

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

August 28, 2024

Ben Shoup

Citation Oil & Gas

14077 Cutten Rd

Houston, TX. 77069-2212

RE: Absaroka - MPU PW Flowline Leak

Work Order #2408260

Enclosed are the results of analyses for samples received by Summit Scientific on 08/21/24 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 "Natalie Tessier". The signature is written in a cursive, flowing style.

Natalie Tessier For Paul Shrewsbury
President



Citation Oil & Gas
14077 Cutten Rd
Houston TX., 77069-2212

Project: Absaroka - MPU PW Flowline Leak

Project Number: 0620.01
Project Manager: Ben Shoup

Reported:
08/28/24 13:27

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SB01@3'	2408260-01	Soil	08/21/24 08:05	08/21/24 16:30
SB01@5'	2408260-02	Soil	08/21/24 08:10	08/21/24 16:30
SB01@7'	2408260-03	Soil	08/21/24 08:15	08/21/24 16:30
SB02@3'	2408260-04	Soil	08/21/24 09:05	08/21/24 16:30
SB02@5'	2408260-05	Soil	08/21/24 09:10	08/21/24 16:30
SB02@7'	2408260-06	Soil	08/21/24 09:15	08/21/24 16:30
SB03@3'	2408260-07	Soil	08/21/24 09:30	08/21/24 16:30
SB03@5'	2408260-08	Soil	08/21/24 09:35	08/21/24 16:30
SB03@7'	2408260-09	Soil	08/21/24 09:40	08/21/24 16:30
SB04@3'	2408260-10	Soil	08/21/24 09:55	08/21/24 16:30
SB04@5'	2408260-11	Soil	08/21/24 10:00	08/21/24 16:30
SB04@7'	2408260-12	Soil	08/21/24 10:05	08/21/24 16:30
SB05@3'	2408260-13	Soil	08/21/24 10:50	08/21/24 16:30
SB05@5'	2408260-14	Soil	08/21/24 10:55	08/21/24 16:30
SB05@7'	2408260-15	Soil	08/21/24 11:00	08/21/24 16:30
BKG04@1'	2408260-16	Soil	08/21/24 11:20	08/21/24 16:30
BKG04@3'	2408260-17	Soil	08/21/24 11:25	08/21/24 16:30
BKG04@5'	2408260-18	Soil	08/21/24 11:30	08/21/24 16:30
BKG04@7'	2408260-19	Soil	08/21/24 11:35	08/21/24 16:30



4653 Table Mountain Drive
 Golden, CO 80403
 303-277-9310

Lab ID 2408260.1 Page 1 of 2

		Send Data To:	Send Invoice To:
Client: Citation		Project Manager: Max Dahlgren/Ben Shoup	Company: Absaroka Energy and Environmental Solutions
Address: On File		E-Mail: ben.shoup@absarokasolutions.com	Project Name/Location:
City/State/Zip:		max.dahlgren@absarokasolutions.com	AFE#:
Phone: 970-481-6909		Project Name: <u>MPV PW Flow-line Leak</u>	PO/Billing Codes:
Sampler Name: <u>Max Dahlgren</u>		Project Number: <u>0620.01</u>	Contact: Max Dahlgren/Ben Shoup

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix			Analysis Requested				Special Instructions
					HCl	HNO3	None	Other	Water	Soil	Air-Canister #	Other	Full 915 Suite	915 ^{MD} EC, SAR	915 - Boron - HWS	
1	SB01 @ 3'	8/21/24	805	1			X			X			X	X		
2	SB01 @ 5'		810													
3	SB01 @ 7'		815													
4	SB02 @ 3'		905													
5	SB02 @ 5'		910													
6	SB02 @ 7'		915													
7	SB03 @ 3'		930													
8	SB03 @ 5'		935													
9	SB03 @ 7'		940													
10	SB04 @ 3'		955													
11	SB04 @ 5'		1000													
12	SB04 @ 7'		1005													
13	SB05 @ 3'		1050													
14	SB05 @ 5'		1055													
15	SB05 @ 7'		1100													

