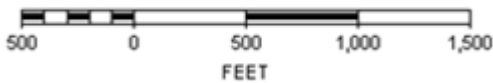


SCALE 1 : 9,000



LEGEND

 Site Location

N



Figure 1
Site Location Map
November 21, 2018 LBK

**State Antelope J-1
Valve Can
Location ID: 440840
SWSE, Sec 1, T5N, R62W, 6th PM
Weld County, Colorado**



Aerial photograph courtesy of Google Earth Pro

LEGEND




-  Release Location
-  Excavated Area
-  Soil Samples



Figure 2
Site Map

January 2, 2019 LBK

**State Antelope J-1 Valve Can
Facility ID: 440840
SESW, Sec 1, T5N, R62W, 6th PM
Weld County, Colorado**

December 27, 2018

Bonanza Creek Energy, Inc.

Brian Dodek

410 17th St, Suite 1400

Denver CO 80211

Project Name - SA J-1

Project Number - [none]

Attached are your analytical results for SA J-1 received by Origins Laboratory, Inc. December 19, 2018. This project is associated with Origins project number Y812313-01.

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: SA J-1

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS01	Y812313-01	Soil	December 17, 2018 9:00	12/19/2018 07:50
SS02	Y812313-02	Soil	December 17, 2018 9:05	12/19/2018 07:50
SS03	Y812313-03	Soil	December 17, 2018 9:10	12/19/2018 07:50
SS04	Y812313-04	Soil	December 17, 2018 9:15	12/19/2018 07:50
SS05	Y812313-05	Soil	December 17, 2018 9:20	12/19/2018 07:50
SS06	Y812313-06	Soil	December 17, 2018 9:25	12/19/2018 07:50

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.

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: SA J-1

www.originslaboratory.com

page 1 of 1

702313

ORIGINS
LABORATORY, INC

Client: Bonanza Creek Energy
 Address: 410 17th Street Suite 1700 Denver, CO 80202
 Project Manager: Brian Dodek/Luke Kelly
 Project Name: SA J-1
 Project Number:
 Samples Collected By: Luke Kelly
 Telephone Number: 720-225-6653
 Email Address:

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative				Matrix				Analysis	Sample Instructions		
				Unpreserved	HCl	HNO ₃	Other	Groundwater	Soil	Air Summa Continer #	Other				
SS01	12/17/2018	900	2	X				X					X	1	
SS02	12/17/2018	905	2	X				X					X	2	
SS03	12/17/2018	910	2	X				X					X	3	
SS04	12/17/2018	915	2	X				X					X	4	
SS05	12/17/2018	920	2	X				X					X	5	
SS06	12/17/2018	925	2	X				X					X	6	
														7	
														8	
														9	
														10	
Relinquished By: <i>JK Kelly</i>	Date: 12/19/18	Time: 7:43						Received By: <i>[Signature]</i>	Date: 12-19-18	Time: 0730			Turnaround Time: Same Day <input type="checkbox"/> 24 Hr <input type="checkbox"/> 48 Hr <input type="checkbox"/> 72 Hr <input checked="" type="checkbox"/> Standard <input type="checkbox"/>		
Relinquished By:	Date:	Time:						Received By:	Date:	Time:					

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

Date Results Needed

12/19/18

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: SA J-1

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: 7812313

Client: Bonanza Creek

Client Project ID: SA J-1

Checklist Completed by: Don Lee

Shipped Via: 40
(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Date/time completed: 12-19-18

Airbill #: 124

Matrix(s) Received: (Check all that apply): Soil/Solid Water Other: _____ (Describe)

Cooler Number/Temperature: 1, 2, 3 °C 1 °C 1 °C 1 °C

Thermometer ID: 1003

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Is there ice present (document if blue ice is used)	<input checked="" type="checkbox"/>			
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)		<input checked="" type="checkbox"/>		
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)		<input checked="" type="checkbox"/>		
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Are short holding time analytes or samples with HTs due within 48 hours present ⁽¹⁾ ?		<input checked="" type="checkbox"/>		
Is a chain-of-custody (COC) present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client with date and time recorded ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.			<input checked="" type="checkbox"/>	
Are samples preserved that require preservation and was it checked ⁽¹⁾ ? (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 HNO ₃ , HCl, H ₂ SO ₄) / (pH >10 for samples preserved with NaAsO ₂ +NaOH, ZnAc+NaOH)			<input checked="" type="checkbox"/>	
Additional Comments (if any):				

⁽¹⁾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.

