

# Summit Scientific

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4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

August 26, 2024

Jacob Whritenour

Tasman Geosciences

6855 W. 119th Ave.

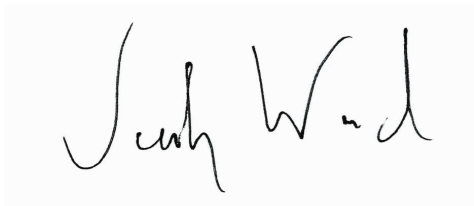
Broomfield, CO 80020

RE: Noble - Five Rivers K09-21D

Work Order #2408210

Enclosed are the results of analyses for samples received by Summit Scientific on 08/20/24 17:40. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "Jacob Wood". The signature is written in a cursive, flowing style.

Jacob Wood For Paul Shrewsbury

President



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

Project: Noble - Five Rivers K09-21D

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
08/26/24 12:34

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS01-FL01-M@3'	2408210-01	Soil	08/20/24 14:28	08/20/24 17:40

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:	
City/State/Zip: Broomfield/CO/ 80020				AFE#:	
Phone: 602-881-5716		Project Name: <u>Five Rivers 809-21D</u>		PO/Billing Codes:	
Sampler Name: <del>Dennis Gray</del> <u>MP Molly Parks</u>		Project Number:		Contact: <u>Erin Crawford</u>	

				Preservative				Matrix				Analysis Requested								Special Instructions
ID	Sample Description	Date Sampled	Time Sampled	# of containers	HCl	HNO3	None	Other	Water	Soil	Air-Canister #	Other	Metals - 915	VOC - 915	TPH - 915	PAH - 915	SAR, EC, pH	Boron - HWS	HOLD	
1	SSOI-FL01-M@3'	08-20-21	1428	2			X			X			X	X	X	X	X	X		SAR, EC, pH by saturated paste
2																				
3																				
4																				
5																				
6																				
7																				
8																				
9																				
10																				
11																				
12																				
13																				
14																				
15																				

Relinquished by:	Date/Time:	Received by: <b>Tasman Lock Box</b>	Date/Time:	TAT Business Days	Field DO	Notes:
<u>MP</u>	<u>08-20-24/1672</u>		<u>08-20-24/1672</u>	Same Day <input checked="" type="checkbox"/>	Field EC	
Relinquished by:	Date/Time:	Received by:	Date/Time:	1 Day	Field ORP	
<u>Tasman Lock Box</u>	<u>8/20/24</u>	<u>[Signature]</u>	<u>8/20/24</u>	2 Days	Field pH	
	<u>1740</u>		<u>1740</u>	3 Days	Field Temp.	
Relinquished by:	Date/Time:	Received by:	Date/Time:	Standard	Field Turb.	
Temperature Upon Receipt: <u>71</u>	Corrected Temperature: <u>8</u>	IR gun #: <u>1</u>	HNO3 lot #:			

S<sub>2</sub>

## Sample Receipt Checklist

S2 Work Order# 2408810Client: Nadee Foman Client Project ID: Five Rivers K09-210Shipped Via: H.D./P.U./FedEx/UPS/USPS/Other ☐ Airbill #: ☐

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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Matrix (Check all that apply) Air ☐ Soil/Solid ☒ Water ☐ Other ☐Temp (°C) 7.1 Thermometer # 1

	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"/>	outside
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 checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Same day
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

8/20/24  
Date/Time



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

Project: Noble - Five Rivers K09-21D

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
08/26/24 12:34

**SS01-FL01-M@3'**  
**2408210-01 (Soil)**

**Summit Scientific**

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

Date Sampled: **08/20/24 14:28**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	BHH0559	08/20/24	08/21/24	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: **08/20/24 14:28**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	0.0411	103 %		50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0393	98.3 %		50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0408	102 %		50-150		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **08/20/24 14:28**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	ND	50		mg/kg	1	BHH0558	08/20/24	08/21/24	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **08/20/24 14:28**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl	9.02	72.2 %		30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