Relinquished by: <u>[Signature]</u>	Date/Time: <u>8/21/24 1545</u>	Received by: <u>[Signature]</u>	Date/Time: <u>8/22/24 1630</u>	TAT Business Days	Field DO	Notes:
				Same Day	Field EC	
Relinquished by: <u>82</u>	Date/Time: <u>8/22/24 1630</u>	Received by: <u>[Signature]</u>	Date/Time: <u>8/22/24 1630</u>	1 Day	Field ORP	
				2 Days	Field pH	
Relinquished by:	Date/Time:	Received by:	Date/Time:	3 Days	Field Temp.	
				Standard	X Field Turb.	
Temperature Upon Receipt: <u>11.7</u>	Corrected Temperature: <u>0</u>	IR gun #: <u>1</u>	HNO3 lot #:			



4653 Table Mountain Drive
 Golden, CO 80403
 303-277-9310

Lab ID
 2408260.2
 Page 2 of 2

		Send Data To:	Send Invoice To:
Client: Citation	Project Manager: Max Dahlgren/Ben Shoup		Company: Absaroka Energy and Environmental Solutions
Address: On File	E-Mail: ben.shoup@absarokasolutions.com		Project Name/Location:
City/State/Zip:	max.dahlgren@absarokasolutions.com		AFE#:
Phone: 970-481-6909	Project Name: <i>MPI PW Flow-line leak</i>		PO/Billing Codes:
Sampler Name: <i>Max Dahlgren</i>	Project Number: <i>0620.01</i>		Contact: Max Dahlgren/Ben Shoup

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested				Special Instructions
					HCl	HNO3	None	Other	Water	Soil	Air-Canister #	Other	Full 915 Suite	915 ^{MD} pH, EC, SAR	915 - Boron - HWS	915 - Metals	
1	<i>BKG04 01'</i>	<i>8/21/24</i>	<i>1120</i>	<i>1</i>			<i>X</i>				<i>X</i>		<i>X</i>				
2	<i>BKG04 03'</i>		<i>1125</i>														
3	<i>BKG04 05'</i>		<i>1130</i>														
4	<i>BKG04 07'</i>		<i>1135</i>														
5																	
6																	
7																	
8																	
9																	
10																	
11																	
12																	
13																	
14																	
15																	

Relinquished by: <i>[Signature]</i>	Date/Time: <i>8/21/24 1545</i>	Received by: <i>[Signature]</i>	Date/Time: <i>8/21/24 1630</i>	TAT Business Days	Field DO	Notes:
				Same Day	Field EC	
Relinquished by: <i>SL</i>	Date/Time: <i>8/21/24 1130</i>	Received by: <i>[Signature]</i>	Date/Time: <i>8/21/24 1130</i>	1 Day	Field ORP	
				2 Days	Field pH	
Relinquished by:	Date/Time:	Received by:	Date/Time:	3 Days	Field Temp.	
				Standard	<i>X</i> Field Turb.	
Temperature Upon Receipt: <i>11.7</i>	Corrected Temperature: <i>0</i>	IR gun #:			HNO3 lot #:	

S₂

2/2

S2 Work Order# 2408260

Sample Receipt Checklist

Client: Citation Client Project ID: MPV PW Flow-line leak

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

Matrix (Check all that apply) Air Soil/Solid Water Other

Temp (°C)

Thermometer #

	Yes	No	N/A	Comments (if any)
If samples require cooling, is the temperature < 6°C? ⁽¹⁾ NOTE: 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"/>	<input type="checkbox"/>	<input type="checkbox"/>	on ice
If custody seals are present, are they intact? ⁽¹⁾	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are samples due within 48 hours present?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input 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 ²⁺), Hexavalent Chromium (Cr ⁶⁺ , Cr VI), COD/BOD, Total Coliform, E. Coli, Total Residual Chlorine (TRC), Dissolved Oxygen	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out Completely? ⁽¹⁾	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client w/ date and time recorded? ⁽¹⁾	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all samples received intact? ⁽¹⁾	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided? ⁽¹⁾	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received? ⁽¹⁾	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC? ⁽¹⁾	<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)? ⁽¹⁾ Note the type of preservative in the comments column – HCl, H ₂ SO ₄ , NaOH, HNO ₃ , etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If samples are acid preserved for metals, is the pH ≤ 2? ⁽¹⁾ 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): <p style="text-align: center;">uncertified bottleneare, requires qualifiers (bags)</p>				
⁽¹⁾ If NO, then contact the client before proceeding with analysis and note in case narrative.				

