

Valance 33#2  
30 - 045 - 32689



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

11 November 2019

Kevin Fredrickson  
Hilcorp  
382 Road 3100  
Aztec, NM 87410  
RE: API - Oil Field "Complete Water"

Enclosed are the results of analyses for samples received by the laboratory on 11/06/19 08:30.  
If you need any further assistance, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads 'Debbie Zufelt'.

Debbie Zufelt  
Reports Manager

**NMOC**  
**NOV 13 2019**  
**DISTRICT III**

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.



dzufelt@greenanalytical.com p: 970.247.4220 f: 970.247.4227 75 Suttle Street Durango, CO 81303

www.GreenAnalytical.com

Hilcorp  
382 Road 3100  
Aztec NM, 87410

Project: API - Oil Field "Complete Water"  
Project Name / Number: Asset: North  
Project Manager: Kevin Fredrickson

Reported:  
11/11/19 17:00

#### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received	Notes
Valance 33 #2 / Tubing	1911055-01	Water	11/06/19 08:00	11/06/19 08:30	
Valance 33 #2 / Bradenhead	1911055-02	Water	11/06/19 08:00	11/06/19 08:30	

NMOC  
NOV 13 2019  
DISTRICT III

Green Analytical Laboratories

Debbie Zufelt, Reports Manager

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. In no event shall Green Analytical Laboratories be liable for incidental or consequential damages. GALs liability, and clients exclusive remedy for any claim arising, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever, shall be deemed waived unless made in writing and received within thirty days after completion of the applicable service.



dzufelt@greenanalytical.com p: 970.247.4220 f: 970.247.4227 75 Suttle Street Durango, CO 81303

www.GreenAnalytical.com

Hilcorp  
382 Road 3100  
Aztec NM, 87410

Project: API - Oil Field "Complete Water"  
Project Name / Number: Asset: North  
Project Manager: Kevin Fredrickson

Reported:  
11/11/19 17:00

**Valance 33 #2 / Tubing  
Area 2**

**1911055-01 (Produced Water)**

Analyte	Result	RL	MDL	Units	Dilution	Analyzed	Method	Notes	Analyst
<b>General Chemistry</b>									
Alkalinity, Bicarbonate as CaCO <sub>3</sub> *	320	10.0		mg/L	5	11/07/19 15:30	2320 B		VJL
Alkalinity, Carbonate as CaCO <sub>3</sub> *	<10.0	10.0		mg/L	5	11/07/19 15:30	2320 B		VJL
Alkalinity, Hydroxide as CaCO <sub>3</sub> *	<10.0	10.0		mg/L	5	11/07/19 15:30	2320 B		VJL
Alkalinity, Total as CaCO <sub>3</sub> *	320	10.0	3.06	mg/L	5	11/07/19 15:30	2320 B		VJL
Chloride*	1260	100	19.3	mg/L	100	11/06/19 17:02	EPA300.0		AES
Conductivity*	5230	10.0		umho/cm @ 25.0°C	1	11/06/19 08:15	2510 B		FGH
pH*	8.02			pH Units	1	11/06/19 08:10	EPA150.1		FGH
Resistivity	191			ohm/cm	1	11/06/19 08:10	2510 B		FGH
Total Dissolved Solids*	2660	10.0		mg/L	1	11/07/19 14:22	EPA160.1		VJL
Specific Gravity	1.001	0.8000		No Unit	1	11/06/19 13:50	ASTM D1429-03		VJL
Sulfate*	<29.5	100	29.5	mg/L	100	11/06/19 17:02	EPA300.0		AES
<b>Potentially Dissolved Metals by ICP</b>									
Barium*	2.04	0.400	0.042	mg/L	20	11/06/19 17:03	EPA200.7		AES
Calcium*	8.18	2.00	0.257	mg/L	20	11/06/19 17:03	EPA200.7		AES
Hardness, as CaCO <sub>3</sub>	20.4	13.2	2.19	mg/L	20	11/06/19 17:03	2340 B		AES
Iron*	2.58	1.00	0.553	mg/L	20	11/06/19 17:03	EPA200.7		AES
Lead*	<2.00	2.00	0.142	mg/L	20	11/06/19 17:03	EPA200.7		AES
Magnesium*	<2.00	2.00	0.375	mg/L	20	11/06/19 17:03	EPA200.7		AES
Manganese*	0.058	0.400	0.054	mg/L	20	11/06/19 17:03	EPA200.7	J	AES
Potassium*	<20.0	20.0	1.91	mg/L	20	11/06/19 17:03	EPA200.7		AES
Silica (SiO <sub>2</sub> )	0.00			mg/L	20	11/06/19 17:03	Calculation		AES
Silicon	<10.0	10.0	0.534	mg/L	20	11/06/19 17:03	EPA200.7		AES
Sodium*	998	20.0	7.34	mg/L	20	11/06/19 17:03	EPA200.7		AES
Strontium*	<2.00	2.00	0.057	mg/L	20	11/06/19 17:03	EPA200.7		AES
Zinc*	<2.00	2.00	0.043	mg/L	20	11/06/19 17:03	EPA200.7		AES
Cation/Anion Balance	2.45								


