



Aerial photograph courtesy of Google Earth Pro

LEGEND

● Soil Sample

N



Figure 2
Soil Sample Location Map
October 2, 2018 LBK

Pronghorn 14-8 Water Vault Removal
Facility ID: 282890
SWSW, Sec 8, T5N, R61W, 6th PM
Weld County, Colorado

TABLE 1
SOIL ANALYTICAL RESULTS
PRONGHORN 14-8
WELD COUNTY, COLORADO
BONANZA CREEK ENERGY OPERATING COMPANY LLC.

Parameters		COGCC Table 910-1 Concentration Level	SS01
BTEX	Benzene	0.17	<0.002
	Toluene	85	<0.002
	Ethylbenzene	100	<0.002
	Total Xylenes	175	<0.002
TPH	DRO	--	<50
	GRO	--	<50
	Total	500	<50
Inorganics	EC (mmhos/cm)	<4	0.0583
	SAR	<12	0.63
	pH (unitless)	6 - 9	6.97

Notes:

-- - no concentration level is available

BOLD - analytical result exceeds the COGCC Table 910-1 Concentration Level

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

EC - electrical conductivity

mmhos/cm - millimhos per centimeter

SAR - sodium adsorption ratio

All results are in mg/kg unless stated otherwise.



March 13, 2018

Bonanza Creek Energy, Inc.

Brian Dodek

410 17th St, Suite 1400

Denver

CO 80211

Project Name - Pronghorn 14-8

Project Number - [none]

Attached are your analytical results for Pronghorn 14-8 received by Origins Laboratory, Inc. March 06, 2018. This project is associated with Origins project number Y803089-01.

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



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

Bonanza Creek Energy, Inc.

410 17th St, Suite 1400

Denver CO 80211

Brian Dodek

Project Number: [none]

Project: Pronghorn 14-8

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS01	Y803089-01	Soil	March 2, 2018 10:00	03/06/2018 07:40

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: Pronghorn 14-8

www.originslaboratory.com

page 1 of 1

ORIGINS
LABORATORY, INC

163089

Client:	Bonanza Creek Energy	Project Manager:	Brian Dodek/Luke Kelly
Address:	410 17th Street Suite 1700 Denver, CO 80202	Project Name:	Pronghorn 14-8
Telephone Number:	720-225-6653	Project Number:	
Email Address:		Samples Collected By:	Luke Kelly

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative				Matrix			Analysis	Sample Instructions	
				Unpreserved	HCl	HNO ₃	Other	Groundwater	Soil	Air Summa #			Other
SS01	3/2/18	10:00	2	K					K			X	
Relinquished By:	Date:	3/6/18	Time:	0700	Received By:	Date:	3/6/18	Time:	0740	Turnaround Time:	<input type="checkbox"/> Same Day <input type="checkbox"/> 24 Hr <input type="checkbox"/> 48 Hr <input checked="" type="checkbox"/> Standard		
Relinquished By:	Date:		Time:		Received By:	Date:		Time:					

Date Results Needed

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: Pronghorn 14-8

Origins Laboratory

F-012207-01-R1

Effective Date: 01/09/12

Sample Receipt Checklist

Origins Work Order: Y803089

Client: Bonanza Creek Energy

Client Project ID: Pronghorn 14-8

Checklist Completed by: Dan Lu

Shipped Via: HD

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

Date/time completed: 3-6-12

Airbill #: NA

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

(Describe)

Cooler Number/Temperature: 11.0 °C 1 °C 1 °C 1 °C

Thermometer ID: 1603

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"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is there ice present (document if blue ice is used)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input 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 type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are short holding time analytes or samples with HTs due within 48 hours present ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>pH</u>
Is a chain-of-custody (COC) present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client with date and time recorded ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input type="checkbox"/>	<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 type="checkbox"/>	<input type="checkbox"/>	<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) [Signature]

Date/Time Reviewed 3/7/18

Origins Laboratory, Inc.

