

# Summit Scientific

---

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

August 27, 2021

Vince DeCianne  
Whiting Oil & Gas  
retail  
Denver, CO 80215

RE: Rangely Sampling  
Work Order #2107460

Enclosed are the results of analyses for samples received by Summit Scientific on 07/30/21 11:25. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Muri Premer". The signature is written in a cursive style with a large initial "M" and a long, sweeping underline.

Muri Premer For Paul Shrewsbury  
President



Whiting Oil & Gas  
retail  
Denver CO, 80215

Project: Rangely Sampling

Project Number: [none]

Project Manager: Vince DeCianne

**Reported:**  
08/27/21 14:30

**ANALYTICAL REPORT FOR SAMPLES**

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Emerald 182_01	2107460-01	Soil	07/27/21 12:00	07/30/21 11:25
Emerald 182_02	2107460-02	Soil	07/27/21 12:35	07/30/21 11:25
Emerald 182_03	2107460-03	Soil	07/27/21 13:00	07/30/21 11:25

Summit Scientific

*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.*

# Summit Scientific

2107460

S<sub>2</sub>

4653 Table Mountain Drive ♦ Golden, Colorado 80403  
303-277-9310

Page 1 of 1

Client: Whiting Oil + Gas (from Kleinfelder) Project Manager: Vince DeCiarre  
 Address: 707 17th St Suite 3000 E-Mail: jveith@kleinfelder.com  
 City/State/Zip: Denver CO 80202 Kyle Waggoner@whiting.com  
 Phone: 970 309 6553 Project Name: Rangeland Sampling  
 Sampler Name: Jordan Veith Project Number: Reading

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested				Special Instructions
					HCl	HNO3	None	Other	Water	Soil	Air-Canister #	Other	COSEC 915-1	EC	SAR	PH	
1	Emerald 182-01	7/27/2021	1200	3			X			X			X				
2	Emerald 182-02	7/27/2021	1235	3			X			X			X				
3	Emerald 182-03	7/27/2021	1300	3			X			X			X				
4	Emerald C134-01	7/27/2021	1315	3			X			X			X	X			
5	EQW#2-01	7/27/2021	1345	3			X			X			X	X	X		
6	EQW#3-01	7/27/2021	1435	3			X			X			X	X	X		
7	Emerald 273-01	7/27/2021	1525	3			X			X			X				
8	Emerald 273-02	7/27/2021	1545	3			X			X			X				
9																	
10																	

Relinquished by: <u>Jordan Veith</u>	Date/Time: <u>7/27/2021 1930</u>	Received by: <u>John Ben</u>	Date/Time: <u>7/30/21 1125</u>	Turn Around Time (Check) Same Day <input type="checkbox"/> 72 hours 24 hours <input type="checkbox"/> Standard <input checked="" type="checkbox"/> 48 hours <input type="checkbox"/> Sample Integrity: Temperature Upon Receipt: <u>13</u> Samples Intact: <input checked="" type="radio"/> Yes <input type="radio"/> No	Notes:
Relinquished by:	Date/Time:	Received by:	Date/Time:		
Relinquished by:	Date/Time:	Received by:	Date/Time:		

2107460

Sample Receipt Checklist

S2 Work Order \_\_\_\_\_

Client: Whiting Oil & Gas Client Project ID: Rangely Sampling

Shipped Via:  H.D./P.U./FedEx/UPS/USPS/Other \_\_\_\_\_ Airbill #: 2819 2500 1195

Matrix (check all that apply):  Air  Soil/Solid  Water  Other: \_\_\_\_\_  
(Describe)

Temp (°C)	13
-----------	----

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C <sup>(1)</sup> ? NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	On ice.
Were all samples received intact <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
If custody seals are present, are they intact <sup>(1)</sup> ?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples with holding times due within 48 hours sample due within 48 hours present?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out completely <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client w/ date and time recorded <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input type="checkbox"/>	<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, H2SO4, NaOH, HNO3, ect	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If samples are acid preserved for metals, is the pH ≤ 2 <sup>(1)</sup> ? Record the pH in Comments.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If dissolved metals are requested, were samples field filtered?	<input type="checkbox"/>	<input type="checkbox"/>	<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.

JB  
Custodian Printed Name or Initials

Josh B...  
Signature of Custodian

7/30/21  
Date/Time



Whiting Oil & Gas  
retail  
Denver CO, 80215

Project: Rangely Sampling

Project Number: [none]  
Project Manager: Vince DeCianne

**Reported:**  
08/27/21 14:30

**Emerald 182\_01**  
**2107460-01 (Soil)**

Summit Scientific

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **07/27/21 12:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	BEH0009	08/02/21	08/05/21	EPA 8260B	
Toluene	ND	0.0050		"	"	"	"	"	"	
Ethylbenzene	ND	0.0050		"	"	"	"	"	"	
Xylenes (total)	ND	0.010		"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050		"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050		"	"	"	"	"	"	
Naphthalene	ND	0.0038		"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50		"	"	"	"	"	"	

Date Sampled: **07/27/21 12:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		106 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		97.7 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		91.6 %		21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **07/27/21 12:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	ND	50		mg/kg	1	BEH0010	08/02/21	08/05/21	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **07/27/21 12:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl		83.0 %		30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

Summit Scientific

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.



