

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

Project: 7473
Facility: 212269
Document #: 2212190
Date: 03/30/2016

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.

OGCC Employee:

Spill Complaint
Inspection NOAV

Tracking No: 2521835

CAUSE OF CONDITION BEING INVESTIGATED AND REMEDIATED

Spill or Release Plug & Abandon Central Facility Closure Site/Facility Closure Other (describe): No Further Action Request

GENERAL INFORMATION

OGCC Operator Number: 8960
Name of Operator: Bonanza Creek Energy Operating Company LLC
Address: 410 17th Street, Suite 1400
City: Denver State: CO Zip: 80202
Contact Name and Telephone: Name: Brian Dodek No: 720-225-6653 Fax: 720-279-2331
API/Facility No: 05-057-06162 County: Weld
Facility Name: McCallum Unit 97 Facility Number: Location: 324651
Well Name: McCallum Unit 97 Well Number:
Location (QtrQtr, Sec, Twp, Rng, Meridian): NESW 34-T10N-R79W Latitude: 40.79453 Longitude: -106.25219

TECHNICAL CONDITIONS

Type of Waste Causing Impact (crude oil, condensate, produced water, etc.): Condensate and Produced Water
Site Conditions: Is location within a sensitive area (according to Rule 901e)? [X] Y [ ] N If yes, attach evaluation.
Adjacent land use (cultivated, irrigated, dry land farming, industrial, residential, etc.): BLM Rangeland
Soil type, if not previously identified on Form 2A or Federal Surface Use Plan: Sandy Clay
Potential receptors (water wells within 1/4 mi, surface waters, etc.): Water well located app. 4,600 feet SW of the site.
Description of Impact (if previously provided, refer to that form or document):
Impacted Media (check): [X] Soils [ ] Vegetation [ ] Groundwater [ ] Surface water
Extent of Impact: 260' N-S x 65' E-W x 6" bgs
How Determined:

REMEDIATION WORKPLAN

Describe initial action taken (if previously provided, refer to that form or document):
A Form 27 No Further Action request was submitted on December 17, 2012 (Doc #2231465), which summarized cleanup activities and presented confirmation soil analytical results.
Describe how source is to be removed:
The release area impacted soil was treated in place by repeatedly discing the first 6 inches of soil.
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.:
As described in the previous Form 27, land treatment on site was successful in remediating the impacted surface soil.

Oil and Gas Conservation Commission

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



Tracking Number:	2521835
Name of Operator:	Bonanza Creek Energy Operating Company LLC
OGCC Operator No:	8960
Received Date:	
Well Name & No:	McCallum 97
Facility Name & No:	Location: 324651

REMEDIATION WORKPLAN (CONT.)

OGCC Employee: \_\_\_\_\_

If groundwater has been impacted, describe proposed monitoring plan (# of wells or sample points, sampling schedule, analytical methods, etc.):  
Groundwater was not encountered during remediation 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 release area was reclaimed and seeded with the requested BLM seed mix.

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:  
The Form 27 NFA request submitted on December 17, 2012, was declined by the COGCC. The COGCC requested the following additional information prior to NFA approval: 1) Provide information on how the aerial extent and vertical extent of the impacted area was determined, in particular near the point of release; and 2) Provide information from the surface owner (BLM) approving the remediation method implemented.

1) The aerial extent of the release was determined by visual delineation as the release saturated the surface soil. The vertical extent of the release was characterized by hand digging along the release path. It was determined that the soil impact did not extend beyond 6 inches below ground surface (bgs). Soil samples collected in 2011 and 2012 were collected from this interval to characterize the impacted soil horizon. Bonanza Creek has updated the previous figure (attached) to accurately depict the spill path aerial extent and depict the remediation area that was subsequently tilled.

In order to confirm the previous extent determinations, Bonanza Creek conducted additional sampling to characterize the spill path. Bonanza Creek personnel collected ten soil samples (SS01 through SS10). Samples were collected beneath the previous spill path samples, from 6 to 12 inches bgs. These samples were collected to confirm the previous depth reported. Samples were also collected adjacent to the spill path to confirm the adjacent soil was compliant. The soil samples were submitted for laboratory analysis of TPH (GRO and DRO) and BTEX. TPH and BTEX concentrations were compliant with COGCC Table 910-1 concentration levels in all samples (attached).

2) Bonanza Creek submitted a sundry request summarizing all remediation activities on March 4, 2013. The BLM approved the sundry and issued requirements for reclamation (attached). Bonanza Creek conducted reclamation as required by the BLM.

Analytical results have confirmed the aerial and vertical extents and confirmed the remaining soil is compliant with COGCC Table 910-1 standards. Bonanza Creek has also confirmed that the BLM has approved the successful onsite soil remediation. Based on both the previous and current laboratory analytical results, Bonanza Creek is requesting a No Further Action determination for this site.

Final disposition of E&P waste (landtreated and disposed onsite, name of licensed disposal facility, recycling, reuse, etc.):  
As described in the previous Form 27, land treatment on site was successful in remediating the impacted surface soil.

IMPLEMENTATION SCHEDULE

Date Site Investigation Began:	10/13/10	Date Site Investigation Completed:	4/12/14	Remediation Plan Submitted:	1/7/16
Remediation Start Date:	10/13/12	Anticipated Completion Date:	12/31/12	Actual Completion Date:	4/23/14

