



GCU 139
30-045-07432
Bradenhead Water Sample

75 Suttle Street
Durango, CO 81303
970.247.4220 Phone
970.247.4227 Fax
www.greenanalytical.com

17 August 2018

Andy Hawk
BP America
380 Airport Rd.
Durango, CO 81303
RE: API

NMOC

FEB 13 2019

DISTRICT III

Enclosed are the results of analyses for samples received by the laboratory on 07/31/18 16:53.
If you need any further assistance, please feel free to contact me.

Sincerely,

A handwritten signature in blue ink that reads "Jeremy D. Allen".

Jeremy D Allen For Debbie Zufelt
Reports Manager

All accredited analytes contained in this report are denoted by an asterisk (*). For a complete list of accredited analytes please do not hesitate to contact us via any of the contact information contained in this report. All of our certifications can be viewed at <http://greenanalytical.com/certifications/>

Green Analytical Laboratories is NELAP accredited through the Texas Commission on Environmental Quality. Accreditation applies to drinking water and non-potable water matrices for trace metals and a variety of inorganic parameters. Green Analytical Laboratories is also accredited through the Colorado Department of Public Health and Environment and EPA region 8 for trace metals, Cyanide, Fluoride, Nitrate, and Nitrite in drinking water.

Our affiliate laboratory, Cardinal Laboratories, is also NELAP accredited through the Texas Commission on Environmental Quality for a variety of organic constituents in drinking water, non-potable water and solid matrices. Cardinal is also accredited for regulated VOCs, TTHM, and HAA-5 in drinking water through the Colorado Department of Public Health and Environment and EPA region 8.



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380 Airport Rd.
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Project: API
Project Name / Number: Bradenhead
Project Manager: Andy Hawk

Reported:
08/17/18 14:48

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
GCU 139	1808026-01	Water	07/31/18 08:14	07/31/18 16:53

Green Analytical Laboratories

A handwritten signature in blue ink that reads 'Jeremy D. Allen'.

Jeremy D Allen For Debbie Zufelt, Reports Manager

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380 Airport Rd.	Project Name / Number: Bradenhead	Reported:
Durango CO, 81303	Project Manager: Andy Hawk	08/17/18 14:48

GCU 139

1808026-01 (Water)

Analyte	Result	RL	MDL	Units	Dilution	Analyzed	Method	Notes	Analyst
General Chemistry									
Alkalinity, Bicarbonate as CaCO ₃ *	<10.0	10.0		mg/L	20	08/10/18	2320 B		JDU
Alkalinity, Carbonate as CaCO ₃ *	880	10.0		mg/L	20	08/10/18	2320 B		JDU
Alkalinity, Hydroxide as CaCO ₃ *	3580	10.0		mg/L	20	08/10/18	2320 B		JDU
Alkalinity, Total as CaCO ₃ *	4460	10.0		mg/L	20	08/10/18	2320 B		JDU
Chloride*	<25.0	25.0	4.82	mg/L	25	08/09/18	EPA300.0		AES
Conductivity*	19300	10.0		uS/cm	1	08/02/18	2510 B		JDU
pH*	12.9			pH Units	1	08/02/18	EPA150.1	H2	JDU
Resistivity	51.8			ohm/cm	1	08/06/18	2510 B		JDU
Total Dissolved Solids*	6220	20.0		mg/L	2	08/07/18	EPA160.1		JDU
Specific Gravity	1.005	0.8000		No Unit	1	08/06/18	Hydrometer		JDU
Sulfate*	86.0	25.0	7.38	mg/L	25	08/09/18	EPA300.0		AES
Total Recoverable Metals by ICP (E200.7)									
Iron*	7.61	0.500	0.174	mg/L	10	08/08/18	EPA200.7		AES
Dissolved Metals by ICP									
Hardness	<6.62	6.62	1.09	mg/L	10	08/08/18	2340 B		AES
Barium*	<0.200	0.200	0.021	mg/L	10	08/08/18	EPA200.7		AES
Calcium*	2.18	1.00	0.128	mg/L	10	08/08/18	EPA200.7		AES
Iron*	<0.500	0.500	0.277	mg/L	10	08/08/18	EPA200.7		AES
Magnesium*	<1.00	1.00	0.188	mg/L	10	08/08/18	EPA200.7		AES
Manganese*	<0.200	0.200	0.027	mg/L	10	08/08/18	EPA200.7		AES
Potassium*	513	10.0	0.955	mg/L	10	08/08/18	EPA200.7		AES
Sodium*	1700	10.0	3.67	mg/L	10	08/08/18	EPA200.7		AES
Strontium*	<1.00	1.00	0.029	mg/L	10	08/08/18	EPA200.7		AES
Cation/Anion Balance	63.03								