Whiting Oil & Gas  
retail  
Denver CO, 80215

Project: Rangely Sampling

Project Number: [none]  
Project Manager: Vince DeCianne

**Reported:**  
08/27/21 14:30

**Emerald 182\_01**  
**2107460-01 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **07/27/21 12:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BEH0025	08/03/21	08/04/21	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **07/27/21 12:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		66.5 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		72.7 %	40-150		"	"	"	"	

**Total Metals by EPA 6020B Hot Water Soluble Extraction**

Date Sampled: **07/27/21 12:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Boron</b>	<b>0.455</b>	0.0100	mg/L	1	BEH0029	08/03/21	08/04/21	EPA 6020B	

**Total Metals by EPA 6020B**

Date Sampled: **07/27/21 12:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
---------	--------	-----------------	-------	----------	-------	----------	----------	--------	-------

Summit Scientific

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.



Whiting Oil & Gas  
retail  
Denver CO, 80215

Project: Rangely Sampling

Project Number: [none]  
Project Manager: Vince DeCianne

**Reported:**  
08/27/21 14:30

**Emerald 182\_01**  
**2107460-01 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	7.34	0.225	mg/kg dry	1	BEH0028	08/03/21	08/04/21	EPA 6020B	
Barium	70.3	0.449	"	"	"	"	"	"	
Cadmium	0.565	0.225	"	"	"	"	"	"	
Copper	16.3	0.449	"	"	"	"	"	"	
Lead	17.9	0.225	"	"	"	"	"	"	
Nickel	20.8	0.449	"	"	"	"	"	"	
Selenium	2.26	0.292	"	"	"	"	"	"	
Silver	0.133	0.0225	"	"	"	"	"	"	
Zinc	98.1	0.449	"	"	"	"	"	"	

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: 07/27/21 12:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BEH0033	08/03/21	08/04/21	EPA 7196A	

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

Date Sampled: 07/27/21 12:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	450	0.0562	mg/L dry	1	BEH0030	08/03/21	08/04/21	EPA 6020B	
Magnesium	651	0.0562	"	"	"	"	"	"	
Sodium	1120	0.0562	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: 07/27/21 12:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	7.90	0.00100	units	1	BEH0078	08/05/21	08/05/21	Calculation	

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

Date Sampled: 07/27/21 12:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
---------	--------	-----------------	-------	----------	-------	----------	----------	--------	-------

Summit Scientific

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.



Whiting Oil & Gas  
retail  
Denver CO, 80215

Project: Rangely Sampling

Project Number: [none]

Project Manager: Vince DeCianne

**Reported:**  
08/27/21 14:30

**Emerald 182\_01**  
**2107460-01 (Soil)**

**Summit Scientific**

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

% Solids	89.0	%	1	BEH0041	08/04/21	08/04/21	Calculation
----------	------	---	---	---------	----------	----------	-------------

**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction**

Date Sampled: **07/27/21 12:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	7.76	0.0100	mmhos/cm	1	BEH0058	08/04/21	08/04/21	EPA 120.1	

**Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction**

Date Sampled: **07/27/21 12:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.22		pH Units	1	BEH0057	08/04/21	08/04/21	EPA 9045D	

Summit Scientific

*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.*



Whiting Oil & Gas  
retail  
Denver CO, 80215

Project: Rangely Sampling

Project Number: [none]  
Project Manager: Vince DeCianne

**Reported:**  
08/27/21 14:30

**Emerald 182\_02**  
**2107460-02 (Soil)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **07/27/21 12:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BEH0009	08/02/21	08/05/21	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **07/27/21 12:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		113 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.6 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		95.1 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **07/27/21 12:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BEH0010	08/02/21	08/05/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **07/27/21 12:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		83.9 %	30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

Summit Scientific

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.



Whiting Oil & Gas  
retail  
Denver CO, 80215

Project: Rangely Sampling

Project Number: [none]  
Project Manager: Vince DeCianne

**Reported:**  
08/27/21 14:30

**Emerald 182\_02**  
**2107460-02 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **07/27/21 12:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BEH0025	08/03/21	08/04/21	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **07/27/21 12:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		65.5 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		68.7 %	40-150		"	"	"	"	

**Total Metals by EPA 6020B Hot Water Soluble Extraction**

Date Sampled: **07/27/21 12:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Boron</b>	<b>0.267</b>	0.0100	mg/L	1	BEH0029	08/03/21	08/04/21	EPA 6020B	

**Total Metals by EPA 6020B**

Date Sampled: **07/27/21 12:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
---------	--------	-----------------	-------	----------	-------	----------	----------	--------	-------

Summit Scientific

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.



