

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

August 27, 2024

Jacob Whritenour

Tasman Geosciences

6855 W. 119th Ave.

Broomfield, CO 80020

RE: Noble - Five Rivers K09-21D

Work Order #2408266

Enclosed are the results of analyses for samples received by Summit Scientific on 08/22/24 17:37. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "Natalie Tessier". The signature is fluid and cursive, with the first name being more prominent.

Natalie Tessier 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:
08/27/24 11:11

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS03-FL01-M@8'	2408266-01	Soil	08/22/24 10:18	08/22/24 17:37
FS02-FL01-M@9'	2408266-02	Soil	08/22/24 10:25	08/22/24 17:37

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.

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

Lab ID	Page 1 of 1
2408266	

Send Data To:		Send Invoice To:
Client: Noble/Tasman	Project Manager: Jake Whritenour	Company: Noble
Address: 6855 W. 119th Ave.	E-Mail: Jwhritenour@tasman-geo.com	Project Name/Location:
City/State/Zip: Broomfield/CO/ 80020		AFE#:
Phone: 937-554-5108	Project Name: Five Rivers K09-21 D	PO/Billing Codes:
Sampler Name: Molly Parks	Project Number:	Contact: Erin Crawford

				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	SS02-FL01-m@8'	08-22-24	1018	2			X			X			X	X	X	X	X	X		SAR, EC, pH by saturated paste
2	FS02-FL01-m@9'	08-22-24	1025	2			X			X			X	X	X	X	X	X		
3																				
4																				
5																				
6																				
7																				
8																				
9																				
10																				
11																				
12																				
13																				
14																				
15																				

Relinquished by: MP	Date/Time: 08-22-24 / 1623	Received by: Tasman Lock Box	Date/Time: 08-22-24 / 1623	TAT Business Days	Field DO	Notes:
				Same Day	Field EC	
Relinquished by: [Signature]	Date/Time: 8/22/24 1737	Received by: [Signature]	Date/Time: 8/22/24 1737	1 Day	Field ORP	
				2 Days	Field pH	
Relinquished by:	Date/Time:	Received by:	Date/Time:	3 Days	Field Temp.	
				Standard	Field Turb.	
Temperature Upon Receipt: 8.8	Corrected Temperature: 6	IR gun #:		HNO3 lot #:		

S₂

Sample Receipt Checklist

S2 Work Order# 2408200Client: Nobu UsmanClient Project ID: Fiverivers K09-21DShipped 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"/>
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

Matrix (Check all that apply)

Air

☐

Soil

☒

Water

☐

Other

☐

Temp (°C)

8.8

Thermometer #

1

	Yes	No	N/A	Comments (if any)
If samples require cooling, is the temperature < 6°C? ⁽¹⁾ NOTE: If samples are delivered the same day of sampling, this requirement is met if there is evidence that cooling has begun.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	on 2CE
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 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 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

8/22/24
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:
08/27/24 11:11

SS03-FL01-M@8'
2408266-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **08/22/24 10:18**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BHH0678	08/22/24	08/22/24	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: **08/22/24 10:18**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	0.0415	104 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0397	99.2 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0394	98.6 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **08/22/24 10:18**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BHH0679	08/22/24	08/22/24	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **08/22/24 10:18**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl	7.33	58.7 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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2408266-01 (Soil)

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PAH by EPA Method 8270D SIM

Date Sampled: **08/22/24 10:18**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Acenaphthene	ND	0.00500	mg/kg	1	BHH0687	08/23/24	08/24/24	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: **08/22/24 10:18**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 2-Methylnaphthalene-d10	0.0172	51.6 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0196	58.8 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **08/22/24 10:18**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Boron	ND	2.00	mg/L	1	BHH0696	08/23/24	08/26/24	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **08/22/24 10:18**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							

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Project: Noble - Five Rivers K09-21D

