

# Summit Scientific

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4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

June 24, 2022

Vince DeCianne

Whiting Oil & Gas

retail

Denver, CO 80215

RE: Emerald 147 Closure

Work Order #2206313

Enclosed are the results of analyses for samples received by Summit Scientific on 06/17/22 16:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'P. Shrewsbury', with a stylized, cursive script.

Paul Shrewsbury

President



Whiting Oil & Gas  
retail  
Denver CO, 80215

Project: Emerald 147 Closure

Project Number: 20221740.001A

Project Manager: Vince DeCianne

**Reported:**  
06/24/22 14:23

#### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
20220615_Emerald_147_AOC@4ft	2206313-01	Soil	06/15/22 10:20	06/17/22 16:30
20220615_Emerald_147_WH@2ft	2206313-02	Soil	06/15/22 10:25	06/17/22 16:30

Summit Scientific

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# Summit Scientific

S<sub>2</sub>

2206313

4653 Table Mountain Drive ♦ Golden, Colorado 80403  
303-277-9310 ♦ 303-374-5933 (f)

Page: 1 of 1

Client: Whiting Oil & Gas

Project Manager: Vince DeCianne

Address: 707 17th Street, Suite 3000

E-Mail: jveith@kleinfelder.com

City/State/Zip: Denver, CO 80202

kyle.waggoner@whiting.com

Phone: 970-309-6553

Project Name: Emerald 147 Closure

Sampler Name: Jordan Veith

Project Number: 20221740.001A

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested						Special Instructions		
					HCl	HNO <sub>3</sub>	None	Other	Water	Soil	Air-Canister #	Other	COGCC Table 915-1	Arsenic, EC, pH, SAR	EC	SAR	pH	Arsenic			
1	20220615 Emerald 147 - ACC-47	6/15/22	10:20	3			X			X							X				
2	20220615 Emerald 147 - WHD-24	6/15/22	10:25	3			X			X							X				
3																					
4																					
5																					
6																					
7																					
8																					
9																					
10																					

*Joe Veith*  
6/15/2022

Relinquished by: <i>Joe Veith</i>	Date/Time: 6/15/2022 15:30	Received by:	Date/Time:	<b>Turn Around Time</b> (Check) Same Day _____ 72 hours _____ 24 hours _____ hours _____ <u>Standard</u> _____ 48 hours _____ <b>Sample Integrity:</b> _____ Upon Receipt: _____ Samples Intact: _____ Yes No	<b>Notes:</b>
Relinquished by:	Date/Time:	Received by:	Date/Time:		
Relinquished by:	Date/Time:	Received by:	Date/Time:		

*MUM* 6/17/22 16:30

S<sub>2</sub>

## Sample Receipt Checklist

S2 Work Order# 2206313

Client: Whiting Client Project ID: Emerald 147 Closure

Shipped Via: H.D./P.U./FedEx/UPS/USPS/Other \_\_\_\_\_ Airbill #: \_\_\_\_\_

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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Matrix (Check all that apply) Air ☐ Soil/Solid ☒ Water ☐ Other ☐Temp (°C) 8.1Thermometer # 002

	Yes	No	N/A	Comments (if any)
If samples require cooling, is the temperature < 6 °C <sup>(1)</sup> ? <b>NOTE:</b> If samples are delivered the same day of sampling, this requirement is met if there is evidence that cooling has begun.		<input checked="" type="checkbox"/>		
Were all samples received intact <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
If custody seals are present, are they intact <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Are samples due within 48 hours present?		<input checked="" type="checkbox"/>		
Are water samples with short hold times present? Note the short hold analysis in the comments column - pH, Nitrate/Nitrite, Ferrous Iron (Fe <sup>2+</sup> ), Hexavalent Chromium (Cr <sup>6+</sup> , Cr VI), COD/BOD, Total Coliform, E. Coli, Total Residual Chlorine (TRC), Dissolved Oxygen		<input checked="" type="checkbox"/>		
Is a chain-of-custody (COC) form present and filled out completely <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client w/ date and time recorded <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
For volatiles in water – is there headspace present? <b>If yes, contact client and note in narrative.</b>			<input checked="" type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling) <sup>(1)</sup> ? Note the type of preservative in the comments column – HCl, H <sub>2</sub> SO <sub>4</sub> , NaOH, HNO <sub>3</sub> , etc.			<input checked="" type="checkbox"/>	
If samples are acid preserved for metals, is the pH ≤ 2 <sup>(1)</sup> ? Record the pH in Comments.			<input checked="" type="checkbox"/>	
If dissolved metals are requested, were samples field filtered?			<input checked="" type="checkbox"/>	
Additional Comments (if any):				

