

State of Colorado
Oil and Gas Conservation Commission

1120 Lincoln Street, Suite 801, Denver, Colorado 80203 (303) 894-2100 Fax 894-2109



FOR OGCC USE ONLY

SITE INVESTIGATION AND REMEDIATION WORKPLAN

This form shall be submitted to the Director for approval prior to the initiation of site investigation and remediation activities. Form 27 is intended to be used whenever possible. Additional documentation will be required when large volumes of soil and groundwater have been impacted or involve large facilities with multiple source areas. See Rule 910. Attach as many pages as needed to fully describe the proposed work.

CAUSE OF CONDITION BEING INVESTIGATED AND REMEDIATED

☒ Spill or Release ☐ Plug & Abandon ☐ Central Facility Closure ☐ Site/Facility Closure ☐ Other (describe): _____

GENERAL INFORMATION

OGCC Operator Number: 10459		Contact Name and Telephone	
Name of Operator: <u>Extraction Oil and Gas, LLC</u>		Name: <u>Josh Carlisle</u>	
Address: <u>1099 18th Street, Suite 1800</u>		No: <u>720-481-2372</u>	
City: <u>Denver</u> State: <u>CO</u> Zip: <u>80202</u>		Fax: <u>720-481-2372</u>	
API/Facility No: <u>335728</u>		County: <u>Weld</u>	
Facility Name: <u>FCR MD</u>		Facility Number: <u>61S69W1NENE</u>	
Well Name: <u>FCR MD</u>		Well Number: <u>1-1</u>	
Location (QtrQtr, Sec, Twp, Rng, Meridian): <u>NENE S1 T1S R69W</u>		Latitude: <u>39.998412</u> Longitude: <u>-105.056779</u>	

TECHNICAL CONDITIONS

Type of Waste Causing Impact (crude oil, condensate, produced water, etc.): <u>Condensate</u>	
Site Conditions: Is location within a sensitive area (according to Rule 901e)? <input checked="" type="checkbox"/> Y <input type="checkbox"/> N If yes, attach evaluation.	
Adjacent land use (cultivated, irrigated, dry land farming, industrial, residential, etc.): <u>Non-Crop Land</u>	
Soil type, if not previously identified on Form 2A or Federal Surface Use Plan: <u>Clay</u>	
Potential receptors (water wells within 1/4 mi, surface waters, etc.): <u>The nearest surface water is located approximately 620' west of the release location.</u>	
<u>The nearest water well is located approximately 150' west of the release location.</u>	
Description of Impact (if previously provided, refer to that form or document):	
Impacted Media (check):	Extent of Impact:
<input checked="" type="checkbox"/> Soils	<u>See attached data</u>
<input type="checkbox"/> Vegetation	_____
<input type="checkbox"/> Groundwater	_____
<input type="checkbox"/> Surface water	_____
How Determined:	
<u>Excavation, soil sampling, and laboratory analysis</u>	

REMEDIALATION WORKPLAN

Describe initial action taken (if previously provided, refer to that form or document):
On December 9, 2015, historical hydrocarbon impacts to groundwater were discovered during routine flowline maintenance at the FCR MD 61S69W1NENE production facility. The volume of released material is unknown. Groundwater was not encountered in the excavation. An Initial Form 19 was submitted to the COGCC on December 10, 2015, and a Supplemental Form 19 was submitted on December 23, 2015. The COGCC has not yet issued a Spill Tracking Number for this release.
Describe how source is to be removed:
On December 10 and 11, 2015, soil samples were collected from the excavated soil pile, sidewalls and base of the open flowline repair excavation, and test pits surrounding the release location to confirm the presence of hydrocarbon impacts. Soil samples were collected between approximately 5 and 11 feet below ground surface (bgs) and submitted to Summit Scientific Laboratory in Golden, Colorado for analysis of benzene, toluene, ethylbenzene, total xylenes (BTEX), total petroleum hydrocarbons (TPH) - gasoline range organics (GRO) by USEPA Method 8260, TPH - diesel range organics (DRO) by USEPA Method 8015. Laboratory results for the confirmation soil samples indicated that BTEX and TPH concentrations were below applicable COGCC standards in the excavations and test pits. Soil analytical results are summarized in Table 1. Soil sample locations are illustrated on Figure 1 and laboratory analytical reports are included as Attachment A.
Based on the analytical data collected during assessment activities, Extraction has selected excavation and chemical treatment to address remaining petroleum hydrocarbon impacts in the soil within the source area. Impacted material will be excavated and chemically treated on-site using hydrogen peroxide. The proposed excavation extent is illustrated on Figure 2. Confirmation soil samples will be collected for every 100 cubic yards of treated material to confirm constituent concentrations decreased below regulatory standards and material may be used for backfilling. Soil samples will be collected from the sidewalls and base of the final excavation extent to confirm remaining soil impacts were successfully removed. A summary of remediation and sampling activities will be provided in a supplemental report.
Describe how remediation of existing impacts is to be accomplished, including removal and disposal at an injection well or licensed facility, land treatment on site, removal of impacted groundwater, insitu bioremediation, burning of oily vegetation, etc.:
Approximately 10 cubic yards of impacted soil were removed from the site and transported to the Buffalo Ridge Landfill in Keenesburg, Colorado for disposal. The waste manifest is included as Attachment B. All remaining impacted soil will be treated onsite and may be used to backfill the excavation.

