

LEGEND

 Site Location



Figure 1  
Location Site Map  
October 8, 2015 BDD

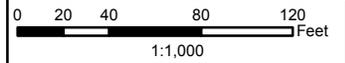
**Pierre B Tank Release**  
**NESW Sec 2, T9N, R79W, 6<sup>th</sup> PM**  
**Jackson County, Colorado**

Figure 2: Pierre B Tank Release - Soil Sample Locations  
NESW, Sec. 2, T9N R79W  
Jackson County, Colorado

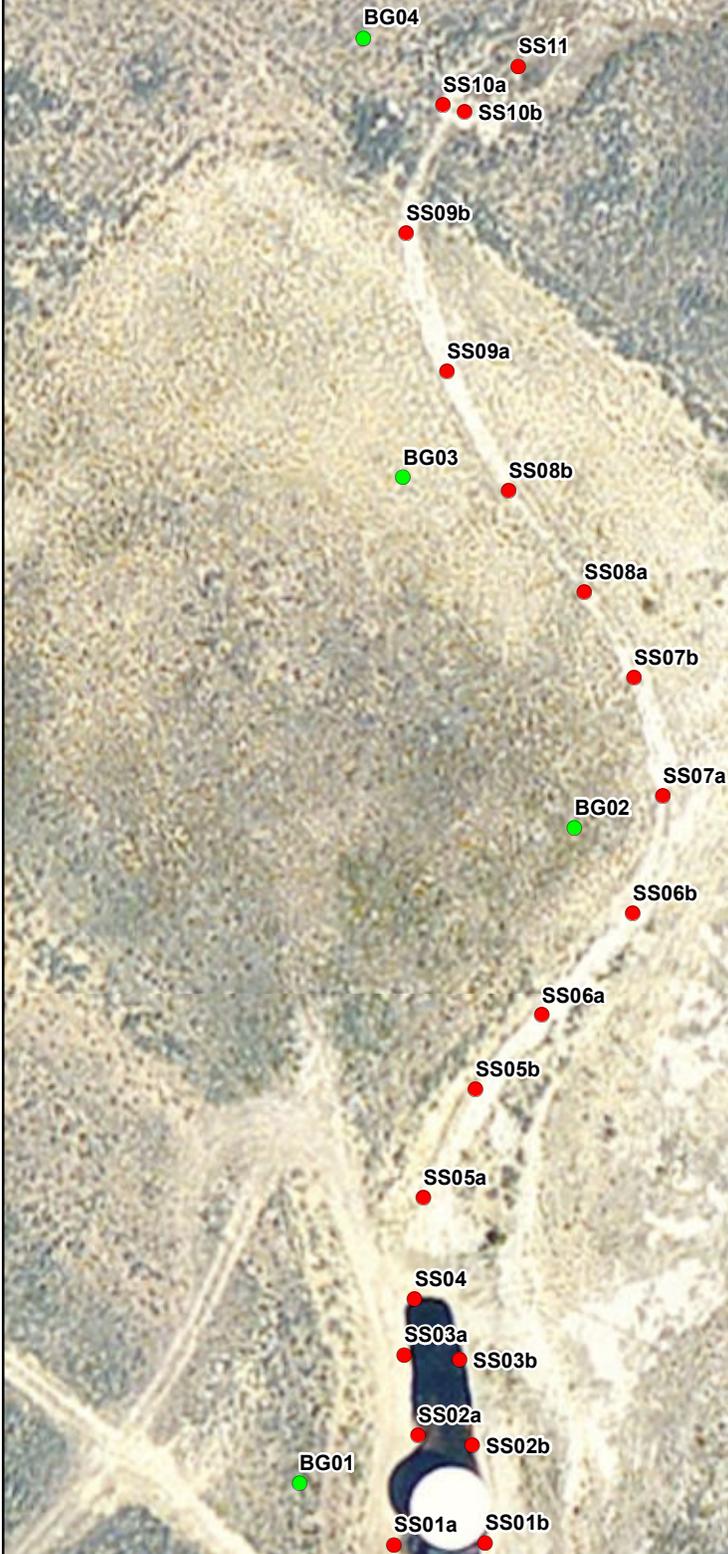
● Spill Path Sample

● Background Sample

D. Castro  
11/13/15



Background: NAIP 9/25/13 True Color Imagery



SampleName	Lat83	Long83
SS01a	40.782016	-106.233200
SS01b	40.782019	-106.233056
SS02a	40.782147	-106.233165
SS02b	40.782137	-106.233079
SS03a	40.782243	-106.233188
SS03b	40.782239	-106.233100
SS04	40.782310	-106.233173
BG01	40.782088	-106.233350
SS05a	40.782433	-106.233162
SS05b	40.782563	-106.233082
SS06a	40.782653	-106.232979
SS06b	40.782777	-106.232838
SS07a	40.782918	-106.232794
SS07b	40.783059	-106.232841
SS08a	40.783160	-106.232921
SS08b	40.783281	-106.233043
SS09a	40.783423	-106.233142
SS09b	40.783588	-106.233210
SS10a	40.783742	-106.233154
SS10b	40.783734	-106.233121
SS11	40.783789	-106.233037
BG02	40.782878	-106.232932
BG03	40.783295	-106.233209
BG04	40.783821	-106.233281

**TABLE 1**  
**SOIL SAMPLE ANALYTICAL RESULTS**  
**PIERRE B TANK RELEASE**  
**BONANZA CREEK ENERGY OPERATING COMPANY LLC**

SAMPLE ID	SAMPLE DATE	DEPTH (inches bgs)	BENZENE (mg/kg)	TOLUENE (mg/kg)	ETHYL-BENZENE (mg/kg)	XYLENES (Total) (mg/kg)	TPH		
							GRO (mg/kg)	DRO (mg/kg)	Total TPH (mg/kg)
