

# Summit Scientific

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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.*

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

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:  Date/Time: 9/5/23 1530	Received by: Tasman Lockbox Date/Time: 9/5/23 1530	TAT Business Days		Field DO	<b>Notes:</b>
		Same Day		Field EC	
Relinquished by: Tasman Lockbox Date/Time: 9/23 1718	Received by:  Date/Time: 9/23 1718	1 Day		Field ORP	
		2 Days		Field pH	
		3 Days		Field Temp.	
Relinquished by:	Received by:	Standard	X	Field Turb.	
Temperature Upon Receipt: 94	Corrected Temperature: 8	IR gun #:		HNO3 lot #:	

S<sub>2</sub>

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? <sup>(1)</sup> 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? <sup>(1)</sup>	<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 <sup>2+</sup> ), Hexavalent Chromium (Cr <sup>6+</sup> , 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? <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"/>	
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"/>	
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"/>	
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, H <sub>2</sub> SO <sub>4</sub> , NaOH, HNO <sub>3</sub> , etc.	<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.

AS  
Custodian Printed Name

9/5/23  
Date/Time

10/10



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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**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
<b>Boron</b>	<b>0.0854</b>	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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Tasman Geosciences  
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Project: Noble - Vern Marshall 1

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

**Reported:**  
09/20/23 13:29

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

**Summit Scientific**

**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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**Reported:**  
09/20/23 13:29

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

**Summit Scientific**

**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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Project: Noble - Vern Marshall I  
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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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**Reported:**  
09/20/23 13:29

**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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Project Manager: Jacob Whritenour

**Reported:**  
09/20/23 13:29

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

**Summit Scientific**

**Total Metals by EPA 6020B**

Analyte	Result	Reporting 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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**Reported:**  
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)	<b>0.130</b>	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
<b>pH</b>	<b>7.60</b>		pH Units	1	BGI0148	09/07/23	09/07/23	EPA 9045D	

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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

##### 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	"							
<i>Surrogate: 1,2-Dichloroethane-d4</i>	0.0252		"	0.0400		62.9	50-150			
<i>Surrogate: Toluene-d8</i>	0.0423		"	0.0400		106	50-150			
<i>Surrogate: 4-Bromofluorobenzene</i>	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			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	0.0275		"	0.0400		68.8	50-150			
<i>Surrogate: Toluene-d8</i>	0.0388		"	0.0400		97.0	50-150			
<i>Surrogate: 4-Bromofluorobenzene</i>	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			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	0.0351		"	0.0400		87.7	50-150			
<i>Surrogate: Toluene-d8</i>	0.0418		"	0.0400		105	50-150			
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0359		"	0.0400		89.7	50-150			

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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**

<b>Matrix Spike Dup (BGI0118-MSD1)</b>	<b>Source: 2309027-01</b>			<b>Prepared &amp; Analyzed: 09/06/23</b>						
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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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	Source		%REC		RPD		Notes
		Limit	Units	Level	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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6855 W. 119th Ave.  
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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**

**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**

<b>Matrix Spike (BGI0280-MS1)</b>	<b>Source: 2309005-01</b>			<b>Prepared &amp; Analyzed: 09/12/23</b>							
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>				

<b>Matrix Spike Dup (BGI0280-MSD1)</b>	<b>Source: 2309005-01</b>			<b>Prepared &amp; Analyzed: 09/12/23</b>							
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 Result	%REC		RPD	Limit	Notes
		Limit	Units			%REC	Limits			

**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	Limit		

**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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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		%REC		RPD		Notes
		Limit	Units		Result	%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 Level	Source		%REC		RPD		Notes
		Limit	Units		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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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 Result	%REC		RPD		Notes
		Limit	Units			%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

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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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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