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Oil and Gas Conservation Commission

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REMEDIATION WORKPLAN (CONT.)

OGCC Employee: _____

Tracking Number: _____
Name of Operator: _____
OGCC Operator No: _____
Received Date: _____
Well Name & No: _____
Facility Name & No.: _____

If groundwater has been impacted, describe proposed monitoring plan (# of wells or sample points, sampling schedule, analytical methods, etc.):
No groundwater was encountered in the site assessment activities.

Describe reclamation plan. Discuss existing and new grade recontouring; method and testing of compaction alleviation; and reseeding program, including location of new seed, seed mix and noxious weed prevention. Attach diagram or drawing. Use additional sheet for description if required.
The excavation will be backfilled and compacted with clean material and the ground surface will be re-contoured to match pre-existing conditions. Extraction's tank battery remains at the site. Reclamation activities at the site will be compliant with COGCC regulations.

Attach samples and analytical results taken to verify remediation of impacts. Show locations of samples on an onsite schematic or drawing.
Is further site investigation required? ☒ Y ☐ N If yes, describe:
Impacted soil will remain onsite for treatment and may be used for backfilling the excavation when the soil meets COGCC Table 910-1 standards. Soil results are summarized in Table 1. The analytical laboratory reports are included as Attachment A.

Final disposition of E&P waste (land treated and disposed onsite, name of licensed disposal facility, recycling, reuse, etc.):
At this time no E&P waste is anticipated to be removed from the site.

IMPLEMENTATION SCHEDULE

Date Site Investigation Began:	12/10/2015	Date Site Investigation Completed:	12/11/2015	Remediation Plan Submitted:	
Remediation Start Date:	1/16/2016	Anticipated Completion Date:	1/16/2016	Actual Completion Date:	

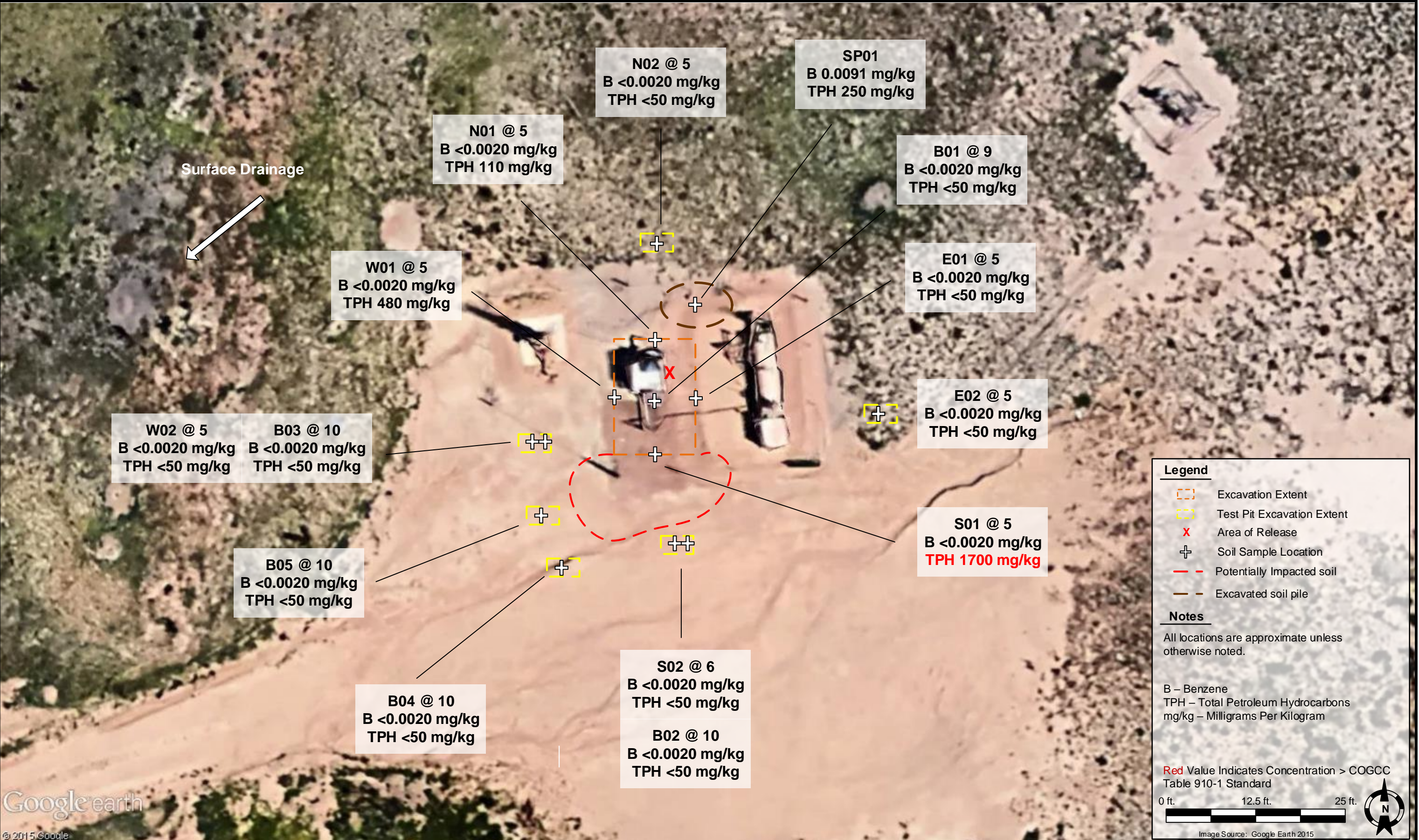
I hereby certify that the statements made in this form are, to the best of my knowledge, true, correct, and complete.