SS01	11/3/2015	0 - 4	<0.002	<0.002	<0.002	<0.002	<0.200	<50	<50
SS02	11/3/2015	0 - 4	<0.050	<0.050	<0.050	<0.050	12.3	183	195.3
SS03	11/3/2015	0 - 4	<0.002	<0.002	0.002	0.002	0.708	<50	0.708
SS04	11/3/2015	0 - 4	<0.002	<0.002	<0.002	<0.002	<0.200	<50	<50
SS05	11/3/2015	0 - 4	<0.002	<0.002	<0.002	<0.002	<0.200	<50	<50
SS06	11/3/2015	0 - 4	<0.002	<0.002	<0.002	<0.002	<0.200	<50	<50
SS07	11/3/2015	0 - 4	<0.002	<0.002	<0.002	<0.002	<0.200	<50	<50
SS08	11/3/2015	0 - 4	<0.002	<0.002	<0.002	<0.002	<0.200	<50	<50
SS09	11/3/2015	0 - 4	<0.002	<0.002	<0.002	<0.002	<0.200	<50	<50
SS10	11/3/2015	0 - 4	<0.002	<0.002	<0.002	<0.002	<0.200	239	239
SS11	11/3/2015	0 - 4	<0.002	<0.002	<0.002	<0.002	<0.200	<50	<50
COGCC Concentration Level			0.17	85	100	175	--	--	500 <sup>1</sup>

Notes:

bgs - below ground surface

mg/kg - milligrams per kilogram

TPH - Total Petroleum Hydrocarbons

GRO - Gasoline Range Organics

DRO - Diesel Range Organics

<0.01 - less than laboratory reporting limit.

COGCC - Colorado Oil and Gas Conservation Commission

<sup>1</sup> - The COGCC concentration level for TPH is applied to the sum of the GRO and DRO concentrations.



November 10, 2015

**Bonanza Creek Energy, Inc.**

**Brian Dodek**

**410 17th St, Suite 1400**

**Denver CO 80211**

**Project Name - McCallum Pierre B**

**Project Number - [none]**

Attached are your analytical results for McCallum Pierre B received by Origins Laboratory, Inc. November 04, 2015. This project is associated with Origins project number X511055-01.