AS

Custodian Printed Name

8/21/24
Date/Time



Citation Oil & Gas
14077 Cutten Rd
Houston TX., 77069-2212

Project: Absaroka - MPU PW Flowline Leak

Project Number: 0620.01
Project Manager: Ben Shoup

Reported:
08/28/24 13:27

SB01@3'
2408260-01 (Soil)

Summit Scientific

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **08/21/24 08:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	3.59	2.00	mg/L	1	BHH0702	08/23/24	08/27/24	EPA 6020B	

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

Date Sampled: **08/21/24 08:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	413	0.0500	mg/L dry	1	BHH0733	08/23/24	08/27/24	EPA 6020B	
Magnesium	72.4	0.0500	"	"	"	"	"	"	
Sodium	5100	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **08/21/24 08:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	60.9	0.00100	units	1	BHH0875	08/28/24	08/28/24	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **08/21/24 08:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	85.8		%	1	BHH0668	08/22/24	08/23/24	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **08/21/24 08:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	29.7	0.0100	mmhos/cm	1	BHH0734	08/23/24	08/27/24	EPA 120.1	

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Citation Oil & Gas
14077 Cutten Rd
Houston TX., 77069-2212

Project: Absaroka - MPU PW Flowline Leak

Project Number: 0620.01
Project Manager: Ben Shoup

Reported:
08/28/24 13:27

SB01@5'
2408260-02 (Soil)

Summit Scientific

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **08/21/24 08:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	2.00	mg/L	1	BHH0702	08/23/24	08/27/24	EPA 6020B	

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

Date Sampled: **08/21/24 08:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	154	0.0500	mg/L dry	1	BHH0733	08/23/24	08/27/24	EPA 6020B	
Magnesium	130	0.0500	"	"	"	"	"	"	
Sodium	2700	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **08/21/24 08:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	38.7	0.00100	units	1	BHH0875	08/28/24	08/28/24	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **08/21/24 08:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	81.2		%	1	BHH0668	08/22/24	08/23/24	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **08/21/24 08:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	15.9	0.0100	mmhos/cm	1	BHH0734	08/23/24	08/27/24	EPA 120.1	

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Citation Oil & Gas
14077 Cutten Rd
Houston TX., 77069-2212

Project: Absaroka - MPU PW Flowline Leak

Project Number: 0620.01
Project Manager: Ben Shoup

Reported:
08/28/24 13:27

SB01@7'
2408260-03 (Soil)

Summit Scientific

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **08/21/24 08:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	2.00	mg/L	1	BHH0702	08/23/24	08/27/24	EPA 6020B	

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

Date Sampled: **08/21/24 08:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	181	0.0500	mg/L dry	1	BHH0733	08/23/24	08/27/24	EPA 6020B	
Magnesium	176	0.0500	"	"	"	"	"	"	
Sodium	3090	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **08/21/24 08:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	39.2	0.00100	units	1	BHH0875	08/28/24	08/28/24	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **08/21/24 08:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	79.7		%	1	BHH0668	08/22/24	08/23/24	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **08/21/24 08:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	17.6	0.0100	mmhos/cm	1	BHH0734	08/23/24	08/27/24	EPA 120.1	

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Citation Oil & Gas
14077 Cutten Rd
Houston TX., 77069-2212

Project: Absaroka - MPU PW Flowline Leak

Project Number: 0620.01
Project Manager: Ben Shoup

Reported:
08/28/24 13:27

SB02@3'
2408260-04 (Soil)