Print Name: Josh Carlisle

Signed: [Signature] Title: Environmental Supervisor Date: 1/7/16

OGCC Approved: _____ Title: _____ Date: _____

FIGURES



DATE:	December 9, 2015
DESIGNED BY:	R. Bruner
DRAWN BY:	R. Bruner



Extraction Oil & Gas LLC
FCR MD 61S69W
NENE, Section 1, Township 1 South, Range 69 West
Weld County, Colorado

Sample Location
Map

FIGURE
1



DATE:	January 7, 2015
DESIGNED BY:	R. Bruner
DRAWN BY:	R. Bruner



Extraction Oil & Gas LLC
FCR MD 61S69W
NENE, Section 1, Township 1 South, Range 69 West
Weld County, Colorado

Proposed Excavation Area

FIGURE
2

**ANALYTICAL
TABLES**

TABLE 1
FCR MD 61S69W1NENE
SOIL SAMPLE RESULTS SUMMARY TABLE
EXTRACTION OIL AND GAS LLC

Sample ID	Date	Depth (ft. bgs)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	TEPH-DRO (mg/kg)
COGCC standards for soil (mg/kg) ⁽¹⁾			0.17	85	100	175	
N01@5	12/10/15	5	<0.0020	<0.0050	<0.0050	<0.0050	110
S01@5	12/10/15	5	<0.0020	<0.0050	<0.0050	<0.0050	1700
E01@5	12/10/15	5	<0.0020	<0.0050	<0.0050	0.041	<50
W01@5	12/10/15	5	<0.0020	<0.0050	0.024	<0.0050	480
SP01	12/10/15	-	0.0091	0.13	0.020	0.69	250
N02@5	12/10/15	5	<0.0020	<0.0050	<0.0050	<0.0050	<50
E02@5	12/10/15	5	<0.0020	<0.0050	<0.0050	<0.0050	63
W02@5	12/10/15	5	<0.0020	<0.0050	<0.0050	<0.0050	<50
S02@6	12/10/15	6	<0.0020	<0.0050	<0.0050	<0.0050	<50
B02@10	12/10/15	10	<0.0020	<0.0050	<0.0050	<0.0050	<50
B03@10	12/10/15	10	<0.0020	<0.0050	<0.0050	<0.0050	<50
B01@9	12/10/15	9	<0.0020	<0.0050	<0.0050	<0.0050	<50
B04@10	12/11/15	10	<0.0020	<0.0050	<0.0050	<0.0050	<50
B05@11	12/11/15	11	<0.0020	<0.0050	<0.0050	<0.0050	<50

Notes:

1. Standards for soil are taken from 2 CCR 404-1, Table 910-1, effective February 1, 2014.

COGCC = Colorado Oil and Gas Conservation Commission

(<) = Analytical result is less than the indicated laboratory reporting limit.

TEPH - DRO = Total extractable petroleum hydrocarbons - diesel range organics

mg/kg = Milligrams per kilogram.

ft. bgs = Feet below ground surface.

BOLD = Analytical result is in exceedance of COGCC Table 910-1 soil standards.

**ATTACHMENT A
LABORATORY
ANALYTICAL REPORTS**

Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

December 17, 2015

Josh Carlisle
Extraction Oil & Gas
570 17th St. Suite 550
Denver, CO 80202
RE: FCR MD 1-1

Enclosed are the results of analyses for samples received by Summit Scientific on 12/10/15 18:00. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in dark ink, appearing to read "M. Clements", with a stylized flourish at the end.