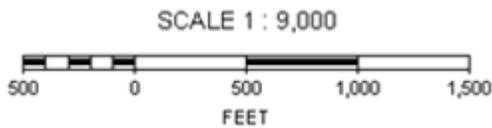
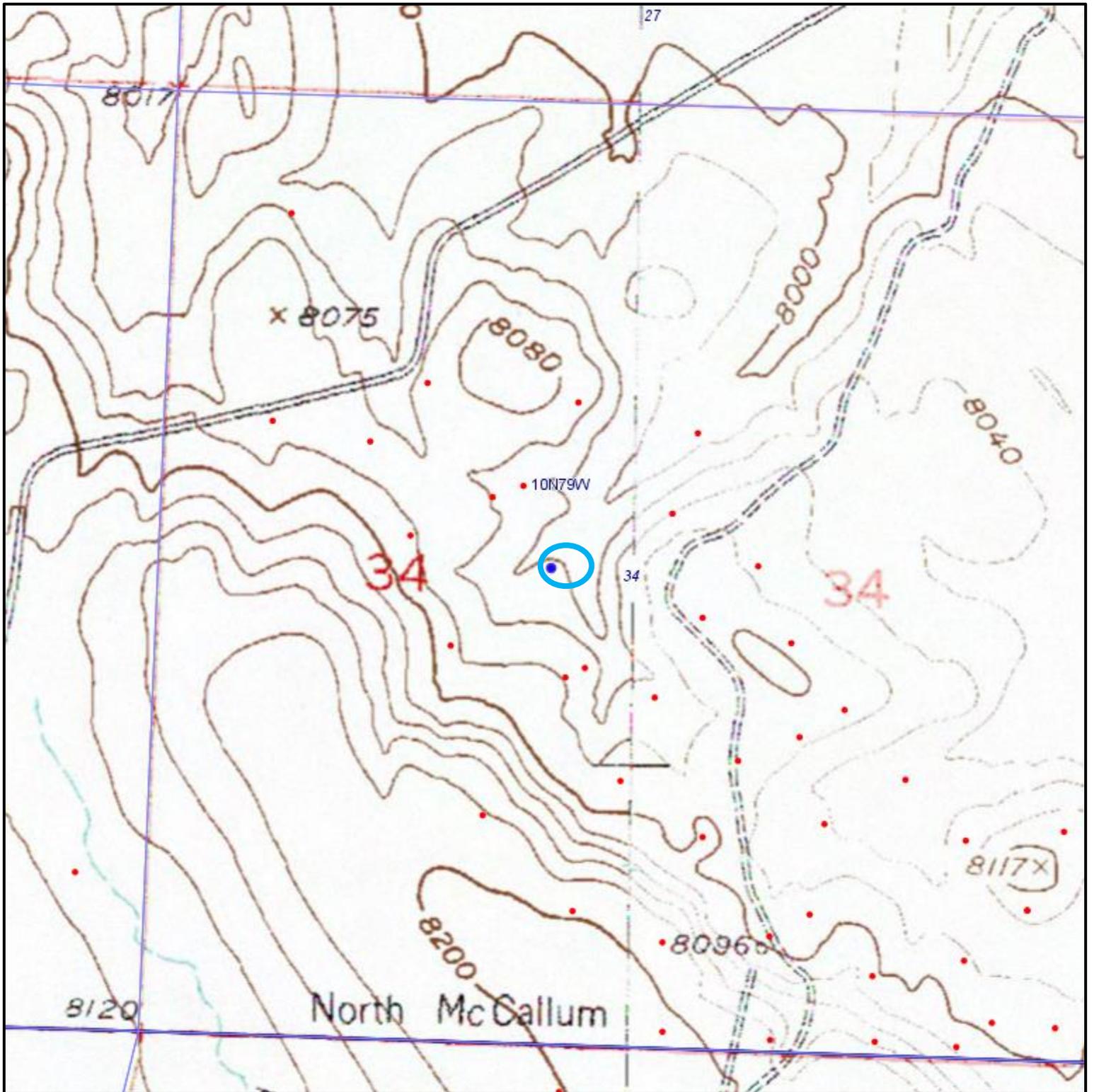
I hereby certify that the statements made in this form are, to the best of my knowledge, true, correct, and complete.

Print Name: **Brian Dodek**

Signed: Brian Dodek Title: **Senior Environmental Specialist** Date: 1/7/16

OGCC Approved: Kris Weidell Title: EPS Date: 3/30/16

IT Appears that No Further Action is required at this time  
However if conditions at the site indicate contaminant concentrations in soils exceeding COGCC standards, further investigation may be required



LEGEND

 Site Location



Figure 1  
Location Site Map  
January 7, 2015 BDD

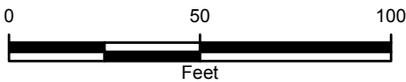
**McCallum Unit 97**  
**Location ID: 324651**  
**NWSW, Sec 34, T10N, R79W, 6<sup>th</sup> PM**  
**Jackson County, Colorado**



IMAGE COURTESY OF ESRI

**LEGEND**

-  RELEASE
-  SOIL SAMPLE
-  BACKGROUND SOIL SAMPLE
-  CULVERT
-  MCCALLUM RELEASE AREA
-  REMEDIATION FOOTPRINT



**FIGURE 2**  
**SITE MAP**  
 MCCALLUM UNIT 97  
 NESW 34-T10N-R79W  
 JACKSON COUNTY, COLORADO  
**BONANZA CREEK ENERGY, INC.**



**TABLE 1**  
**MCCALLUM UNIT 97**  
**JACKSON COUNTY, COLORADO**  
**BONANZA CREEK ENERGY OPERATING COMPANY LLC.**

Sample ID	Sample Date	Sample Depth	Benzene	Toluene	Ethylbenzene	Total Xylenes	TPH-DRO	TPH-GRO	Total TPH
Sample #1	10/10/2011	0-6"	<0.0050	<0.0050	<0.0050	<0.0050	920	<0.50	<b>1,080</b>
Sample #2	10/10/2011	0-6"	<0.0050	<0.0050	<0.0050	<0.0050	1200	<0.50	<b>1,200</b>
Sample #3	10/10/2011	0-6"	<0.0050	<0.0050	<0.0050	<0.0050	2800	<0.50	<b>2,800</b>
SS01@0-6"	5/7/2012	0-6"	<0.0050	<0.0050	<0.0050	<0.0050	100	<0.50	100
SS02@0-6"	5/7/2012	0-6"	<0.0050	<0.0050	<0.0050	<0.0050	100	<0.50	100
SS03@0-6"	5/7/2012	0-6"	<0.0050	<0.0050	<0.0050	<0.0050	<50	<0.50	<50
SS04@0-6"	5/7/2012	0-6"	<0.0050	<0.0050	<0.0050	<0.0050	630	<0.50	<b>630</b>
W-4 #1	8/21/2012	0-6"	<0.0050	<0.0050	<0.0050	<0.0050	60	<0.50	60
W-4 #2	8/21/2012	0-6"	<0.0050	<0.0050	<0.0050	<0.0050	120	<0.50	120
SS01@6-12"	4/23/2014	6-12"	<0.0020	<0.0050	<0.0050	<0.0050	<50	<0.50	<50
SS02@0-6"	4/23/2014	0-6"	<0.0018	<0.0045	<0.0045	<0.0045	<50	<0.45	<50
SS03@6-12"	4/23/2014	6-12"	<0.0020	<0.0050	<0.0050	<0.0050	350	<0.50	350
SS04@6-12"	4/23/2014	6-12"	<0.0020	<0.0050	<0.0050	<0.0050	210	<0.50	210
SS05@0-6"	4/23/2014	0-6"	<0.0020	<0.0050	<0.0050	<0.0050	<50	<0.50	<50
SS06@0-6"	4/23/2014	0-6"	<0.0020	<0.0050	<0.0050	<0.0050	<50	<0.50	<50
SS07@0-6"	4/23/2014	0-6"	<0.0018	<0.0044	<0.0044	<0.0044	<50	<0.44	<50
SS08@0-6"	4/23/2014	0-6"	<0.0020	<0.0050	<0.0050	<0.0050	<50	<0.50	<50
SS09@0-6"	4/23/2014	0-6"	<0.0020	<0.0050	<0.0050	<0.0050	<50	<0.50	<50
SS10@0-6"	4/23/2014	0-6"	<0.0020	<0.0050	<0.0050	<0.0050	180	<0.50	180
<b>COGCC Table 910-1 Concentration Level</b>			<b>0.17</b>	<b>85</b>	<b>100</b>	<b>175</b>	--	--	<b>500</b>

**Notes:**

-- - no concentration level is available

BTEX - benzene, toluene, ethylbenzene, xylenes (total)

COGCC - Colorado Oil and Gas Conservation Commission

TPH - total petroleum hydrocarbons

DRO - diesel range organics

GRO - gasoline range organics

All results are in mg/kg unless stated otherwise.