Whiting Oil & Gas  
retail  
Denver CO, 80215

Project: Rangely Sampling

Project Number: [none]  
Project Manager: Vince DeCianne

**Reported:**  
08/27/21 14:30

**Emerald 182\_02**  
**2107460-02 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Arsenic	5.87	0.208	mg/kg dry	1	BEH0028	08/03/21	08/04/21	EPA 6020B
Barium	85.9	0.416	"	"	"	"	"	"
Cadmium	0.394	0.208	"	"	"	"	"	"
Copper	11.6	0.416	"	"	"	"	"	"
Lead	11.6	0.208	"	"	"	"	"	"
Nickel	13.6	0.416	"	"	"	"	"	"
Selenium	1.50	0.270	"	"	"	"	"	"
Silver	0.0801	0.0208	"	"	"	"	"	"
Zinc	62.2	0.416	"	"	"	"	"	"

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: 07/27/21 12:35

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BEH0033	08/03/21	08/04/21	EPA 7196A	

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

Date Sampled: 07/27/21 12:35

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	467	0.0520	mg/L dry	1	BEH0030	08/03/21	08/04/21	EPA 6020B	
Magnesium	320	0.0520	"	"	"	"	"	"	
Sodium	665	0.0520	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: 07/27/21 12:35

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	5.81	0.00100	units	1	BEH0078	08/05/21	08/05/21	Calculation	

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

Date Sampled: 07/27/21 12:35

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
---------	--------	-----------------	-------	----------	-------	----------	----------	--------	-------

Summit Scientific

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.



Whiting Oil & Gas  
retail  
Denver CO, 80215

Project: Rangely Sampling

Project Number: [none]

Project Manager: Vince DeCianne

**Reported:**  
08/27/21 14:30

**Emerald 182\_02**  
**2107460-02 (Soil)**

**Summit Scientific**

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

% Solids	96.2	%	1	BEH0041	08/04/21	08/04/21	Calculation
----------	------	---	---	---------	----------	----------	-------------

**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction**

Date Sampled: **07/27/21 12:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	5.58	0.0100	mmhos/cm	1	BEH0058	08/04/21	08/04/21	EPA 120.1	

**Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction**

Date Sampled: **07/27/21 12:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.18		pH Units	1	BEH0057	08/04/21	08/04/21	EPA 9045D	

Summit Scientific

*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.*



Whiting Oil & Gas  
retail  
Denver CO, 80215

Project: Rangely Sampling

Project Number: [none]  
Project Manager: Vince DeCianne

**Reported:**  
08/27/21 14:30

**Emerald 182\_03**  
**2107460-03 (Soil)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **07/27/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BEH0009	08/02/21	08/05/21	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **07/27/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		105 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.7 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		92.2 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **07/27/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BEH0010	08/02/21	08/05/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **07/27/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		86.6 %	30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

Summit Scientific

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.



Whiting Oil & Gas  
retail  
Denver CO, 80215

Project: Rangely Sampling

Project Number: [none]  
Project Manager: Vince DeCianne

**Reported:**  
08/27/21 14:30

**Emerald 182\_03**  
**2107460-03 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **07/27/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BEH0025	08/03/21	08/04/21	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **07/27/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		71.9 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		64.0 %	40-150		"	"	"	"	

**Total Metals by EPA 6020B Hot Water Soluble Extraction**

Date Sampled: **07/27/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Boron</b>	<b>0.282</b>	0.0100	mg/L	1	BEH0029	08/03/21	08/04/21	EPA 6020B	

**Total Metals by EPA 6020B**

Date Sampled: **07/27/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
---------	--------	-----------------	-------	----------	-------	----------	----------	--------	-------

Summit Scientific

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.



Whiting Oil & Gas  
retail  
Denver CO, 80215

Project: Rangely Sampling

Project Number: [none]  
Project Manager: Vince DeCianne

**Reported:**  
08/27/21 14:30

**Emerald 182\_03**  
**2107460-03 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Arsenic	7.71	0.237	mg/kg dry	1	BEH0028	08/03/21	08/04/21	EPA 6020B
Barium	111	0.474	"	"	"	"	"	"
Cadmium	0.754	0.237	"	"	"	"	"	"
Copper	20.0	0.474	"	"	"	"	"	"
Lead	21.4	0.237	"	"	"	"	"	"
Nickel	23.1	0.474	"	"	"	"	"	"
Selenium	2.66	0.308	"	"	"	"	"	"
Silver	0.139	0.0237	"	"	"	"	"	"
Zinc	125	0.474	"	"	"	"	"	"

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **07/27/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BEH0033	08/03/21	08/04/21	EPA 7196A	

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

Date Sampled: **07/27/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	560	0.0593	mg/L dry	1	BEH0030	08/03/21	08/04/21	EPA 6020B	
Magnesium	115	0.0593	"	"	"	"	"	"	
Sodium	100	0.0593	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **07/27/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	1.01	0.00100	units	1	BEH0078	08/05/21	08/05/21	Calculation	

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

Date Sampled: **07/27/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
---------	--------	-----------------	-------	----------	-------	----------	----------	--------	-------