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**2408210-01 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **08/20/24 14:28**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	0.100	0.00500	mg/kg	1	BHH0561	08/21/24	08/23/24	EPA 8270D SIM	
Anthracene	0.355	0.00500	"	"	"	"	"	"	E
Benzo (a) anthracene	0.331	0.00500	"	"	"	"	"	"	E
Benzo (a) pyrene	0.242	0.00500	"	"	"	"	"	"	E
Benzo (b) fluoranthene	0.297	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	0.134	0.00500	"	"	"	"	"	"	
Chrysene	0.366	0.00500	"	"	"	"	"	"	E
Dibenz (a,h) anthracene	0.0390	0.00500	"	"	"	"	"	"	
Fluoranthene	1.49	0.0500	"	10	"	"	08/23/24	"	
Fluorene	0.171	0.00500	"	1	"	"	08/23/24	"	
Indeno (1,2,3-cd) pyrene	0.146	0.00500	"	"	"	"	"	"	
Pyrene	1.05	0.0500	"	10	"	"	08/23/24	"	
1-Methylnaphthalene	ND	0.00500	"	1	"	"	08/23/24	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **08/20/24 14:28**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0145	43.5 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0141	42.4 %	40-150		"	"	"	"	

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

Date Sampled: **08/20/24 14:28**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	2.00	mg/L	1	BHH0577	08/21/24	08/22/24	EPA 6020B	

**Total Metals by EPA 6020B**

Date Sampled: **08/20/24 14:28**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	1.28	0.200	mg/kg dry	1	BHH0578	08/21/24	08/21/24	EPA 6020B	

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**SS01-FL01-M@3'**  
**2408210-01 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Barium	52.4	0.400	mg/kg dry	1	BHH0578	08/21/24	08/21/24	EPA 6020B
Cadmium	0.218	0.200	"	"	"	"	"	"
Copper	4.53	0.400	"	"	"	"	"	"
Lead	7.77	0.200	"	"	"	"	"	"
Nickel	1.73	0.400	"	"	"	"	"	"
Silver	0.0794	0.0200	"	"	"	"	"	"
Zinc	20.5	0.400	"	"	"	"	"	"
Selenium	ND	0.260	"	"	"	"	"	"

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **08/20/24 14:28**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BHH0570	08/21/24	08/21/24	EPA 7196A	

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

Date Sampled: **08/20/24 14:28**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	24.7	0.0500	mg/L dry	1	BHH0547	08/21/24	08/22/24	EPA 6020B	
Magnesium	3.43	0.0500	"	"	"	"	"	"	
Sodium	64.6	0.0500	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **08/20/24 14:28**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	3.23	0.00100	units	1	BHH0705	08/23/24	08/23/24	Calculation	

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

Date Sampled: **08/20/24 14:28**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	88.9		%	1	BHH0556	08/21/24	08/21/24	Calculation	

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Project Number: [none]  
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08/26/24 12:34

**SS01-FL01-M@3'**  
**2408210-01 (Soil)**

**Summit Scientific**

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

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

Date Sampled: **08/20/24 14:28**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Specific Conductance (EC)	<b>0.739</b>	0.0100		mmhos/cm	1	BHH0548	08/20/24	08/21/24	EPA 120.1	I-03

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

Date Sampled: **08/20/24 14:28**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
<b>pH</b>	<b>7.70</b>			pH Units	1	BHH0549	08/20/24	08/21/24	EPA 9045D	I-03

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08/26/24 12:34

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

### Summit Scientific

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

#### Batch BHH0559 - EPA 5030 Soil MS

##### Blank (BHH0559-BLK1)

Prepared: 08/20/24 Analyzed: 08/21/24

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	0.0413		"	0.0400		103	50-150			
Surrogate: Toluene-d8	0.0392		"	0.0400		97.9	50-150			
Surrogate: 4-Bromofluorobenzene	0.0389		"	0.0400		97.2	50-150			