# Summit Scientific

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741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

May 01, 2014

Brian Dodek  
Bonanza Creek Energy  
410 17th Street, Suite 1500  
Denver, CO 80202  
RE: McCallum 97

Enclosed are the results of analyses for samples received by Summit Scientific on 04/24/14 17:00. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to be 'BS', with a long, sweeping horizontal line extending to the right.

Ben Shrewsbury  
President / Laboratory Manager



Bonanza Creek Energy  
410 17th Street, Suite 1500  
Denver CO, 80202

Project: McCallum 97

Project Number: [none]  
Project Manager: Brian Dodek

**Reported:**  
05/01/14 22:27

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS01	1404185-01	Soil	04/24/14 11:26	04/24/14 17:00
SS02	1404185-02	Soil	04/24/14 11:30	04/24/14 17:00
SS03	1404185-03	Soil	04/24/14 11:48	04/24/14 17:00
SS04	1404185-04	Soil	04/24/14 11:05	04/24/14 17:00
SS05	1404185-05	Soil	04/24/14 11:00	04/24/14 17:00
SS06	1404185-06	Soil	04/24/14 11:02	04/24/14 17:00
SS07	1404185-07	Soil	04/24/14 11:21	04/24/14 17:00
SS08	1404185-08	Soil	04/24/14 11:44	04/24/14 17:00
SS09	1404185-09	Soil	04/24/14 11:46	04/24/14 17:00
SS10	1404185-10	Soil	04/24/14 11:52	04/24/14 17:00

Summit Scientific

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Bonanza Creek Energy  
410 17th Street, Suite 1500  
Denver CO, 80202

Project: McCallum 97

Project Number: [none]  
Project Manager: Brian Dodek

Reported:  
05/01/14 22:27

**SS01**  
**1404185-01 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **04/24/14 11:26**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1404193	04/28/14	04/30/14	8015M	

Date Sampled: **04/24/14 11:26**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		94.1 %	30-150		"	"	"	"	

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **04/24/14 11:26**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1404194	"	04/29/14	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **04/24/14 11:26**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		95.8 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.6 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		90.7 %	21-167		"	"	"	"	

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Bonanza Creek Energy  
410 17th Street, Suite 1500  
Denver CO, 80202

Project: McCallum 97

Project Number: [none]  
Project Manager: Brian Dodek

Reported:  
05/01/14 22:27

**SS02**

**1404185-02 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **04/24/14 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1404193	04/28/14	04/30/14	8015M	

Date Sampled: **04/24/14 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		95.0 %	30-150		"	"	"	"	

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **04/24/14 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0018	mg/kg	1	1404194	"	04/29/14	EPA 8260B	
Toluene	ND	0.0045	"	"	"	"	"	"	
Ethylbenzene	ND	0.0045	"	"	"	"	"	"	
Xylenes (total)	ND	0.0045	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.45	"	"	"	"	"	"	

Date Sampled: **04/24/14 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		96.7 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		100 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		92.0 %	21-167		"	"	"	"	

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Bonanza Creek Energy  
410 17th Street, Suite 1500  
Denver CO, 80202

Project: McCallum 97

Project Number: [none]  
Project Manager: Brian Dodek

Reported:  
05/01/14 22:27

**SS03**

**1404185-03 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **04/24/14 11:48**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	350	50	mg/kg	1	1404193	04/28/14	04/30/14	8015M	

Date Sampled: **04/24/14 11:48**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		96.6 %	30-150		"	"	"	"	

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **04/24/14 11:48**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1404194	"	04/29/14	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **04/24/14 11:48**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		96.1 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.4 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		83.9 %	21-167		"	"	"	"	

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Bonanza Creek Energy  
410 17th Street, Suite 1500  
Denver CO, 80202

Project: McCallum 97

Project Number: [none]  
Project Manager: Brian Dodek

Reported:  
05/01/14 22:27

**SS04**

**1404185-04 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **04/24/14 11:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>C10-C28 (DRO)</b>	<b>210</b>	50	mg/kg	1	1404193	04/28/14	04/30/14	8015M	

Date Sampled: **04/24/14 11:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		119 %	30-150		"	"	"	"	

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **04/24/14 11:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1404194	"	04/29/14	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **04/24/14 11:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		96.1 %	23-173		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		98.9 %	20-170		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		89.7 %	21-167		"	"	"	"	

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Bonanza Creek Energy  
410 17th Street, Suite 1500  
Denver CO, 80202

Project: McCallum 97

Project Number: [none]  
Project Manager: Brian Dodek

Reported:  
05/01/14 22:27

**SS05**

**1404185-05 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **04/24/14 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1404193	04/28/14	04/30/14	8015M	

Date Sampled: **04/24/14 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		94.0 %	30-150		"	"	"	"	

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **04/24/14 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1404194	"	04/29/14	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **04/24/14 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		97.2 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.7 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		91.0 %	21-167		"	"	"	"	

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Bonanza Creek Energy  
410 17th Street, Suite 1500  
Denver CO, 80202

Project: McCallum 97

Project Number: [none]  
Project Manager: Brian Dodek

Reported:  
05/01/14 22:27

**SS06**

**1404185-06 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **04/24/14 11:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1404193	04/28/14	05/01/14	8015M	

Date Sampled: **04/24/14 11:02**

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

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **04/24/14 11:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1404194	"	04/29/14	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **04/24/14 11:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		96.4 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.8 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		90.8 %	21-167		"	"	"	"	

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Bonanza Creek Energy  
410 17th Street, Suite 1500  
Denver CO, 80202

Project: McCallum 97

Project Number: [none]  
Project Manager: Brian Dodek

Reported:  
05/01/14 22:27

**SS07**

**1404185-07 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **04/24/14 11:21**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1404193	04/28/14	05/01/14	8015M	

Date Sampled: **04/24/14 11:21**

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

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **04/24/14 11:21**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0018	mg/kg	1	1404194	"	04/29/14	EPA 8260B	
Toluene	ND	0.0044	"	"	"	"	"	"	
Ethylbenzene	ND	0.0044	"	"	"	"	"	"	
Xylenes (total)	ND	0.0044	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.44	"	"	"	"	"	"	

Date Sampled: **04/24/14 11:21**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane- <i>d</i> 4		100 %	23-173		"	"	"	"	
Surrogate: Toluene- <i>d</i> 8		102 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		91.1 %	21-167		"	"	"	"	

Summit Scientific

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Bonanza Creek Energy  
410 17th Street, Suite 1500  
Denver CO, 80202