<sup>(1)</sup> If NO, then contact the client before proceeding with analysis and note in case narrative.
  
 \_\_\_\_\_  
 Custodian Printed Name

6/17/22 16:30  
 Date/Time



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Denver CO, 80215

Project: Emerald 147 Closure

Project Number: 20221740.001A

Project Manager: Vince DeCianne

**Reported:**  
06/24/22 14:23

**20220615\_Emerald\_147\_AOC@4ft**  
**2206313-01 (Soil)**

**Summit Scientific**

**Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction**

Date Sampled: **06/15/22 10:20**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Calcium	<b>1570</b>	0.0604	mg/L dry	1	BFF0613	06/23/22	06/24/22	EPA 6020B	
Magnesium	<b>653</b>	0.0604	"	"	"	"	"	"	
Sodium	<b>134</b>	0.0604	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **06/15/22 10:20**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Sodium Adsorption Ratio	<b>0.717</b>	0.00100	units	1	BFF0644	06/24/22	06/24/22	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **06/15/22 10:20**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	<b>82.8</b>		%	1	BFF0605	06/23/22	06/24/22	Calculation	

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Project: Emerald 147 Closure  
Project Number: 20221740.001A  
Project Manager: Vince DeCianne

**Reported:**  
06/24/22 14:23

**20220615\_Emerald\_147\_WH@2ft**  
**2206313-02 (Soil)**

**Summit Scientific**

**Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction**

Date Sampled: **06/15/22 10:25**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Calcium	1280	0.0567	mg/L dry	1	BFF0613	06/23/22	06/24/22	EPA 6020B	
Magnesium	198	0.0567	"	"	"	"	"	"	
Sodium	135	0.0567	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **06/15/22 10:25**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Sodium Adsorption Ratio	0.927	0.00100	units	1	BFF0644	06/24/22	06/24/22	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **06/15/22 10:25**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	88.2		%	1	BFF0605	06/23/22	06/24/22	Calculation	

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**Reported:**  
06/24/22 14:23

**Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction - Quality Control**

**Summit Scientific**

Analyte	Result	Reporting		Spike Level	Source Result	%REC		RPD	Limit	Notes
		Limit	Units			%REC	Limits			

**Batch BFF0613 - General Preparation**

**Blank (BFF0613-BLK1)**

Prepared: 06/23/22 Analyzed: 06/24/22

Calcium	ND	0.0500	mg/L wet
Magnesium	ND	0.0500	"
Sodium	ND	0.0500	"

**LCS (BFF0613-BS1)**

Prepared: 06/23/22 Analyzed: 06/24/22

Calcium	514	0.0500	mg/L wet	500	103	70-130
Magnesium	555	0.0500	"	500	111	70-130
Sodium	512	0.0500	"	500	102	70-130

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Project: Emerald 147 Closure

Project Number: 20221740.001A

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**Reported:**  
06/24/22 14:23

**Physical Parameters by APHA/ASTM/EPA Methods - Quality Control**

**Summit Scientific**

Analyte	Result	Reporting		Spike Level	Source		%REC		RPD	
		Limit	Units		Result	%REC	Limits	RPD	Limit	Notes

**Batch BFF0605 - General Preparation**

**Duplicate (BFF0605-DUP1)**

**Source: 2206305-01**

Prepared: 06/23/22 Analyzed: 06/24/22

% Solids	86.2	%	85.4	0.911	20
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**Reported:**  
06/24/22 14:23

### 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
RPD	Relative Percent Difference