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[www.greenanalytical.com](http://www.greenanalytical.com)

25 July 2023

Kevin Fredrickson  
Hilcorp  
382 CR 3100  
Aztec, NM 87410  
RE: North

Enclosed are the results of analyses for samples received by the laboratory on 07/20/23 12:15. The data to follow was performed, in whole or in part, by Green Analytical Laboratories. Any data that was performed by a subcontract laboratory is included within the GAL report, or with an additional report attached.

If you need any further assistance, please feel free to contact me.

Sincerely,

A handwritten signature in blue ink that reads 'Veronica J. Wells'.

Veronica Wells  
Project 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. TNI Certificate Number: T104704514-23-17

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. TNI Certificate Number: T104704398-23-16



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Hilcorp 382 CR 3100 Aztec NM, 87410	Project: Braden Head Project Name / Number: North Project Manager: Kevin Fredrickson	Reported: 07/25/23 16:10
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## ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received	Notes
Sam Cooley 1	2307190-04	Water	07/19/23 15:00	07/20/23 12:15	

Green Analytical Laboratories

A handwritten signature in blue ink that reads 'Veronica J. Wells'.

Veronica Wells, Project Manager

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Page 2 of 9 2307190 GAL FINAL 07 25 23 1610 07/25/23 16:10:17



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Project: Braden Head  
Project Name / Number: North  
Project Manager: Kevin Fredrickson

Reported:  
07/25/23 16:10

**Sam Cooley 1****2307190-04 (Produced Water)****Sampled Date: 07/19/23 15:00**

Analyte	Result	RL	MDL	Units	Dilution	Analyzed	Method	Notes	Analyst
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**General Chemistry**

Alkalinity, Total as CaCO <sub>3</sub> *	495	10.0	6.06	mg/L	5	07/25/23 00:00	2320 B		AES
Alkalinity, Hydroxide as CaCO <sub>3</sub> *	<10.0	10.0	6.06	mg/L	5	07/25/23 00:00	2320 B		AES
Alkalinity, Carbonate as CaCO <sub>3</sub> *	80.0	10.0	6.06	mg/L	5	07/25/23 00:00	2320 B		AES
Alkalinity, Bicarbonate as CaCO <sub>3</sub> *	415	10.0	6.06	mg/L	5	07/25/23 00:00	2320 B		AES
Chloride*	2180	100	5.55	mg/L	100	07/21/23 01:39	EPA300.0		AWG
Sulfate*	10400	100	12.4	mg/L	100	07/21/23 01:39	EPA300.0		AWG
Total Dissolved Solids*	19500	40.0		mg/L	4	07/21/23 14:16	EPA160.1		CAI

**Potentially Dissolved Metals by ICP**

Calcium*	155	2.00	1.24	mg/L	20	07/25/23 11:54	EPA200.7		AES
Iron*	4.24	1.00	0.302	mg/L	20	07/25/23 11:54	EPA200.7		AES
Magnesium*	25.7	2.00	0.702	mg/L	20	07/25/23 11:54	EPA200.7		AES
Sodium*	5530	20.0	8.18	mg/L	20	07/25/23 11:54	EPA200.7		AES

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Veronica Wells, Project Manager

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07/25/23 16:10

## General Chemistry - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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## Batch B232090 - IC- Ion Chromatograph

## Blank (B232090-BLK1)

Prepared &amp; Analyzed: 07/20/23

Chloride	ND	1.00	mg/L							
Sulfate	ND	1.00	mg/L							

## LCS (B232090-BS1)

Prepared &amp; Analyzed: 07/20/23

Chloride	25.8	1.00	mg/L	25.0		103	90-110			
Sulfate	24.8	1.00	mg/L	25.0		99.1	90-110			

## LCS Dup (B232090-BSD1)

Prepared &amp; Analyzed: 07/20/23

Chloride	25.9	1.00	mg/L	25.0		103	90-110	0.0813	20	
Sulfate	24.8	1.00	mg/L	25.0		99.4	90-110	0.282	20	

## Batch B232097 - General Prep - Wet Chem

## Blank (B232097-BLK1)

Prepared &amp; Analyzed: 07/21/23

Total Dissolved Solids	ND	10.0	mg/L							
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## Reference (B232097-SRM1)

Prepared &amp; Analyzed: 07/21/23

Total Dissolved Solids	375	10.0	mg/L	400		93.7	85-115			
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## Batch B232121 - General Prep - Wet Chem

## Blank (B232121-BLK1)

Prepared: 07/24/23 Analyzed: 07/25/23

Alkalinity, Bicarbonate as CaCO <sub>3</sub>	ND	10.0	mg/L							
Alkalinity, Carbonate as CaCO <sub>3</sub>	ND	10.0	mg/L							
Alkalinity, Hydroxide as CaCO <sub>3</sub>	ND	10.0	mg/L							
Alkalinity, Total as CaCO <sub>3</sub>	ND	10.0	mg/L							

## LCS (B232121-BS1)

Prepared: 07/24/23 Analyzed: 07/25/23

Alkalinity, Total as CaCO <sub>3</sub>	92.0	10.0	mg/L	100		92.0	85-115			
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## LCS Dup (B232121-BSD1)

Prepared: 07/24/23 Analyzed: 07/25/23

Alkalinity, Total as CaCO <sub>3</sub>	99.0	10.0	mg/L	100		99.0	85-115	7.33	20	
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## Reference (B232121-SRM1)

