



LEGEND

 Site Location



Figure 1
Location Site Map
October 28, 2019 LBK

Ankeney 2-28
Facility ID: 467663
NWNE Sec 28, T6N, R64W, 6th PM
Weld County, Colorado



Aerial photograph courtesy of Bing Maps

LEGEND

● Sample Location

--- Excavation Footprint

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Figure 2
Site Map

October 21, 2019 LBK

Ankeney 2-28
Facility ID: 467663
NWNE Sec 28, T6N, R64W, 6th PM
Weld County, Colorado

TABLE 1
SOIL ANALYTICAL RESULTS
ANKENEY 2-28
WELD COUNTY, COLORADO
BONANZA CREEK ENERGY OPERATING COMPANY LLC.

Parameters		COGCC Table 910-1 Concentration Level	SS01	Field Screen 1 (FS01)	Field Screen 2 (FS02)	Field Screen 3 (FS03)	Field Screen 4 (FS04)
Sample Date			10/16/2019	10/16/2019	10/16/2019	10/16/2019	10/16/2019
Sample Depth (feet)			6-7'	2-2.5'	2-2.5'	2-2.5'	2-2.5'
BTEX	Benzene	0.17	<0.002	NA	NA	NA	NA
	Toluene	85	<0.002	NA	NA	NA	NA
	Ethylbenzene	100	<0.002	NA	NA	NA	NA
	Total Xylenes	175	<0.002	NA	NA	NA	NA
TPH	DRO	--	<50.0	NA	NA	NA	NA
	GRO	--	<50.0	NA	NA	NA	NA
	Total	500	<50.0	NA	NA	NA	NA
Inorganics	EC (mmhos/cm)	<4	0.0836	NA	NA	NA	NA
	SAR	<12	1.55	NA	NA	NA	NA
	pH (unitless)	6 - 9	8.23	NA	NA	NA	NA
VOC Screening (ppm)*		--	10.8	7.3	3.8	5.9	12.3

Notes:

COGCC - Colorado Oil and Gas Conservation Commission

-- - no concentration level is available

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

DRO - diesel range organics

GRO - gasoline range organics

TPH - total petroleum hydrocarbons

EC - electrical conductivity

mmhos/cm - millimhos per centimeter

SAR - sodium adsorption ratio

All results are in mg/kg unless stated otherwise.

* - VOC screening conducted with a calibrated photo-ionization detector in the field

October 24, 2019

Bonanza Creek Energy, Inc.

Brian Dodek

410 17th St, Suite 1400

Denver CO 80211

Project Name - Ankenney 2-28

Project Number - [none]

Attached are your analytical results for Ankenney 2-28 received by Origins Laboratory, Inc. October 17, 2019. This project is associated with Origins project number Y910256-01.

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: Ankenney 2-28

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS01 (6-7')	Y910256-01	Soil	October 16, 2019 9:00	10/17/2019 07:37

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: Ankenney 2-28

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: 7910256

Client: Bonanza Creek Energy
Client Project ID: Ankenney 2-28

Checklist Completed by: Da Lee

Shipped Via: HD
(UPS, FedEx, Hand Delivered, Pick-up, etc.)
Airbill #: EM

Date/time completed: 10-17-17

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

Cooler Number/Temperature: 1 / 8.1 °C 1 / _____ °C 1 / _____ °C 1 / _____ °C

Thermometer ID: 603

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"/>			pH
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 Na ₂ CO ₃ +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) _____

Date/Time Reviewed 10-17-17

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: Ankenney 2-28

SS01 (6-7')

10/16/2019 9:00:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y910256-01 (Soil)

BTEX by EPA 8260D

Benzene	ND	0.002	mg/kg	1	B9J1702	KDK	10/17/2019	10/17/2019	U
Toluene	ND	0.002	"	"	"	KDK	"	"	U
Ethylbenzene	ND	0.002	"	"	"	KDK	"	"	U
Xylenes, total	ND	0.002	"	"	"	KDK	"	"	U