##### LCS (BHH0559-BS1)

Prepared: 08/20/24 Analyzed: 08/21/24

Benzene	0.0943	0.0020	mg/kg	0.100		94.3	70-130			
Toluene	0.0935	0.0050	"	0.100		93.5	70-130			
Ethylbenzene	0.0938	0.0050	"	0.100		93.8	70-130			
m,p-Xylene	0.182	0.010	"	0.200		90.8	70-130			
o-Xylene	0.0907	0.0050	"	0.100		90.7	70-130			
1,2,4-Trimethylbenzene	0.0865	0.0050	"	0.100		86.5	70-130			
1,3,5-Trimethylbenzene	0.0866	0.0050	"	0.100		86.6	70-130			
Naphthalene	0.0822	0.0038	"	0.100		82.2	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0444		"	0.0400		111	50-150			
Surrogate: Toluene-d8	0.0405		"	0.0400		101	50-150			
Surrogate: 4-Bromofluorobenzene	0.0394		"	0.0400		98.6	50-150			

##### Matrix Spike (BHH0559-MS1)

Source: 2408204-01

Prepared: 08/20/24 Analyzed: 08/21/24

Benzene	0.0873	0.0020	mg/kg	0.100	ND	87.3	70-130			
Toluene	0.0862	0.0050	"	0.100	ND	86.2	70-130			
Ethylbenzene	0.0910	0.0050	"	0.100	ND	91.0	70-130			
m,p-Xylene	0.174	0.010	"	0.200	ND	86.9	70-130			
o-Xylene	0.0853	0.0050	"	0.100	ND	85.3	70-130			
1,2,4-Trimethylbenzene	0.0817	0.0050	"	0.100	ND	81.7	70-130			
1,3,5-Trimethylbenzene	0.0835	0.0050	"	0.100	ND	83.5	70-130			
Naphthalene	0.0782	0.0038	"	0.100	ND	78.2	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0439		"	0.0400		110	50-150			
Surrogate: Toluene-d8	0.0396		"	0.0400		98.9	50-150			
Surrogate: 4-Bromofluorobenzene	0.0396		"	0.0400		99.0	50-150			

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Project: Noble - Five Rivers K09-21D

Project Number: [none]  
Project Manager: Jacob Whritenour

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08/26/24 12:34

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

### Summit Scientific

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

#### Batch BHH0559 - EPA 5030 Soil MS

##### Matrix Spike Dup (BHH0559-MSD1)

Source: 2408204-01

Prepared: 08/20/24 Analyzed: 08/21/24

Benzene	0.0816	0.0020	mg/kg	0.100	ND	81.6	70-130	6.75	30	
Toluene	0.0807	0.0050	"	0.100	ND	80.7	70-130	6.58	30	
Ethylbenzene	0.0857	0.0050	"	0.100	ND	85.7	70-130	6.01	30	
m,p-Xylene	0.169	0.010	"	0.200	ND	84.3	70-130	3.10	30	
o-Xylene	0.0802	0.0050	"	0.100	ND	80.2	70-130	6.09	30	
1,2,4-Trimethylbenzene	0.0776	0.0050	"	0.100	ND	77.6	70-130	5.16	30	
1,3,5-Trimethylbenzene	0.0798	0.0050	"	0.100	ND	79.8	70-130	4.52	30	
Naphthalene	0.0758	0.0038	"	0.100	ND	75.8	70-130	3.12	30	
Surrogate: 1,2-Dichloroethane-d4	0.0420		"	0.0400		105	50-150			
Surrogate: Toluene-d8	0.0399		"	0.0400		99.7	50-150			
Surrogate: 4-Bromofluorobenzene	0.0384		"	0.0400		95.9	50-150			

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08/26/24 12:34

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

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

**Batch BHH0558 - EPA 3550A**

**Blank (BHH0558-BLK1)**

Prepared: 08/20/24 Analyzed: 08/21/24

C10-C28 (DRO)	ND	50	mg/kg							
C28-C36 (ORO)	ND	50	"							
Surrogate: o-Terphenyl	15.3		"	12.5		123	30-150			

**LCS (BHH0558-BS1)**

Prepared: 08/20/24 Analyzed: 08/21/24

C10-C28 (DRO)	422	50	mg/kg	500		84.3	70-130			
Surrogate: o-Terphenyl	14.7		"	12.5		117	30-150			

