

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

September 20, 2023

Jacob Whritenour
Tasman Geosciences
6855 W. 119th Ave.
Broomfield, CO 80020
RE: Noble - Vern Marshall 1
Work Order #2309050

Enclosed are the results of analyses for samples received by Summit Scientific on 09/05/23 17:18. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Mikayla Axtell For Paul Shrewsbury
President



Tasman Geosciences
6855 W. 119th Ave.
Broomfield CO, 80020

Project: Noble - Vern Marshall 1
Project Number: UWRWE-A3126-ABN
Project Manager: Jacob Whritenour

Reported:
09/20/23 13:29

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FL01-A@4'	2309050-01	Soil	09/05/23 13:22	09/05/23 17:18
FL01-B@4'	2309050-02	Soil	09/05/23 13:28	09/05/23 17:18

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.

Send Data To:		Send Invoice To:	
Client: Noble / Tasman	Project Manager: Jake Whritenour	Company: Chevron	
Address: 6855 W. 119th Ave	E-Mail: Jwhritenour@tasman-geo.com	Project Name/Location: <u>Vern Marshall 1</u>	
City/State/Zip: Broomfield, CO 80020		AFE#: <u>UWRWE-A3126-ABN</u>	
Phone: 303-903-5168	Project Name: <u>Vern Marshall 1</u>	PO/Billing Codes:	
Sampler Name: Dalton Hagen	Project Number:	Contact: <u>Jeff White</u>	

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix			Analysis Requested							Special Instructions			
					HCl	HNO3	None	Other	Water	Soil	Air-Canister #	Other	VOC - 915	TPH - 915	PAH - 915	pH, EC, SAR	Boron - HWS	Metals - 915		HOLD		
1	FL01-Ae4	9/5/23	1322	3			X			X			X	X	X	X	X	X	X		pH, EC, SAR by saturated paste	
2	FL01-Be4	L	1328	L			L			L			L	L	L	L	L	L	L			
3																						
4																						
5																						
6																						
7																						
8																						
9																						
10																						
11																						
12																						
13																						
14																						
15																						

Relinquished by: <u>[Signature]</u>	Date/Time: <u>9/5/23 1530</u>	Received by: <u>Tasman Lockbox</u>	Date/Time: <u>9/5/23 1530</u>	TAT Business Days	Field DO	Notes:
				Same Day	Field EC	
Relinquished by: <u>Tasman Lockbox</u>	Date/Time: <u>9/23 1718</u>	Received by: <u>[Signature]</u>	Date/Time: <u>9/23 1718</u>	1 Day	Field ORP	
				2 Days	Field pH	
Relinquished by:	Date/Time:	Received by:	Date/Time:	3 Days	Field Temp.	
Temperature Upon Receipt: <u>94</u>	Corrected Temperature: <u>9</u>	IR gun #:		Standard	X Field Turb.	
					X Field Turb.	
					HNO3 lot #:	

S₂

Sample Receipt Checklist

S2 Work Order# 2309050

Client: Nabe Tasman Client Project ID: Vern Marshall 7

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"/>	<u>OK 7/16</u>
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):				

⁽¹⁾ If NO, then contact the client before proceeding with analysis and note in case narrative.

AS
Custodian Printed Name

9/5/23
Date/Time

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Tasman Geosciences
6855 W. 119th Ave.
Broomfield CO, 80020

Project: Noble - Vern Marshall I
Project Number: UWRWE-A3126-ABN
Project Manager: Jacob Whritenour

Reported:
09/20/23 13:29

FL01-A@4'
2309050-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/05/23 13:22**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	BGI0118	09/06/23	09/07/23	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: **09/05/23 13:22**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	0.0340	85.0 %		50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0381	95.3 %		50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0381	95.3 %		50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **09/05/23 13:22**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	ND	50		mg/kg	1	BGI0124	09/06/23	09/07/23	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **09/05/23 13:22**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl	12.8	102 %		30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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FL01-A@4'
2309050-01 (Soil)

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PAH by EPA Method 8270D SIM

Date Sampled: **09/05/23 13:22**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BGI0280	09/12/23	09/13/23	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: **09/05/23 13:22**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0202	60.7 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0164	49.2 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **09/05/23 13:22**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.0854	0.0100	mg/L	1	BGI0100	09/06/23	09/07/23	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **09/05/23 13:22**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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FL01-A@4'
2309050-01 (Soil)

