

Additional Information

Formation Water Analysis
12/14/20



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03 November 2020

Dave Brown
DJR Operating
1 Road 3263
Aztec, NM 87410
RE: API

Enclosed are the results of analyses for samples received by the laboratory on 10/30/20 11:07.
If you need any further assistance, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Debbie Zufelt". The signature is written in a cursive, flowing style.

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.



DJR Operating 1 Road 3263 Aztec NM, 87410	Project: API Project Name / Number: North Alamito WDW #1 Project Manager: Dave Brown	Reported: 11/03/20 15:47
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ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received	Notes
North Alamito WDW #1	2010288-01	Water	10/29/20 15:30	10/30/20 11:07	

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North Alamito WDW #1

2010288-01 (Water)

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

Alkalinity, Bicarbonate as CaCO3*	290	10.0	7.16	mg/L	5	10/30/20 14:00	2320 B		JDA
Alkalinity, Carbonate as CaCO3*	<10.0	10.0		mg/L	5	10/30/20 14:00	2320 B		JDA
Alkalinity, Hydroxide as CaCO3*	<10.0	10.0		mg/L	5	10/30/20 14:00	2320 B		JDA
Alkalinity, Total as CaCO3*	290	10.0	7.16	mg/L	5	10/30/20 14:00	2320 B		JDA
Chloride*	2350	200	17.7	mg/L	200	11/02/20 12:04	EPA300.0		JDA
Conductivity*	19300	1.00		umho/cm @ 25.0°C	1	10/30/20 13:35	2510 B		JDA
pH*	7.40			pH Units	1	10/30/20 11:15	EPA150.1		JDA
Resistivity	51.8			ohm/cm	1	10/30/20 13:35	2510 B		JDA
Total Dissolved Solids*	13200	20.0		mg/L	2	10/30/20 14:29	EPA160.1		JDA
Specific Gravity	1.011	0.8000		No Unit	1	10/30/20 14:00	ASTM D1429-03		JDA
Sulfate*	5300	200	30.5	mg/L	200	11/02/20 12:04	EPA300.0		JDA

Total Recoverable Metals by ICP (E200.7)

Iron*	55.1	1.25	0.407	mg/L	25	11/03/20 11:33	EPA200.7		AES
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Dissolved Metals by ICP

Hardness	494	16.5	3.45	mg/L	25	11/03/20 14:30	2340 B		AES
Barium*	<0.500	0.500	0.039	mg/L	25	11/03/20 14:30	EPA200.7		AES
Calcium*	178	2.50	0.415	mg/L	25	11/03/20 14:30	EPA200.7		AES
Iron*	<1.25	1.25	0.460	mg/L	25	11/03/20 14:30	EPA200.7		AES
Magnesium*	12.0	2.50	0.587	mg/L	25	11/03/20 14:30	EPA200.7		AES
Manganese*	0.514	0.500	0.039	mg/L	25	11/03/20 14:30	EPA200.7		AES
Potassium*	1280	25.0	3.25	mg/L	25	11/03/20 14:30	EPA200.7		AES
Sodium*	3110	25.0	2.51	mg/L	25	11/03/20 14:30	EPA200.7		AES
Strontium*	8.44	2.50	0.104	mg/L	25	11/03/20 14:30	EPA200.7		AES

Cation/Anion Balance -0.98

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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 B202316 - General Prep - Wet Chem

Blank (B202316-BLK1)		Prepared & Analyzed: 10/30/20								
Total Dissolved Solids	ND	10.0	mg/L							
Duplicate (B202316-DUP1)		Source: 2010276-01 Prepared & Analyzed: 10/30/20								
Total Dissolved Solids	415	10.0	mg/L		395			4.94	20	
Reference (B202316-SRM1)		Prepared & Analyzed: 10/30/20								
Total Dissolved Solids	340	10.0	mg/L	380		89.5	85-115			

Batch B202317 - General Prep - Wet Chem

Blank (B202317-BLK1)		Prepared & Analyzed: 10/30/20								
Alkalinity, Total as CaCO3	ND	10.0	mg/L							
LCS (B202317-BS1)		Prepared & Analyzed: 10/30/20								
Alkalinity, Total as CaCO3	105	10.0	mg/L	100		105	85-115			
LCS Dup (B202317-BSD1)		Prepared & Analyzed: 10/30/20								
Alkalinity, Total as CaCO3	96.0	10.0	mg/L	100		96.0	85-115	8.96	20	