Project Number: [none]
Project Manager: Jacob Whritenour

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SS03-FL01-M@8'
2408266-01 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Arsenic	0.299	0.200	mg/kg dry	1	BHH0689	08/23/24	08/26/24	EPA 6020B
Barium	7.02	0.400	"	"	"	"	"	"
Cadmium	ND	0.200	"	"	"	"	"	"
Copper	1.28	0.400	"	"	"	"	"	"
Lead	1.42	0.200	"	"	"	"	"	"
Nickel	0.948	0.400	"	"	"	"	"	"
Silver	ND	0.0200	"	"	"	"	"	"
Zinc	5.47	0.400	"	"	"	"	"	"
Selenium	ND	0.260	"	"	"	"	"	"

Hexavalent Chromium by EPA Method 7196

Date Sampled: **08/22/24 10:18**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BHH0692	08/23/24	08/23/24	EPA 7196A	

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

Date Sampled: **08/22/24 10:18**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	10.2	0.0500	mg/L dry	1	BHH0674	08/22/24	08/26/24	EPA 6020B	
Magnesium	19.2	0.0500	"	"	"	"	"	"	
Sodium	48.3	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **08/22/24 10:18**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	2.06	0.00100	units	1	BHH0809	08/27/24	08/27/24	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

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Project Number: [none]

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SS03-FL01-M@8'
2408266-01 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **08/22/24 10:18**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
% Solids	85.3			%	1	BHH0700	08/23/24	08/23/24	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **08/22/24 10:18**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Specific Conductance (EC)	0.493	0.0100		mmhos/cm	1	BHH0676	08/22/24	08/23/24	EPA 120.1	

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

Date Sampled: **08/22/24 10:18**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
pH	8.38			pH Units	1	BHH0675	08/22/24	08/23/24	EPA 9045D	

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Project: Noble - Five Rivers K09-21D

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Reported:
08/27/24 11:11

FS02-FL01-M@9'
2408266-02 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **08/22/24 10:25**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BHH0678	08/22/24	08/22/24	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	0.018	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	0.0092	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	0.0095	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **08/22/24 10:25**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	0.0437	109 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0404	101 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0398	99.4 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **08/22/24 10:25**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BHH0679	08/22/24	08/22/24	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **08/22/24 10:25**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl	6.86	54.9 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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FS02-FL01-M@9'
2408266-02 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **08/22/24 10:25**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Acenaphthene	ND	0.00500	mg/kg	1	BHH0687	08/23/24	08/24/24	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: **08/22/24 10:25**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 2-Methylnaphthalene-d10	0.0164	49.2 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0201	60.2 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **08/22/24 10:25**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Boron	ND	2.00	mg/L	1	BHH0696	08/23/24	08/26/24	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **08/22/24 10:25**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							

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Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
08/27/24 11:11

FS02-FL01-M@9'
2408266-02 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Arsenic	0.933	0.200	mg/kg dry	1	BHH0689	08/23/24	08/26/24	EPA 6020B
Barium	33.7	0.400	"	"	"	"	"	"
Cadmium	ND	0.200	"	"	"	"	"	"
Copper	3.95	0.400	"	"	"	"	"	"
Lead	4.23	0.200	"	"	"	"	"	"
Nickel	3.33	0.400	"	"	"	"	"	"
Silver	0.0396	0.0200	"	"	"	"	"	"
Zinc	20.0	0.400	"	"	"	"	"	"
Selenium	ND	0.260	"	"	"	"	"	"

Hexavalent Chromium by EPA Method 7196

Date Sampled: **08/22/24 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BHH0692	08/23/24	08/23/24	EPA 7196A	

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

Date Sampled: **08/22/24 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	23.0	0.0500	mg/L dry	1	BHH0674	08/22/24	08/26/24	EPA 6020B	
Magnesium	119	0.0500	"	"	"	"	"	"	
Sodium	59.7	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **08/22/24 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	1.11	0.00100	units	1	BHH0809	08/27/24	08/27/24	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