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Total Metals by EPA 6020B

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	0.557	0.200	mg/kg dry	1	BGI0159	09/07/23	09/08/23	EPA 6020B	
Barium	56.9	0.400	"	"	"	"	"	"	
Cadmium	ND	0.200	"	"	"	"	"	"	
Copper	1.58	0.400	"	"	"	"	"	"	
Lead	5.81	0.200	"	"	"	"	"	"	
Nickel	1.50	0.400	"	"	"	"	"	"	
Silver	0.0213	0.0200	"	"	"	"	"	"	
Zinc	5.72	0.400	"	"	"	"	"	"	
Selenium	ND	0.260	"	"	"	"	"	"	

Hexavalent Chromium by EPA Method 7196

Date Sampled: **09/05/23 13:22**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BGI0171	09/07/23	09/07/23	EPA 7196A	

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

Date Sampled: **09/05/23 13:22**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	188	0.0532	mg/L dry	1	BGI0133	09/06/23	09/07/23	EPA 6020B	
Magnesium	43.2	0.0532	"	"	"	"	"	"	
Sodium	17.7	0.0532	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **09/05/23 13:22**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.303	0.00100	units	1	BGI0211	09/08/23	09/08/23	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

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2309050-01 (Soil)

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Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **09/05/23 13:22**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	94.0		%	1	BGI0099	09/06/23	09/06/23	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **09/05/23 13:22**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.421	0.0100	mmhos/cm	1	BGI0149	09/07/23	09/07/23	EPA 120.1	

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

Date Sampled: **09/05/23 13:22**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	6.78		pH Units	1	BGI0148	09/07/23	09/07/23	EPA 9045D	

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Reported:
09/20/23 13:29

FL01-B@4'
2309050-02 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/05/23 13:28**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BGI0118	09/06/23	09/07/23	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: **09/05/23 13:28**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4	0.0320	80.0 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0410	102 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0394	98.5 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **09/05/23 13:28**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BGI0124	09/06/23	09/07/23	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **09/05/23 13:28**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl	14.5	116 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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FL01-B@4'
2309050-02 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **09/05/23 13:28**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	0.0340	0.00500	mg/kg	1	BGI0280	09/12/23	09/13/23	EPA 8270D SIM	
Anthracene	0.0649	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	0.176	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	0.131	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	0.156	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	0.0649	0.00500	"	"	"	"	"	"	
Chrysene	0.152	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	0.365	0.00500	"	"	"	"	"	"	E
Fluorene	0.0202	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	0.0672	0.00500	"	"	"	"	"	"	
Pyrene	0.363	0.00500	"	"	"	"	"	"	E
1-Methylnaphthalene	0.00875	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **09/05/23 13:28**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0195	58.4 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0153	46.0 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **09/05/23 13:28**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.0466	0.0100	mg/L	1	BGI0100	09/06/23	09/07/23	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **09/05/23 13:28**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	0.719	0.200	mg/kg dry	1	BGI0159	09/07/23	09/08/23	EPA 6020B	

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FL01-B@4'
2309050-02 (Soil)

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Total Metals by EPA 6020B

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Barium	57.6	0.400	mg/kg dry	1	BGI0159	09/07/23	09/08/23	EPA 6020B	
Cadmium	0.256	0.200	"	"	"	"	"	"	
Copper	1.84	0.400	"	"	"	"	"	"	
Lead	5.98	0.200	"	"	"	"	"	"	
Nickel	1.87	0.400	"	"	"	"	"	"	
Silver	0.0354	0.0200	"	"	"	"	"	"	
Zinc	7.90	0.400	"	"	"	"	"	"	
Selenium	ND	0.260	"	"	"	"	"	"	

Hexavalent Chromium by EPA Method 7196

Date Sampled: **09/05/23 13:28**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BGI0171	09/07/23	09/07/23	EPA 7196A	

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

Date Sampled: **09/05/23 13:28**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	107	0.0546	mg/L dry	1	BGI0133	09/06/23	09/07/23	EPA 6020B	
Magnesium	21.0	0.0546	"	"	"	"	"	"	
Sodium	2.09	0.0546	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **09/05/23 13:28**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.0484	0.00100	units	1	BGI0211	09/08/23	09/08/23	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **09/05/23 13:28**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	91.5		%	1	BGI0099	09/06/23	09/06/23	Calculation	

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09/20/23 13:29

FL01-B@4'
2309050-02 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **09/05/23 13:28**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.130	0.0100	mmhos/cm	1	BGI0149	09/07/23	09/07/23	EPA 120.1	