Michelle Clements For Paul Shrewsbury
President



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

Project: FCR MD 1-1

Project Number: [none]
Project Manager: Josh Carlisle

Reported:
12/17/15 14:55

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
N01@5'	1512095-01	Soil	12/10/15 10:28	12/10/15 18:00
S01@5'	1512095-02	Soil	12/10/15 10:32	12/10/15 18:00
E01@5'	1512095-03	Soil	12/10/15 10:29	12/10/15 18:00
W01@5'	1512095-04	Soil	12/10/15 10:31	12/10/15 18:00
SP01	1512095-05	Soil	12/10/15 10:33	12/10/15 18:00
N02@5'	1512095-06	Soil	12/10/15 11:03	12/10/15 18:00
E02@5'	1512095-07	Soil	12/10/15 11:22	12/10/15 18:00
W02@5'	1512095-08	Soil	12/10/15 11:34	12/10/15 18:00
S02@6'	1512095-09	Soil	12/10/15 11:50	12/10/15 18:00
B02@10'	1512095-10	Soil	12/10/15 12:18	12/10/15 18:00
B03@10'	1512095-11	Soil	12/10/15 12:52	12/10/15 18:00
B01@9'	1512095-12	Soil	12/10/15 13:15	12/10/15 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.



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

Project: FCR MD 1-1

Project Number: [none]
Project Manager: Josh Carlisle

Reported:
12/17/15 14:55

Summit Scientific

1512095.1

741 Corporate Circle Suite 1 • Golden, Colorado 80401
303-277-9310 • 303-374-5933 Fax

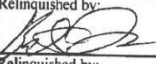
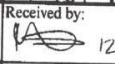
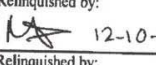
Client: Extraction Oil & Gas

Page 1 of 2

Address:
City/State/Zip:
Phone: Fax:
Sampler Name: Kate Forsmark

Project Manager: Ryan Bruner
E-Mail: rbruner@tasman-geo.com
Project Name: FCR MD 1-1
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)	BTEX 8260	DRO 8015	
N010'S	12/10/15	1028	1			X								
S010'S		1032	1			X								
E010'S		1029	1			X								
W010'S		1031	1			X								
S011		1033	1			X								
N020'S		1103	1			X								
E020'S		1122	1			X								
W020'S		1134	1			X								
S020'S		1150	1			X								
B02010'	12/10/15	1218	1			X								

Relinquished by: 	Date/Time: 12/10/15 1530	Received by: 	Date/Time: 12-10-15 18:00	Turn Around Time (Check) Same Day <input type="checkbox"/> 72 Hours <input type="checkbox"/> 24 Hours <input type="checkbox"/> Standard <input checked="" type="checkbox"/> 48 Hours <input type="checkbox"/>	Notes:
Relinquished by: 	Date/Time: 12-10-15 18:15	Received by:	Date/Time:		
Relinquished by:	Date/Time:	Received in Lab by:	Date/Time:		

Sample Integrity:
Temperature Upon Receipt: _____
Intact: Yes ☒ No ☐

www.s2scientific.com

Summit Scientific



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

Project: FCR MD 1-1

Project Number: [none]
Project Manager: Josh Carlisle

Reported:
12/17/15 14:55

Summit Scientific

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

Page 2 of 2

Client:	Extraction Oil & Gas
Address:	
City/State/Zip:	
Phone:	Fax:
Sampler Name:	Kate Forsmark

Project Manager: Ryan Bruner
E-Mail: rbruner@tasman-geo.com
Project Name: FCR MD 1-1
Project Number:

[illegible]

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M Clement

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

Project: FCR MD 1-1

Project Number: [none]
Project Manager: Josh Carlisle

Reported:
12/17/15 14:55

N01@5'
1512095-01 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: 12/10/15 10:28

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	110	50	mg/kg	1	1512132	12/14/15	12/14/15	8015M	

Date Sampled: 12/10/15 10:28

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

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 12/10/15 10:28

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1512140	12/15/15	12/17/15	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	

Date Sampled: 12/10/15 10:28

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		91.9 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		106 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		94.4 %	21-167		"	"	"	"	

Summit Scientific

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

Project: FCR MD 1-1

Project Number: [none]
Project Manager: Josh Carlisle

Reported:
12/17/15 14:55

S01@5'
1512095-02 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: 12/10/15 10:32

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	1700	50	mg/kg	1	1512132	12/14/15	12/14/15	8015M	

Date Sampled: 12/10/15 10:32

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		189 %	30-150		"	"	"	"	S-02

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 12/10/15 10:32

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1512140	12/15/15	12/17/15	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	12/17/15	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	12/17/15	"	

Date Sampled: 12/10/15 10:32

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		86.5 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		103 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		202 %	21-167		"	"	"	"	S-02

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

Project: FCR MD 1-1

Project Number: [none]
Project Manager: Josh Carlisle

Reported:
12/17/15 14:55

E01@5'
1512095-03 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: 12/10/15 10:29

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1512132	12/14/15	12/14/15	8015M	

Date Sampled: 12/10/15 10:29

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		112 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 12/10/15 10:29

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1512140	12/15/15	12/17/15	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	0.041	0.0050	"	"	"	"	"	"	

Date Sampled: 12/10/15 10:29

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		84.5 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		112 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		147 %	21-167		"	"	"	"	

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

Project: FCR MD 1-1

Project Number: [none]
Project Manager: Josh Carlisle

Reported:
12/17/15 14:55

W01@5'
1512095-04 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: 12/10/15 10:31

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	480	50	mg/kg	1	1512132	12/14/15	12/14/15	8015M	