Prepared: 07/24/23 Analyzed: 07/25/23

Alkalinity, Total as CaCO <sub>3</sub>	79.0	10.0	mg/L	72.7		109	85-115			
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Project Manager: Kevin Fredrickson

Reported:  
07/25/23 16:10

## Potentially 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 B232127 - Potentially Dissolved ICP

## Blank (B232127-BLK1)

Prepared &amp; Analyzed: 07/25/23

Calcium	ND	0.100	mg/L							
Iron	ND	0.050	mg/L							
Magnesium	ND	0.100	mg/L							
Sodium	ND	1.00	mg/L							

## LCS (B232127-BS1)

Prepared &amp; Analyzed: 07/25/23

Calcium	3.84	0.100	mg/L	4.00		96.0	85-115			
Iron	3.88	0.050	mg/L	4.00		97.1	85-115			
Magnesium	19.7	0.100	mg/L	20.0		98.5	85-115			
Sodium	3.34	1.00	mg/L	3.24		103	85-115			

## LCS Dup (B232127-BSD1)

Prepared &amp; Analyzed: 07/25/23

Calcium	3.86	0.100	mg/L	4.00		96.4	85-115	0.355	20	
Iron	3.91	0.050	mg/L	4.00		97.6	85-115	0.591	20	
Magnesium	19.7	0.100	mg/L	20.0		98.6	85-115	0.121	20	
Sodium	3.34	1.00	mg/L	3.24		103	85-115	0.0127	20	

## Notes and Definitions

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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# Project Information

Printed: 07/20/2023 1:29 pm

**Hilcorp**

382 CR 3100

Aztec, NM 87410

Laboratory PM: Veronica Wells

**Hilcorp**

Phone: (505) 599-4005

Fax: (505) 599-4005

**Project Name:** Braden Head  
**Project Number:**  
**Client PM:** Kevin Fredrickson  
**Comments:**

Analysis	Comment
Chloride [IC]	
pH	
Sulfate [IC]	
Total Dissolved Solids [TDS]	

# Project Information

Printed: 07/20/2023 1:29 pm

**Hilcorp**

382 CR 3100

Aztec, NM 87410

Laboratory PM: Veronica Wells

**Hilcorp**

Phone: (505) 599-4005

Fax: (505) 599-4005

**Project Name:** Formation Comparison**Project Number:****Client PM:** Kevin Fredrickson**Comments:**

Analysis	Comment
Alkalinity, Total	
Calcium Potentially Dissolved by ICP	
Chloride [IC]	
Iron Potentially Dissolved by ICP	
Magnesium Potentially Dissolved by ICP	
Sodium Potentially Dissolved by ICP	
Sulfate [IC]	
Total Dissolved Solids [TDS]	

Potentially Dissolved Metals are not filtered.





## SAMPLE CONDITION RECEIPT FORM

Client Name: HincorpWork Order # 2307-190Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☒ Client ☐ KangarooCustody Seals on Box/Cooler Present: ☐ Yes ☒ NoSeals Intact: ☐ Yes ☐ NoThermometer Used: #2 Samples on ice, cooling process has begun: ☐ Yes ☒ NoType of Ice: ☐ Wet ☐ Blue ☒ NoneCooler Temp: Observed Temp: 26.5 °C Correction Factor: 4 °C Final Temp: 25.5 °C

\* Temp should be above freezing to 6°C

Date/Initials of person examining contents: 7/20/23  
[Signature]

Labeled by initials: \_\_\_\_\_  
 (if different than above)

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	3.
Sampler Name and Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	4.
Samples arrived within hold time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5.
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input type="checkbox"/> No	6. <u>pH /</u>
Rush Turn Around Time Requested:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	7. <u>3 Day T.A.T.</u>
Sufficient Volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	8.
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10.
Dissolved Testing Needed:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	11. <u>POURED OFF / ACIDIFIED 7/20 @ 13:40</u>
Field Filtered: <input type="checkbox"/> Yes <input type="checkbox"/> No		
Sample Labels match COC: -Includes Date/Time/ID	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	12.
Matrix:	<input checked="" type="checkbox"/> WT <input type="checkbox"/> SL <input type="checkbox"/> OT	
Trip Blank Present:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	13.
Trip Blank Custody Seals Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	

## Client Notification/Resolution:

Person Contacted: \_\_\_\_\_

Date/Time: \_\_\_\_\_

Comments/Resolution: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**District I**  
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**District II**  
811 S. First St., Artesia, NM 88210  
Phone:(575) 748-1283 Fax:(575) 748-9720  
**District III**  
1000 Rio Brazos Rd., Aztec, NM 87410  
Phone:(505) 334-6178 Fax:(505) 334-6170  
**District IV**  
1220 S. St Francis Dr., Santa Fe, NM 87505  
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico  
Energy, Minerals and Natural Resources  
Oil Conservation Division  
1220 S. St Francis Dr.  
Santa Fe, NM 87505

CONDITIONS  
  
Action 244511

CONDITIONS

Operator: HILCORP ENERGY COMPANY 1111 Travis Street Houston, TX 77002	OGRID: 372171
	Action Number: 244511
	Action Type: [UF-GA] Gas Analysis (GAS ANALYSIS)

CONDITIONS

Created By	Condition	Condition Date
mkuehling	TDS ND	9/20/2023