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General Chemistry - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B808034 - General Prep - Wet Chem										
Reference (B808034-SRM1)				Prepared & Analyzed: 08/02/18						
pH	8.79		pH Units	8.91		98.7	97.8-102.2			
Batch B808035 - General Prep - Wet Chem										
Reference (B808035-SRM1)				Prepared & Analyzed: 08/02/18						
Conductivity	490	10.0	uS/cm	491		99.8	90-110.1			
Batch B808052 - General Prep - Wet Chem										
Blank (B808052-BLK1)				Prepared & Analyzed: 08/07/18						
Total Dissolved Solids	ND	10.0	mg/L							
Reference (B808052-SRM1)				Prepared & Analyzed: 08/07/18						
Total Dissolved Solids	3420	10.0	mg/L	3440		99.3	85-115			
Batch B808056 - General Prep - Wet Chem										
Blank (B808056-BLK1)				Prepared: 08/07/18 Analyzed: 08/10/18						
Alkalinity, Total as CaCO ₃	ND	10.0	mg/L							
LCS (B808056-BS1)				Prepared: 08/07/18 Analyzed: 08/10/18						
Alkalinity, Total as CaCO ₃	115	10.0	mg/L	100		115	85-115			
LCS Dup (B808056-BSD1)				Prepared: 08/07/18 Analyzed: 08/10/18						
Alkalinity, Total as CaCO ₃	113	10.0	mg/L	100		113	85-115	1.75	20	
Batch B808061 - General Prep - Wet Chem										
Blank (B808061-BLK1)				Prepared: 08/07/18 Analyzed: 08/09/18						
Chloride	ND	1.00	mg/L							
Sulfate	ND	1.00	mg/L							
LCS (B808061-BS1)				Prepared: 08/07/18 Analyzed: 08/09/18						
Chloride	23.8	1.00	mg/L	25.0		95.2	90-110			
Sulfate	23.8	1.00	mg/L	25.0		95.0	90-110			
LCS Dup (B808061-BSD1)				Prepared: 08/07/18 Analyzed: 08/09/18						
Chloride	23.6	1.00	mg/L	25.0		94.5	90-110	0.683	20	
Sulfate	23.7	1.00	mg/L	25.0		94.7	90-110	0.325	20	

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Total Recoverable Metals by ICP (E200.7) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B808039 - Total Rec. 200.7/200.8/200.2										
Blank (B808039-BLK1)										
Iron	ND	0.050	mg/L							Prepared: 08/06/18 Analyzed: 08/08/18
LCS (B808039-BS1)										
Iron	3.97	0.050	mg/L	4.00		99.3	85-115			Prepared: 08/06/18 Analyzed: 08/08/18
LCS Dup (B808039-BSD1)										
Iron	3.94	0.050	mg/L	4.00		98.6	85-115	0.749	20	Prepared: 08/06/18 Analyzed: 08/08/18

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Dissolved Metals by ICP - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B808043 - Diss. 200.7/200.8

Blank (B808043-BLK1)

Prepared & Analyzed: 08/06/18

Barium	ND	0.020	mg/L
Calcium	ND	0.100	mg/L
Iron	ND	0.050	mg/L
Magnesium	ND	0.100	mg/L
Manganese	ND	0.020	mg/L
Potassium	ND	1.00	mg/L
Sodium	ND	1.00	mg/L
Strontium	ND	0.100	mg/L

LCS (B808043-BS1)