[Signature]

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: Pronghorn 14-8

SS01

3/2/2018 10:00:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
---------	--------	-----------------	-------	----------	-------	----------	----------	-------

Origins Laboratory, Inc.
Y803089-01 (Soil)

BTEX by EPA 8260C

Benzene	ND	0.002	mg/kg	1	B8C0805	03/08/2018	03/08/2018	U
Toluene	ND	0.002	"	"	"	"	"	U
Ethylbenzene	ND	0.002	"	"	"	"	"	U
Xylenes, total	ND	0.002	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4

105 % 70-130

" " "

Surrogate: Toluene-d8

102 % 70-130

" " "

Surrogate: 4-Bromofluorobenzene

103 % 70-130

" " "

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

Gasoline (C6-C10)	ND	50.0	mg/kg	1	B8C0806	03/08/2018	03/08/2018	U
Diesel (C10-C28)	ND	50.0	"	"	"	"	"	U

Surrogate: o-Terphenyl

80.6 % 59-131

" " "

Metals (Saturated Paste Prep)

Calcium	1.12		me/L	1	'[none]'	03/08/2018	03/12/2018	
Magnesium	1.10		"	"	"	"	"	
Sodium	0.66		"	"	"	"	"	

pH in Soil by EPA 9045D

pH	6.97		pH Units	1	B8C0807	03/08/2018	03/08/2018	
----	------	--	----------	---	---------	------------	------------	--

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: Pronghorn 14-8

SS01

3/2/2018 10:00:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
---------	--------	--------------------	-------	----------	-------	----------	----------	-------

Origins Laboratory, Inc.
Y803089-01 (Soil)

SAR by 20B Saturated Paste

SAR	0.63			1	'[none]'	03/08/2018	03/12/2018	
-----	------	--	--	---	----------	------------	------------	--

Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.0583		mmhos/cm	1	B8C0808	03/08/2018	03/08/2018	
---------------------------	--------	--	----------	---	---------	------------	------------	--

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: Pronghorn 14-8

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
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

Batch B8C0805 - EPA 5030 (soil)

Blank (B8C0805-BLK1)

Prepared: 03/08/2018 Analyzed: 03/08/2018

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	65		ug/kg	62.5		104	70-130			
Surrogate: Toluene-d8	63		"	62.5		101	70-130			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		101	70-130			

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: Pronghorn 14-8

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
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

Batch B8C0805 - EPA 5030 (soil)

Blank (B8C0805-BLK2)

Prepared: 03/08/2018 Analyzed: 03/08/2018

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	64		ug/kg	62.5		102	70-130			
Surrogate: Toluene-d8	64		"	62.5		102	70-130			
Surrogate: 4-Bromofluorobenzene	64		"	62.5		102	70-130			

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: Pronghorn 14-8

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
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

Batch B8C0805 - EPA 5030 (soil)

LCS (B8C0805-BS1)

Prepared: 03/08/2018 Analyzed: 03/08/2018

Benzene	0.120	0.002	mg/kg	0.100		120	77.1-124			
Toluene	0.117	0.002	"	0.100		117	74.5-128			
Ethylbenzene	0.112	0.002	"	0.100		112	66.4-127			
m,p-Xylene	0.222	0.004	"	0.200		111	76.6-124			
o-Xylene	0.111	0.002	"	0.100		111	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	56		ug/kg	62.5		90.4	70-130			
Surrogate: Toluene-d8	63		"	62.5		101	70-130			
Surrogate: 4-Bromofluorobenzene	60		"	62.5		96.1	70-130			

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: Pronghorn 14-8

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
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

Batch B8C0805 - EPA 5030 (soil)

LCS (B8C0805-BS2)

Prepared: 03/08/2018 Analyzed: 03/08/2018

Benzene	0.119	0.002	mg/kg	0.100		119	77.1-124			
Toluene	0.116	0.002	"	0.100		116	74.5-128			
Ethylbenzene	0.113	0.002	"	0.100		113	66.4-127			
m,p-Xylene	0.220	0.004	"	0.200		110	76.6-124			
o-Xylene	0.107	0.002	"	0.100		107	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	60		ug/kg	62.5		95.3	70-130			
Surrogate: Toluene-d8	63		"	62.5		101	70-130			
Surrogate: 4-Bromofluorobenzene	61		"	62.5		98.3	70-130			

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: Pronghorn 14-8

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
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

Batch B8C0805 - EPA 5030 (soil)