Reviewed by (Project Manager) JPD

Date/Time Reviewed 12/20/18

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: SA J-1

SS01

12/17/2018 9:00:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.
Y812313-01 (Soil)**

BTEX by EPA 8260C

Benzene	ND	0.002	mg/kg	1	B8L2105	JTD	12/21/2018	12/24/2018	U
Toluene	ND	0.002	"	"	"	JTD	"	"	U
Ethylbenzene	ND	0.002	"	"	"	JTD	"	"	U
Xylenes, total	ND	0.002	"	"	"	JTD	"	"	U

Surrogate: 1,2-Dichloroethane-d4	101 %	70-130			"	"	"	"	
Surrogate: Toluene-d8	98.5 %	70-130			"	"	"	"	
Surrogate: 4-Bromofluorobenzene	96.0 %	70-130			"	"	"	"	

GRO (TVPH)/DRO (TEPH)by EPA 8015C

Gasoline (C6-C10)	ND	50.0	mg/kg	1	B8L2106	KDK	12/21/2018	12/21/2018	U
Diesel (C10-C28)	ND	50.0	"	"	"	KDK	"	"	U

Surrogate: o-Terphenyl	93.0 %	59-131			"	"	"	"	
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Metals (Saturated Paste Prep)

Calcium	2.72		me/L	1	'[none]'		12/20/2018	12/26/2018	
Magnesium	1.32		"	"	"		"	"	
Sodium	0.72		"	"	"		"	"	

pH in Soil by EPA 9045D

pH	8.66		pH Units	1	B8L2107	OLAB	12/21/2018	12/21/2018	
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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: SA J-1

SS01

12/17/2018 9:00:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y812313-01 (Soil)

SAR by 20B Saturated Paste

SAR	0.51			1	'[none]'		12/20/2018	12/26/2018	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.0320	0.00500	mmhos/cm	1	B8L2108	OLAB	12/21/2018	12/21/2018	
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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: SA J-1

SS02

12/17/2018 9:05:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y812313-02 (Soil)

BTEX by EPA 8260C

Benzene	ND	0.002	mg/kg	1	B8L2105	JTD	12/21/2018	12/24/2018	U
Toluene	ND	0.002	"	"	"	JTD	"	"	U
Ethylbenzene	ND	0.002	"	"	"	JTD	"	"	U
Xylenes, total	ND	0.002	"	"	"	JTD	"	"	U

Surrogate: 1,2-Dichloroethane-d4	102 %	70-130			"	"	"	"	
Surrogate: Toluene-d8	97.4 %	70-130			"	"	"	"	
Surrogate: 4-Bromofluorobenzene	96.2 %	70-130			"	"	"	"	

GRO (TVPH)/DRO (TEPH) by EPA 8015C

Gasoline (C6-C10)	ND	50.0	mg/kg	1	B8L2106	KDK	12/21/2018	12/21/2018	U
Diesel (C10-C28)	50.9	50.0	"	"	"	KDK	"	"	

Surrogate: o-Terphenyl	77.3 %	59-131			"	"	"	"	
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Metals (Saturated Paste Prep)

Calcium	8.30		me/L	1	'[none]'		12/20/2018	12/26/2018	
Magnesium	3.14		"	"	"		"	"	
Sodium	12.41		"	"	"		"	"	

pH in Soil by EPA 9045D

pH	7.86		pH Units	1	B8L2107	OLAB	12/21/2018	12/21/2018	
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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: SA J-1

SS02

12/17/2018 9:05:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.
Y812313-02 (Soil)**

SAR by 20B Saturated Paste

SAR	5.19			1	'[none]'		12/20/2018	12/26/2018	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.132	0.00500	mmhos/cm	1	B8L2108	OLAB	12/21/2018	12/21/2018	
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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: SA J-1