Project: McCallum 97

Project Number: [none]  
Project Manager: Brian Dodek

Reported:  
05/01/14 22:27

**SS08**

**1404185-08 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **04/24/14 11:44**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1404193	04/28/14	05/01/14	8015M	

Date Sampled: **04/24/14 11:44**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		113 %	30-150		"	"	"	"	

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **04/24/14 11:44**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1404194	"	04/29/14	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **04/24/14 11:44**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		97.0 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.1 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		93.1 %	21-167		"	"	"	"	

Summit Scientific

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Bonanza Creek Energy  
410 17th Street, Suite 1500  
Denver CO, 80202

Project: McCallum 97

Project Number: [none]  
Project Manager: Brian Dodek

**Reported:**  
05/01/14 22:27

**SS09**

**1404185-09 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **04/24/14 11:46**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1404193	04/28/14	05/01/14	8015M	

Date Sampled: **04/24/14 11:46**

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

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **04/24/14 11:46**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1404194	"	04/29/14	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **04/24/14 11:46**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		88.8 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.6 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		82.8 %	21-167		"	"	"	"	

Summit Scientific

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Bonanza Creek Energy  
410 17th Street, Suite 1500  
Denver CO, 80202

Project: McCallum 97

Project Number: [none]  
Project Manager: Brian Dodek

Reported:  
05/01/14 22:27

**SS10**  
**1404185-10 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **04/24/14 11:52**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>C10-C28 (DRO)</b>	<b>180</b>	50	mg/kg	1	1404193	04/28/14	05/01/14	8015M	

Date Sampled: **04/24/14 11:52**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		113 %	30-150		"	"	"	"	

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **04/24/14 11:52**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1404194	"	04/29/14	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **04/24/14 11:52**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		98.3 %	23-173		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		98.9 %	20-170		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		88.7 %	21-167		"	"	"	"	

Summit Scientific

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Bonanza Creek Energy  
 410 17th Street, Suite 1500  
 Denver CO, 80202

Project: McCallum 97

Project Number: [none]  
 Project Manager: Brian Dodek

**Reported:**  
 05/01/14 22:27

**Extractable Petroleum Hydrocarbons by 8015 - Quality Control**  
**Summit Scientific**

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

**Batch 1404193 - EPA 3550A**

<b>Blank (1404193-BLK1)</b>				Prepared & Analyzed: 04/28/14						
C10-C28 (DRO)	ND	50	mg/kg							
<b>LCS (1404193-BS1)</b>				Prepared & Analyzed: 04/28/14						
C10-C28 (DRO)	517	50	mg/kg	460	112	73-134				
<b>Matrix Spike (1404193-MS1)</b>				Source: 1404179-01 Prepared & Analyzed: 04/28/14						
C10-C28 (DRO)	530	50	mg/kg	492	ND	108	50-148			
<b>Matrix Spike Dup (1404193-MSD1)</b>				Source: 1404179-01 Prepared & Analyzed: 04/28/14						
C10-C28 (DRO)	480	50	mg/kg	450	ND	107	50-148	9.87	13	

Summit Scientific

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Bonanza Creek Energy  
410 17th Street, Suite 1500  
Denver CO, 80202

Project: McCallum 97

Project Number: [none]  
Project Manager: Brian Dodek

Reported:  
05/01/14 22:27

**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 1404194 - EPA 5030 Soil MS**

**Blank (1404194-BLK1)**

Prepared & Analyzed: 04/28/14

Benzene	ND	0.0020	mg/kg							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.0050	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
Surrogate: 1,2-Dichloroethane-d4	0.0434		"	0.0397		109	23-173			
Surrogate: Toluene-d8	0.0398		"	0.0400		99.4	20-170			
Surrogate: 4-Bromofluorobenzene	0.0416		"	0.0400		104	21-167			

**LCS (1404194-BS1)**

Prepared & Analyzed: 04/28/14

Benzene	0.0870	0.0020	mg/kg	0.0997		87.2	58-130			
Toluene	0.0956	0.0050	"	0.100		95.6	61-134			
Ethylbenzene	0.100	0.0050	"	0.0992		101	74-139			
m,p-Xylene	0.210	0.010	"	0.200		105	73-137			
o-Xylene	0.103	0.0050	"	0.0988		104	73-141			
Surrogate: 1,2-Dichloroethane-d4	0.0436		"	0.0397		110	23-173			
Surrogate: Toluene-d8	0.0401		"	0.0400		100	20-170			
Surrogate: 4-Bromofluorobenzene	0.0411		"	0.0400		103	21-167			

**LCS (1404194-BS2)**

Prepared & Analyzed: 04/28/14

Benzene	0.106	0.0020	mg/kg	0.0997		107	58-130			
Toluene	0.104	0.0050	"	0.100		104	61-134			
Ethylbenzene	0.120	0.0050	"	0.0992		121	74-139			
m,p-Xylene	0.240	0.010	"	0.200		120	73-137			
o-Xylene	0.123	0.0050	"	0.0988		125	73-141			
Surrogate: 1,2-Dichloroethane-d4	0.0459		"	0.0397		116	23-173			
Surrogate: Toluene-d8	0.0391		"	0.0400		97.8	20-170			
Surrogate: 4-Bromofluorobenzene	0.0398		"	0.0400		99.6	21-167			

Summit Scientific

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Bonanza Creek Energy  
410 17th Street, Suite 1500  
Denver CO, 80202

Project: McCallum 97

Project Number: [none]  
Project Manager: Brian Dodek

Reported:  
05/01/14 22:27

**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 1404194 - EPA 5030 Soil MS**

<b>Matrix Spike (1404194-MS1)</b>		<b>Source: 1404179-01</b>			<b>Prepared &amp; Analyzed: 04/28/14</b>					
Benzene	0.0714	0.0018	mg/kg	0.0893	ND	79.9	30-131			
Toluene	0.0826	0.0045	"	0.0896	ND	92.1	30-134			
Ethylbenzene	0.125	0.0045	"	0.0889	ND	141	22-153			
m,p-Xylene	0.226	0.0090	"	0.179	ND	126	10-159			
o-Xylene	0.133	0.0045	"	0.0885	ND	151	31-151			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0402</i>		"	<i>0.0356</i>		<i>113</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0345</i>		"	<i>0.0358</i>		<i>96.2</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0355</i>		"	<i>0.0358</i>		<i>99.1</i>	<i>21-167</i>			

<b>Matrix Spike (1404194-MS2)</b>		<b>Source: 1404179-02</b>			<b>Prepared &amp; Analyzed: 04/28/14</b>					
Benzene	0.102	0.0020	mg/kg	0.0942	ND	108	30-131			
Toluene	0.0989	0.0050	"	0.0945	ND	105	30-134			
Ethylbenzene	0.110	0.0050	"	0.0938	ND	117	22-153			
m,p-Xylene	0.221	0.010	"	0.189	ND	117	10-159			
o-Xylene	0.109	0.0050	"	0.0934	ND	116	31-151			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0468</i>		"	<i>0.0375</i>		<i>125</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0367</i>		"	<i>0.0378</i>		<i>97.1</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0378</i>		"	<i>0.0378</i>		<i>100</i>	<i>21-167</i>			