Matrix Spike (B8C0805-MS1)		Source: Y803089-01			Prepared: 03/08/2018 Analyzed: 03/08/2018					
Benzene	0.100	0.002	mg/kg	0.100	ND	100	71.8-126			
Toluene	0.096	0.002	"	0.100	ND	96.3	65.1-130			
Ethylbenzene	0.091	0.002	"	0.100	ND	90.8	62.2-130			
m,p-Xylene	0.181	0.004	"	0.200	0.0009	90.1	46.5-137			
o-Xylene	0.091	0.002	"	0.100	0.0004	90.8	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	59		ug/kg	62.5		94.8	70-130			
Surrogate: Toluene-d8	62		"	62.5		99.9	70-130			
Surrogate: 4-Bromofluorobenzene	60		"	62.5		96.4	70-130			

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: Pronghorn 14-8

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
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

Batch B8C0805 - EPA 5030 (soil)

Matrix Spike (B8C0805-MS2)		Source: Y803092-01			Prepared: 03/08/2018 Analyzed: 03/08/2018					
Benzene	0.109	0.002	mg/kg	0.100	0.0006	108	71.8-126			
Toluene	0.109	0.002	"	0.100	0.010	98.3	65.1-130			
Ethylbenzene	0.124	0.002	"	0.100	0.023	101	62.2-130			
m,p-Xylene	0.266	0.004	"	0.200	0.045	111	46.5-137			
o-Xylene	0.133	0.002	"	0.100	0.022	111	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	62		ug/kg	62.5		98.5	70-130			
Surrogate: Toluene-d8	63		"	62.5		100	70-130			
Surrogate: 4-Bromofluorobenzene	75		"	62.5		120	70-130			

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: Pronghorn 14-8

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
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

Batch B8C0805 - EPA 5030 (soil)

Matrix Spike Dup (B8C0805-MSD1)		Source: Y803089-01			Prepared: 03/08/2018 Analyzed: 03/08/2018					
Benzene	0.104	0.002	mg/kg	0.100	ND	104	71.8-126	4.17	11.3	
Toluene	0.101	0.002	"	0.100	ND	101	65.1-130	4.88	15.4	
Ethylbenzene	0.099	0.002	"	0.100	ND	98.7	62.2-130	8.25	19.6	
m,p-Xylene	0.194	0.004	"	0.200	0.0009	96.6	46.5-137	6.93	19.2	
o-Xylene	0.098	0.002	"	0.100	0.0004	98.0	54.2-134	7.62	17.9	
Surrogate: 1,2-Dichloroethane-d4	60		ug/kg	62.5		95.5	70-130			
Surrogate: Toluene-d8	62		"	62.5		99.8	70-130			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		98.5	70-130			

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: Pronghorn 14-8

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
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

Batch B8C0805 - EPA 5030 (soil)

Matrix Spike Dup (B8C0805-MSD2)		Source: Y803092-01			Prepared: 03/08/2018 Analyzed: 03/08/2018					
Benzene	0.104	0.002	mg/kg	0.100	0.0006	104	71.8-126	4.48	11.3	
Toluene	0.097	0.002	"	0.100	0.010	86.9	65.1-130	11.1	15.4	
Ethylbenzene	0.100	0.002	"	0.100	0.023	76.8	62.2-130	21.3	19.6	QR-02
m,p-Xylene	0.222	0.004	"	0.200	0.045	88.3	46.5-137	18.3	19.2	
o-Xylene	0.112	0.002	"	0.100	0.022	90.1	54.2-134	17.3	17.9	
Surrogate: 1,2-Dichloroethane-d4	58		ug/kg	62.5		93.5	70-130			
Surrogate: Toluene-d8	62		"	62.5		99.8	70-130			
Surrogate: 4-Bromofluorobenzene	74		"	62.5		119	70-130			

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: Pronghorn 14-8

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
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

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
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

Batch B8C0806 - EPA 3550B

Blank (B8C0806-BLK1)

Prepared: 03/08/2018 Analyzed: 03/08/2018

Gasoline (C6-C10)	ND	50.0	mg/kg							U
-------------------	----	------	-------	--	--	--	--	--	--	---

Diesel (C10-C28)	ND	50.0	"							U
------------------	----	------	---	--	--	--	--	--	--	---

Surrogate: o-Terphenyl	50		"	50.0		100	59-131			
------------------------	----	--	---	------	--	-----	--------	--	--	--

Blank (B8C0806-BLK2)

Prepared: 03/08/2018 Analyzed: 03/09/2018

Gasoline (C6-C10)	ND	50.0	mg/kg							U
-------------------	----	------	-------	--	--	--	--	--	--	---