Batch B202318 - General Prep - Wet Chem

Duplicate (B202318-DUP1)		Source: 2010288-01 Prepared & Analyzed: 10/30/20								
Specific Gravity	1.011	0.8000	No Unit		1.011			0.00	20	

Batch B202324 - General Prep - Wet Chem

Blank (B202324-BLK1)		Prepared & Analyzed: 11/02/20								
Chloride	ND	1.00	mg/L							
Sulfate	ND	1.00	mg/L							
LCS (B202324-BS1)		Prepared & Analyzed: 11/02/20								
Chloride	23.4	1.00	mg/L	25.0		93.4	90-110			
Sulfate	24.6	1.00	mg/L	25.0		98.3	90-110			
LCS Dup (B202324-BSD1)		Prepared & Analyzed: 11/02/20								
Chloride	24.4	1.00	mg/L	25.0		97.5	90-110	4.23	20	
Sulfate	25.1	1.00	mg/L	25.0		100	90-110	1.95	20	

Batch B202330 - General Prep - Wet Chem

Duplicate (B202330-DUP1)		Source: 2010288-01 Prepared & Analyzed: 10/30/20								
Conductivity	19500	1.00	umho/cm @ 25.0°C		19300			0.774	20	
Reference (B202330-SRM1)		Prepared & Analyzed: 10/30/20								
Conductivity	623	1.00	umho/cm @ 25.0°C	599		104	90-110			

Batch B202331 - General Prep - Wet Chem

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**General Chemistry - Quality Control
(Continued)**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B202331 - General Prep - Wet Chem (Continued)

Duplicate (B202331-DUP1)		Source: 2010288-01		Prepared & Analyzed: 10/30/20						
pH	7.43		pH Units		7.40			0.405	20	
Reference (B202331-SRM1)		Prepared & Analyzed: 10/30/20								
pH	6.99		pH Units	7.00		99.9	98.57-101.42			

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
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Batch B202320 - Total Rec. 200.7/200.8/200.2

Blank (B202320-BLK1)		Prepared: 11/02/20 Analyzed: 11/03/20								
Iron	ND	0.050	mg/L							
LCS (B202320-BS1)		Prepared: 11/02/20 Analyzed: 11/03/20								
Iron	4.06	0.050	mg/L	4.00		102	85-115			
LCS Dup (B202320-BSD1)		Prepared: 11/02/20 Analyzed: 11/03/20								
Iron	4.20	0.050	mg/L	4.00		105	85-115	3.29	20	

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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 B202342 - Diss. 200.7/200.8

Blank (B202342-BLK1)

Prepared & Analyzed: 11/03/20

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 (B202342-BS1)

Prepared & Analyzed: 11/03/20

Barium	2.31	0.020	mg/L	2.50		92.5	85-115			
Calcium	4.82	0.100	mg/L	5.00		96.4	85-115			
Iron	4.70	0.050	mg/L	5.00		94.0	85-115			
Magnesium	24.6	0.100	mg/L	25.0		98.6	85-115			
Manganese	2.36	0.020	mg/L	2.50		94.4	85-115			
Potassium	10.0	1.00	mg/L	10.0		100	85-115			
Sodium	3.95	1.00	mg/L	4.05		97.6	85-115			
Strontium	4.66	0.100	mg/L	5.00		93.3	85-115			

LCS Dup (B202342-BSD1)

Prepared & Analyzed: 11/03/20

Barium	2.27	0.020	mg/L	2.50		90.6	85-115	2.02	20	
Calcium	4.55	0.100	mg/L	5.00		91.1	85-115	5.72	20	
Iron	4.48	0.050	mg/L	5.00		89.7	85-115	4.73	20	
Magnesium	23.3	0.100	mg/L	25.0		93.4	85-115	5.45	20	
Manganese	2.24	0.020	mg/L	2.50		89.5	85-115	5.27	20	
Potassium	9.61	1.00	mg/L	10.0		96.1	85-115	4.02	20	
Sodium	3.77	1.00	mg/L	4.05		93.2	85-115	4.68	20	
Strontium	4.59	0.100	mg/L	5.00		91.9	85-115	1.55	20	

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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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