Summit Scientific

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **08/21/24 09:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	2.00	mg/L	1	BHH0702	08/23/24	08/27/24	EPA 6020B	

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

Date Sampled: **08/21/24 09:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	274	0.0500	mg/L dry	1	BHH0733	08/23/24	08/27/24	EPA 6020B	
Magnesium	151	0.0500	"	"	"	"	"	"	
Sodium	1370	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **08/21/24 09:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	16.5	0.00100	units	1	BHH0875	08/28/24	08/28/24	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **08/21/24 09:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	93.2		%	1	BHH0668	08/22/24	08/23/24	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **08/21/24 09:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	11.5	0.0100	mmhos/cm	1	BHH0734	08/23/24	08/27/24	EPA 120.1	

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Citation Oil & Gas
14077 Cutten Rd
Houston TX., 77069-2212

Project: Absaroka - MPU PW Flowline Leak

Project Number: 0620.01
Project Manager: Ben Shoup

Reported:
08/28/24 13:27

SB02@5'
2408260-05 (Soil)

Summit Scientific

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **08/21/24 09:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	2.00	mg/L	1	BHH0702	08/23/24	08/27/24	EPA 6020B	

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

Date Sampled: **08/21/24 09:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	15.2	0.0500	mg/L dry	1	BHH0733	08/23/24	08/27/24	EPA 6020B	
Magnesium	7.35	0.0500	"	"	"	"	"	"	
Sodium	576	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **08/21/24 09:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	30.3	0.00100	units	1	BHH0875	08/28/24	08/28/24	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **08/21/24 09:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	95.4		%	1	BHH0668	08/22/24	08/23/24	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **08/21/24 09:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	3.73	0.0100	mmhos/cm	1	BHH0734	08/23/24	08/27/24	EPA 120.1	

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14077 Cutten Rd
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Project: Absaroka - MPU PW Flowline Leak

Project Number: 0620.01
Project Manager: Ben Shoup

Reported:
08/28/24 13:27

SB02@7'
2408260-06 (Soil)

Summit Scientific

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **08/21/24 09:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	2.98	2.00	mg/L	1	BHH0702	08/23/24	08/27/24	EPA 6020B	

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

Date Sampled: **08/21/24 09:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	47.4	0.0500	mg/L dry	1	BHH0733	08/23/24	08/27/24	EPA 6020B	
Magnesium	91.0	0.0500	"	"	"	"	"	"	
Sodium	1810	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **08/21/24 09:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	35.5	0.00100	units	1	BHH0875	08/28/24	08/28/24	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **08/21/24 09:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	78.4		%	1	BHH0668	08/22/24	08/23/24	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **08/21/24 09:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	8.02	0.0100	mmhos/cm	1	BHH0734	08/23/24	08/27/24	EPA 120.1	

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Citation Oil & Gas
14077 Cutten Rd
Houston TX., 77069-2212

Project: Absaroka - MPU PW Flowline Leak

Project Number: 0620.01
Project Manager: Ben Shoup

Reported:
08/28/24 13:27

SB03@3'
2408260-07 (Soil)

Summit Scientific

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **08/21/24 09:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	2.47	2.00	mg/L	1	BHH0702	08/23/24	08/27/24	EPA 6020B	

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

Date Sampled: **08/21/24 09:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	332	0.0500	mg/L dry	1	BHH0733	08/23/24	08/27/24	EPA 6020B	
Magnesium	180	0.0500	"	"	"	"	"	"	
Sodium	1990	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **08/21/24 09:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	21.9	0.00100	units	1	BHH0875	08/28/24	08/28/24	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **08/21/24 09:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	89.5		%	1	BHH0668	08/22/24	08/23/24	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **08/21/24 09:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	7.04	0.0100	mmhos/cm	1	BHH0734	08/23/24	08/27/24	EPA 120.1	

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.