Diesel (C10-C28)	ND	50.0	"							U
------------------	----	------	---	--	--	--	--	--	--	---

Surrogate: o-Terphenyl	44		"	50.0		88.9	59-131			
------------------------	----	--	---	------	--	------	--------	--	--	--

LCS (B8C0806-BS1)

Prepared: 03/08/2018 Analyzed: 03/08/2018

Gasoline (C6-C10)	953	50.0	mg/kg	1000		95.3	59-133			
-------------------	-----	------	-------	------	--	------	--------	--	--	--

Diesel (C10-C28)	993	50.0	"	1000		99.3	64-121			
------------------	-----	------	---	------	--	------	--------	--	--	--

Surrogate: o-Terphenyl	49		"	50.0		98.0	59-131			
------------------------	----	--	---	------	--	------	--------	--	--	--

LCS (B8C0806-BS2)

Prepared: 03/08/2018 Analyzed: 03/09/2018

Gasoline (C6-C10)	854	50.0	mg/kg	1000		85.4	59-133			
-------------------	-----	------	-------	------	--	------	--------	--	--	--

Diesel (C10-C28)	864	50.0	"	1000		86.4	64-121			
------------------	-----	------	---	------	--	------	--------	--	--	--

Surrogate: o-Terphenyl	48		"	50.0		95.8	59-131			
------------------------	----	--	---	------	--	------	--------	--	--	--

Matrix Spike (B8C0806-MS1)

Source: Y803089-01

Prepared: 03/08/2018 Analyzed: 03/08/2018

Gasoline (C6-C10)	948	50.0	mg/kg	1000	ND	94.8	57-139			
-------------------	-----	------	-------	------	----	------	--------	--	--	--

Diesel (C10-C28)	953	50.0	"	1000	31.4	92.1	53-125			
------------------	-----	------	---	------	------	------	--------	--	--	--

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: Pronghorn 14-8

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
Batch B8C0806 - EPA 3550B										
Matrix Spike (B8C0806-MS1)		Source: Y803089-01			Prepared: 03/08/2018 Analyzed: 03/08/2018					
Surrogate: o-Terphenyl	46		mg/kg	50.0		92.5	59-131			
Matrix Spike (B8C0806-MS2)		Source: Y803092-01			Prepared: 03/08/2018 Analyzed: 03/09/2018					
Gasoline (C6-C10)	901	50.0	mg/kg	1000	26.0	87.5	57-139			
Diesel (C10-C28)	1170	50.0	"	1000	505	66.9	53-125			
Surrogate: o-Terphenyl	47		"	50.0		94.3	59-131			
Matrix Spike Dup (B8C0806-MSD1)		Source: Y803089-01			Prepared: 03/08/2018 Analyzed: 03/08/2018					
Gasoline (C6-C10)	916	50.0	mg/kg	1000	ND	91.6	57-139	3.51	20	
Diesel (C10-C28)	902	50.0	"	1000	31.4	87.1	53-125	5.44	20	
Surrogate: o-Terphenyl	47		"	50.0		93.3	59-131			
Matrix Spike Dup (B8C0806-MSD2)		Source: Y803092-01			Prepared: 03/08/2018 Analyzed: 03/09/2018					
Gasoline (C6-C10)	946	50.0	mg/kg	1000	26.0	92.0	57-139	4.89	20	
Diesel (C10-C28)	1220	50.0	"	1000	505	71.4	53-125	3.70	20	
Surrogate: o-Terphenyl	47		"	50.0		93.9	59-131			

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: Pronghorn 14-8

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 B8C0807 - NO PREP										
Duplicate (B8C0807-DUP1)		Source: Y803089-01			Prepared: 03/08/2018 Analyzed: 03/08/2018					
pH	7.17		pH Units		6.97			2.83	25	
Batch B8C0808 - NO PREP										
Blank (B8C0808-BLK1)		Prepared: 03/08/2018 Analyzed: 03/08/2018								
Specific Conductance (EC)	0.00430		mmhos/cm							
Duplicate (B8C0808-DUP1)		Source: Y803089-01			Prepared: 03/08/2018 Analyzed: 03/08/2018					
Specific Conductance (EC)	0.0576		mmhos/cm		0.0583			1.21	25	

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: Pronghorn 14-8

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.

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.