Summit Scientific

*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.*



Whiting Oil & Gas  
retail  
Denver CO, 80215

Project: Rangely Sampling

Project Number: [none]

Project Manager: Vince DeCianne

**Reported:**  
08/27/21 14:30

**Emerald 182\_03**  
**2107460-03 (Soil)**

**Summit Scientific**

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

% Solids	84.4	%	1	BEH0041	08/04/21	08/04/21	Calculation
----------	------	---	---	---------	----------	----------	-------------

**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction**

Date Sampled: **07/27/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	2.76	0.0100	mmhos/cm	1	BEH0058	08/04/21	08/04/21	EPA 120.1	

**Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction**

Date Sampled: **07/27/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.04		pH Units	1	BEH0057	08/04/21	08/04/21	EPA 9045D	

Summit Scientific

*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.*



Whiting Oil & Gas  
retail  
Denver CO, 80215

Project: Rangely Sampling

Project Number: [none]  
Project Manager: Vince DeCianne

**Reported:**  
08/27/21 14:30

**Volatile Organic Compounds by EPA Method 8260B - Quality Control**

**Summit Scientific**

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

**Batch BEH0009 - EPA 5030 Soil MS**

**Blank (BEH0009-BLK1)**

Prepared: 08/02/21 Analyzed: 08/05/21

Benzene	ND	0.0020	mg/kg							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
1,2,4-Trimethylbenzene	ND	0.0050	"							
1,3,5-Trimethylbenzene	ND	0.0050	"							
Naphthalene	ND	0.0038	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
Surrogate: 1,2-Dichloroethane-d4	0.0421		"	0.0400		105		23-173		
Surrogate: Toluene-d8	0.0391		"	0.0400		97.6		20-170		
Surrogate: 4-Bromofluorobenzene	0.0368		"	0.0400		91.9		21-167		

**LCS (BEH0009-BS1)**

Prepared: 08/02/21 Analyzed: 08/05/21

Benzene	0.0651	0.0020	mg/kg	0.0750		86.8		70-130		
Toluene	0.0661	0.0050	"	0.0750		88.2		70-130		
Ethylbenzene	0.0819	0.0050	"	0.0750		109		70-130		
m,p-Xylene	0.162	0.010	"	0.150		108		70-130		
o-Xylene	0.0835	0.0050	"	0.0750		111		70-130		
1,2,4-Trimethylbenzene	0.0833	0.0050	"	0.0750		111		70-130		
1,3,5-Trimethylbenzene	0.0815	0.0050	"	0.0750		109		70-130		
Naphthalene	0.0778	0.0038	"	0.0750		104		70-130		
Surrogate: 1,2-Dichloroethane-d4	0.0429		"	0.0400		107		23-173		
Surrogate: Toluene-d8	0.0398		"	0.0400		99.4		20-170		
Surrogate: 4-Bromofluorobenzene	0.0361		"	0.0400		90.2		21-167		

**Matrix Spike (BEH0009-MS1)**

Source: 2107462-01

Prepared: 08/02/21 Analyzed: 08/05/21

Benzene	0.0561	0.0020	mg/kg	0.0750	ND	74.8		70-130		
Toluene	0.0553	0.0050	"	0.0750	ND	73.8		70-130		
Ethylbenzene	0.0659	0.0050	"	0.0750	ND	87.8		70-130		
m,p-Xylene	0.129	0.010	"	0.150	ND	85.7		70-130		
o-Xylene	0.0677	0.0050	"	0.0750	ND	90.3		70-130		
1,2,4-Trimethylbenzene	0.0628	0.0050	"	0.0750	ND	83.7		70-130		
1,3,5-Trimethylbenzene	0.0621	0.0050	"	0.0750	ND	82.8		70-130		
Naphthalene	0.0833	0.0038	"	0.0750	ND	111		70-130		
Surrogate: 1,2-Dichloroethane-d4	0.0451		"	0.0400		113		23-173		
Surrogate: Toluene-d8	0.0394		"	0.0400		98.6		20-170		
Surrogate: 4-Bromofluorobenzene	0.0364		"	0.0400		90.9		21-167		

Summit Scientific

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.



Whiting Oil & Gas  
retail  
Denver CO, 80215

Project: Rangely Sampling

Project Number: [none]

Project Manager: Vince DeCianne

**Reported:**  
08/27/21 14:30

**Volatile Organic Compounds by EPA Method 8260B - Quality Control**

**Summit Scientific**

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

**Batch BEH0009 - EPA 5030 Soil MS**

Matrix Spike Dup (BEH0009-MSD1)	Source: 2107462-01			Prepared: 08/02/21 Analyzed: 08/05/21						
Benzene	0.0551	0.0020	mg/kg	0.0750	ND	73.5	70-130	1.83	30	
Toluene	0.0536	0.0050	"	0.0750	ND	71.4	70-130	3.20	30	
Ethylbenzene	0.0640	0.0050	"	0.0750	ND	85.4	70-130	2.86	30	
m,p-Xylene	0.126	0.010	"	0.150	ND	83.8	70-130	2.29	30	
o-Xylene	0.0662	0.0050	"	0.0750	ND	88.3	70-130	2.19	30	
1,2,4-Trimethylbenzene	0.0609	0.0050	"	0.0750	ND	81.2	70-130	3.11	30	
1,3,5-Trimethylbenzene	0.0605	0.0050	"	0.0750	ND	80.7	70-130	2.59	30	
Naphthalene	0.0797	0.0038	"	0.0750	ND	106	70-130	4.42	30	
Surrogate: 1,2-Dichloroethane-d4	0.0440		"	0.0400		110	23-173			
Surrogate: Toluene-d8	0.0392		"	0.0400		98.0	20-170			
Surrogate: 4-Bromofluorobenzene	0.0368		"	0.0400		92.1	21-167			