Citation Oil & Gas
14077 Cutten Rd
Houston TX., 77069-2212

Project: Absaroka - MPU PW Flowline Leak

Project Number: 0620.01
Project Manager: Ben Shoup

Reported:
08/28/24 13:27

SB03@5'
2408260-08 (Soil)

Summit Scientific

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **08/21/24 09:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	2.18	2.00	mg/L	1	BHH0702	08/23/24	08/27/24	EPA 6020B	

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

Date Sampled: **08/21/24 09:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	90.4	0.0500	mg/L dry	1	BHH0733	08/23/24	08/27/24	EPA 6020B	
Magnesium	289	0.0500	"	"	"	"	"	"	
Sodium	828	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **08/21/24 09:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	9.58	0.00100	units	1	BHH0875	08/28/24	08/28/24	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **08/21/24 09:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	83.1		%	1	BHH0668	08/22/24	08/23/24	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **08/21/24 09:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	1.81	0.0100	mmhos/cm	1	BHH0734	08/23/24	08/27/24	EPA 120.1	

Summit Scientific

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Citation Oil & Gas
14077 Cutten Rd
Houston TX., 77069-2212

Project: Absaroka - MPU PW Flowline Leak

Project Number: 0620.01
Project Manager: Ben Shoup

Reported:
08/28/24 13:27

SB03@7'
2408260-09 (Soil)

Summit Scientific

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **08/21/24 09:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	2.00	mg/L	1	BHH0702	08/23/24	08/27/24	EPA 6020B	

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

Date Sampled: **08/21/24 09:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	433	0.0500	mg/L dry	1	BHH0733	08/23/24	08/27/24	EPA 6020B	
Magnesium	114	0.0500	"	"	"	"	"	"	
Sodium	981	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **08/21/24 09:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	10.8	0.00100	units	1	BHH0875	08/28/24	08/28/24	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **08/21/24 09:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	81.8		%	1	BHH0668	08/22/24	08/23/24	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **08/21/24 09:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	7.28	0.0100	mmhos/cm	1	BHH0734	08/23/24	08/27/24	EPA 120.1	

Summit Scientific

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Citation Oil & Gas
14077 Cutten Rd
Houston TX., 77069-2212

Project: Absaroka - MPU PW Flowline Leak

Project Number: 0620.01
Project Manager: Ben Shoup

Reported:
08/28/24 13:27

SB04@3'
2408260-10 (Soil)

Summit Scientific

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **08/21/24 09:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	3.35	2.00	mg/L	1	BHH0702	08/23/24	08/27/24	EPA 6020B	

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

Date Sampled: **08/21/24 09:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	388	0.0500	mg/L dry	1	BHH0733	08/23/24	08/27/24	EPA 6020B	
Magnesium	119	0.0500	"	"	"	"	"	"	
Sodium	1510	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **08/21/24 09:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	17.2	0.00100	units	1	BHH0875	08/28/24	08/28/24	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **08/21/24 09:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	89.3		%	1	BHH0668	08/22/24	08/23/24	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **08/21/24 09:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	9.87	0.0100	mmhos/cm	1	BHH0734	08/23/24	08/27/24	EPA 120.1	

Summit Scientific

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Citation Oil & Gas
14077 Cutten Rd
Houston TX., 77069-2212

Project: Absaroka - MPU PW Flowline Leak

Project Number: 0620.01
Project Manager: Ben Shoup

Reported:
08/28/24 13:27

SB04@5'
2408260-11 (Soil)

Summit Scientific

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **08/21/24 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	5.84	2.00	mg/L	1	BHH0702	08/23/24	08/27/24	EPA 6020B	

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

Date Sampled: **08/21/24 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	424	0.0500	mg/L dry	1	BHH0733	08/23/24	08/27/24	EPA 6020B	
Magnesium	122	0.0500	"	"	"	"	"	"	
Sodium	1420	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **08/21/24 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	15.6	0.00100	units	1	BHH0875	08/28/24	08/28/24	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **08/21/24 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	83.1		%	1	BHH0668	08/22/24	08/23/24	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **08/21/24 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	9.01	0.0100	mmhos/cm	1	BHH0734	08/23/24	08/27/24	EPA 120.1	