**Matrix Spike (BHH0558-MS1)**

Source: 2408204-01

Prepared: 08/20/24 Analyzed: 08/21/24

C10-C28 (DRO)	405	50	mg/kg	500	26.3	75.8	70-130			
Surrogate: o-Terphenyl	11.8		"	12.5		94.1	30-150			

**Matrix Spike Dup (BHH0558-MSD1)**

Source: 2408204-01

Prepared: 08/20/24 Analyzed: 08/21/24

C10-C28 (DRO)	401	50	mg/kg	500	26.3	75.0	70-130	1.03	20	
Surrogate: o-Terphenyl	12.5		"	12.5		100	30-150			

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Project Number: [none]  
Project Manager: Jacob Whritenour

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08/26/24 12:34

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

### Summit Scientific

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

#### Batch BHH0561 - EPA 5030 Soil MS

##### Blank (BHH0561-BLK1)

Prepared: 08/21/24 Analyzed: 08/22/24

Acenaphthene	ND	0.00500	mg/kg							
Anthracene	ND	0.00500	"							
Benzo (a) anthracene	ND	0.00500	"							
Benzo (a) pyrene	ND	0.00500	"							
Benzo (b) fluoranthene	ND	0.00500	"							
Benzo (k) fluoranthene	ND	0.00500	"							
Chrysene	ND	0.00500	"							
Dibenz (a,h) anthracene	ND	0.00500	"							
Fluoranthene	ND	0.00500	"							
Fluorene	ND	0.00500	"							
Indeno (1,2,3-cd) pyrene	ND	0.00500	"							
Pyrene	ND	0.00500	"							
1-Methylnaphthalene	ND	0.00500	"							
2-Methylnaphthalene	ND	0.00500	"							
Surrogate: 2-Methylnaphthalene-d10	0.0182		"	0.0333		54.5	40-150			
Surrogate: Fluoranthene-d10	0.0169		"	0.0333		50.6	40-150			

##### LCS (BHH0561-BS1)

Prepared: 08/21/24 Analyzed: 08/22/24

Acenaphthene	0.0261	0.00500	mg/kg	0.0333		78.3	31-137			
Anthracene	0.0200	0.00500	"	0.0333		60.0	30-120			
Benzo (a) anthracene	0.0231	0.00500	"	0.0333		69.2	30-120			
Benzo (a) pyrene	0.0223	0.00500	"	0.0333		67.0	30-120			
Benzo (b) fluoranthene	0.0217	0.00500	"	0.0333		65.2	30-120			
Benzo (k) fluoranthene	0.0229	0.00500	"	0.0333		68.6	30-120			
Chrysene	0.0240	0.00500	"	0.0333		71.9	30-120			
Dibenz (a,h) anthracene	0.0239	0.00500	"	0.0333		71.6	30-120			
Fluoranthene	0.0201	0.00500	"	0.0333		60.4	30-120			
Fluorene	0.0249	0.00500	"	0.0333		74.7	30-120			
Indeno (1,2,3-cd) pyrene	0.0188	0.00500	"	0.0333		56.5	30-120			
Pyrene	0.0266	0.00500	"	0.0333		79.7	35-142			
1-Methylnaphthalene	0.0219	0.00500	"	0.0333		65.7	35-142			
2-Methylnaphthalene	0.0208	0.00500	"	0.0333		62.5	35-142			
Surrogate: 2-Methylnaphthalene-d10	0.0216		"	0.0333		64.9	40-150			
Surrogate: Fluoranthene-d10	0.0201		"	0.0333		60.3	40-150			