SS03

12/17/2018 9:10:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.
Y812313-03 (Soil)**

BTEX by EPA 8260C

Benzene	ND	0.002	mg/kg	1	B8L2105	JTD	12/21/2018	12/24/2018	U
Toluene	ND	0.002	"	"	"	JTD	"	"	U
Ethylbenzene	ND	0.002	"	"	"	JTD	"	"	U
Xylenes, total	ND	0.002	"	"	"	JTD	"	"	U

Surrogate: 1,2-Dichloroethane-d4	103 %	70-130			"	"	"	"	
Surrogate: Toluene-d8	97.5 %	70-130			"	"	"	"	
Surrogate: 4-Bromofluorobenzene	97.1 %	70-130			"	"	"	"	

GRO (TVPH)/DRO (TEPH)by EPA 8015C

Gasoline (C6-C10)	ND	50.0	mg/kg	1	B8L2106	KDK	12/21/2018	12/21/2018	U
Diesel (C10-C28)	ND	50.0	"	"	"	KDK	"	"	U

Surrogate: o-Terphenyl	94.1 %	59-131			"	"	"	"	
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Metals (Saturated Paste Prep)

Calcium	3.72		me/L	1	'[none]'		12/20/2018	12/26/2018	
Magnesium	1.67		"	"	"		"	"	
Sodium	0.82		"	"	"		"	"	

pH in Soil by EPA 9045D

pH	8.29		pH Units	1	B8L2107	OLAB	12/21/2018	12/21/2018	
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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: SA J-1

SS03

12/17/2018 9:10:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y812313-03 (Soil)

SAR by 20B Saturated Paste

SAR	0.50			1	'[none]'		12/20/2018	12/26/2018	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.0559	0.00500	mmhos/cm	1	B8L2108	OLAB	12/21/2018	12/21/2018	
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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: SA J-1

SS04

12/17/2018 9:15:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y812313-04 (Soil)

BTEX by EPA 8260C

Benzene	ND	0.002	mg/kg	1	B8L2105	JTD	12/21/2018	12/24/2018	U
Toluene	ND	0.002	"	"	"	JTD	"	"	U
Ethylbenzene	ND	0.002	"	"	"	JTD	"	"	U
Xylenes, total	ND	0.002	"	"	"	JTD	"	"	U

Surrogate: 1,2-Dichloroethane-d4	102 %	70-130			"	"	"	"	
Surrogate: Toluene-d8	97.8 %	70-130			"	"	"	"	
Surrogate: 4-Bromofluorobenzene	97.3 %	70-130			"	"	"	"	

GRO (TVPH)/DRO (TEPH)by EPA 8015C

Gasoline (C6-C10)	ND	50.0	mg/kg	1	B8L2106	KDK	12/21/2018	12/21/2018	U
Diesel (C10-C28)	ND	50.0	"	"	"	KDK	"	"	U

Surrogate: o-Terphenyl	89.0 %	59-131			"	"	"	"	
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Metals (Saturated Paste Prep)

Calcium	3.30		me/L	1	'[none]'		12/20/2018	12/26/2018	
Magnesium	1.66		"	"	"		"	"	
Sodium	0.95		"	"	"		"	"	

pH in Soil by EPA 9045D

pH	8.26		pH Units	1	B8L2107	OLAB	12/21/2018	12/21/2018	
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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: SA J-1

SS04

12/17/2018 9:15:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y812313-04 (Soil)

SAR by 20B Saturated Paste

SAR	0.60			1	'[none]'		12/20/2018	12/26/2018	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.0372	0.00500	mmhos/cm	1	B8L2108	OLAB	12/21/2018	12/21/2018	
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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: SA J-1

SS05

12/17/2018 9:20:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y812313-05 (Soil)

BTEX by EPA 8260C

Benzene	ND	0.050	mg/kg	25	B8L2105	JTD	12/21/2018	12/24/2018	U
Toluene	ND	0.050	"	"	"	JTD	"	"	U
Ethylbenzene	ND	0.050	"	"	"	JTD	"	"	U
Xylenes, total	ND	0.050	"	"	"	JTD	"	"	U