The analytical results in the following report were analyzed under the guidelines of EPA Methods. These methods are identified as follows; "SW" are defined in SW-846, "EPA" are defined in 40CFR part 136 and "SM" are defined in the most current revision of Standard Methods For the Examination of Water and Wastewater.

The analytical results apply specifically to the samples and analyses specified per the attached Chain of Custody. As such, this report shall not be reproduced except in full, without the written approval of Origin's laboratory.

Unless otherwise noted, the analytical results for all soil samples are reported on a wet weight basis. All analytical analyses were performed under NELAP guidelines unless noted by a data qualifier.

Any holding time exceedances, deviations from the method specifications or deviations from Origins Laboratory's Standard Operating Procedures are outlined in the case narrative.

Thank you for selecting Origins for your analytical needs. Please contact us with any questions concerning this report, or if we can help with anything at all.

Origins Laboratory, Inc.  
303.433.1322  
o-squad@oelabinc.com



Bonanza Creek Energy, Inc.

410 17th St, Suite 1400

Denver CO 80211

Brian Dodek

Project Number: [none]

Project: McCallum Pierre B

## CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS01	X511055-01	Soil	November 3, 2015 10:52	11/04/2015 13:55
SS02	X511055-02	Soil	November 3, 2015 11:17	11/04/2015 13:55
SS03	X511055-03	Soil	November 3, 2015 11:52	11/04/2015 13:55
SS04	X511055-04	Soil	November 3, 2015 12:02	11/04/2015 13:55
SS05	X511055-05	Soil	November 3, 2015 12:32	11/04/2015 13:55
SS06	X511055-06	Soil	November 3, 2015 12:44	11/04/2015 13:55
SS07	X511055-07	Soil	November 3, 2015 12:59	11/04/2015 13:55
SS08	X511055-08	Soil	November 3, 2015 13:25	11/04/2015 13:55
SS09	X511055-09	Soil	November 3, 2015 13:30	11/04/2015 13:55
SS10	X511055-10	Soil	November 3, 2015 13:48	11/04/2015 13:55

Origins Laboratory, Inc.



*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.*

Bonanza Creek Energy, Inc.

410 17th St, Suite 1400

Denver CO 80211

Brian Dodek

Project Number: [none]

Project: McCallum Pierre B

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS11	X511055-11	Soil	November 3, 2015 13:53	11/04/2015 13:55

Origins Laboratory, Inc.



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Jen Pellegrini For Noelle Doyle Mathis, President

Bonanza Creek Energy, Inc.

410 17th St, Suite 1400

Denver CO 80211

Brian Dodek

Project Number: [none]

Project: McCallum Pierre B

www.originslaboratory.com

XSI10SS

page 1 of 2

**ORIGINS**  
LABORATORY, INC

Client: Bonanza Creek Energy, Inc.  
Address: 410 17th Street, Suite 1400  
Telephone Number: 720-225-0653  
Email Address: bdodek@bonanzacrk.com

Project Manager: Brian Dodek  
Project Name: McCallum Pierre B  
Project Number: NA  
Samples Collected By: Sam Robles

1725 Elk Place | Denver, CO 80211 | Phone: 303.433.1322 | Fax: 303.265.9645

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative				Matrix			Analysis	Sample Instructions		
				Unpreserved	HCl	HNO <sub>3</sub>	Other	Groundwater	Soil	Air Summ. #			Other	
SS01	11-3-15	10:52	2	<input checked="" type="checkbox"/>						X			BTEX, TPH-GRO, TPH-DRO	
SS02		11:17	2							X			BTEX, TPH-GRO, TPH-DRO	1
SS03		11:52	2							X			BTEX, TPH-GRO, TPH-DRO	2
SS04		12:02	2							X			BTEX, TPH-GRO, TPH-DRO	3
SS05		12:32	2							X			BTEX, TPH-GRO, TPH-DRO	4
SS06		12:44	2							X			BTEX, TPH-GRO, TPH-DRO	5
SS07		12:59	2							X			BTEX, TPH-GRO, TPH-DRO	6
SS08		13:25	2							X			BTEX, TPH-GRO, TPH-DRO	7
SS09		13:36	2							X			BTEX, TPH-GRO, TPH-DRO	8
SS10	11-3-15	13:48	2							X			BTEX, TPH-GRO, TPH-DRO	9
Relinquished By: Sam Robles	Date: 11-4-15	Time: 17:35	Received By: Jim Ward	Date: 11-4-15	Time: 17:35	Turnaround Time: Same Day	24 Hr							
Relinquished By: Jim Ward	Date: 11-4-15	Time: 1:25	Received By: Jim Ward	Date: 11-4-15	Time: 13:55	Turnaround Time: 48 Hr	72 Hr							

Date Results Needed

Origins Laboratory, Inc.