Prepared & Analyzed: 08/06/18

Barium	2.50	0.020	mg/L	2.50	100	85-115
Calcium	4.98	0.100	mg/L	5.00	99.5	85-115
Iron	4.95	0.050	mg/L	5.00	99.1	85-115
Magnesium	24.8	0.100	mg/L	25.0	99.3	85-115
Manganese	2.53	0.020	mg/L	2.50	101	85-115
Potassium	10.0	1.00	mg/L	10.0	100	85-115
Sodium	3.97	1.00	mg/L	4.05	97.9	85-115
Strontium	5.16	0.100	mg/L	5.00	103	85-115

LCS Dup (B808043-BSD1)

Prepared & Analyzed: 08/06/18

Barium	2.49	0.020	mg/L	2.50	99.5	85-115	0.509	20
Calcium	4.94	0.100	mg/L	5.00	98.8	85-115	0.716	20
Iron	4.92	0.050	mg/L	5.00	98.5	85-115	0.588	20
Magnesium	24.7	0.100	mg/L	25.0	98.9	85-115	0.324	20
Manganese	2.52	0.020	mg/L	2.50	101	85-115	0.544	20
Potassium	9.94	1.00	mg/L	10.0	99.4	85-115	1.04	20
Sodium	3.92	1.00	mg/L	4.05	96.8	85-115	1.14	20
Strontium	5.09	0.100	mg/L	5.00	102	85-115	1.30	20

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Notes and Definitions

H2 Sample analysis performed past hold time specified by the method.

DET Analyte DETECTED

ND Analyte NOT DETECTED at or above the reporting limit

NR Not Reported

dry Sample results reported on a dry weight basis
*Results reported on as received basis unless designated as dry.

RPD Relative Percent Difference

LCS Laboratory Control Sample (Blank Spike)

RL Report Limit

MDL Method Detection Limit

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[illegible]

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Relinquished By:  Relinquished By: Christine Clark Relinquished By: kangaroo express		Date: 7/31/18 Time: 1653 Date: 8/1/18 Time: 1655 Date: 08/02/18 Time: 0845	Received By: Christine Clark Received By: kangaroo express Received By: 	ADDITIONAL REMARKS: 0.6/0.4°C #1 on ice in DGD
Delivered By: (Circle One) Sampler - UPS - FedEx - Kangaroo - Other:		Temperature at receipt: 33.8°C No ice	CHECKED BY: 	Report to State? (Circle) Yes No

* Chain of Custody must be signed in "Relinquished By:" as an acceptance of services and all applicable charges.



NEW MEXICO ENERGY, MINERALS
AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION
AZTEC DISTRICT OFFICE
1000 RIO BRAZOS ROAD
AZTEC, NM 87410
(505) 334-6178 FAX: (505) 334-6170
<http://www.emnrd.state.nm.us/ocd/>

BRADENHEAD TEST REPORT

(Submit 2 copies to above address)

Date of Test 7-31-18 Operator BP America Production Company API # 3004507432

Property Name GCU 139-DK Location: Unit P Section 18 Township 28 Range 11
(Well Name and Number)

Pressure (Shut-in or Producing) Tubing 18 Intermediate 0 Casing 30 Bradenhead 2

OPEN BRADENHEAD AND INTERMEDIATE TO ATMOSPHERE INDIVIDUALLY FOR 15 MINUTES EACH

Time	Bradenhead			Intermediate		Bradenhead Flowed	Intermediate Flowed
	BH Blowdown	Casing Monitor	Intermediate Monitor	Intermediate Blowdown	Casing Monitor		
5 minutes	0	27	0	0	43	Steady Flow	
10 minutes	0	32	0	0	44	Surges	
15 minutes	0	32	0	0	46	Down to Nothing	456L 256L
20 minutes						No Flow	
25 minutes						Gas	
30 minutes						Gas and Water	
5 minute SI	0	40	0	0	48	Water	

If bradenhead flowed water, check all of the descriptions that apply below:

Clear X Fresh _____ Salty _____ Sulfur _____ Black NMOCD

5 Minute Shut-in Bradenhead 0 Intermediate 0

REMARKS:

WATER SAMPLE TAKEN

By SCOTT WILLARD Witness _____
FIELD TECH
(Position)