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

Date Sampled: **09/05/23 13:28**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.60		pH Units	1	BGI0148	09/07/23	09/07/23	EPA 9045D	

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Reported:
09/20/23 13:29

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 BGI0118 - EPA 5030 Soil MS

Blank (BGI0118-BLK1)

Prepared & Analyzed: 09/06/23

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	0.0252		"	0.0400		62.9	50-150			
Surrogate: Toluene-d8	0.0423		"	0.0400		106	50-150			
Surrogate: 4-Bromofluorobenzene	0.0382		"	0.0400		95.5	50-150			

LCS (BGI0118-BS1)

Prepared & Analyzed: 09/06/23

Benzene	0.116	0.0020	mg/kg	0.100		116	70-130			
Toluene	0.116	0.0050	"	0.100		116	70-130			
Ethylbenzene	0.130	0.0050	"	0.100		130	70-130			
m,p-Xylene	0.249	0.010	"	0.200		124	70-130			
o-Xylene	0.113	0.0050	"	0.100		113	70-130			
1,2,4-Trimethylbenzene	0.121	0.0050	"	0.100		121	70-130			
1,3,5-Trimethylbenzene	0.124	0.0050	"	0.100		124	70-130			
Naphthalene	0.0731	0.0038	"	0.100		73.1	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0275		"	0.0400		68.8	50-150			
Surrogate: Toluene-d8	0.0388		"	0.0400		97.0	50-150			
Surrogate: 4-Bromofluorobenzene	0.0384		"	0.0400		96.0	50-150			

Matrix Spike (BGI0118-MS1)

Source: 2309027-01

Prepared & Analyzed: 09/06/23

Benzene	0.104	0.0020	mg/kg	0.100	ND	104	70-130			
Toluene	0.0996	0.0050	"	0.100	ND	99.6	70-130			
Ethylbenzene	0.101	0.0050	"	0.100	ND	101	70-130			
m,p-Xylene	0.192	0.010	"	0.200	ND	95.9	70-130			
o-Xylene	0.0895	0.0050	"	0.100	ND	89.5	70-130			
1,2,4-Trimethylbenzene	0.0880	0.0050	"	0.100	ND	88.0	70-130			
1,3,5-Trimethylbenzene	0.0954	0.0050	"	0.100	ND	95.4	70-130			
Naphthalene	0.108	0.0038	"	0.100	ND	108	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0351		"	0.0400		87.7	50-150			
Surrogate: Toluene-d8	0.0418		"	0.0400		105	50-150			
Surrogate: 4-Bromofluorobenzene	0.0359		"	0.0400		89.7	50-150			

Summit Scientific

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Tasman Geosciences
6855 W. 119th Ave.
Broomfield CO, 80020

Project: Noble - Vern Marshall 1
Project Number: UWRWE-A3126-ABN
Project Manager: Jacob Whritenour

Reported:
09/20/23 13:29

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 BGI0118 - EPA 5030 Soil MS

Matrix Spike Dup (BGI0118-MSD1)	Source: 2309027-01			Prepared & Analyzed: 09/06/23						
Benzene	0.102	0.0020	mg/kg	0.100	ND	102	70-130	1.52	30	
Toluene	0.0941	0.0050	"	0.100	ND	94.1	70-130	5.67	30	
Ethylbenzene	0.0934	0.0050	"	0.100	ND	93.4	70-130	7.84	30	
m,p-Xylene	0.231	0.010	"	0.200	ND	115	70-130	18.4	30	
o-Xylene	0.108	0.0050	"	0.100	ND	108	70-130	18.6	30	
1,2,4-Trimethylbenzene	0.0970	0.0050	"	0.100	ND	97.0	70-130	9.76	30	
1,3,5-Trimethylbenzene	0.120	0.0050	"	0.100	ND	120	70-130	22.5	30	
Naphthalene	0.100	0.0038	"	0.100	ND	100	70-130	7.33	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0318</i>		<i>"</i>	<i>0.0400</i>		<i>79.6</i>	<i>50-150</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0392</i>		<i>"</i>	<i>0.0400</i>		<i>98.0</i>	<i>50-150</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0237</i>		<i>"</i>	<i>0.0400</i>		<i>59.3</i>	<i>50-150</i>			

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Broomfield CO, 80020

Project: Noble - Vern Marshall 1
Project Number: UWRWE-A3126-ABN
Project Manager: Jacob Whritenour

Reported:
09/20/23 13:29

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 BGI0124 - EPA 3550A

Blank (BGI0124-BLK1)