Date Sampled: 12/10/15 10:31

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

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 12/10/15 10:31

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1512140	12/15/15	12/17/15	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.024	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	

Date Sampled: 12/10/15 10:31

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		92.3 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		96.5 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		113 %	21-167		"	"	"	"	

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

Project: FCR MD 1-1

Project Number: [none]
Project Manager: Josh Carlisle

Reported:
12/17/15 14:55

SP01
1512095-05 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: 12/10/15 10:33

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	250	50	mg/kg	1	1512132	12/14/15	12/14/15	8015M	

Date Sampled: 12/10/15 10:33

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

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 12/10/15 10:33

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	0.0091	0.0018	mg/kg	1	1512140	12/15/15	12/17/15	EPA 8260B	
Toluene	0.13	0.0045	"	"	"	"	"	"	
Ethylbenzene	0.020	0.0045	"	"	"	"	"	"	
Xylenes (total)	0.69	0.0045	"	"	"	"	"	"	

Date Sampled: 12/10/15 10:33

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		75.2 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		144 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		215 %	21-167		"	"	"	"	S-02

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

Project: FCR MD 1-1

Project Number: [none]
Project Manager: Josh Carlisle

Reported:
12/17/15 14:55

N02@5'
1512095-06 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: 12/10/15 11:03

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1512132	12/14/15	12/14/15	8015M	

Date Sampled: 12/10/15 11:03

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		112 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 12/10/15 11:03

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1512140	12/15/15	12/16/15	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	

Date Sampled: 12/10/15 11:03

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		90.8 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		90.8 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		91.7 %	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.



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

Project: FCR MD 1-1
Project Number: [none]
Project Manager: Josh Carlisle

Reported:
12/17/15 14:55

E02@5'
1512095-07 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: 12/10/15 11:22

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	63	50	mg/kg	1	1512132	12/14/15	12/14/15	8015M	

Date Sampled: 12/10/15 11:22

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		107 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 12/10/15 11:22

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1512140	12/15/15	12/16/15	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	

Date Sampled: 12/10/15 11:22

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		92.6 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		92.5 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		89.8 %	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.



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

Project: FCR MD 1-1

Project Number: [none]
Project Manager: Josh Carlisle

Reported:
12/17/15 14:55

W02@5'
1512095-08 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: 12/10/15 11:34

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1512132	12/14/15	12/15/15	8015M	

Date Sampled: 12/10/15 11:34

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: 12/10/15 11:34

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1512140	12/15/15	12/16/15	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	

Date Sampled: 12/10/15 11:34

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		102 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		91.4 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		93.2 %	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.



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

Project: FCR MD 1-1

Project Number: [none]
Project Manager: Josh Carlisle

Reported:
12/17/15 14:55

S02@6'
1512095-09 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: 12/10/15 11:50

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1512132	12/14/15	12/15/15	8015M	

Date Sampled: 12/10/15 11:50

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

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 12/10/15 11:50

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1512140	12/15/15	12/17/15	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	

Date Sampled: 12/10/15 11:50

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		96.0 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.6 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		94.3 %	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.



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

Project: FCR MD 1-1

Project Number: [none]
Project Manager: Josh Carlisle

Reported:
12/17/15 14:55

B02@10'
1512095-10 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: 12/10/15 12:18

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1512132	12/14/15	12/15/15	8015M	

Date Sampled: 12/10/15 12:18

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		116 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 12/10/15 12:18

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1512140	12/15/15	12/16/15	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	

Date Sampled: 12/10/15 12:18

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		95.1 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		88.7 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		93.0 %	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.



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

Project: FCR MD 1-1

Project Number: [none]
Project Manager: Josh Carlisle

Reported:
12/17/15 14:55

B03@10'
1512095-11 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: 12/10/15 12:52

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1512132	12/14/15	12/15/15	8015M	

Date Sampled: 12/10/15 12:52

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		117 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 12/10/15 12:52

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1512140	12/15/15	12/16/15	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	

Date Sampled: 12/10/15 12:52

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		93.9 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		93.0 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		95.5 %	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.



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

Project: FCR MD 1-1

Project Number: [none]
Project Manager: Josh Carlisle

Reported:
12/17/15 14:55

B01@9'
1512095-12 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: 12/10/15 13:15

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1512132	12/14/15	12/15/15	8015M	

Date Sampled: 12/10/15 13:15

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

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 12/10/15 13:15

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1512140	12/15/15	12/16/15	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	

Date Sampled: 12/10/15 13:15

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		95.1 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		90.8 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		94.8 %	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.