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Project: Noble - Five Rivers K09-21D

Project Number: [none]

Project Manager: Jacob Whritenour

Reported:
08/27/24 11:11

FS02-FL01-M@9'
2408266-02 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **08/22/24 10:25**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
% Solids	79.8			%	1	BHH0700	08/23/24	08/23/24	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **08/22/24 10:25**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Specific Conductance (EC)	0.597	0.0100		mmhos/cm	1	BHH0676	08/22/24	08/23/24	EPA 120.1	

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

Date Sampled: **08/22/24 10:25**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
pH	7.65			pH Units	1	BHH0675	08/22/24	08/23/24	EPA 9045D	

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Project: Noble - Five Rivers K09-21D

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
08/27/24 11:11

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 BHH0678 - EPA 5030 Soil MS

Blank (BHH0678-BLK1)

Prepared & Analyzed: 08/22/24

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	0.0445		"	0.0400		111	50-150			
Surrogate: Toluene-d8	0.0400		"	0.0400		100	50-150			
Surrogate: 4-Bromofluorobenzene	0.0392		"	0.0400		98.0	50-150			

LCS (BHH0678-BS1)

Prepared: 08/22/24 Analyzed: 08/23/24

Benzene	0.0998	0.0020	mg/kg	0.100		99.8	70-130			
Toluene	0.0980	0.0050	"	0.100		98.0	70-130			
Ethylbenzene	0.102	0.0050	"	0.100		102	70-130			
m,p-Xylene	0.197	0.010	"	0.200		98.4	70-130			
o-Xylene	0.0971	0.0050	"	0.100		97.1	70-130			
1,2,4-Trimethylbenzene	0.0951	0.0050	"	0.100		95.1	70-130			
1,3,5-Trimethylbenzene	0.0955	0.0050	"	0.100		95.5	70-130			
Naphthalene	0.0915	0.0038	"	0.100		91.5	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0450		"	0.0400		112	50-150			
Surrogate: Toluene-d8	0.0396		"	0.0400		99.1	50-150			
Surrogate: 4-Bromofluorobenzene	0.0412		"	0.0400		103	50-150			

Matrix Spike (BHH0678-MS1)

Source: 2408265-01

Prepared: 08/22/24 Analyzed: 08/23/24

Benzene	0.111	0.0020	mg/kg	0.100	ND	111	70-130			
Toluene	0.110	0.0050	"	0.100	ND	110	70-130			
Ethylbenzene	0.107	0.0050	"	0.100	ND	107	70-130			
m,p-Xylene	0.210	0.010	"	0.200	ND	105	70-130			
o-Xylene	0.100	0.0050	"	0.100	ND	100	70-130			
1,2,4-Trimethylbenzene	0.0978	0.0050	"	0.100	ND	97.8	70-130			
1,3,5-Trimethylbenzene	0.0995	0.0050	"	0.100	ND	99.5	70-130			
Naphthalene	0.0880	0.0038	"	0.100	ND	88.0	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0477		"	0.0400		119	50-150			
Surrogate: Toluene-d8	0.0413		"	0.0400		103	50-150			
Surrogate: 4-Bromofluorobenzene	0.0406		"	0.0400		102	50-150			

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Project: Noble - Five Rivers K09-21D