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Bonanza Creek Energy, Inc.

410 17th St, Suite 1400

Denver CO 80211

Brian Dodek

Project Number: [none]

Project: McCallum Pierre B

Origins Laboratory

F-012207-01-R1  
Effective Date: 01/09/12

Sample Receipt Checklist

Origins Work Order: XSL1055

Client: Bonanza Creek

Client Project ID: McCallum Pierre B

Checklist Completed by: Jef Smith

Shipped Via: HTD

(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Date/time completed: 11/4/15

Airbill #: N/A

Matrix(s) Received: (Check all that apply):  Soil/Solid  Water  Other: \_\_\_\_\_

Cooler Number/Temperature: 1 10.7 °C 1 °C 1 °C (Describe) °C

Thermometer ID: T003

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C <sup>(1)</sup> ?	X			
Is there ice present (document if blue ice is used)	X			
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)		X		
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)		I		
Were all samples received intact <sup>(1)</sup> ?	X			
Was adequate sample volume provided <sup>(1)</sup> ?	X			
Are short holding time analytes or samples with HTs due within 48 hours present <sup>(1)</sup> ?	X			PH
Is a chain-of-custody (COC) present and filled out completely <sup>(1)</sup> ?	X			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	X			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	I			
Is the COC properly relinquished by the client with date and time recorded <sup>(1)</sup> ?	X			
For volatiles in water – is there headspace (> ¼ inch bubble) present? <b>If yes, contact client and note in narrative.</b>			X	
Are samples preserved that require preservation and was it checked <sup>(1)</sup> ? (note ID of confirmation instrument used in comments) / (preservation is not confirmed for subcontracted analyses in order to insure sample integrity)/(pH <2 for samples preserved with HNO3, HCL, H2SO4) / (pH >10 for samples preserved with NaAsO2+NaOH, ZnAc+NaOH)			X	
Additional Comments (if any): <u>Brian D. requested by phone conversation that B601- B604 be placed on Hold Pending results from S501-S511.</u>				
<u>11/4/15 Jef Smith</u>				

<sup>(1)</sup>If NO, then contact the client before proceeding with analysis and note date/time and person contacted as well as the corrective action to in the additional comments (above) and the case narrative.

[Signature]  
Reviewed by (Project Manager)

11/5/15  
Date/Time Reviewed

Origins Laboratory, Inc.

Jefe Pellegrini

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.

Bonanza Creek Energy, Inc.

410 17th St, Suite 1400

Denver CO 80211

Brian Dodek

Project Number: [none]

Project: McCallum Pierre B

**SS01**

**11/3/2015 10:52:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X511055-01 (Soil)**

**Diesel Range Organics (DRO/TEPH) by EPA 8015C**

Diesel (C10-C28)	ND	50.0	mg/kg	1	B5K0502	11/05/2015	11/05/2015	
Surrogate: o-Terphenyl	88.2 %	59-131			"	"	"	

**GBTEX by EPA 8260C**

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B5K0501	11/05/2015	11/06/2015	
Benzene	ND	0.002	"	"	"	"	"	
Toluene	ND	0.002	"	"	"	"	"	
Ethylbenzene	ND	0.002	"	"	"	"	"	
Xylenes, total	ND	0.002	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	112 %	70-130			"	"	"	
Surrogate: Toluene-d8	98.2 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	104 %	70-130			"	"	"	

Origins Laboratory, Inc.



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Bonanza Creek Energy, Inc.