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

Project: FCR MD 1-1

Project Number: [none]
Project Manager: Josh Carlisle

Reported:
12/17/15 14:55

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 1512132 - EPA 3550A

Blank (1512132-BLK1)

Prepared & Analyzed: 12/14/15

C10-C28 (DRO)	ND	50	mg/kg							
Surrogate: o-Terphenyl	14.0		"	12.5		112	30-150			

LCS (1512132-BS1)

Prepared & Analyzed: 12/14/15

C10-C28 (DRO)	517	50	mg/kg	499		104	73-134			
Surrogate: o-Terphenyl	14.3		"	12.5		114	30-150			

Matrix Spike (1512132-MS1)

Source: 1512095-01

Prepared & Analyzed: 12/14/15

C10-C28 (DRO)	607	50	mg/kg	463	107	108	50-148			
Surrogate: o-Terphenyl	17.1		"	11.6		147	30-150			

Matrix Spike Dup (1512132-MSD1)

Source: 1512095-01

Prepared & Analyzed: 12/14/15

C10-C28 (DRO)	608	50	mg/kg	474	107	106	50-148	0.0792	13	
Surrogate: o-Terphenyl	13.9		"	11.9		117	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.



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

Project: FCR MD 1-1
Project Number: [none]
Project Manager: Josh Carlisle

Reported:
12/17/15 14:55

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 1512140 - EPA 5030 Soil MS

Blank (1512140-BLK1)

Prepared: 12/15/15 Analyzed: 12/16/15

Benzene	ND	0.0020	mg/kg							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.0050	"							
Surrogate: 1,2-Dichloroethane-d4	0.0337		"	0.0400		84.2	23-173			
Surrogate: Toluene-d8	0.0380		"	0.0400		94.9	20-170			
Surrogate: 4-Bromofluorobenzene	0.0366		"	0.0400		91.6	21-167			

LCS (1512140-BS1)

Prepared: 12/15/15 Analyzed: 12/16/15

Benzene	0.0880	0.0020	mg/kg	0.100		88.0	58-130			
Toluene	0.0887	0.0050	"	0.100		88.7	61-134			
Ethylbenzene	0.0989	0.0050	"	0.0992		99.7	74-139			
m,p-Xylene	0.195	0.010	"	0.200		97.8	73-137			
o-Xylene	0.0939	0.0050	"	0.0984		95.4	73-141			
Surrogate: 1,2-Dichloroethane-d4	0.0320		"	0.0400		80.0	23-173			
Surrogate: Toluene-d8	0.0382		"	0.0400		95.5	20-170			
Surrogate: 4-Bromofluorobenzene	0.0369		"	0.0400		92.2	21-167			

Matrix Spike (1512140-MS1)

Source: 1512095-06

Prepared: 12/15/15 Analyzed: 12/16/15

Benzene	0.0897	0.0020	mg/kg	0.0943	ND	95.1	30-131			
Toluene	0.0893	0.0050	"	0.0943	ND	94.7	30-134			
Ethylbenzene	0.0993	0.0050	"	0.0936	ND	106	22-153			
m,p-Xylene	0.195	0.010	"	0.188	ND	104	10-159			
o-Xylene	0.0950	0.0050	"	0.0928	ND	102	31-151			
Surrogate: 1,2-Dichloroethane-d4	0.0361		"	0.0377		95.8	23-173			
Surrogate: Toluene-d8	0.0362		"	0.0377		96.0	20-170			
Surrogate: 4-Bromofluorobenzene	0.0351		"	0.0377		93.1	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.



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

Project: FCR MD 1-1

Project Number: [none]
Project Manager: Josh Carlisle

Reported:
12/17/15 14:55

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 1512140 - EPA 5030 Soil MS

Matrix Spike Dup (1512140-MSD1)	Source: 1512095-06			Prepared: 12/15/15		Analyzed: 12/16/15				
Benzene	0.0921	0.0020	mg/kg	0.0990	ND	93.0	30-131	2.66	34	
Toluene	0.0929	0.0050	"	0.0990	ND	93.8	30-134	3.91	30	
Ethylbenzene	0.106	0.0050	"	0.0982	ND	108	22-153	6.61	24	
m,p-Xylene	0.208	0.010	"	0.198	ND	105	10-159	6.34	68	
o-Xylene	0.0992	0.0050	"	0.0974	ND	102	31-151	4.38	38	
Surrogate: 1,2-Dichloroethane-d4	0.0358		"	0.0396		90.4	23-173			
Surrogate: Toluene-d8	0.0363		"	0.0396		91.6	20-170			
Surrogate: 4-Bromofluorobenzene	0.0367		"	0.0396		92.5	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.



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

Project: FCR MD 1-1

Project Number: [none]
Project Manager: Josh Carlisle

Reported:
12/17/15 14:55

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

A handwritten signature in black ink, appearing to read 'M. Clement'.

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

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

December 17, 2015

Ryan Bruner
Extraction Oil & Gas
570 17th St. Suite 550
Denver, CO 80202
RE: FCR MD 1-1

Enclosed are the results of analyses for samples received by Summit Scientific on 12/11/15 16:00. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in dark ink, appearing to read "M. Clements", with a stylized flourish at the end.

Michelle Clements For Paul Shrewsbury
President



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

Project: FCR MD 1-1

Project Number: [none]
Project Manager: Ryan Bruner

Reported:
12/17/15 14:58

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
B04@10'	1512104-01	Soil	12/11/15 10:28	12/11/15 16:00
B05@11'	1512104-02	Soil	12/11/15 10:42	12/11/15 16:00

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.