<b>Matrix Spike Dup (1404194-MSD1)</b>		<b>Source: 1404179-01</b>			<b>Prepared &amp; Analyzed: 04/28/14</b>					
Benzene	0.0760	0.0020	mg/kg	0.0946	ND	80.4	30-131	6.28	34	
Toluene	0.0879	0.0050	"	0.0949	ND	92.7	30-134	6.30	30	
Ethylbenzene	0.137	0.0050	"	0.0941	ND	146	22-153	9.19	24	
m,p-Xylene	0.245	0.010	"	0.190	ND	129	10-159	8.02	68	
o-Xylene	0.138	0.0050	"	0.0937	ND	147	31-151	3.49	38	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0417</i>		"	<i>0.0377</i>		<i>111</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0368</i>		"	<i>0.0380</i>		<i>97.0</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0378</i>		"	<i>0.0380</i>		<i>99.7</i>	<i>21-167</i>			

Summit Scientific

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Bonanza Creek Energy  
410 17th Street, Suite 1500  
Denver CO, 80202

Project: McCallum 97

Project Number: [none]  
Project Manager: Brian Dodek

Reported:  
05/01/14 22:27

**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 1404194 - EPA 5030 Soil MS**

<b>Matrix Spike Dup (1404194-MSD2)</b>	<b>Source: 1404179-02</b>			<b>Prepared &amp; Analyzed: 04/28/14</b>						
Benzene	0.100	0.0020	mg/kg	0.0950	ND	106	30-131	1.13	34	
Toluene	0.0951	0.0050	"	0.0952	ND	99.8	30-134	3.97	30	
Ethylbenzene	0.111	0.0050	"	0.0945	ND	117	22-153	0.811	24	
m,p-Xylene	0.223	0.010	"	0.190	ND	117	10-159	0.900	68	
o-Xylene	0.111	0.0050	"	0.0941	ND	118	31-151	2.29	38	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0449</i>		<i>"</i>	<i>0.0378</i>		<i>119</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0385</i>		<i>"</i>	<i>0.0381</i>		<i>101</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0381</i>		<i>"</i>	<i>0.0381</i>		<i>100</i>	<i>21-167</i>			

Summit Scientific

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Bonanza Creek Energy  
410 17th Street, Suite 1500  
Denver CO, 80202

Project: McCallum 97

Project Number: [none]  
Project Manager: Brian Dodek

**Reported:**  
05/01/14 22:27

### 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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UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

RECEIVED

MAR 4 2013

FORM APPROVED  
OMB No. 1004-0137  
Expires: July 31, 2010

**SUNDRY NOTICES AND REPORTS ON WELLS**  
*Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APD) for such proposals.*

BY **KIM KUTTLER**

5. Lease Serial No.  
D-029243  
6. If Indian, Name of Tribe Name

**SUBMIT IN TRIPLICATE** – Other instructions on page 2.

1. Type of Well

Oil Well     Gas Well     Other

7. If Unit of CA/Agreement, Name and/or No.  
COC-047650C

8. Well Name and No.  
McCallum Unit 97

2. Name of Operator  
Bonanza Creek Energy, Inc.

9. API Well No.  
05-057-06162

3a. Address  
410 17th Street, Suite 1500  
Denver, CO 80202

3b. Phone No. (include area code)  
720-440-6100

10. Field and Pool or Exploratory Area  
McCallum Unit, Pierre B

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)

NESW Sec 34-T10N-R79W Lat 40.79453 Long -106.25219

11. Country or Parish, State  
Jackson, Colorado

12. CHECK THE APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
<input type="checkbox"/> Notice of Intent	<input type="checkbox"/> Acidize	<input type="checkbox"/> Deepen	<input type="checkbox"/> Production (Start/Resume)	<input type="checkbox"/> Water Shut-Off
<input checked="" type="checkbox"/> Subsequent Report	<input type="checkbox"/> Alter Casing	<input type="checkbox"/> Fracture Treat	<input type="checkbox"/> Reclamation	<input type="checkbox"/> Well Integrity
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Casing Repair	<input type="checkbox"/> New Construction	<input type="checkbox"/> Recomplete	<input checked="" type="checkbox"/> Other <u>COGCC Incident</u>
	<input type="checkbox"/> Change Plans	<input type="checkbox"/> Plug and Abandon	<input type="checkbox"/> Temporarily Abandon	<u>Tracking # 2521835</u>
	<input type="checkbox"/> Convert to Injection	<input type="checkbox"/> Plug Back	<input type="checkbox"/> Water Disposal	

13. Describe Proposed or Completed Operation: Clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplate horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports must be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recomplate in a new interval, a Form 3160-4 must be filed once testing has been completed. Final Abandonment Notices must be filed only after all requirements, including reclamation, have been completed and the operator has determined that the site is ready for final inspection.)

10-13-2010 - Following the repair of a corroded flowline, the injection header valve was left open to bleed air from the system. The line was pressured up and approximately 27 bbls of produced water were released through the open valve onto the ground surface. Pressurizing activities ceased and the valve was closed to stop the release.

On October 10, 2011, three confirmation soil samples (Sample #1 through Sample #3) were collected from the release area and submitted for laboratory analysis of TPH, BTEX, SVOC's, pH, EC, SAR, and Table 910-1 metals. Laboratory results confirm that all concentrations were within the COGCC Table 910-1 allowable levels and/or below the background levels detected in soil sample BG01 with the exception of TPH. Laboratory results indicate that TPH concentrations exceeded COGCC allowable levels in all three soil samples. As a BLM preference, the TPH impacted soil was not excavated but was land treated on-site by periodic disking and monitored for natural attenuation. On May 7, 2012, four confirmation soil samples (SS01 through SS04) were collected from the release area and submitted for laboratory analysis of TPH and BTEX. Laboratory results for the soil samples indicate that TPH and BTEX concentrations were below COGCC allowable levels in samples SS01, SS02 and SS03. However, the TPH concentration in sample SS04, located closest to the release point, remained above allowable levels. The release area in the vicinity of SS04 continued to be disked. On August 21, 2012 two confirmation soil samples (W-4 #1 and W-4 #2) were collected from the release area in the vicinity of soil sample SS04 and submitted for laboratory analysis of TPH and BTEX. Laboratory results for the soil samples indicate that TPH and BTEX concentrations are below COGCC allowable levels in both soil samples.

The impacted soil was land treated on site.