Prepared & Analyzed: 09/06/23

C10-C28 (DRO)	ND	50	mg/kg								
C28-C36 (ORO)	ND	50	"								
Surrogate: <i>o</i> -Terphenyl	13.7		"	12.5	109	30-150					

LCS (BGI0124-BS1)

Prepared & Analyzed: 09/06/23

C10-C28 (DRO)	525	50	mg/kg	500	105	70-130					
Surrogate: <i>o</i> -Terphenyl	12.8		"	12.5	102	30-150					

Matrix Spike (BGI0124-MS1)

Source: 2309027-01

Prepared & Analyzed: 09/06/23

C10-C28 (DRO)	411	50	mg/kg	500	11.3	79.9	70-130				
Surrogate: <i>o</i> -Terphenyl	11.5		"	12.5	91.9	30-150					

Matrix Spike Dup (BGI0124-MSD1)

Source: 2309027-01

Prepared & Analyzed: 09/06/23

C10-C28 (DRO)	426	50	mg/kg	500	11.3	82.9	70-130	3.69	20		
Surrogate: <i>o</i> -Terphenyl	12.7		"	12.5	101	30-150					

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Broomfield CO, 80020

Project: Noble - Vern Marshall I
Project Number: UWRWE-A3126-ABN
Project Manager: Jacob Whritenour

Reported:
09/20/23 13:29

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 BGI0280 - EPA 5030 Soil MS

Blank (BGI0280-BLK1)

Prepared & Analyzed: 09/12/23

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	"							
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0257</i>		<i>"</i>	<i>0.0333</i>		<i>77.2</i>	<i>40-150</i>			
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0315</i>		<i>"</i>	<i>0.0333</i>		<i>94.6</i>	<i>40-150</i>			

LCS (BGI0280-BS1)

Prepared & Analyzed: 09/12/23

Acenaphthene	0.0290	0.00500	mg/kg	0.0333		87.1	31-137			
Anthracene	0.0302	0.00500	"	0.0333		90.7	30-120			
Benzo (a) anthracene	0.0279	0.00500	"	0.0333		83.8	30-120			
Benzo (a) pyrene	0.0292	0.00500	"	0.0333		87.6	30-120			
Benzo (b) fluoranthene	0.0290	0.00500	"	0.0333		87.1	30-120			
Benzo (k) fluoranthene	0.0310	0.00500	"	0.0333		92.9	30-120			
Chrysene	0.0303	0.00500	"	0.0333		90.8	30-120			
Dibenz (a,h) anthracene	0.0123	0.00500	"	0.0333		36.9	30-120			
Fluoranthene	0.0295	0.00500	"	0.0333		88.6	30-120			
Fluorene	0.0293	0.00500	"	0.0333		87.8	30-120			
Indeno (1,2,3-cd) pyrene	0.0216	0.00500	"	0.0333		64.8	30-120			
Pyrene	0.0280	0.00500	"	0.0333		84.0	35-142			
1-Methylnaphthalene	0.0268	0.00500	"	0.0333		80.4	35-142			
2-Methylnaphthalene	0.0310	0.00500	"	0.0333		92.9	35-142			
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0279</i>		<i>"</i>	<i>0.0333</i>		<i>83.7</i>	<i>40-150</i>			
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0301</i>		<i>"</i>	<i>0.0333</i>		<i>90.4</i>	<i>40-150</i>			

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Tasman Geosciences
6855 W. 119th Ave.
Broomfield CO, 80020