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

Project: FCR MD 1-1

Project Number: [none]
Project Manager: Ryan Bruner

Reported:
12/17/15 14:58

B04@10'
1512104-01 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: 12/11/15 10:28

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1512132	12/14/15	12/15/15	8015M	

Date Sampled: 12/11/15 10:28

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

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 12/11/15 10:28

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0018	mg/kg	1	1512140	12/15/15	12/16/15	EPA 8260B	
Toluene	ND	0.0044	"	"	"	"	"	"	
Ethylbenzene	ND	0.0044	"	"	"	"	"	"	
Xylenes (total)	ND	0.0044	"	"	"	"	"	"	

Date Sampled: 12/11/15 10:28

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		98.2 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		94.2 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		95.5 %	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.



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

Project: FCR MD 1-1

Project Number: [none]
Project Manager: Ryan Bruner

Reported:
12/17/15 14:58

B05@11'
1512104-02 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: 12/11/15 10:42

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1512132	12/14/15	12/15/15	8015M	

Date Sampled: 12/11/15 10:42

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

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 12/11/15 10:42

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1512140	12/15/15	12/16/15	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	

Date Sampled: 12/11/15 10:42

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		100 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		94.0 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		92.1 %	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.



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

Project: FCR MD 1-1

Project Number: [none]
Project Manager: Ryan Bruner

Reported:
12/17/15 14:58

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 1512132 - EPA 3550A

Blank (1512132-BLK1)

Prepared & Analyzed: 12/14/15

C10-C28 (DRO)	ND	50	mg/kg							
Surrogate: o-Terphenyl	14.0		"	12.5		112	30-150			

LCS (1512132-BS1)

Prepared & Analyzed: 12/14/15

C10-C28 (DRO)	517	50	mg/kg	499		104	73-134			
Surrogate: o-Terphenyl	14.3		"	12.5		114	30-150			

Matrix Spike (1512132-MS1)

Source: 1512095-01

Prepared & Analyzed: 12/14/15

C10-C28 (DRO)	607	50	mg/kg	463	107	108	50-148			
Surrogate: o-Terphenyl	17.1		"	11.6		147	30-150			

Matrix Spike Dup (1512132-MSD1)

Source: 1512095-01

Prepared & Analyzed: 12/14/15

C10-C28 (DRO)	608	50	mg/kg	474	107	106	50-148	0.0792	13	
Surrogate: o-Terphenyl	13.9		"	11.9		117	30-150			

Summit Scientific

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

Project: FCR MD 1-1

Project Number: [none]
Project Manager: Ryan Bruner

Reported:
12/17/15 14:58

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 1512140 - EPA 5030 Soil MS

Blank (1512140-BLK1)

Prepared: 12/15/15 Analyzed: 12/16/15

Benzene	ND	0.0020	mg/kg							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.0050	"							
Surrogate: 1,2-Dichloroethane-d4	0.0337		"	0.0400		84.2	23-173			
Surrogate: Toluene-d8	0.0380		"	0.0400		94.9	20-170			
Surrogate: 4-Bromofluorobenzene	0.0366		"	0.0400		91.6	21-167			

LCS (1512140-BS1)

Prepared: 12/15/15 Analyzed: 12/16/15

Benzene	0.0880	0.0020	mg/kg	0.100		88.0	58-130			
Toluene	0.0887	0.0050	"	0.100		88.7	61-134			
Ethylbenzene	0.0989	0.0050	"	0.0992		99.7	74-139			
m,p-Xylene	0.195	0.010	"	0.200		97.8	73-137			
o-Xylene	0.0939	0.0050	"	0.0984		95.4	73-141			
Surrogate: 1,2-Dichloroethane-d4	0.0320		"	0.0400		80.0	23-173			
Surrogate: Toluene-d8	0.0382		"	0.0400		95.5	20-170			
Surrogate: 4-Bromofluorobenzene	0.0369		"	0.0400		92.2	21-167			

Matrix Spike (1512140-MS1)

Source: 1512095-06

Prepared: 12/15/15 Analyzed: 12/16/15

Benzene	0.0897	0.0020	mg/kg	0.0943	ND	95.1	30-131			
Toluene	0.0893	0.0050	"	0.0943	ND	94.7	30-134			
Ethylbenzene	0.0993	0.0050	"	0.0936	ND	106	22-153			
m,p-Xylene	0.195	0.010	"	0.188	ND	104	10-159			
o-Xylene	0.0950	0.0050	"	0.0928	ND	102	31-151			
Surrogate: 1,2-Dichloroethane-d4	0.0361		"	0.0377		95.8	23-173			
Surrogate: Toluene-d8	0.0362		"	0.0377		96.0	20-170			
Surrogate: 4-Bromofluorobenzene	0.0351		"	0.0377		93.1	21-167			