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
08/27/24 11:11

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 BHH0678 - EPA 5030 Soil MS

Matrix Spike Dup (BHH0678-MSD1)		Source: 2408265-01			Prepared: 08/22/24 Analyzed: 08/23/24					
Benzene	0.0857	0.0020	mg/kg	0.100	ND	85.7	70-130	25.4	30	
Toluene	0.0861	0.0050	"	0.100	ND	86.1	70-130	24.6	30	
Ethylbenzene	0.0918	0.0050	"	0.100	ND	91.8	70-130	15.2	30	
m,p-Xylene	0.176	0.010	"	0.200	ND	87.8	70-130	17.8	30	
o-Xylene	0.0867	0.0050	"	0.100	ND	86.7	70-130	14.7	30	
1,2,4-Trimethylbenzene	0.0828	0.0050	"	0.100	ND	82.8	70-130	16.6	30	
1,3,5-Trimethylbenzene	0.0840	0.0050	"	0.100	ND	84.0	70-130	16.9	30	
Naphthalene	0.0789	0.0038	"	0.100	ND	78.9	70-130	10.9	30	
<hr/>										
Surrogate: 1,2-Dichloroethane-d4	0.0408		"	0.0400		102	50-150			
Surrogate: Toluene-d8	0.0404		"	0.0400		101	50-150			
Surrogate: 4-Bromofluorobenzene	0.0387		"	0.0400		96.8	50-150			

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Project: Noble - Five Rivers K09-21D

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
08/27/24 11:11

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 BHH0679 - EPA 3550A

Blank (BHH0679-BLK1)

Prepared: 08/22/24 Analyzed: 08/23/24

C10-C28 (DRO)	ND	50	mg/kg							
C28-C36 (ORO)	ND	50	"							
Surrogate: o-Terphenyl	11.7		"	12.5		93.9	30-150			

LCS (BHH0679-BS1)

Prepared: 08/22/24 Analyzed: 08/23/24

C10-C28 (DRO)	457	50	mg/kg	500		91.4	70-130			
Surrogate: o-Terphenyl	10.9		"	12.5		87.5	30-150			

Matrix Spike (BHH0679-MS1)

Source: 2408265-01

Prepared: 08/22/24 Analyzed: 08/23/24

C10-C28 (DRO)	457	50	mg/kg	500	ND	91.5	70-130			
Surrogate: o-Terphenyl	7.80		"	12.5		62.4	30-150			

Matrix Spike Dup (BHH0679-MSD1)

Source: 2408265-01

Prepared: 08/22/24 Analyzed: 08/23/24

C10-C28 (DRO)	445	50	mg/kg	500	ND	89.0	70-130	2.81	20	
Surrogate: o-Terphenyl	9.31		"	12.5		74.5	30-150			

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Project: Noble - Five Rivers K09-21D

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
08/27/24 11:11

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

Batch BHH0687 - EPA 5030 Soil MS

Blank (BHH0687-BLK1)

Prepared & Analyzed: 08/23/24

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	0.0202		"	0.0333		60.5		40-150			
Surrogate: Fluoranthene-d10	0.0274		"	0.0333		82.2		40-150			

LCS (BHH0687-BS1)

Prepared & Analyzed: 08/23/24

Acenaphthene	0.0246	0.00500	mg/kg	0.0333		73.8		31-137			
Anthracene	0.0240	0.00500	"	0.0333		72.1		30-120			
Benzo (a) anthracene	0.0252	0.00500	"	0.0333		75.5		30-120			
Benzo (a) pyrene	0.0188	0.00500	"	0.0333		56.5		30-120			
Benzo (b) fluoranthene	0.0179	0.00500	"	0.0333		53.8		30-120			
Benzo (k) fluoranthene	0.0173	0.00500	"	0.0333		51.9		30-120			
Chrysene	0.0247	0.00500	"	0.0333		74.1		30-120			
Dibenz (a,h) anthracene	0.0220	0.00500	"	0.0333		66.0		30-120			
Fluoranthene	0.0236	0.00500	"	0.0333		70.7		30-120			
Fluorene	0.0245	0.00500	"	0.0333		73.5		30-120			
Indeno (1,2,3-cd) pyrene	0.0159	0.00500	"	0.0333		47.6		30-120			
Pyrene	0.0285	0.00500	"	0.0333		85.5		35-142			
1-Methylnaphthalene	0.0213	0.00500	"	0.0333		63.9		35-142			
2-Methylnaphthalene	0.0209	0.00500	"	0.0333		62.7		35-142			
Surrogate: 2-Methylnaphthalene-d10	0.0216		"	0.0333		64.8		40-150			
Surrogate: Fluoranthene-d10	0.0239		"	0.0333		71.6		40-150			