410 17th St, Suite 1400

Denver CO 80211

Brian Dodek

Project Number: [none]

Project: McCallum Pierre B

**SS02**

**11/3/2015 11:17:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X511055-02 (Soil)**

**Diesel Range Organics (DRO/TEPH) by EPA 8015C**

Diesel (C10-C28)	183	50.0	mg/kg	1	B5K0502	11/05/2015	11/05/2015	
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Surrogate: <i>o</i> -Terphenyl	102 %	59-131			"	"	"	
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**GBTEX by EPA 8260C**

Gasoline Range Hydrocarbons	12.3	5.00	mg/kg	25	B5K0501	11/05/2015	11/06/2015	
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Benzene	ND	0.050	"	"	"	"	"	
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Toluene	ND	0.050	"	"	"	"	"	
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Ethylbenzene	ND	0.050	"	"	"	"	"	
--------------	----	-------	---	---	---	---	---	--

Xylenes, total	ND	0.050	"	"	"	"	"	
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Surrogate: 1,2-Dichloroethane-d4	104 %	70-130			"	"	"	
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Surrogate: Toluene-d8	98.9 %	70-130			"	"	"	
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Surrogate: 4-Bromofluorobenzene	102 %	70-130			"	"	"	
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Origins Laboratory, Inc.



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Bonanza Creek Energy, Inc.

410 17th St, Suite 1400

Denver CO 80211

Brian Dodek

Project Number: [none]

Project: McCallum Pierre B

**SS03**

**11/3/2015 11:52:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X511055-03 (Soil)**

**Diesel Range Organics (DRO/TEPH) by EPA 8015C**

Diesel (C10-C28)	ND	50.0	mg/kg	1	B5K0502	11/05/2015	11/05/2015	
Surrogate: o-Terphenyl	97.9 %	59-131			"	"	"	

**GBTEX by EPA 8260C**

Gasoline Range Hydrocarbons	<b>0.708</b>	0.200	mg/kg	1	B5K0501	11/05/2015	11/06/2015	
Benzene	ND	0.002	"	"	"	"	"	
Toluene	ND	0.002	"	"	"	"	"	
Ethylbenzene	<b>0.002</b>	0.002	"	"	"	"	"	
Xylenes, total	<b>0.002</b>	0.002	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	116 %	70-130			"	"	"	
Surrogate: Toluene-d8	101 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	120 %	70-130			"	"	"	

Origins Laboratory, Inc.



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Bonanza Creek Energy, Inc.

410 17th St, Suite 1400

Denver CO 80211

Brian Dodek

Project Number: [none]

Project: McCallum Pierre B

**SS04**

**11/3/2015 12:02:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X511055-04 (Soil)**

**Diesel Range Organics (DRO/TEPH) by EPA 8015C**

Diesel (C10-C28)	76.6	50.0	mg/kg	1	B5K0502	11/05/2015	11/05/2015	
Surrogate: o-Terphenyl	95.7 %	59-131			"	"	"	

**GBTEX by EPA 8260C**

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B5K0501	11/05/2015	11/06/2015	
Benzene	ND	0.002	"	"	"	"	"	
Toluene	ND	0.002	"	"	"	"	"	
Ethylbenzene	ND	0.002	"	"	"	"	"	
Xylenes, total	ND	0.002	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	119 %	70-130			"	"	"	
Surrogate: Toluene-d8	104 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	140 %	70-130			"	"	"	S-07

Origins Laboratory, Inc.



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Bonanza Creek Energy, Inc.

410 17th St, Suite 1400

Denver CO 80211

Brian Dodek

Project Number: [none]

Project: McCallum Pierre B

**SS05**

**11/3/2015 12:32:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X511055-05 (Soil)**

**Diesel Range Organics (DRO/TEPH) by EPA 8015C**

Diesel (C10-C28)	ND	50.0	mg/kg	1	B5K0502	11/05/2015	11/05/2015	
Surrogate: <i>o</i> -Terphenyl	94.4 %	59-131			"	"	"	

**GBTEX by EPA 8260C**

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B5K0501	11/05/2015	11/06/2015	
Benzene	ND	0.002	"	"	"	"	"	
Toluene	ND	0.002	"	"	"	"	"	
Ethylbenzene	ND	0.002	"	"	"	"	"	
Xylenes, total	ND	0.002	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	121 %	70-130			"	"	"	
Surrogate: Toluene-d8	96.1 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	102 %	70-130			"	"	"	

Origins Laboratory, Inc.