Surrogate: 1,2-Dichloroethane-d4	107 %	70-130			"	"	"	"	
Surrogate: Toluene-d8	104 %	70-130			"	"	"	"	
Surrogate: 4-Bromofluorobenzene	99.7 %	70-130			"	"	"	"	

GRO (TVPH)/DRO (TEPH) by EPA 8015C

Gasoline (C6-C10)	ND	50.0	mg/kg	1	B8L2106	KDK	12/21/2018	12/21/2018	U
Diesel (C10-C28)	166	50.0	"	"	"	KDK	"	"	

Surrogate: o-Terphenyl	90.5 %	59-131			"	"	"	"	
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Metals (Saturated Paste Prep)

Calcium	5.67		me/L	1	'[none]'		12/20/2018	12/26/2018	
Magnesium	2.16		"	"	"		"	"	
Sodium	56.88		"	"	"		"	"	

pH in Soil by EPA 9045D

pH	7.76		pH Units	1	B8L2107	OLAB	12/21/2018	12/21/2018	
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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: SA J-1

SS05

12/17/2018 9:20:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y812313-05 (Soil)

SAR by 20B Saturated Paste

SAR	28.75			1	'[none]'		12/20/2018	12/26/2018	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.565	0.00500	mmhos/cm	1	B8L2108	OLAB	12/21/2018	12/21/2018	
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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: SA J-1

SS06

12/17/2018 9:25:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y812313-06 (Soil)

BTEX by EPA 8260C

Benzene	ND	0.002	mg/kg	1	B8L2105	JTD	12/21/2018	12/24/2018	U
Toluene	ND	0.002	"	"	"	JTD	"	"	U
Ethylbenzene	ND	0.002	"	"	"	JTD	"	"	U
Xylenes, total	ND	0.002	"	"	"	JTD	"	"	U

Surrogate: 1,2-Dichloroethane-d4	104 %	70-130			"	"	"	"	
Surrogate: Toluene-d8	97.4 %	70-130			"	"	"	"	
Surrogate: 4-Bromofluorobenzene	97.7 %	70-130			"	"	"	"	

GRO (TVPH)/DRO (TEPH) by EPA 8015C

Gasoline (C6-C10)	ND	50.0	mg/kg	1	B8L2106	KDK	12/21/2018	12/21/2018	U
Diesel (C10-C28)	ND	50.0	"	"	"	KDK	"	"	U

Surrogate: o-Terphenyl	90.3 %	59-131			"	"	"	"	
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Metals (Saturated Paste Prep)

Calcium	2.63		me/L	1	'[none]'		12/20/2018	12/26/2018	
Magnesium	1.00		"	"	"		"	"	
Sodium	91.48		"	"	"		"	"	

pH in Soil by EPA 9045D

pH	8.12		pH Units	1	B8L2107	OLAB	12/21/2018	12/21/2018	
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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: SA J-1

SS06

12/17/2018 9:25:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y812313-06 (Soil)

SAR by 20B Saturated Paste

SAR	67.90			1	'[none]'		12/20/2018	12/26/2018	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.828	0.00500	mmhos/cm	1	B8L2108	OLAB	12/21/2018	12/21/2018	
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Bonanza Creek Energy, Inc.

410 17th St, Suite 1400

Denver CO 80211

Brian Dodek

Project Number: [none]

Project: SA J-1

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 B8L2105 - EPA 5030 (soil)

Blank (B8L2105-BLK1)

Prepared: 12/21/2018 Analyzed: 12/22/2018

Benzene	ND	0.002	mg/kg							U
Toluene	ND	0.002	"							U
Ethylbenzene	ND	0.002	"							U
Xylenes, total	ND	0.002	"							U
Surrogate: 1,2-Dichloroethane-d4	0.13		"	0.125		101	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		98.7	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		101	70-130			

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410 17th St, Suite 1400

Denver CO 80211

Brian Dodek

Project Number: [none]

Project: SA J-1

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 B8L2105 - EPA 5030 (soil)

Blank (B8L2105-BLK2)

Prepared: 12/21/2018 Analyzed: 12/22/2018

Benzene	ND	0.002	mg/kg							U
Toluene	ND	0.002	"							U
Ethylbenzene	ND	0.002	"							U
Xylenes, total	ND	0.002	"							U
Surrogate: 1,2-Dichloroethane-d4	0.13		"	0.125		102	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		97.9	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		96.5	70-130			

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Bonanza Creek Energy, Inc.