14. I hereby certify that the foregoing is true and correct. Name (Printed/Typed)  
Tom Peterson

Title Engineering Technician

Signature

*Tom Peterson*

Date 01/31/2013

ACCEPTED FOR THE RECORD

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by

Title

FEB 26 2013

Date

Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Office

LITTLE SNAKE FIELD OFFICE

RECEIVED  
 BLM LITTLE SNAKE FIELD OFFICE  
 P.O. BOX 1000  
 PIERRE, COLORADO 80501  
 2013 FEB -4 PM 12:32

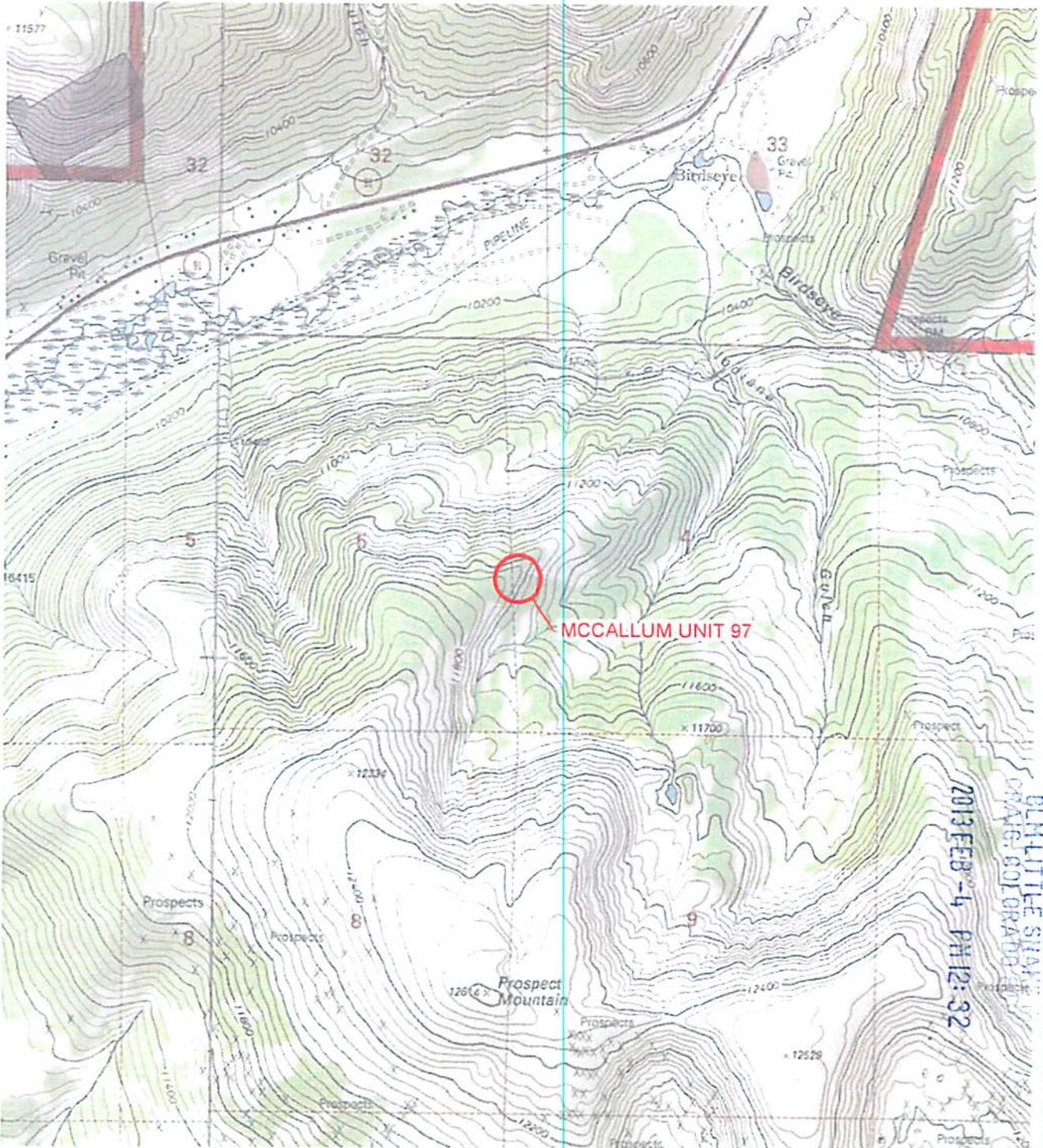
Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Instructions on page 2)

OPERATOR COPY

Bonnie J. Hicke  
LAWYER

CONDITIONS OF APPROVAL  
ATTACHED



RECEIVED  
 PLM-LITTLE STATE  
 OFRAIG, COLORADO  
 2013 FEB -4 PM 12:32

**LEGEND**

○ SITE LOCATION

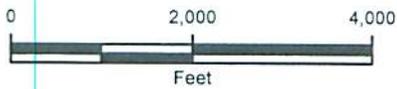
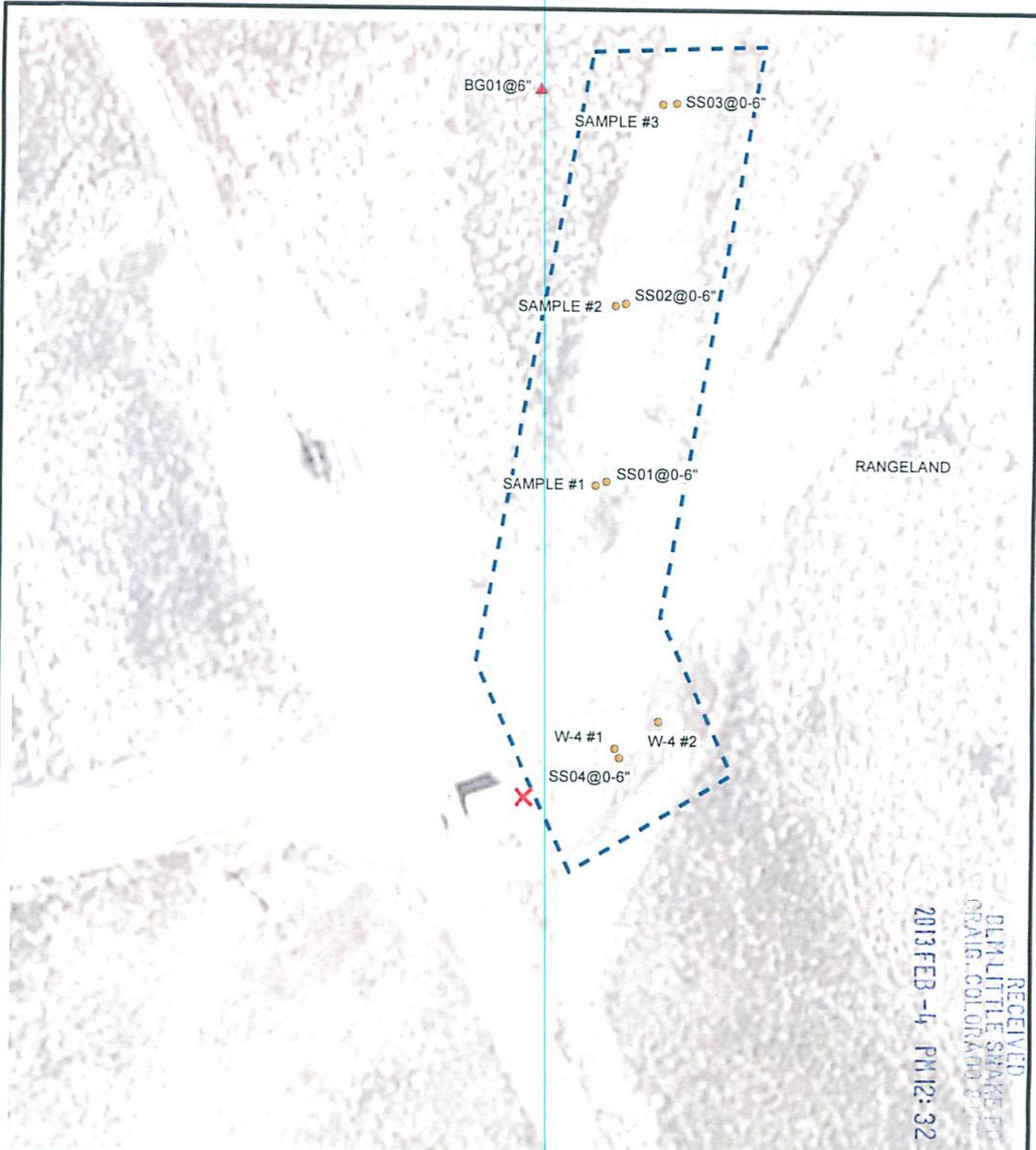