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Bonanza Creek Energy, Inc.

410 17th St, Suite 1400

Denver CO 80211

Brian Dodek

Project Number: [none]

Project: McCallum Pierre B

**SS06**

**11/3/2015 12:44:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
X511055-06 (Soil)

**Diesel Range Organics (DRO/TEPH) by EPA 8015C**

Diesel (C10-C28)	ND	50.0	mg/kg	1	B5K0502	11/05/2015	11/05/2015	
Surrogate: <i>o</i> -Terphenyl	103 %	59-131			"	"	"	

**GBTEX by EPA 8260C**

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B5K0501	11/05/2015	11/06/2015	
Benzene	ND	0.002	"	"	"	"	"	
Toluene	ND	0.002	"	"	"	"	"	
Ethylbenzene	ND	0.002	"	"	"	"	"	
Xylenes, total	ND	0.002	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	112 %	70-130			"	"	"	
Surrogate: Toluene-d8	98.7 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	112 %	70-130			"	"	"	

Origins Laboratory, Inc.



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Bonanza Creek Energy, Inc.

410 17th St, Suite 1400

Denver CO 80211

Brian Dodek

Project Number: [none]

Project: McCallum Pierre B

**SS07**

**11/3/2015 12:59:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X511055-07 (Soil)**

**Diesel Range Organics (DRO/TEPH) by EPA 8015C**

Diesel (C10-C28)	ND	50.0	mg/kg	1	B5K0502	11/05/2015	11/05/2015	
Surrogate: <i>o</i> -Terphenyl	97.2 %	59-131			"	"	"	

**GBTEX by EPA 8260C**

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B5K0501	11/05/2015	11/06/2015	
Benzene	ND	0.002	"	"	"	"	"	
Toluene	ND	0.002	"	"	"	"	"	
Ethylbenzene	ND	0.002	"	"	"	"	"	
Xylenes, total	ND	0.002	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	120 %	70-130			"	"	"	
Surrogate: Toluene-d8	100 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	123 %	70-130			"	"	"	

Origins Laboratory, Inc.



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Bonanza Creek Energy, Inc.

410 17th St, Suite 1400

Denver CO 80211

Brian Dodek

Project Number: [none]

Project: McCallum Pierre B

**SS08**

**11/3/2015 1:25:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
X511055-08 (Soil)

**Diesel Range Organics (DRO/TEPH) by EPA 8015C**

Diesel (C10-C28)	ND	50.0	mg/kg	1	B5K0502	11/05/2015	11/05/2015	
Surrogate: o-Terphenyl	81.5 %	59-131			"	"	"	

**GBTEX by EPA 8260C**

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B5K0501	11/05/2015	11/06/2015	
Benzene	ND	0.002	"	"	"	"	"	
Toluene	ND	0.002	"	"	"	"	"	
Ethylbenzene	ND	0.002	"	"	"	"	"	
Xylenes, total	ND	0.002	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	120 %	70-130			"	"	"	
Surrogate: Toluene-d8	98.6 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	117 %	70-130			"	"	"	

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Bonanza Creek Energy, Inc.

410 17th St, Suite 1400

Denver CO 80211

Brian Dodek

Project Number: [none]

Project: McCallum Pierre B

**SS09**

**11/3/2015 1:30:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
X511055-09 (Soil)

**Diesel Range Organics (DRO/TEPH) by EPA 8015C**

Diesel (C10-C28)	ND	50.0	mg/kg	1	B5K0502	11/05/2015	11/05/2015	
Surrogate: o-Terphenyl	93.5 %	59-131			"	"	"	