Project: Noble - Vern Marshall 1

Project Number: UWRWE-A3126-ABN
Project Manager: Jacob Whritenour

Reported:
09/20/23 13:29

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 BGI0280 - EPA 5030 Soil MS

Matrix Spike (BGI0280-MS1)	Source: 2309005-01			Prepared & Analyzed: 09/12/23						
Acenaphthene	0.0181	0.00500	mg/kg	0.0333	ND	54.2	31-137			
Anthracene	0.0197	0.00500	"	0.0333	ND	59.0	30-120			
Benzo (a) anthracene	0.0188	0.00500	"	0.0333	ND	56.5	30-120			
Benzo (a) pyrene	0.0172	0.00500	"	0.0333	ND	51.7	30-120			
Benzo (b) fluoranthene	0.0178	0.00500	"	0.0333	ND	53.5	30-120			
Benzo (k) fluoranthene	0.0192	0.00500	"	0.0333	ND	57.5	30-120			
Chrysene	0.0184	0.00500	"	0.0333	ND	55.2	30-120			
Dibenz (a,h) anthracene	0.0190	0.00500	"	0.0333	ND	57.0	30-120			
Fluoranthene	0.0187	0.00500	"	0.0333	ND	56.1	30-120			
Fluorene	0.0208	0.00500	"	0.0333	ND	62.4	30-120			
Indeno (1,2,3-cd) pyrene	0.0150	0.00500	"	0.0333	ND	45.1	30-120			
Pyrene	0.0158	0.00500	"	0.0333	ND	47.4	35-142			
1-Methylnaphthalene	0.0196	0.00500	"	0.0333	ND	58.9	15-130			
2-Methylnaphthalene	0.0210	0.00500	"	0.0333	ND	63.1	15-130			
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0214</i>		<i>"</i>	<i>0.0333</i>		<i>64.3</i>	<i>40-150</i>			
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0193</i>		<i>"</i>	<i>0.0333</i>		<i>58.0</i>	<i>40-150</i>			

Matrix Spike Dup (BGI0280-MSD1)	Source: 2309005-01			Prepared & Analyzed: 09/12/23						
Acenaphthene	0.0175	0.00500	mg/kg	0.0333	ND	52.5	31-137	3.04	30	
Anthracene	0.0159	0.00500	"	0.0333	ND	47.8	30-120	21.1	30	
Benzo (a) anthracene	0.0177	0.00500	"	0.0333	ND	53.0	30-120	6.43	30	
Benzo (a) pyrene	0.0176	0.00500	"	0.0333	ND	52.8	30-120	2.09	30	
Benzo (b) fluoranthene	0.0182	0.00500	"	0.0333	ND	54.6	30-120	2.01	30	
Benzo (k) fluoranthene	0.0190	0.00500	"	0.0333	ND	57.0	30-120	0.852	30	
Chrysene	0.0181	0.00500	"	0.0333	ND	54.2	30-120	1.89	30	
Dibenz (a,h) anthracene	0.0169	0.00500	"	0.0333	ND	50.6	30-120	11.8	30	
Fluoranthene	0.0176	0.00500	"	0.0333	ND	52.9	30-120	5.82	30	
Fluorene	0.0184	0.00500	"	0.0333	ND	55.1	30-120	12.5	30	
Indeno (1,2,3-cd) pyrene	0.0202	0.00500	"	0.0333	ND	60.7	30-120	29.6	30	
Pyrene	0.0165	0.00500	"	0.0333	ND	49.4	35-142	4.02	30	
1-Methylnaphthalene	0.0190	0.00500	"	0.0333	ND	57.0	15-130	3.25	50	
2-Methylnaphthalene	0.0166	0.00500	"	0.0333	ND	49.9	15-130	23.4	50	
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0178</i>		<i>"</i>	<i>0.0333</i>		<i>53.3</i>	<i>40-150</i>			
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0180</i>		<i>"</i>	<i>0.0333</i>		<i>54.0</i>	<i>40-150</i>			

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Tasman Geosciences
6855 W. 119th Ave.
Broomfield CO, 80020

Project: Noble - Vern Marshall 1
Project Number: UWRWE-A3126-ABN
Project Manager: Jacob Whritenour

Reported:
09/20/23 13:29

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 BGI0100 - EPA 3050B

Blank (BGI0100-BLK1)

Prepared: 09/06/23 Analyzed: 09/07/23

Boron ND 0.0100 mg/L

LCS (BGI0100-BS1)

Prepared: 09/06/23 Analyzed: 09/07/23

Boron 4.71 0.0100 mg/L 5.00 94.2 80-120

Duplicate (BGI0100-DUP1)

Source: 2309033-01

Prepared: 09/06/23 Analyzed: 09/07/23

Boron 0.298 0.0100 mg/L 0.210 34.4 20 QR-04

Matrix Spike (BGI0100-MS1)

Source: 2309033-01

Prepared: 09/06/23 Analyzed: 09/07/23

Boron 4.83 0.0100 mg/L 5.00 0.210 92.4 75-125

Matrix Spike Dup (BGI0100-MSD1)

Source: 2309033-01

Prepared: 09/06/23 Analyzed: 09/07/23

Boron 4.96 0.0100 mg/L 5.00 0.210 95.0 75-125 2.59 25

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6855 W. 119th Ave.
Broomfield CO, 80020

Project: Noble - Vern Marshall 1
Project Number: UWRWE-A3126-ABN
Project Manager: Jacob Whritenour