410 17th St, Suite 1400

Denver CO 80211

Brian Dodek

Project Number: [none]

Project: SA J-1

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 B8L2105 - EPA 5030 (soil)

LCS (B8L2105-BS1)

Prepared: 12/21/2018 Analyzed: 12/21/2018

Benzene	0.100	0.002	mg/kg	0.100		100	77.1-124			
Toluene	0.105	0.002	"	0.100		105	74.5-128			
Ethylbenzene	0.108	0.002	"	0.100		108	66.4-127			
m,p-Xylene	0.207	0.004	"	0.200		103	76.6-124			
o-Xylene	0.115	0.002	"	0.100		115	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	0.12		"	0.125		98.2	70-130			
Surrogate: Toluene-d8	0.13		"	0.125		102	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		99.4	70-130			

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410 17th St, Suite 1400

Denver CO 80211

Brian Dodek

Project Number: [none]

Project: SA J-1

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 B8L2105 - EPA 5030 (soil)

LCS (B8L2105-BS2)

Prepared: 12/21/2018 Analyzed: 12/22/2018

Benzene	0.111	0.002	mg/kg	0.100		111	77.1-124			
Toluene	0.107	0.002	"	0.100		107	74.5-128			
Ethylbenzene	0.114	0.002	"	0.100		114	66.4-127			
m,p-Xylene	0.214	0.004	"	0.200		107	76.6-124			
o-Xylene	0.117	0.002	"	0.100		117	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	0.12		"	0.125		96.8	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		97.7	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		102	70-130			

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Bonanza Creek Energy, Inc.

410 17th St, Suite 1400

Denver CO 80211

Brian Dodek

Project Number: [none]

Project: SA J-1

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 B8L2105 - EPA 5030 (soil)

Matrix Spike (B8L2105-MS1)	Source: Y812287-01			Prepared: 12/21/2018 Analyzed: 12/22/2018						
Benzene	0.094	0.002	mg/kg	0.100	ND	94.0	71.8-126			
Toluene	0.094	0.002	"	0.100	ND	94.1	65.1-130			
Ethylbenzene	0.100	0.002	"	0.100	ND	100	62.2-130			
m,p-Xylene	0.189	0.004	"	0.200	ND	94.4	46.5-137			
o-Xylene	0.101	0.002	"	0.100	ND	101	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	0.13		"	0.125		105	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		96.0	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		103	70-130			

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410 17th St, Suite 1400

Denver CO 80211

Brian Dodek

Project Number: [none]

Project: SA J-1

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 B8L2105 - EPA 5030 (soil)

Matrix Spike (B8L2105-MS2)	Source: Y812287-02			Prepared: 12/21/2018 Analyzed: 12/22/2018						
Benzene	0.079	0.002	mg/kg	0.100	ND	78.5	71.8-126			
Toluene	0.075	0.002	"	0.100	ND	75.3	65.1-130			
Ethylbenzene	0.064	0.002	"	0.100	ND	63.9	62.2-130			
m,p-Xylene	0.119	0.004	"	0.200	ND	59.4	46.5-137			
o-Xylene	0.065	0.002	"	0.100	ND	65.1	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	0.15		"	0.125		123	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		94.4	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		93.4	70-130			

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Brian Dodek

Project Number: [none]

Project: SA J-1

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 B8L2105 - EPA 5030 (soil)