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

Project: Noble - Five Rivers K09-21D

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
08/26/24 12:34

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

### Summit Scientific

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

#### Batch BHH0561 - EPA 5030 Soil MS

##### Matrix Spike (BHH0561-MS1)

Source: 2408202-26

Prepared: 08/21/24 Analyzed: 08/22/24

Acenaphthene	0.0213	0.00500	mg/kg	0.0333	ND	64.0	31-137		
Anthracene	0.0162	0.00500	"	0.0333	ND	48.5	30-120		
Benzo (a) anthracene	0.0174	0.00500	"	0.0333	ND	52.3	30-120		
Benzo (a) pyrene	0.0171	0.00500	"	0.0333	ND	51.4	30-120		
Benzo (b) fluoranthene	0.0162	0.00500	"	0.0333	ND	48.5	30-120		
Benzo (k) fluoranthene	0.0166	0.00500	"	0.0333	ND	49.9	30-120		
Chrysene	0.0178	0.00500	"	0.0333	ND	53.3	30-120		
Dibenz (a,h) anthracene	0.0193	0.00500	"	0.0333	ND	58.0	30-120		
Fluoranthene	0.0154	0.00500	"	0.0333	ND	46.3	30-120		
Fluorene	0.0203	0.00500	"	0.0333	ND	60.8	30-120		
Indeno (1,2,3-cd) pyrene	0.0180	0.00500	"	0.0333	ND	54.0	30-120		
Pyrene	0.0216	0.00500	"	0.0333	ND	64.8	35-142		
1-Methylnaphthalene	0.0214	0.00500	"	0.0333	ND	64.2	15-130		
2-Methylnaphthalene	0.0203	0.00500	"	0.0333	ND	60.8	15-130		
Surrogate: 2-Methylnaphthalene-d10	0.0200		"	0.0333		60.0	40-150		
Surrogate: Fluoranthene-d10	0.0158		"	0.0333		47.5	40-150		

##### Matrix Spike Dup (BHH0561-MSD1)

Source: 2408202-26

Prepared: 08/21/24 Analyzed: 08/22/24

Acenaphthene	0.0185	0.00500	mg/kg	0.0333	ND	55.5	31-137	14.2	30
Anthracene	0.0145	0.00500	"	0.0333	ND	43.4	30-120	11.0	30
Benzo (a) anthracene	0.0167	0.00500	"	0.0333	ND	50.0	30-120	4.47	30
Benzo (a) pyrene	0.0167	0.00500	"	0.0333	ND	50.2	30-120	2.35	30
Benzo (b) fluoranthene	0.0156	0.00500	"	0.0333	ND	46.7	30-120	3.81	30
Benzo (k) fluoranthene	0.0163	0.00500	"	0.0333	ND	48.9	30-120	2.10	30
Chrysene	0.0170	0.00500	"	0.0333	ND	51.0	30-120	4.27	30
Dibenz (a,h) anthracene	0.0172	0.00500	"	0.0333	ND	51.5	30-120	11.9	30
Fluoranthene	0.0141	0.00500	"	0.0333	ND	42.2	30-120	9.20	30
Fluorene	0.0178	0.00500	"	0.0333	ND	53.4	30-120	12.9	30
Indeno (1,2,3-cd) pyrene	0.0186	0.00500	"	0.0333	ND	55.7	30-120	3.02	30
Pyrene	0.0187	0.00500	"	0.0333	ND	56.0	35-142	14.6	30
1-Methylnaphthalene	0.0189	0.00500	"	0.0333	ND	56.6	15-130	12.7	50
2-Methylnaphthalene	0.0187	0.00500	"	0.0333	ND	56.1	15-130	8.11	50
Surrogate: 2-Methylnaphthalene-d10	0.0187		"	0.0333		56.0	40-150		
Surrogate: Fluoranthene-d10	0.0146		"	0.0333		43.7	40-150		