Reported:
09/20/23 13:29

Hexavalent Chromium by EPA Method 7196 - Quality Control
Summit Scientific

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

Batch BGI0171 - 3060A Mod

Blank (BGI0171-BLK1)

Prepared & Analyzed: 09/07/23

Chromium, Hexavalent ND 0.30 mg/kg wet

LCS (BGI0171-BS1)

Prepared & Analyzed: 09/07/23

Chromium, Hexavalent 24.0 0.30 mg/kg wet 25.0 96.2 80-120

Duplicate (BGI0171-DUP1)

Source: 2308661-02

Prepared & Analyzed: 09/07/23

Chromium, Hexavalent ND 0.30 mg/kg dry ND 20

Matrix Spike (BGI0171-MS1)

Source: 2308661-02

Prepared & Analyzed: 09/07/23

Chromium, Hexavalent 27.2 0.30 mg/kg dry 29.5 ND 92.2 75-125

Matrix Spike Dup (BGI0171-MSD1)

Source: 2308661-02

Prepared & Analyzed: 09/07/23

Chromium, Hexavalent 27.0 0.30 mg/kg dry 29.5 ND 91.6 75-125 0.653 20

Summit Scientific

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Tasman Geosciences
6855 W. 119th Ave.
Broomfield CO, 80020

Project: Noble - Vern Marshall 1
Project Number: UWRWE-A3126-ABN
Project Manager: Jacob Whritenour

Reported:
09/20/23 13:29

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 BGI0133 - General Preparation

Blank (BGI0133-BLK1)

Prepared: 09/06/23 Analyzed: 09/07/23

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

LCS (BGI0133-BS1)

Prepared: 09/06/23 Analyzed: 09/07/23

Calcium	4.76	0.0500	mg/L wet	5.00		95.2	70-130			
Magnesium	4.73	0.0500	"	5.00		94.6	70-130			
Sodium	4.52	0.0500	"	5.00		90.4	70-130			

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Tasman Geosciences
 6855 W. 119th Ave.
 Broomfield CO, 80020

Project: Noble - Vern Marshall 1

Project Number: UWRWE-A3126-ABN
 Project Manager: Jacob Whritenour

Reported:
 09/20/23 13:29

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 BGI0099 - General Preparation

Duplicate (BGI0099-DUP1)

Source: 2308165-05

Prepared & Analyzed: 09/06/23

% Solids	77.0		%		76.4			0.779	20	
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Summit Scientific

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Tasman Geosciences
6855 W. 119th Ave.
Broomfield CO, 80020

Project: Noble - Vern Marshall 1
Project Number: UWRWE-A3126-ABN
Project Manager: Jacob Whritenour

Reported:
09/20/23 13:29

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 BGI0149 - General Preparation

Blank (BGI0149-BLK1)

Prepared & Analyzed: 09/07/23

Specific Conductance (EC) ND 0.0100 mmhos/cm

LCS (BGI0149-BS1)

Prepared & Analyzed: 09/07/23

Specific Conductance (EC) 0.155 0.0100 mmhos/cm 0.150 104 95-105

Duplicate (BGI0149-DUP1)

Source: 2309048-01

Prepared & Analyzed: 09/07/23

Specific Conductance (EC) 0.608 0.0100 mmhos/cm 0.608 0.00 20

Summit Scientific

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Tasman Geosciences
6855 W. 119th Ave.
Broomfield CO, 80020

Project: Noble - Vern Marshall 1

Project Number: UWRWE-A3126-ABN
Project Manager: Jacob Whritenour

Reported:
09/20/23 13:29

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 BGI0148 - General Preparation

LCS (BGI0148-BS1)

Prepared & Analyzed: 09/07/23

pH 9.06 pH Units 9.18 98.7 95-105

Duplicate (BGI0148-DUP1)

Source: 2309048-01

Prepared & Analyzed: 09/07/23

pH 7.17 pH Units 7.17 0.00 20

Summit Scientific

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Tasman Geosciences
6855 W. 119th Ave.
Broomfield CO, 80020

Project: Noble - Vern Marshall 1

Project Number: UWRWE-A3126-ABN
Project Manager: Jacob Whritenour

Reported:
09/20/23 13:29

Notes and Definitions

- QR-04 The RPD value for the sample duplicate or MS/MSD was outside of QC acceptance. QC batch accepted based on LCS and/or LCSD recovery and/or RPD values.
- E The concentration indicated for this analyte is an estimated value above the calibration range of the instrument.
- 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