Summit Scientific

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.



Whiting Oil & Gas  
retail  
Denver CO, 80215

Project: Rangely Sampling

Project Number: [none]  
Project Manager: Vince DeCianne

**Reported:**  
08/27/21 14:30

**Extractable Petroleum Hydrocarbons by 8015 - Quality Control**  
**Summit Scientific**

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

**Batch BEH0010 - EPA 3550A**

**Blank (BEH0010-BLK1)**

Prepared: 08/02/21 Analyzed: 08/05/21

C10-C28 (DRO)	ND	50	mg/kg							
C28-C36 (ORO)	ND	50	"							

**LCS (BEH0010-BS1)**

Prepared: 08/02/21 Analyzed: 08/05/21

C10-C28 (DRO)	533	50	mg/kg	500	107	70-130				
---------------	-----	----	-------	-----	-----	--------	--	--	--	--

**Matrix Spike (BEH0010-MS1)**

Source: 2107462-01

Prepared: 08/02/21 Analyzed: 08/05/21

C10-C28 (DRO)	545	50	mg/kg	500	16.9	106	70-130			
---------------	-----	----	-------	-----	------	-----	--------	--	--	--

**Matrix Spike Dup (BEH0010-MSD1)**

Source: 2107462-01

Prepared: 08/02/21 Analyzed: 08/05/21

C10-C28 (DRO)	617	50	mg/kg	500	16.9	120	70-130	12.4	20	
---------------	-----	----	-------	-----	------	-----	--------	------	----	--

Summit Scientific

*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.*



Whiting Oil & Gas  
retail  
Denver CO, 80215

Project: Rangely Sampling

Project Number: [none]  
Project Manager: Vince DeCianne

**Reported:**  
08/27/21 14:30

**PAH by EPA Method 8270D SIM - Quality Control**

**Summit Scientific**

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

**Batch BEH0025 - EPA 5030 Soil MS**

**Blank (BEH0025-BLK1)**

Prepared & Analyzed: 08/03/21

Acenaphthene	ND	0.00500	mg/kg							
Anthracene	ND	0.00500	"							
Benzo (a) anthracene	ND	0.00500	"							
Benzo (a) pyrene	ND	0.00500	"							
Benzo (b) fluoranthene	ND	0.00500	"							
Benzo (k) fluoranthene	ND	0.00500	"							
Chrysene	ND	0.00500	"							
Dibenz (a,h) anthracene	ND	0.00500	"							
Fluoranthene	ND	0.00500	"							
Fluorene	ND	0.00500	"							
Indeno (1,2,3-cd) pyrene	ND	0.00500	"							
Pyrene	ND	0.00500	"							
1-Methylnaphthalene	ND	0.00500	"							
2-Methylnaphthalene	ND	0.00500	"							
Surrogate: 2-Methylnaphthalene-d10	0.0244		"	0.0333		73.2	40-150			
Surrogate: Fluoranthene-d10	0.0267		"	0.0333		80.1	40-150			

**LCS (BEH0025-BS1)**

Prepared & Analyzed: 08/03/21

Acenaphthene	0.0241	0.00500	mg/kg	0.0333		72.3	31-137			
Anthracene	0.0256	0.00500	"	0.0333		76.7	30-120			
Benzo (a) anthracene	0.0266	0.00500	"	0.0333		79.7	30-120			
Benzo (a) pyrene	0.0216	0.00500	"	0.0333		64.8	30-120			
Benzo (b) fluoranthene	0.0214	0.00500	"	0.0333		64.1	30-120			
Benzo (k) fluoranthene	0.0208	0.00500	"	0.0333		62.5	30-120			
Chrysene	0.0266	0.00500	"	0.0333		79.8	30-120			
Dibenz (a,h) anthracene	0.0236	0.00500	"	0.0333		70.9	30-120			
Fluoranthene	0.0256	0.00500	"	0.0333		76.9	30-120			
Fluorene	0.0250	0.00500	"	0.0333		75.1	30-120			
Indeno (1,2,3-cd) pyrene	0.0229	0.00500	"	0.0333		68.8	30-120			
Pyrene	0.0249	0.00500	"	0.0333		74.7	35-142			
1-Methylnaphthalene	0.0243	0.00500	"	0.0333		73.0	35-142			
2-Methylnaphthalene	0.0244	0.00500	"	0.0333		73.3	35-142			
Surrogate: 2-Methylnaphthalene-d10	0.0243		"	0.0333		72.8	40-150			
Surrogate: Fluoranthene-d10	0.0263		"	0.0333		78.9	40-150			

Summit Scientific

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.