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

Project: Noble - Five Rivers K09-21D

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
08/26/24 12:34

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

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

**Batch BHH0577 - EPA 3050B**

**Blank (BHH0577-BLK1)**

Prepared: 08/21/24 Analyzed: 08/22/24

Boron ND 2.00 mg/L

**LCS (BHH0577-BS1)**

Prepared: 08/21/24 Analyzed: 08/22/24

Boron 4.69 2.00 mg/L 5.00 93.7 80-120

**Duplicate (BHH0577-DUP1)**

**Source: 2408123-08**

Prepared: 08/21/24 Analyzed: 08/22/24

Boron 0.154 2.00 mg/L 0.155 0.462 20

**Matrix Spike (BHH0577-MS1)**

**Source: 2408123-08**

Prepared: 08/21/24 Analyzed: 08/22/24

Boron 4.83 2.00 mg/L 5.00 0.155 93.4 75-125

**Matrix Spike Dup (BHH0577-MSD1)**

**Source: 2408123-08**

Prepared: 08/21/24 Analyzed: 08/22/24

Boron 4.83 2.00 mg/L 5.00 0.155 93.5 75-125 0.0358 25

Summit Scientific

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

Project: Noble - Five Rivers K09-21D

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
08/26/24 12:34

### Total Metals by EPA 6020B - Quality Control

#### Summit Scientific

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

#### Batch BHH0578 - EPA 3050B

##### Blank (BHH0578-BLK1)

Prepared & Analyzed: 08/21/24

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

##### LCS (BHH0578-BS1)

Prepared & Analyzed: 08/21/24

Arsenic	34.7	0.200	mg/kg wet	36.8	94.4	80-120
Barium	33.6	0.400	"	36.8	91.3	80-120
Cadmium	1.67	0.200	"	1.84	90.8	80-120
Copper	35.8	0.400	"	36.8	97.3	80-120
Lead	16.6	0.200	"	18.4	90.3	80-120
Nickel	35.1	0.400	"	36.8	95.6	80-120
Silver	1.68	0.0200	"	1.84	91.2	80-120
Zinc	35.2	0.400	"	36.8	95.9	80-120
Selenium	4.00	0.260	"	3.68	109	80-120

##### Duplicate (BHH0578-DUP1)

Source: 2408123-08

Prepared & Analyzed: 08/21/24

Arsenic	0.870	0.181	mg/kg dry	0.981	12.0	20	
Barium	71.5	0.362	"	81.4	13.0	20	
Cadmium	0.178	0.181	"	0.220	21.4	20	QR-01
Copper	3.71	0.362	"	4.01	7.72	20	
Lead	12.6	0.181	"	7.74	47.4	20	QR-04
Nickel	2.18	0.362	"	2.35	7.76	20	
Silver	0.0446	0.0181	"	0.0635	34.9	20	QR-01
Zinc	27.7	0.362	"	27.9	0.774	20	
Selenium	ND	0.236	"	ND		20	

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

Project: Noble - Five Rivers K09-21D

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
08/26/24 12:34

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

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

**Batch BHH0578 - EPA 3050B**

**Matrix Spike (BHH0578-MS1)**

**Source: 2408123-08**

Prepared & Analyzed: 08/21/24

Arsenic	25.2	0.200	mg/kg dry	39.0	0.981	62.1	75-125			QM-05
Barium	103	0.400	"	39.0	81.4	54.7	75-125			QM-07
Cadmium	1.89	0.200	"	1.95	0.220	85.5	75-125			
Copper	28.2	0.400	"	39.0	4.01	62.2	75-125			QM-05
Lead	25.0	0.200	"	19.5	7.74	88.6	75-125			
Nickel	26.6	0.400	"	39.0	2.35	62.3	75-125			QM-05
Silver	1.73	0.0200	"	1.95	0.0635	85.7	75-125			
Zinc	48.4	0.400	"	39.0	27.9	52.7	75-125			QM-07
Selenium	3.72	0.260	"	3.90	ND	95.5	75-125			

**Matrix Spike Dup (BHH0578-MSD1)**

**Source: 2408123-08**

Prepared & Analyzed: 08/21/24

Arsenic	24.7	0.200	mg/kg dry	39.5	0.981	60.0	75-125	1.85	25	QM-05
Barium	115	0.400	"	39.5	81.4	86.0	75-125	11.6	25	
Cadmium	2.00	0.200	"	1.98	0.220	90.2	75-125	6.06	25	
Copper	29.2	0.400	"	39.5	4.01	63.7	75-125	3.43	25	QM-05
Lead	24.8	0.200	"	19.8	7.74	86.1	75-125	0.939	25	
Nickel	28.3	0.400	"	39.5	2.35	65.6	75-125	6.05	25	QM-05
Silver	1.76	0.0200	"	1.98	0.0635	85.7	75-125	1.50	25	
Zinc	62.8	0.400	"	39.5	27.9	88.4	75-125	25.9	25	QM-07
Selenium	3.49	0.260	"	3.95	ND	88.2	75-125	6.44	25	