Summit Scientific

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Citation Oil & Gas
14077 Cutten Rd
Houston TX., 77069-2212

Project: Absaroka - MPU PW Flowline Leak

Project Number: 0620.01
Project Manager: Ben Shoup

Reported:
08/28/24 13:27

SB04@7'
2408260-12 (Soil)

Summit Scientific

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **08/21/24 10:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	3.79	2.00	mg/L	1	BHH0702	08/23/24	08/27/24	EPA 6020B	

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

Date Sampled: **08/21/24 10:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	43.1	0.0500	mg/L dry	1	BHH0733	08/23/24	08/27/24	EPA 6020B	
Magnesium	144	0.0500	"	"	"	"	"	"	
Sodium	1000	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **08/21/24 10:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	16.4	0.00100	units	1	BHH0875	08/28/24	08/28/24	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **08/21/24 10:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	83.6		%	1	BHH0668	08/22/24	08/23/24	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **08/21/24 10:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	3.99	0.0100	mmhos/cm	1	BHH0734	08/23/24	08/27/24	EPA 120.1	

Summit Scientific

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Citation Oil & Gas
14077 Cutten Rd
Houston TX., 77069-2212

Project: Absaroka - MPU PW Flowline Leak

Project Number: 0620.01
Project Manager: Ben Shoup

Reported:
08/28/24 13:27

SB05@3'
2408260-13 (Soil)

Summit Scientific

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **08/21/24 10:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	3.55	2.00	mg/L	1	BHH0702	08/23/24	08/27/24	EPA 6020B	

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

Date Sampled: **08/21/24 10:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	458	0.0500	mg/L dry	1	BHH0733	08/23/24	08/27/24	EPA 6020B	
Magnesium	141	0.0500	"	"	"	"	"	"	
Sodium	2560	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **08/21/24 10:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	26.8	0.00100	units	1	BHH0875	08/28/24	08/28/24	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **08/21/24 10:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	83.8		%	1	BHH0668	08/22/24	08/23/24	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **08/21/24 10:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	12.8	0.0100	mmhos/cm	1	BHH0734	08/23/24	08/27/24	EPA 120.1	

Summit Scientific

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Citation Oil & Gas
14077 Cutten Rd
Houston TX., 77069-2212

Project: Absaroka - MPU PW Flowline Leak

Project Number: 0620.01
Project Manager: Ben Shoup

Reported:
08/28/24 13:27

SB05@5'
2408260-14 (Soil)

Summit Scientific

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **08/21/24 10:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	3.47	2.00	mg/L	1	BHH0702	08/23/24	08/27/24	EPA 6020B	

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

Date Sampled: **08/21/24 10:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	96.0	0.0500	mg/L dry	1	BHH0733	08/23/24	08/27/24	EPA 6020B	
Magnesium	344	0.0500	"	"	"	"	"	"	
Sodium	2380	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **08/21/24 10:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	25.5	0.00100	units	1	BHH0875	08/28/24	08/28/24	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **08/21/24 10:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	78.1		%	1	BHH0668	08/22/24	08/23/24	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **08/21/24 10:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	9.98	0.0100	mmhos/cm	1	BHH0734	08/23/24	08/27/24	EPA 120.1	

Summit Scientific

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Citation Oil & Gas
14077 Cutten Rd
Houston TX., 77069-2212

Project: Absaroka - MPU PW Flowline Leak

Project Number: 0620.01
Project Manager: Ben Shoup

Reported:
08/28/24 13:27

SB05@7'
2408260-15 (Soil)

Summit Scientific

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **08/21/24 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	2.13	2.00	mg/L	1	BHH0702	08/23/24	08/27/24	EPA 6020B	

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

Date Sampled: **08/21/24 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	429	0.0500	mg/L dry	1	BHH0733	08/23/24	08/27/24	EPA 6020B	
Magnesium	129	0.0500	"	"	"	"	"	"	
Sodium	2580	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **08/21/24 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	28.0	0.00100	units	1	BHH0875	08/28/24	08/28/24	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **08/21/24 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	81.1		%	1	BHH0668	08/22/24	08/23/24	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **08/21/24 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	11.9	0.0100	mmhos/cm	1	BHH0734	08/23/24	08/27/24	EPA 120.1	