**GBTEX by EPA 8260C**

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B5K0501	11/05/2015	11/06/2015	
Benzene	ND	0.002	"	"	"	"	"	
Toluene	ND	0.002	"	"	"	"	"	
Ethylbenzene	ND	0.002	"	"	"	"	"	
Xylenes, total	ND	0.002	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	117 %	70-130			"	"	"	
Surrogate: Toluene-d8	99.4 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	116 %	70-130			"	"	"	

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410 17th St, Suite 1400

Denver CO 80211

Brian Dodek

Project Number: [none]

Project: McCallum Pierre B

**SS10**

**11/3/2015 1:48:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
X511055-10 (Soil)

**Diesel Range Organics (DRO/TEPH) by EPA 8015C**

Diesel (C10-C28)	239	50.0	mg/kg	1	B5K0502	11/05/2015	11/05/2015	
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Surrogate: o-Terphenyl	78.5 %	59-131			"	"	"	
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**GBTEX by EPA 8260C**

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B5K0501	11/05/2015	11/06/2015	
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Benzene	ND	0.002	"	"	"	"	"	
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Toluene	ND	0.002	"	"	"	"	"	
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Ethylbenzene	ND	0.002	"	"	"	"	"	
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Xylenes, total	ND	0.002	"	"	"	"	"	
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Surrogate: 1,2-Dichloroethane-d4	114 %	70-130			"	"	"	
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Surrogate: Toluene-d8	101 %	70-130			"	"	"	
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Surrogate: 4-Bromofluorobenzene	121 %	70-130			"	"	"	
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410 17th St, Suite 1400

Denver CO 80211

Brian Dodek

Project Number: [none]

Project: McCallum Pierre B

**SS11**

**11/3/2015 1:53:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X511055-11 (Soil)**

**Diesel Range Organics (DRO/TEPH) by EPA 8015C**

Diesel (C10-C28)	ND	50.0	mg/kg	1	B5K0502	11/05/2015	11/05/2015	
<i>Surrogate: o-Terphenyl</i>	94.8 %	59-131			"	"	"	

**GBTEX by EPA 8260C**

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B5K0501	11/05/2015	11/06/2015	
Benzene	ND	0.002	"	"	"	"	"	
Toluene	ND	0.002	"	"	"	"	"	
Ethylbenzene	ND	0.002	"	"	"	"	"	
Xylenes, total	ND	0.002	"	"	"	"	"	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	113 %	70-130			"	"	"	
<i>Surrogate: Toluene-d8</i>	100 %	70-130			"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>	115 %	70-130			"	"	"	

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410 17th St, Suite 1400

Denver CO 80211

Brian Dodek

Project Number: [none]

Project: McCallum Pierre B

**Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B5K0501 - EPA 5030 (soil)**

**Blank (B5K0501-BLK1)**

Prepared: 11/05/2015 Analyzed: 11/06/2015

Gasoline Range Hydrocarbons	ND	0.200	mg/kg							
Benzene	ND	0.002	"							
Toluene	ND	0.002	"							
Ethylbenzene	ND	0.002	"							
Xylenes, total	ND	0.002	"							
Surrogate: 1,2-Dichloroethane-d4	68.7		ug/kg	62.5		110	70-130			
Surrogate: Toluene-d8	61.8		"	62.5		98.9	70-130			
Surrogate: 4-Bromofluorobenzene	62.7		"	62.5		100	70-130			

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Bonanza Creek Energy, Inc.

410 17th St, Suite 1400

Denver CO 80211

Brian Dodek

Project Number: [none]

Project: McCallum Pierre B

**Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B5K0501 - EPA 5030 (soil)**

**LCS (B5K0501-BS1)**

Prepared: 11/05/2015 Analyzed: 11/06/2015

Benzene	0.095	0.002	mg/kg	0.100		94.7	77.1-124			
Toluene	0.094	0.002	"	0.100		93.7	74.5-128			
Ethylbenzene	0.089	0.002	"	0.100		89.4	66.4-127			
m,p-Xylene	0.180	0.004	"	0.200		89.9	76.6-124			
o-Xylene	0.089	0.002	"	0.100		89.1	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	64.2		ug/kg	62.5		103	70-130			
Surrogate: Toluene-d8	61.7		"	62.5		98.7	70-130			
Surrogate: 4-Bromofluorobenzene	62.5		"	62.5		100	70-130			

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Bonanza Creek Energy, Inc.