IMAGE COURTESY OF ESRI/BING MAPS

**FIGURE 1**  
**SITE LOCATION MAP**  
**MCCALLUM UNIT 97**  
**NESW 34-T10N-R79W**  
**JACKSON COUNTY, COLORADO**  
**BONANZA CREEK ENERGY, INC.**



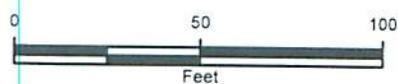


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 CRAIG, COLORADO 81701  
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IMAGE COURTESY OF ESRI/BING MAPS

**LEGEND**

- X RELEASE
- SOIL SAMPLE
- ▲ BACKGROUND SOIL SAMPLE
- EXTENT OF RELEASE



<p><b>FIGURE 2</b>  <b>SITE MAP</b>          MCCALLUM UNIT 97          NESW 34-T10N-R79W          JACKSON COUNTY, COLORADO          BONANZA CREEK ENERGY, INC.</p>	
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Bonanza Creek Energy, Inc.  
Table 1 - Soil Sample Analytical Results

Sample ID	Date Sampled	TPH (mg/kg)	BTEX				SVOC's													
			Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	Acenaphthene (mg/kg)	Anthracene (mg/kg)	Benzo (A) anthracene (mg/kg)	Benzo (B) fluoranthene (mg/kg)	Benzo (K) fluoranthene (mg/kg)	Benzo (A)pyrene (mg/kg)	Chrysene (mg/kg)	Dibenzo (A,H) anthracene (mg/kg)	Fluoranthene (mg/kg)	Fluorene (mg/kg)	Indeno (1,2,3,C,D) pyrene (mg/kg)	Naphthalene (mg/kg)	Pyrene (mg/kg)	
Table 910-1 Allowable Level		500	0.17	85	100	175	1000	1000	0.22	0.22	2.2	0.022	22	0.022	1000	1000	0.22	23	1000	
Sample #1	10/10/2011	<b>1,080</b>	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0191	0.0173	0.0277	<0.0050	0.14	<0.0100	<0.0050	0.0338	<0.0100	<0.0050	0.0316	
Sample #2	10/10/2011	<b>1,600</b>	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0306	<0.0050	0.0467	0.044	<0.0050	0.00866	<0.0100	<0.0050	<0.0050	<0.0100	<0.0050	<0.0050	
Sample #3	10/10/2011	<b>3,900</b>	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0264	<0.0050	0.0148	0.012	0.0197	0.128	0.0196	<0.0050	<0.0050	<0.0100	<0.0050	<0.0050	
SS01@0-6"	5/7/2012	150	<0.0050	<0.0050	<0.0050	<0.0050	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
SS02@0-6"	5/7/2012	100	<0.0050	<0.0050	<0.0050	<0.0050	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
SS03@0-6"	5/7/2012	<50	<0.0050	<0.0050	<0.0050	<0.0050	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
SS04@0-6"	5/7/2012	<b>890</b>	<0.0050	<0.0050	<0.0050	<0.0050	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
W-4 #1	8/21/2012	60	<0.0050	<0.0050	<0.0050	<0.0050	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
W-4 #2	8/21/2012	120	<0.0050	<0.0050	<0.0050	<0.0050	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
BG01@6"	11/7/2012	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	

Notes:

- < 1.0 - less than reported laboratory reporting limit
- mg/kg - milligram per kilogram
- TPH - Total Petroleum Hydrocarbons
- EC - Electrical Conductivity
- mg/L - milligram per liter
- mmhos/cm - millimhos per centimeter
- NA - Not Analyzed
- Results noted in bold exceed COGCC allowable levels.

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Bonanza Creek Energy, Inc.  
Table 1 (continued) - Soil Sample Analytical Results

Sample ID	Date Sampled	pH	EC (mmhos/cm)	SAR	Metals											
					Arsenic (mg/kg)	Barium (mg/kg)	Cadmium (mg/kg)	Chromium III (mg/kg)	Chromium VI (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Mercury (mg/kg)	Nickel (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)	Zinc (mg/kg)
<b>Table 910-1 Allowable Level</b>		6-9	<4	<12	<b>0.39</b>	<b>15,000</b>	<b>70</b>	<b>120,000</b>	<b>23</b>	<b>3,100</b>	<b>400</b>	<b>23</b>	<b>1,600</b>	<b>390</b>	<b>390</b>	<b>23,000</b>
Sample #1	10/10/2011	8.7	0.934	4.51	<b>3.18</b>	128.0	0.317	13.6	<0.47	3.64	11.3	<0.0500	11.7	0.245	<0.100	59.2
Sample #2	10/10/2011	8.9	0.772	6.14	<b>1.76</b>	94.1	0.271	11.3	<0.49	3.99	11	<0.0500	10.7	0.193	<0.0786	49
Sample #3	10/10/2011	8	0.556	4.47	<b>3.49</b>	98.7	0.335	12.4	<0.5	4.42	13.3	<0.0500	11.6	0.231	<0.0867	54.8
SS01@0-6"	5/7/2012	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SS02@0-6"	5/7/2012	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SS03@0-6"	5/7/2012	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SS04@0-6"	5/7/2012	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W-4 #1	8/21/2012	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W-4 #2	8/21/2012	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BG01@6"	11/7/2012	NA	NA	NA	<b>3.61</b>	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:

< 1.0 - less than reported laboratory reporting limit

mg/kg - milligram per kilogram

TPH - Total Petroleum Hydrocarbons

EC - Electrical Conductivity

mg/L - milligram per liter

mmhos/cm - millimhos per centimeter

NA - Not Analyzed

Results noted in bold exceed COGCC allowable levels.