Summit Scientific

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Citation Oil & Gas
14077 Cutten Rd
Houston TX., 77069-2212

Project: Absaroka - MPU PW Flowline Leak
Project Number: 0620.01
Project Manager: Ben Shoup

Reported:
08/28/24 13:27

BKG04@1'
2408260-16 (Soil)

Summit Scientific

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **08/21/24 11:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	2.00	mg/L	1	BHH0702	08/23/24	08/27/24	EPA 6020B	

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

Date Sampled: **08/21/24 11:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	38.8	0.0500	mg/L dry	1	BHH0733	08/23/24	08/27/24	EPA 6020B	
Magnesium	30.2	0.0500	"	"	"	"	"	"	
Sodium	11.6	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **08/21/24 11:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.339	0.00100	units	1	BHH0875	08/28/24	08/28/24	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **08/21/24 11:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	94.9		%	1	BHH0668	08/22/24	08/23/24	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **08/21/24 11:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.179	0.0100	mmhos/cm	1	BHH0734	08/23/24	08/27/24	EPA 120.1	

Summit Scientific

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Citation Oil & Gas
14077 Cutten Rd
Houston TX., 77069-2212

Project: Absaroka - MPU PW Flowline Leak
Project Number: 0620.01
Project Manager: Ben Shoup

Reported:
08/28/24 13:27

BKG04@3'
2408260-17 (Soil)

Summit Scientific

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **08/21/24 11:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	2.00	mg/L	1	BHH0702	08/23/24	08/27/24	EPA 6020B	

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

Date Sampled: **08/21/24 11:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	200	0.0500	mg/L dry	1	BHH0733	08/23/24	08/27/24	EPA 6020B	
Magnesium	335	0.0500	"	"	"	"	"	"	
Sodium	219	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **08/21/24 11:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	2.20	0.00100	units	1	BHH0875	08/28/24	08/28/24	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **08/21/24 11:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	97.5		%	1	BHH0668	08/22/24	08/23/24	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **08/21/24 11:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.589	0.0100	mmhos/cm	1	BHH0734	08/23/24	08/27/24	EPA 120.1	

Summit Scientific

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Citation Oil & Gas
14077 Cutten Rd
Houston TX., 77069-2212

Project: Absaroka - MPU PW Flowline Leak
Project Number: 0620.01
Project Manager: Ben Shoup

Reported:
08/28/24 13:27

BKG04@5'
2408260-18 (Soil)

Summit Scientific

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **08/21/24 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	2.00	mg/L	1	BHH0702	08/23/24	08/27/24	EPA 6020B	

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

Date Sampled: **08/21/24 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	172	0.0500	mg/L dry	1	BHH0733	08/23/24	08/27/24	EPA 6020B	
Magnesium	134	0.0500	"	"	"	"	"	"	
Sodium	255	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **08/21/24 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	3.54	0.00100	units	1	BHH0875	08/28/24	08/28/24	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **08/21/24 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	89.1		%	1	BHH0668	08/22/24	08/23/24	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **08/21/24 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	1.34	0.0100	mmhos/cm	1	BHH0734	08/23/24	08/27/24	EPA 120.1	

Summit Scientific

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Citation Oil & Gas
14077 Cutten Rd
Houston TX., 77069-2212

Project: Absaroka - MPU PW Flowline Leak

Project Number: 0620.01
Project Manager: Ben Shoup

Reported:
08/28/24 13:27

BKG04@7'
2408260-19 (Soil)

Summit Scientific

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **08/21/24 11:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	3.36	2.00	mg/L	1	BHH0702	08/23/24	08/27/24	EPA 6020B	