Summit Scientific

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

Project: FCR MD 1-1

Project Number: [none]
Project Manager: Ryan Bruner

Reported:
12/17/15 14:58

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 1512140 - EPA 5030 Soil MS

Matrix Spike Dup (1512140-MSD1)	Source: 1512095-06			Prepared: 12/15/15		Analyzed: 12/16/15				
Benzene	0.0921	0.0020	mg/kg	0.0990	ND	93.0	30-131	2.66	34	
Toluene	0.0929	0.0050	"	0.0990	ND	93.8	30-134	3.91	30	
Ethylbenzene	0.106	0.0050	"	0.0982	ND	108	22-153	6.61	24	
m,p-Xylene	0.208	0.010	"	0.198	ND	105	10-159	6.34	68	
o-Xylene	0.0992	0.0050	"	0.0974	ND	102	31-151	4.38	38	
Surrogate: 1,2-Dichloroethane-d4	0.0358		"	0.0396		90.4	23-173			
Surrogate: Toluene-d8	0.0363		"	0.0396		91.6	20-170			
Surrogate: 4-Bromofluorobenzene	0.0367		"	0.0396		92.5	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.



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

Project: FCR MD 1-1

Project Number: [none]
Project Manager: Ryan Bruner

Reported:
12/17/15 14:58

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

A handwritten signature in black ink, appearing to read 'M. Clement'.

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.

ATTACHMENT B
WASTE MANIFEST

10408216



Buffalo Ridge
11655 CR 59
Keenesburg, CO, 80643
Ph: (303)732-0218

Original
Ticket# 940511

Customer Name EXTRACTION OIL & GAS EXTRACTION Carrier NORTHERN PLAINS NORTHERN PLAINS
Ticket Date 12/29/2015 Vehicle# 77 Volume
Payment Type Credit Account Container
Manual Ticket# Driver
Hauling Ticket# Check#
Route Billing # 0000518
State Waste Code Gen EPA ID
Manifest 238393 Grid
Destination
PO Various per Driver
Profile 12237500 (CONTAMINATED SOIL)
Generator 125-EXTRACTION OIL & GAS VARIOUS CO EXTRACTION OIL & GAS VARIOUS CO

Time
In 12/29/2015 15:08:34
Out 12/29/2015 15:08:34

Scale
Scale 1

Operator
shaddock
shaddock

Inbound

Gross
Tare
Net
Tons

64960 lb
26740 lb
38220 lb
19.11

Comments

WASTE MANAGEMENT

Hours: M-F 7AM-4PM, Sat: 8AM-1PM

Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1 Cont Soil Pet-Tons	100	19.11	Tons				
2 FUEL-Fuel Surcharg	100		%				
3 EVF-L-Standard Env	100	1	Load				

Total Tax
Total Ticket

NON-HAZARDOUS WASTE MANIFEST		1. Generator ID Number N / A		2. Page 1 of 1		3. Emergency Response Phone 800-424-9300		4. Waste Tracking Number 238393			
		5. Generator's Name and Mailing Address EXTRACTION OIL AND GAS 370 17TH STREET SUITE 5300 DENVER CO 80202		Generator's Project Address (if different than mailing address) VARIOUS LOCATIONS							
		Generator's Phone: (720) 481-2372									
GENERATOR		6. Transporter 1: Complete Company Name and Address NPO						Transporter Phone 970 534015			
		7. Transporter 2: Complete Company Name and Address						Transporter Phone			
		8. Designated Disposal Facility Name and Site Address Buffalo Ridge Landfill 11655 WCR 59 Keenesburg CO 80643						Facility's Phone: (303) 732-0218			
TRANSPORTER		9. Waste Shipping Name, Description, & Profile Number 1. NON REGULATED SOLID (CONTAMINATED SOIL) 122375CO				10. Containers		11. Total Quantity 19.11 Tons	12. Unit Wt./Vol.		
						No. Type					
		13. Regulatory Agency: Colorado Department of Public Health and Environment 4300 Cherry Creek Drive South Denver, Co 80222-1530						Emergency Notification: CHEMTREC (800) 424-9300 24-hour Toll Free Number			
		14. Bill to & Account Number: Customer Acct #: BR 518 Customer Name: EXTRACTION OIL AND GAS									
		15. Contractor/Generator Certification: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/ placarded, and are in all respects in proper condition for transportation according to applicable national and state governmental regulations. I hereby certify that the above described waste is not a hazardous waste defined by federal, state or local regulations and does not contain regulated quantities of PCB's or radioactive materials. <div style="text-align: right;">Date: Dec 22 2015</div>									
		Generator's/Officer's Printed/Typed Name [Signature]						Signature [Signature]			
								Month Day Year			
DESIGNATED FACILITY		16. Transporter Acknowledgement of Receipt of Materials									
		Transporter 1 Printed/Typed Name NPO						Signature [Signature]		Month Day Year 12 29 15	
		Transporter 2 Printed/Typed Name						Signature		Month Day Year	
		17. Special Handling Instructions									
		18. Discrepancy Indication Space:						19. Ticket # 940511			
		Initials of Person noting discrepancy _____ Signature _____						Date _____			
		20. Management Method/Location Landfill <input checked="" type="checkbox"/> Monofill _____ Location: _____									
		21. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 18 Printed/Typed Name Sonyia Hardock									
		Signature [Signature]						Month Day Year 12 29 15			