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**CONDITIONS OF APPROVAL FOR SUNDRY NOTICE DATED 01/31/13**

Lease number: <b>COD 029243</b>	Operator: <b>BONANZA CREEK ENERGY OPERATING CO.</b>	
Well: <b>McCallum Unit #97</b>	Location: 6 <sup>th</sup> PM <b>Section 34, T 10N, R79W</b>	County: <b>Jackson</b>

- KFO concurs with proposed sundry (subsequent report) pertaining to COGCC Incident Tracking #2521835. Soil samples submitted for laboratory analysis were all within allowable levels and/or below permissible concentration levels. All impacted soils were land treated on site.
- Control of noxious weeds will be required through successful vegetation establishment and/or herbicide application. It is the responsibility of the lease operator to insure compliance with all local, state, and federal laws and regulations, as well as labeling directions specific to the use of any given herbicide.
- Bonanza Creek Energy Operating Co. will follow the attached reclamation performance standards in order to reclaim all disturbed areas.

Should you have any questions regarding the above Conditions of Approval of this Sundry Notice, please call Kelly Elliott, Natural Resource Specialist, at 970-724-3015.

## **RECLAMATION PERFORMANCE STANDARDS**

1. The lessee is required to use the reclamation practices necessary to reclaim all disturbed areas. Reclamation will ensure surface and subsurface stability, growth of a self-regenerating permanent vegetative cover and compatibility with post land use. The vegetation will be diverse and of the same seasonal growth as adjoining vegetation. Post land use will be determined by the Authorized Officer but normally will be the same as adjoining uses.

Reclamation practices which must be applied or accomplished are: re-grading to the approximate original contour, effectively controlling noxious weeds, separating, storing and protecting topsoil for redistribution during final abandonment, seeding and controlling erosion. If topsoil is not present, or quantities are insufficient to achieve reclamation goals, a suitable plant growth media will be separated, stored and protected for later use. Reclamation will begin with the salvaging of topsoil and continue until the required standards are met. Topsoil that is stored for 1 year or longer will be seeded with naturally occurring species to retain topsoil vigor. If use of the disturbed area is for a short time (less than one year), practices which ensure stability will be used as necessary during the project, and reclamation, with the exception of vegetative establishment, will be completed within one year. If use of the area is for greater than one year, interim reclamation is required on the unused areas. Interim reclamation of the unused areas will begin immediately upon completion of the permanent facility(s).

For both short and long term projects vegetative establishment will be monitored annually. If the desired vegetation is not established by the end of the second growing season, practices necessary for establishment will be implemented prior to the beginning of the next growing season. Interim reclamation, unless otherwise approved, will require meeting the same standards as final abandonment with the exception of original contour.

Annual reports consisting of reclamation practices completed and the effectiveness of the reclamation will be provided to the Kremmling Field Office. The first report will be due in January following initiation of reclamation practices and annually thereafter until final abandonment is approved.

There are numerous reclamation practices and techniques that increase the success rate of reclamation and stabilization. With the exception of those stated above, it is the lessee's prerogative to use those they choose to accomplish the objective. Additional site specific mitigations may be specified and required. However, it is recommended that state-of-the-art reclamation, stabilization, and management practices be used to achieve the desired objective in a timely and cost-effective manner.

The following definitions and measurements will be used to accomplish and determine if reclamation has been achieved:

Permanent vegetative cover will be accomplished if the basal cover of perennial species, adapted to the area, is at least ninety (90) percent of the basal cover of the undisturbed vegetation of adjoining land or the potential basal cover as defined in adjacent undisturbed areas.

Diversity will be accomplished if at least two (2) perennial genera and three (3) perennial species that are adapted to the area make up the basal cover of the reclaimed area in precipitation zones thirteen (13) inches or less. One species will not make up more than fifty (50) percent of the perennial vegetation by basal cover.

Self-regeneration and adaptation to the area will be evident if the plant community is in good vigor, there is evidence of successful reproduction, and the species are those commonly found in the area.

Surface stability will be accomplished if soil movement as measured by deposits around obstacles, depths of truncated areas, and height of pedestalling, is not greater than three tenths (0.3) of an inch and if erosion channels (rills, gullies, etc.) are less than one (1) inch in depth and at intervals greater than ten (10) feet.

If this standard is not met by the end of the second growing season, two alternatives exist depending on the severity of the erosion:

If erosion were greater than two (2) times the allowable amount, corrective action would have to be taken by the responsible company at that time;

If erosion is less than or equal to two (2) times the allowable amount, and it is determined the erosion occurred during vegetative establishment and the site may become stable, no corrective action would be required at that time. Another measurement would be performed a year later to determine if stability standards had been met. If the original measurements have not increased by more than the allowed standard, the standard would be considered met. However, if the increase were greater than the allowed standard, corrective action would be required.

Subsurface stability (mass wasting event) is of concern if disturbance has included excavation over four (4) feet in depth and greater than 10,000 square feet in area on slopes thirty five (35) percent and greater, or on any erosion-prone slope. When these conditions occur, length of liability for reclamation and final abandonment will continue for ten (10) years following re-contouring to original contour or for such time that climatic patterns provide two (2) consecutive years in which measurable precipitation totals at least 120 percent of average from October 1 through September 30, as measured by data averaged from nearby regional weather stations. The Authorized Officer may waive this stipulation, or portions of it. Such waiver will be documented and justified when not applicable, or when objectives are accomplished through another method.

## Seed Mix

### Drill Seeding Rate

<u>SEED NAME</u>	<u>APPLICATION RATE PLS/ACRE</u>	<u>SEEDS/SQ. FT.</u>
<i>Grasses</i>		
Western wheatgrass	2.97	7.5
Pascopyrum smithii, variety. Arriba		
Thickspike Wheatgrass	2.13	7.5
Elymus lanceolatus var. Critana		
Bluebunch wheatgrass	2.51	7.5
Pseudoroegneria spicata, var. Secar (Alternate var. Goldar)		
Sheep fescue	.62	7.5
Festuca ovina, var. Covar		
<b>TOTAL</b>	<b>8.23</b>	<b>30</b>
<i>Forbes</i>		
Alfalfa var. Ladak	.73	3.5
Big sagebrush	.06	3.5
<b>TOTAL</b>	<b>.79</b>	<b>7</b>

- Big sagebrush and Alfalfa may be seeded when it would be better for success
- Broadcast seeds at twice the rate

*(Seed tags must be submitted to BLM after seeding.)*

\* do not seed prior to October 1, to avoid sprouting.

### MULCH

Native Hay or Straw                      2,000 lbs.      X      acres      =

-Mulch is optional but it will help reclamation results.

-Must be Certified Noxious Weed Free

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