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

Date Sampled: **08/21/24 11:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	117	0.0500	mg/L dry	1	BHH0733	08/23/24	08/27/24	EPA 6020B	
Magnesium	414	0.0500	"	"	"	"	"	"	
Sodium	1080	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **08/21/24 11:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	10.5	0.00100	units	1	BHH0875	08/28/24	08/28/24	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **08/21/24 11:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	85.7		%	1	BHH0668	08/22/24	08/23/24	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **08/21/24 11:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	2.42	0.0100	mmhos/cm	1	BHH0734	08/23/24	08/27/24	EPA 120.1	

Summit Scientific

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Citation Oil & Gas
 14077 Cutten Rd
 Houston TX., 77069-2212

Project: Absaroka - MPU PW Flowline Leak

Project Number: 0620.01
 Project Manager: Ben Shoup

Reported:
 08/28/24 13:27

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

Summit Scientific

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

Batch BHH0702 - EPA 3050B

Blank (BHH0702-BLK1)

Prepared: 08/23/24 Analyzed: 08/27/24

Boron ND 2.00 mg/L

LCS (BHH0702-BS1)

Prepared: 08/23/24 Analyzed: 08/27/24

Boron 3.37 2.00 mg/L 5.00 67.4 80-120 QM-01

Duplicate (BHH0702-DUP1)

Source: 2408260-01

Prepared: 08/23/24 Analyzed: 08/27/24

Boron 3.77 2.00 mg/L 3.59 4.86 20

Matrix Spike (BHH0702-MS1)

Source: 2408260-01

Prepared: 08/23/24 Analyzed: 08/27/24

Boron 5.29 2.00 mg/L 5.03 3.59 33.9 75-125 QM-01

Matrix Spike Dup (BHH0702-MSD1)

Source: 2408260-01

Prepared: 08/23/24 Analyzed: 08/27/24

Boron 6.57 2.00 mg/L 5.03 3.59 59.3 75-125 21.5 25 QM-01

Summit Scientific

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Reported:
 08/28/24 13:27

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

Summit Scientific

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

Batch BHH0733 - General Preparation

Blank (BHH0733-BLK1)

Prepared: 08/23/24 Analyzed: 08/27/24

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

LCS (BHH0733-BS1)

Prepared: 08/23/24 Analyzed: 08/27/24

Calcium	4.73	0.0500	mg/L wet	5.00	94.5	70-130
Magnesium	4.97	0.0500	"	5.00	99.4	70-130
Sodium	4.90	0.0500	"	5.00	98.1	70-130

Summit Scientific

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 Houston TX., 77069-2212

Project: Absaroka - MPU PW Flowline Leak

Project Number: 0620.01
 Project Manager: Ben Shoup

Reported:
 08/28/24 13:27

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

Summit Scientific

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

Batch BHH0668 - General Preparation

Duplicate (BHH0668-DUP1)	Source: 2407179-11		Prepared: 08/22/24 Analyzed: 08/23/24	
% Solids	93.2	%	93.7	0.488 20

Summit Scientific

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Project: Absaroka - MPU PW Flowline Leak

Project Number: 0620.01
 Project Manager: Ben Shoup

Reported:
 08/28/24 13:27

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 BHH0734 - General Preparation

Blank (BHH0734-BLK1)

Prepared: 08/23/24 Analyzed: 08/27/24

Specific Conductance (EC) ND 0.0100 mmhos/cm

LCS (BHH0734-BS1)

Prepared: 08/23/24 Analyzed: 08/27/24

Specific Conductance (EC) 0.154 0.0100 mmhos/cm 0.150 103 95-105

Duplicate (BHH0734-DUP1)

Source: 2408233-01

Prepared: 08/23/24 Analyzed: 08/27/24

Specific Conductance (EC) 0.594 0.0100 mmhos/cm 0.635 6.61 20

Summit Scientific

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Citation Oil & Gas
14077 Cutten Rd
Houston TX., 77069-2212

Project: Absaroka - MPU PW Flowline Leak

Project Number: 0620.01
Project Manager: Ben Shoup

Reported:
08/28/24 13:27

Notes and Definitions

- QM-01 The spike recovery for this QC sample is outside of established control limits due to sample matrix interference.
- 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