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Project: Noble - Five Rivers K09-21D

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
08/27/24 11:11

PAH by EPA Method 8270D SIM - Quality Control

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

Batch BHH0687 - EPA 5030 Soil MS

Matrix Spike (BHH0687-MS1)

Source: 2408239-23

Prepared & Analyzed: 08/23/24

Acenaphthene	0.0181	0.00500	mg/kg	0.0333	ND	54.4	31-137		
Anthracene	0.0179	0.00500	"	0.0333	ND	53.8	30-120		
Benzo (a) anthracene	0.0185	0.00500	"	0.0333	ND	55.5	30-120		
Benzo (a) pyrene	0.0135	0.00500	"	0.0333	ND	40.6	30-120		
Benzo (b) fluoranthene	0.0158	0.00500	"	0.0333	ND	47.5	30-120		
Benzo (k) fluoranthene	0.0153	0.00500	"	0.0333	ND	45.8	30-120		
Chrysene	0.0184	0.00500	"	0.0333	ND	55.2	30-120		
Dibenz (a,h) anthracene	0.0150	0.00500	"	0.0333	ND	44.9	30-120		
Fluoranthene	0.0174	0.00500	"	0.0333	ND	52.2	30-120		
Fluorene	0.0183	0.00500	"	0.0333	ND	54.9	30-120		
Indeno (1,2,3-cd) pyrene	0.0166	0.00500	"	0.0333	ND	49.8	30-120		
Pyrene	0.0220	0.00500	"	0.0333	ND	65.9	35-142		
1-Methylnaphthalene	0.0170	0.00500	"	0.0333	ND	51.1	15-130		
2-Methylnaphthalene	0.0160	0.00500	"	0.0333	ND	48.1	15-130		
Surrogate: 2-Methylnaphthalene-d10	0.0162		"	0.0333		48.6	40-150		
Surrogate: Fluoranthene-d10	0.0175		"	0.0333		52.4	40-150		

Matrix Spike Dup (BHH0687-MSD1)

Source: 2408239-23

Prepared & Analyzed: 08/23/24

Acenaphthene	0.0169	0.00500	mg/kg	0.0333	ND	50.7	31-137	7.00	30	
Anthracene	0.0168	0.00500	"	0.0333	ND	50.3	30-120	6.75	30	
Benzo (a) anthracene	0.0173	0.00500	"	0.0333	ND	52.0	30-120	6.64	30	
Benzo (a) pyrene	0.0186	0.00500	"	0.0333	ND	55.9	30-120	31.8	30	QR-02
Benzo (b) fluoranthene	0.0147	0.00500	"	0.0333	ND	44.2	30-120	7.18	30	
Benzo (k) fluoranthene	0.0142	0.00500	"	0.0333	ND	42.7	30-120	7.14	30	
Chrysene	0.0171	0.00500	"	0.0333	ND	51.3	30-120	7.47	30	
Dibenz (a,h) anthracene	0.0227	0.00500	"	0.0333	ND	68.0	30-120	40.9	30	QR-02
Fluoranthene	0.0162	0.00500	"	0.0333	ND	48.7	30-120	6.96	30	
Fluorene	0.0170	0.00500	"	0.0333	ND	51.1	30-120	7.17	30	
Indeno (1,2,3-cd) pyrene	0.0180	0.00500	"	0.0333	ND	54.1	30-120	8.42	30	
Pyrene	0.0198	0.00500	"	0.0333	ND	59.5	35-142	10.2	30	
1-Methylnaphthalene	0.0156	0.00500	"	0.0333	ND	46.7	15-130	8.97	50	
2-Methylnaphthalene	0.0149	0.00500	"	0.0333	ND	44.7	15-130	7.24	50	
Surrogate: 2-Methylnaphthalene-d10	0.0157		"	0.0333		47.0	40-150			
Surrogate: Fluoranthene-d10	0.0162		"	0.0333		48.6	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:
08/27/24 11:11