Surrogate: 1,2-Dichloroethane-d4	86.3 %	70-130			"	"	"	"	
Surrogate: Toluene-d8	97.1 %	70-130			"	"	"	"	
Surrogate: 4-Bromofluorobenzene	101 %	70-130			"	"	"	"	

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

Gasoline (C6-C10)	ND	50.0	mg/kg	1	B9J1703	KDK	10/17/2019	10/17/2019	U
Diesel (C10-C28)	ND	50.0	"	"	"	KDK	"	"	U

Surrogate: o-Terphenyl	66.9 %	50-150			"	"	"	"	
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Metals (Saturated Paste Prep)

Calcium	1.21		me/L	1	[none]		10/21/2019	10/23/2019	
Magnesium	1.00		"	"	"		"	"	
Sodium	1.63		"	"	"		"	"	

pH in Soil by EPA 9045D

pH	8.23		pH Units	1	B9J1704	OLAB	10/17/2019	10/17/2019	
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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: Ankenney 2-28

SS01 (6-7')

10/16/2019 9:00:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y910256-01 (Soil)

SAR by 20B Saturated Paste

SAR	1.55			1	[none]		10/21/2019	10/23/2019	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.0836	0.00500	mmhos/cm	1	B9J1705	KDK	10/17/2019	10/17/2019	
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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: Ankenney 2-28

Volatile Organic Compounds by GC/MS SW846 8260D - 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 B9J1702 - EPA 5030 (soil)

Blank (B9J1702-BLK1)

Prepared: 10/17/2019 Analyzed: 10/17/2019

Benzene	ND	0.002	mg/kg							U
Toluene	ND	0.002	"							U
Ethylbenzene	ND	0.002	"							U
Xylenes, total	ND	0.002	"							U
<i>Surrogate: 1,2-Dichloroethane-d4</i>	0.12		"	0.125	97.9		70-130			
<i>Surrogate: Toluene-d8</i>	0.12		"	0.125	99.2		70-130			
<i>Surrogate: 4-Bromofluorobenzene</i>	0.13		"	0.125	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: Ankenney 2-28

Volatile Organic Compounds by GC/MS SW846 8260D - 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 B9J1702 - EPA 5030 (soil)

LCS (B9J1702-BS1)

Prepared: 10/17/2019 Analyzed: 10/17/2019

Benzene	0.113	0.002	mg/kg	0.100		113	70-130			
Toluene	0.112	0.002	"	0.100		112	70-130			
Ethylbenzene	0.115	0.002	"	0.100		115	70-130			
m,p-Xylene	0.240	0.004	"	0.200		120	70-130			
o-Xylene	0.117	0.002	"	0.100		117	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.11		"	0.125		91.8	70-130			
Surrogate: Toluene-d8	0.13		"	0.125		100	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: Ankenney 2-28

Volatile Organic Compounds by GC/MS SW846 8260D - 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 B9J1702 - EPA 5030 (soil)

Matrix Spike (B9J1702-MS1)	Source: Y910248-01			Prepared: 10/17/2019 Analyzed: 10/17/2019						
Benzene	0.117	0.002	mg/kg	0.100	ND	117	70-130			
Toluene	0.111	0.002	"	0.100	ND	111	70-130			
Ethylbenzene	0.114	0.002	"	0.100	ND	114	70-130			
m,p-Xylene	0.238	0.004	"	0.200	ND	119	70-130			
o-Xylene	0.116	0.002	"	0.100	ND	116	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.11		"	0.125		84.3	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		97.8	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: Ankenney 2-28

Volatile Organic Compounds by GC/MS SW846 8260D - 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 B9J1702 - EPA 5030 (soil)