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

Project: Noble - Five Rivers K09-21D

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
08/26/24 12:34

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

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

**Batch BHH0570 - 3060A Mod**

**Blank (BHH0570-BLK1)**

Prepared & Analyzed: 08/21/24

Chromium, Hexavalent ND 0.30 mg/kg wet

**LCS (BHH0570-BS1)**

Prepared & Analyzed: 08/21/24

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

**Duplicate (BHH0570-DUP1)**

**Source: 2408198-01**

Prepared & Analyzed: 08/21/24

Chromium, Hexavalent ND 0.30 mg/kg dry ND 20

**Matrix Spike (BHH0570-MS1)**

**Source: 2408198-01**

Prepared & Analyzed: 08/21/24

Chromium, Hexavalent 26.6 0.30 mg/kg dry 26.8 ND 99.6 75-125

**Matrix Spike Dup (BHH0570-MSD1)**

**Source: 2408198-01**

Prepared & Analyzed: 08/21/24

Chromium, Hexavalent 26.4 0.30 mg/kg dry 26.8 ND 98.6 75-125 1.01 20

Summit Scientific

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

Project: Noble - Five Rivers K09-21D

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
08/26/24 12:34

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

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

**Batch BHH0547 - General Preparation**

**Blank (BHH0547-BLK1)**

Prepared: 08/20/24 Analyzed: 08/22/24

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

**LCS (BHH0547-BS1)**

Prepared: 08/20/24 Analyzed: 08/22/24

Calcium	4.96	0.0500	mg/L wet	5.00	99.2	70-130
Magnesium	4.89	0.0500	"	5.00	97.8	70-130
Sodium	4.78	0.0500	"	5.00	95.6	70-130

Summit Scientific

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

Project: Noble - Five Rivers K09-21D

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
08/26/24 12:34

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

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

**Batch BHH0556 - General Preparation**

Duplicate (BHH0556-DUP1)			Source: 2408123-09			Prepared & Analyzed: 08/21/24				
% Solids	93.3		%			92.8		0.580	20	

Summit Scientific

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

Project: Noble - Five Rivers K09-21D

Project Number: [none]

Project Manager: Jacob Whritenour

**Reported:**  
08/26/24 12:34

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

**Summit Scientific**

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

**Batch BHH0548 - General Preparation**

**Blank (BHH0548-BLK1)**

Prepared: 08/20/24 Analyzed: 08/21/24

Specific Conductance (EC) ND 0.0100 mmhos/cm

**LCS (BHH0548-BS1)**

Prepared: 08/20/24 Analyzed: 08/21/24

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

**Duplicate (BHH0548-DUP1)**

**Source: 2408179-01**

Prepared: 08/20/24 Analyzed: 08/21/24

Specific Conductance (EC) 0.264 0.0100 mmhos/cm 0.268 1.65 20

Summit Scientific

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

Project: Noble - Five Rivers K09-21D

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
08/26/24 12:34

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

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

**Batch BHH0549 - General Preparation**

**LCS (BHH0549-BS1)**

Prepared: 08/20/24 Analyzed: 08/21/24

pH	9.08	pH Units	9.18	98.9	95-105
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**Duplicate (BHH0549-DUP1)**

Source: 2408179-01

Prepared: 08/20/24 Analyzed: 08/21/24

pH	8.22	pH Units	8.36	1.69	20
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Summit Scientific

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

Project: Noble - Five Rivers K09-21D

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
08/26/24 12:34

### Notes and Definitions

QR-04	The RPD value for the sample duplicate or MS/MSD was outside of QC acceptance limits. QC batch accepted based on LCS and/or LCSD recovery and/or RPD values.
QR-01	Analyses are not controlled on RPD values from sample concentrations below the reporting limit. QC batch accepted based on LCS and/or LCSD QC results.
QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS/LCSD recovery.
QM-05	The spike recovery was outside acceptance limits for the MS and/or MSD due to matrix interference. The associated LCS and/or LCSD were within acceptance limits, therefore the data are considered valid.
I-03	Sample was received and prepared outside of holding time.
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