Whiting Oil & Gas  
retail  
Denver CO, 80215

Project: Rangely Sampling

Project Number: [none]  
Project Manager: Vince DeCianne

**Reported:**  
08/27/21 14:30

**PAH by EPA Method 8270D SIM - Quality Control**

**Summit Scientific**

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

**Batch BEH0025 - EPA 5030 Soil MS**

<b>Matrix Spike (BEH0025-MS1)</b>	<b>Source: 2107460-01</b>			<b>Prepared &amp; Analyzed: 08/03/21</b>							
Acenaphthene	0.0318	0.00500	mg/kg	0.0333	ND	95.3	31-137				
Anthracene	0.0318	0.00500	"	0.0333	0.00203	89.3	30-120				
Benzo (a) anthracene	0.0321	0.00500	"	0.0333	ND	96.3	30-120				
Benzo (a) pyrene	0.0308	0.00500	"	0.0333	ND	92.3	30-120				
Benzo (b) fluoranthene	0.0292	0.00500	"	0.0333	ND	87.7	30-120				
Benzo (k) fluoranthene	0.0297	0.00500	"	0.0333	ND	89.2	30-120				
Chrysene	0.0321	0.00500	"	0.0333	ND	96.2	30-120				
Dibenz (a,h) anthracene	0.0332	0.00500	"	0.0333	ND	99.5	30-120				
Fluoranthene	0.0307	0.00500	"	0.0333	ND	92.2	30-120				
Fluorene	0.0308	0.00500	"	0.0333	ND	92.3	30-120				
Indeno (1,2,3-cd) pyrene	0.0315	0.00500	"	0.0333	ND	94.4	30-120				
Pyrene	0.0338	0.00500	"	0.0333	ND	101	35-142				
1-Methylnaphthalene	0.0347	0.00500	"	0.0333	ND	104	15-130				
2-Methylnaphthalene	0.0363	0.00500	"	0.0333	ND	109	15-130				
Surrogate: 2-Methylnaphthalene-d10	0.0328		"	0.0333		98.5	40-150				
Surrogate: Fluoranthene-d10	0.0289		"	0.0333		86.6	40-150				

<b>Matrix Spike Dup (BEH0025-MSD1)</b>	<b>Source: 2107460-01</b>			<b>Prepared: 08/03/21 Analyzed: 08/04/21</b>							
Acenaphthene	0.0308	0.00500	mg/kg	0.0333	ND	92.5	31-137	2.99	30		
Anthracene	0.0317	0.00500	"	0.0333	0.00203	89.1	30-120	0.270	30		
Benzo (a) anthracene	0.0304	0.00500	"	0.0333	ND	91.2	30-120	5.39	30		
Benzo (a) pyrene	0.0292	0.00500	"	0.0333	ND	87.6	30-120	5.18	30		
Benzo (b) fluoranthene	0.0278	0.00500	"	0.0333	ND	83.4	30-120	5.06	30		
Benzo (k) fluoranthene	0.0281	0.00500	"	0.0333	ND	84.4	30-120	5.62	30		
Chrysene	0.0304	0.00500	"	0.0333	ND	91.3	30-120	5.29	30		
Dibenz (a,h) anthracene	0.0321	0.00500	"	0.0333	ND	96.3	30-120	3.29	30		
Fluoranthene	0.0300	0.00500	"	0.0333	ND	90.0	30-120	2.45	30		
Fluorene	0.0301	0.00500	"	0.0333	ND	90.3	30-120	2.19	30		
Indeno (1,2,3-cd) pyrene	0.0309	0.00500	"	0.0333	ND	92.8	30-120	1.66	30		
Pyrene	0.0318	0.00500	"	0.0333	ND	95.3	35-142	6.13	30		
1-Methylnaphthalene	0.0303	0.00500	"	0.0333	ND	90.9	15-130	13.5	50		
2-Methylnaphthalene	0.0304	0.00500	"	0.0333	ND	91.1	15-130	17.8	50		
Surrogate: 2-Methylnaphthalene-d10	0.0307		"	0.0333		92.2	40-150				
Surrogate: Fluoranthene-d10	0.0286		"	0.0333		85.7	40-150				

Summit Scientific

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.