Green Analytical Laboratories

*Debbie Zufelt*

Debbie Zufelt, Reports Manager

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. In no event shall Green Analytical Laboratories be liable for incidental or consequential damages. GALs liability, and clients exclusive remedy for any claim arising, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever, shall be deemed waived unless made in writing and received within thirty days after completion of the applicable service.

Client: <b>Hilcorp</b>	Asset: <b>North</b>	Phone# <b>505-634-6059</b>	Contact <b>Kevin Fredrickson</b>
Address: 382 Road 3100, Aztec, NM. 87410		E-Mail Address <a href="mailto:kfredrickson@hilcorp.com">kfredrickson@hilcorp.com</a>	



75 Suttle Street  
Durango, CO 81303  
Phone: 970-247-4220  
FAX: 970-247-4227

CHAIN OF CUSTODY RECORD	
GAL Work Order #	1911-055
PO#	
Project Name:	

**Sample Location:**

(1)BumperSpring, (2)CompressorDischarge, (3)Flowline, (4)Meter, (5)Oil Tank  
(6)PigLauncher, (7)PigReceiver, (8)Pipeline, (9)Pit Tank, (10)PostFilter, (11)PreFilter  
(12)SeparatorInlet, (13)SeparatorOutlet, (14)SeparatorDump, (15)SWDInlet  
(16)SWDOutlet, (17)TransferPump, (18)ValveCan, (19)WaterTank, (20)Wellhead  
(21)Other

**Sample Type:**

(1)Casing, (2)CO2GasTube, (3)Coupon, (4)Water, (5)H2SGasTube, (6)Metals  
(7)O2GasTube, (8)PipeSection, (9)Residual, (10)Sludge, (11)Solid, (12)Tubing, (13)Other

Collection								Preservative				Analyses Required			
Post Rig water	Area	Date	Time	Collected By: (Init.)	Sample Location	Sample Type	No. of Containers	Filtered: Y / N	Unpreserved	H2SO4	Other:	Iron and Manganese	Phosphate	Full Water API	Bradenhead
1 Valance 33 # 2 / Tubing	2	11/6/2019	8am	NH	20	4	1	N	X					X	
2 Valance 33 # 2 / Bradenhead	2	11/6/2019	8am	NH	20	4	1	N	X						X
5.															
6.															
7.															
8.															
9.															
10.															
11.															
12.															
13.															
14.															
15.															
16.															
17.															
18.															
19.															
20.															

Relinquished by:	Date:	Time:	Received By:	Date:	Time:
<i>[Signature]</i>	11-6-19	8:30am	<i>[Signature]</i>	11-6-19	0830

16.3 / 16.1°C  
No Ice

5 day TAT