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 BHH0696 - EPA 3050B

Blank (BHH0696-BLK1)

Prepared: 08/23/24 Analyzed: 08/26/24

Boron ND 2.00 mg/L

LCS (BHH0696-BS1)

Prepared: 08/23/24 Analyzed: 08/26/24

Boron 4.90 2.00 mg/L 5.00 98.1 80-120

Duplicate (BHH0696-DUP1)

Source: 2408234-01

Prepared: 08/23/24 Analyzed: 08/26/24

Boron ND 2.00 mg/L ND 20

Matrix Spike (BHH0696-MS1)

Source: 2408234-01

Prepared: 08/23/24 Analyzed: 08/26/24

Boron 4.92 2.00 mg/L 5.00 ND 98.4 75-125

Matrix Spike Dup (BHH0696-MSD1)

Source: 2408234-01

Prepared: 08/23/24 Analyzed: 08/26/24

Boron 4.93 2.00 mg/L 5.00 ND 98.7 75-125 0.304 25

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Project: Noble - Five Rivers K09-21D

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
08/27/24 11:11

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 BHH0689 - EPA 3050B

Blank (BHH0689-BLK1)

Prepared: 08/23/24 Analyzed: 08/26/24

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 (BHH0689-BS1)

Prepared: 08/23/24 Analyzed: 08/26/24

Arsenic	37.2	0.200	mg/kg wet	36.8	101	80-120
Barium	36.6	0.400	"	36.8	99.5	80-120
Cadmium	1.75	0.200	"	1.84	95.1	80-120
Copper	36.8	0.400	"	36.8	100	80-120
Lead	18.0	0.200	"	18.4	98.1	80-120
Nickel	37.0	0.400	"	36.8	101	80-120
Silver	1.92	0.0200	"	1.84	104	80-120
Zinc	36.5	0.400	"	36.8	99.4	80-120
Selenium	3.61	0.260	"	3.68	98.2	80-120

Duplicate (BHH0689-DUP1)

Source: 2408265-01

Prepared: 08/23/24 Analyzed: 08/26/24

Arsenic	2.43	0.200	mg/kg dry	1.44	51.2	20	QR-02
Barium	43.3	0.400	"	42.8	1.21	20	
Cadmium	0.0786	0.200	"	0.0676	15.0	20	
Copper	3.95	0.400	"	3.28	18.5	20	
Lead	3.98	0.200	"	3.60	9.94	20	
Nickel	4.41	0.400	"	3.88	13.0	20	
Silver	0.0194	0.0200	"	0.0225	14.9	20	
Zinc	16.8	0.400	"	14.6	13.9	20	
Selenium	ND	0.260	"	ND		20	

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Project: Noble - Five Rivers K09-21D

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
08/27/24 11:11

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 BHH0689 - EPA 3050B

Matrix Spike (BHH0689-MS1)

Source: 2408265-01

Prepared: 08/23/24 Analyzed: 08/26/24

Arsenic	46.6	0.200	mg/kg dry	46.2	1.44	97.6	75-125
Barium	86.2	0.400	"	46.2	42.8	93.8	75-125
Cadmium	2.19	0.200	"	2.31	0.0676	92.1	75-125
Copper	47.1	0.400	"	46.2	3.28	94.9	75-125
Lead	26.1	0.200	"	23.1	3.60	97.3	75-125
Nickel	48.5	0.400	"	46.2	3.88	96.6	75-125
Silver	2.14	0.0200	"	2.31	0.0225	91.8	75-125
Zinc	60.4	0.400	"	46.2	14.6	99.0	75-125
Selenium	4.02	0.260	"	4.62	ND	86.9	75-125