Whiting Oil & Gas  
 retail  
 Denver CO, 80215

Project: Rangely Sampling

Project Number: [none]  
 Project Manager: Vince DeCianne

**Reported:**  
 08/27/21 14:30

**Total Metals by EPA 6020B Hot Water Soluble Extraction - Quality Control**  
**Summit Scientific**

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

**Batch BEH0029 - EPA 3050B**

<b>Blank (BEH0029-BLK1)</b>				Prepared: 08/03/21 Analyzed: 08/04/21						
Boron	ND	0.0100	mg/L							
<b>LCS (BEH0029-BS1)</b>				Prepared: 08/03/21 Analyzed: 08/04/21						
Boron	5.00	0.0100	mg/L	5.00		100	80-120			
<b>Duplicate (BEH0029-DUP1)</b>				<b>Source: 2107459-01</b>		Prepared: 08/03/21 Analyzed: 08/04/21				
Boron	0.131	0.0100	mg/L		0.142			7.57	20	
<b>Matrix Spike (BEH0029-MS1)</b>				<b>Source: 2107459-01</b>		Prepared: 08/03/21 Analyzed: 08/04/21				
Boron	4.65	0.0100	mg/L	5.00	0.142	90.1	75-125			
<b>Matrix Spike Dup (BEH0029-MSD1)</b>				<b>Source: 2107459-01</b>		Prepared: 08/03/21 Analyzed: 08/04/21				
Boron	5.09	0.0100	mg/L	5.00	0.142	99.0	75-125	9.16	25	

Summit Scientific

*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.*



Whiting Oil & Gas  
retail  
Denver CO, 80215

Project: Rangely Sampling

Project Number: [none]  
Project Manager: Vince DeCianne

**Reported:**  
08/27/21 14:30

**Total Metals by EPA 6020B - Quality Control**  
**Summit Scientific**

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

**Batch BEH0028 - EPA 3050B**

**Blank (BEH0028-BLK1)**

Prepared: 08/03/21 Analyzed: 08/04/21

Arsenic	ND	0.200	mg/kg wet							
Barium	ND	0.400	"							
Cadmium	ND	0.200	"							
Copper	ND	0.400	"							
Lead	ND	0.200	"							
Nickel	ND	0.400	"							
Selenium	ND	0.260	"							
Silver	ND	0.0200	"							
Zinc	ND	0.400	"							

**LCS (BEH0028-BS1)**

Prepared: 08/03/21 Analyzed: 08/04/21

Arsenic	47.1	0.200	mg/kg wet	40.0		118	80-120
Barium	41.3	0.400	"	40.0		103	80-120
Cadmium	2.20	0.200	"	2.00		110	80-120
Copper	41.9	0.400	"	40.0		105	80-120
Lead	20.2	0.200	"	20.0		101	80-120
Nickel	40.8	0.400	"	40.0		102	80-120
Selenium	3.97	0.260	"	4.00		99.3	80-120
Silver	2.00	0.0200	"	2.00		100	80-120
Zinc	45.0	0.400	"	40.0		113	80-120

**Duplicate (BEH0028-DUP1)**

Source: 2107460-01

Prepared: 08/03/21 Analyzed: 08/04/21

Arsenic	7.92	0.225	mg/kg dry		7.34		7.54	20
Barium	73.4	0.449	"		70.3		4.25	20
Cadmium	0.530	0.225	"		0.565		6.38	20
Copper	17.2	0.449	"		16.3		5.35	20
Lead	18.1	0.225	"		17.9		1.53	20
Nickel	21.7	0.449	"		20.8		4.23	20
Selenium	2.43	0.292	"		2.26		7.34	20
Silver	0.135	0.0225	"		0.133		1.49	20
Zinc	102	0.449	"		98.1		3.99	20

Summit Scientific

*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.*



Whiting Oil & Gas  
retail  
Denver CO, 80215

Project: Rangely Sampling

Project Number: [none]  
Project Manager: Vince DeCianne

**Reported:**  
08/27/21 14:30

**Total Metals by EPA 6020B - Quality Control**  
**Summit Scientific**

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

**Batch BEH0028 - EPA 3050B**

**Matrix Spike (BEH0028-MS1)**

Source: 2107460-01

Prepared: 08/03/21 Analyzed: 08/04/21

Arsenic	60.3	0.225	mg/kg dry	44.9	7.34	118	75-125		
Barium	118	0.449	"	44.9	70.3	105	75-125		
Cadmium	3.02	0.225	"	2.25	0.565	109	75-125		
Copper	63.4	0.449	"	44.9	16.3	105	75-125		
Lead	38.7	0.225	"	22.5	17.9	92.9	75-125		
Nickel	66.3	0.449	"	44.9	20.8	101	75-125		
Selenium	6.96	0.292	"	4.49	2.26	105	75-125		
Silver	2.33	0.0225	"	2.25	0.133	97.6	75-125		
Zinc	139	0.449	"	44.9	98.1	90.2	75-125		

**Matrix Spike Dup (BEH0028-MSD1)**

Source: 2107460-01

Prepared: 08/03/21 Analyzed: 08/04/21

Arsenic	58.7	0.225	mg/kg dry	44.9	7.34	114	75-125	2.72	25
Barium	121	0.449	"	44.9	70.3	112	75-125	2.78	25
Cadmium	2.91	0.225	"	2.25	0.565	104	75-125	3.65	25
Copper	60.2	0.449	"	44.9	16.3	97.8	75-125	5.11	25
Lead	37.3	0.225	"	22.5	17.9	86.4	75-125	3.82	25
Nickel	64.8	0.449	"	44.9	20.8	97.8	75-125	2.28	25
Selenium	6.74	0.292	"	4.49	2.26	99.7	75-125	3.19	25
Silver	2.29	0.0225	"	2.25	0.133	96.2	75-125	1.37	25
Zinc	149	0.449	"	44.9	98.1	114	75-125	7.48	25

Summit Scientific

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.