410 17th St, Suite 1400

Denver CO 80211

Brian Dodek

Project Number: [none]

Project: McCallum Pierre B

**Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B5K0501 - EPA 5030 (soil)

Matrix Spike (B5K0501-MS1)	Source: X511055-01			Prepared: 11/05/2015 Analyzed: 11/06/2015						
Benzene	0.096	0.002	mg/kg	0.100	ND	95.9	71.8-126			
Toluene	0.093	0.002	"	0.100	ND	93.2	65.1-130			
Ethylbenzene	0.092	0.002	"	0.100	ND	92.5	62.2-130			
m,p-Xylene	0.184	0.004	"	0.200	ND	92.2	46.5-137			
o-Xylene	0.092	0.002	"	0.100	ND	91.5	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	64.7		ug/kg	62.5		103	70-130			
Surrogate: Toluene-d8	62.0		"	62.5		99.2	70-130			
Surrogate: 4-Bromofluorobenzene	64.0		"	62.5		102	70-130			

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Bonanza Creek Energy, Inc.

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Denver CO 80211

Brian Dodek

Project Number: [none]

Project: McCallum Pierre B

**Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B5K0501 - EPA 5030 (soil)

Matrix Spike Dup (B5K0501-MSD1)	Source: X511055-01			Prepared: 11/05/2015 Analyzed: 11/06/2015						
Benzene	0.094	0.002	mg/kg	0.100	ND	93.6	71.8-126	2.43	11.3	
Toluene	0.092	0.002	"	0.100	ND	92.2	65.1-130	1.08	15.4	
Ethylbenzene	0.089	0.002	"	0.100	ND	89.4	62.2-130	3.39	19.6	
m,p-Xylene	0.179	0.004	"	0.200	ND	89.6	46.5-137	2.84	19.2	
o-Xylene	0.089	0.002	"	0.100	ND	88.9	54.2-134	2.95	17.9	
Surrogate: 1,2-Dichloroethane-d4	65.6		ug/kg	62.5		105	70-130			
Surrogate: Toluene-d8	62.0		"	62.5		99.2	70-130			
Surrogate: 4-Bromofluorobenzene	63.1		"	62.5		101	70-130			

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Bonanza Creek Energy, Inc.

410 17th St, Suite 1400

Denver CO 80211

Brian Dodek

Project Number: [none]

Project: McCallum Pierre B

**Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Extractable Petroleum Hydrocarbons by 8015C - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B5K0502 - EPA 3580**

**Blank (B5K0502-BLK1)**

Prepared: 11/05/2015 Analyzed: 11/05/2015

Diesel (C10-C28) ND 50.0 mg/kg

Surrogate: o-Terphenyl 45 " 50.0 89.4 59-131

**LCS (B5K0502-BS1)**

Prepared: 11/05/2015 Analyzed: 11/05/2015

Diesel (C10-C28) 956 50.0 mg/kg 1000 95.6 64-121

Surrogate: o-Terphenyl 51 " 50.0 102 59-131

**Matrix Spike (B5K0502-MS1)**

**Source: X511055-01**

Prepared: 11/05/2015 Analyzed: 11/05/2015

Diesel (C10-C28) 866 50.0 mg/kg 1000 21.3 84.5 53-125

Surrogate: o-Terphenyl 43 " 50.0 85.7 59-131

**Matrix Spike Dup (B5K0502-MSD1)**

**Source: X511055-01**

Prepared: 11/05/2015 Analyzed: 11/05/2015

Diesel (C10-C28) 1040 50.0 mg/kg 1000 21.3 102 53-125 18.2 20

Surrogate: o-Terphenyl 53 " 50.0 106 59-131

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Bonanza Creek Energy, Inc.  
410 17th St, Suite 1400  
Denver CO 80211

Brian Dodek  
Project Number: [none]  
Project: McCallum Pierre B

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### Notes and Definitions

S-07 High surrogate in sample, however sample is non-detect. High surrogate indicates result values are biased high.

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported at a wet weight basis.

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