Matrix Spike Dup (B8L2105-MSD1)	Source: Y812287-01			Prepared: 12/21/2018 Analyzed: 12/22/2018						
Benzene	0.079	0.002	mg/kg	0.100	ND	78.8	71.8-126	17.6	11.3	QR-02
Toluene	0.078	0.002	"	0.100	ND	78.1	65.1-130	18.6	15.4	QR-02
Ethylbenzene	0.082	0.002	"	0.100	ND	81.8	62.2-130	20.3	19.6	QR-02
m,p-Xylene	0.152	0.004	"	0.200	ND	76.1	46.5-137	21.4	19.2	QR-02
o-Xylene	0.084	0.002	"	0.100	ND	84.3	54.2-134	17.6	17.9	
Surrogate: 1,2-Dichloroethane-d4	0.13		"	0.125		102	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		98.7	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		106	70-130			

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Brian Dodek

Project Number: [none]

Project: SA J-1

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 B8L2105 - EPA 5030 (soil)

Matrix Spike Dup (B8L2105-MSD2)	Source: Y812287-02			Prepared: 12/21/2018 Analyzed: 12/22/2018						
Benzene	0.092	0.002	mg/kg	0.100	ND	92.5	71.8-126	16.3	11.3	QR-02
Toluene	0.090	0.002	"	0.100	ND	90.0	65.1-130	17.8	15.4	QR-02
Ethylbenzene	0.090	0.002	"	0.100	ND	89.8	62.2-130	33.7	19.6	QR-02
m,p-Xylene	0.167	0.004	"	0.200	ND	83.5	46.5-137	33.8	19.2	QR-02
o-Xylene	0.093	0.002	"	0.100	ND	93.0	54.2-134	35.3	17.9	QR-02
Surrogate: 1,2-Dichloroethane-d4	0.13		"	0.125		102	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		98.9	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		103	70-130			

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Brian Dodek

Project Number: [none]

Project: SA J-1

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 B8L2106 - EPA 3580

Blank (B8L2106-BLK1)

Prepared: 12/21/2018 Analyzed: 12/21/2018

Gasoline (C6-C10)	ND	50.0	mg/kg							U
Diesel (C10-C28)	ND	50.0	"							U
Surrogate: o-Terphenyl	44		"	50.0		88.0	59-131			

LCS (B8L2106-BS1)

Prepared: 12/21/2018 Analyzed: 12/21/2018

Gasoline (C6-C10)	1110	50.0	mg/kg	1000		111	59-133			
Diesel (C10-C28)	1070	50.0	"	1000		107	64-121			
Surrogate: o-Terphenyl	52		"	50.0		104	59-131			

Matrix Spike (B8L2106-MS1)

Source: Y812312-02

Prepared: 12/21/2018 Analyzed: 12/21/2018

Gasoline (C6-C10)	1030	50.0	mg/kg	1000	ND	103	57-139			
Diesel (C10-C28)	998	50.0	"	1000	ND	99.8	53-125			
Surrogate: o-Terphenyl	47		"	50.0		93.1	59-131			

Matrix Spike Dup (B8L2106-MSD1)

Source: Y812312-02

Prepared: 12/21/2018 Analyzed: 12/21/2018

Gasoline (C6-C10)	1060	50.0	mg/kg	1000	ND	106	57-139	3.32	20	
Diesel (C10-C28)	1040	50.0	"	1000	ND	104	53-125	3.99	20	
Surrogate: o-Terphenyl	48		"	50.0		97.0	59-131			

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Brian Dodek

Project Number: [none]

Project: SA J-1

Classical Chemistry Parameters - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B8L2107 - NO PREP										
Duplicate (B8L2107-DUP1)		Source: Y812301-01			Prepared: 12/21/2018 Analyzed: 12/21/2018					
pH	7.41		pH Units		8.13			9.27	25	
Batch B8L2108 - NO PREP										
Blank (B8L2108-BLK1)					Prepared: 12/21/2018 Analyzed: 12/21/2018					
Specific Conductance (EC)	0.00350	0.00500	mmhos/cm							
Duplicate (B8L2108-DUP1)		Source: Y812301-01			Prepared: 12/21/2018 Analyzed: 12/21/2018					
Specific Conductance (EC)	0.0947	0.00500	mmhos/cm		0.0836			12.5	25	

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

Brian Dodek
Project Number: [none]
Project: SA J-1

Notes and Definitions

U Sample is Non-Detect.

QR-02 The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data.

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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Jen Pellegrini For Noelle Doyle Mathis, President