Whiting Oil & Gas  
retail  
Denver CO, 80215

Project: Rangely Sampling

Project Number: [none]  
Project Manager: Vince DeCianne

**Reported:**  
08/27/21 14:30

**Hexavalent Chromium by EPA Method 7196 - Quality Control**  
**Summit Scientific**

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

**Batch BEH0033 - 3060A Mod**

**Blank (BEH0033-BLK1)**

Prepared: 08/03/21 Analyzed: 08/04/21

Chromium, Hexavalent ND 0.30 mg/kg wet

**LCS (BEH0033-BS1)**

Prepared: 08/03/21 Analyzed: 08/04/21

Chromium, Hexavalent 25.8 0.30 mg/kg wet 25.0 103 80-120

**Duplicate (BEH0033-DUP1)**

**Source: 2107456-01**

Prepared: 08/03/21 Analyzed: 08/04/21

Chromium, Hexavalent ND 0.30 mg/kg dry ND 20

**Matrix Spike (BEH0033-MS1)**

**Source: 2107456-01**

Prepared: 08/03/21 Analyzed: 08/04/21

Chromium, Hexavalent 29.3 0.30 mg/kg dry 34.5 ND 85.0 75-125

**Matrix Spike Dup (BEH0033-MSD1)**

**Source: 2107456-01**

Prepared: 08/03/21 Analyzed: 08/04/21

Chromium, Hexavalent 29.3 0.30 mg/kg dry 34.5 ND 85.0 75-125 0.00 20

Summit Scientific

*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.*





Whiting Oil & Gas  
retail  
Denver CO, 80215

Project: Rangely Sampling

Project Number: [none]

Project Manager: Vince DeCianne

**Reported:**  
08/27/21 14:30

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

**Summit Scientific**

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

**Batch BEH0030 - General Preparation**

**Blank (BEH0030-BLK1)**

Prepared: 08/03/21 Analyzed: 08/04/21

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

**LCS (BEH0030-BS1)**

Prepared: 08/03/21 Analyzed: 08/04/21

Calcium	5.43	0.0500	mg/L wet	5.00		109	70-130			
Magnesium	6.23	0.0500	"	5.00		125	70-130			
Sodium	5.54	0.0500	"	5.00		111	70-130			

Summit Scientific

*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.*



Whiting Oil & Gas  
retail  
Denver CO, 80215

Project: Rangely Sampling

Project Number: [none]

Project Manager: Vince DeCianne

**Reported:**  
08/27/21 14:30

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

**Summit Scientific**

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

**Batch BEH0041 - General Preparation**

**Duplicate (BEH0041-DUP1)**

**Source: 2106292-12**

Prepared & Analyzed: 08/04/21

% Solids	85.3	%	85.7	0.460	20
----------	------	---	------	-------	----

Summit Scientific

*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.*



Whiting Oil & Gas  
retail  
Denver CO, 80215

Project: Rangely Sampling

Project Number: [none]

Project Manager: Vince DeCianne

**Reported:**  
08/27/21 14:30

**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction - Quality Control**

**Summit Scientific**

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

**Batch BEH0058 - General Preparation**

**Blank (BEH0058-BLK1)**

Prepared & Analyzed: 08/04/21

Specific Conductance (EC) ND 0.0100 mmhos/cm

**LCS (BEH0058-BS1)**

Prepared & Analyzed: 08/04/21

Specific Conductance (EC) 0.146 0.0100 mmhos/cm 0.150 97.7 90-110

**Duplicate (BEH0058-DUP1)**

Source: 2107460-01

Prepared & Analyzed: 08/04/21

Specific Conductance (EC) 7.76 0.0100 mmhos/cm 7.76 0.0129 20

Summit Scientific

*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.*



Whiting Oil & Gas  
retail  
Denver CO, 80215

Project: Rangely Sampling

Project Number: [none]

Project Manager: Vince DeCianne

**Reported:**

08/27/21 14:30

**Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction - Quality Control**

**Summit Scientific**

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

**Batch BEH0057 - General Preparation**

**LCS (BEH0057-BS1)**

Prepared & Analyzed: 08/04/21

pH	9.33	pH Units	9.21	101	95-105
----	------	----------	------	-----	--------

**Duplicate (BEH0057-DUP1)**

Source: 2107460-01

Prepared & Analyzed: 08/04/21

pH	8.24	pH Units	8.22	0.243	20
----	------	----------	------	-------	----

Summit Scientific

*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.*



Whiting Oil & Gas  
retail  
Denver CO, 80215

Project: Rangely Sampling

Project Number: [none]

Project Manager: Vince DeCianne

**Reported:**  
08/27/21 14:30

### 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