Matrix Spike Dup (B9J1702-MSD1)	Source: Y910248-01			Prepared: 10/17/2019 Analyzed: 10/17/2019						
Benzene	0.115	0.002	mg/kg	0.100	ND	115	70-130	1.40	20	
Toluene	0.110	0.002	"	0.100	ND	110	70-130	0.886	20	
Ethylbenzene	0.111	0.002	"	0.100	ND	111	70-130	2.40	20	
m,p-Xylene	0.231	0.004	"	0.200	ND	116	70-130	2.82	20	
o-Xylene	0.114	0.002	"	0.100	ND	114	70-130	1.66	20	
Surrogate: 1,2-Dichloroethane-d4	0.11		"	0.125		85.6	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: Ankenney 2-28

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B9J1703 - EPA 3580										
Blank (B9J1703-BLK1)										
					Prepared: 10/17/2019 Analyzed: 10/17/2019					
Gasoline (C6-C10)	ND	25.0	mg/kg							U
Diesel (C10-C28)	ND	25.0	"							U
Surrogate: o-Terphenyl	22		"	25.0		86.6	50-150			

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Bonanza Creek Energy, Inc.

410 17th St, Suite 1400

Denver CO 80211

Brian Dodek

Project Number: [none]

Project: Ankenney 2-28

Extractable Petroleum Hydrocarbons by 8015D - 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 B9J1703 - EPA 3580

LCS (B9J1703-BS1)

Prepared: 10/17/2019 Analyzed: 10/17/2019

Gasoline (C6-C10)	993	50.0	mg/kg	1000		99.3	70-130			
Diesel (C10-C28)	902	50.0	"	1000		90.2	70-130			
Surrogate: o-Terphenyl	46		"	50.0		91.8	50-150			

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: Ankenney 2-28

Extractable Petroleum Hydrocarbons by 8015D - 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 B9J1703 - EPA 3580

Matrix Spike (B9J1703-MS1)	Source: Y910255-01			Prepared: 10/17/2019 Analyzed: 10/17/2019						
Gasoline (C6-C10)	940	50.0	mg/kg	1000	ND	94.0	70-130			
Diesel (C10-C28)	848	50.0	"	1000	ND	84.8	70-130			
Surrogate: o-Terphenyl	39		"	50.0		78.9	50-150			

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: Ankenney 2-28

Extractable Petroleum Hydrocarbons by 8015D - 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 B9J1703 - EPA 3580

Matrix Spike Dup (B9J1703-MSD1)	Source: Y910255-01			Prepared: 10/17/2019 Analyzed: 10/17/2019						
Gasoline (C6-C10)	886	50.0	mg/kg	1000	ND	88.6	70-130	5.91	35	
Diesel (C10-C28)	819	50.0	"	1000	ND	81.9	70-130	3.46	35	
Surrogate: o-Terphenyl	38		"	50.0		75.6	50-150			

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410 17th St, Suite 1400

Denver CO 80211

Brian Dodek

Project Number: [none]

Project: Ankenney 2-28

Extractable Petroleum Hydrocarbons by 8015D - 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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Classical Chemistry Parameters - 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 B9J1704 - NO PREP

Duplicate (B9J1704-DUP1)

Source: Y910256-01

Prepared: 10/17/2019 Analyzed: 10/17/2019

pH	8.18		pH Units		8.23			0.609	25	
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Batch B9J1705 - NO PREP

Blank (B9J1705-BLK1)

Prepared: 10/17/2019 Analyzed: 10/17/2019

Specific Conductance (EC)	0.00380	0.00500	mmhos/cm							
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Duplicate (B9J1705-DUP1)

Source: Y910256-01

Prepared: 10/17/2019 Analyzed: 10/17/2019

Specific Conductance (EC)	0.0775	0.00500	mmhos/cm		0.0836			7.57	25	
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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: Ankenney 2-28

Notes and Definitions

U Sample is Non-Detect.

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.



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Jen Pellegrini For Noelle Doyle Mathis, President