Matrix Spike Dup (BHH0689-MSD1)

Source: 2408265-01

Prepared: 08/23/24 Analyzed: 08/26/24

Arsenic	46.5	0.200	mg/kg dry	42.8	1.44	105	75-125	0.223	25
Barium	87.1	0.400	"	42.8	42.8	103	75-125	1.08	25
Cadmium	2.21	0.200	"	2.14	0.0676	100	75-125	0.643	25
Copper	47.2	0.400	"	42.8	3.28	103	75-125	0.256	25
Lead	25.7	0.200	"	21.4	3.60	103	75-125	1.64	25
Nickel	48.8	0.400	"	42.8	3.88	105	75-125	0.491	25
Silver	2.11	0.0200	"	2.14	0.0225	97.3	75-125	1.78	25
Zinc	60.6	0.400	"	42.8	14.6	107	75-125	0.339	25
Selenium	4.02	0.260	"	4.28	ND	93.7	75-125	0.00882	25

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Project: Noble - Five Rivers K09-21D

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
08/27/24 11:11

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 BHH0692 - 3060A Mod

Blank (BHH0692-BLK1)

Prepared & Analyzed: 08/23/24

Chromium, Hexavalent ND 0.30 mg/kg wet

LCS (BHH0692-BS1)

Prepared & Analyzed: 08/23/24

Chromium, Hexavalent 25.9 0.30 mg/kg wet 25.0 104 80-120

Duplicate (BHH0692-DUP1)

Source: 2408234-21

Prepared & Analyzed: 08/23/24

Chromium, Hexavalent ND 0.30 mg/kg dry ND 20

Matrix Spike (BHH0692-MS1)

Source: 2408234-21

Prepared & Analyzed: 08/23/24

Chromium, Hexavalent 31.4 0.30 mg/kg dry 32.3 ND 97.4 75-125

Matrix Spike Dup (BHH0692-MSD1)

Source: 2408234-21

Prepared & Analyzed: 08/23/24

Chromium, Hexavalent 33.6 0.30 mg/kg dry 32.3 ND 104 75-125 6.55 20

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Project: Noble - Five Rivers K09-21D

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
08/27/24 11:11

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

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

Batch BHH0674 - General Preparation

Blank (BHH0674-BLK1)

Prepared: 08/22/24 Analyzed: 08/26/24

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

LCS (BHH0674-BS1)

Prepared: 08/22/24 Analyzed: 08/26/24

Calcium	5.31	0.0500	mg/L wet	5.00	106	70-130
Magnesium	5.53	0.0500	"	5.00	111	70-130
Sodium	5.17	0.0500	"	5.00	103	70-130

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Tasman Geosciences
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Project: Noble - Five Rivers K09-21D

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
08/27/24 11:11

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

Summit Scientific

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

Batch BHH0700 - General Preparation

Duplicate (BHH0700-DUP1)

Source: 2408255-01

Prepared & Analyzed: 08/23/24

% Solids	96.7	%	96.5	0.160	20
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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.



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

Project: Noble - Five Rivers K09-21D

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
08/27/24 11:11

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 BHH0676 - General Preparation

Blank (BHH0676-BLK1)

Prepared: 08/22/24 Analyzed: 08/23/24

Specific Conductance (EC) ND 0.0100 mmhos/cm

LCS (BHH0676-BS1)

Prepared: 08/22/24 Analyzed: 08/23/24

Specific Conductance (EC) 0.155 0.0100 mmhos/cm 0.150 103 95-105

Duplicate (BHH0676-DUP1)

Source: 2408123-08

Prepared: 08/22/24 Analyzed: 08/23/24

Specific Conductance (EC) 0.126 0.0100 mmhos/cm 0.128 1.34 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:
08/27/24 11:11

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 BHH0675 - General Preparation

LCS (BHH0675-BS1)

Prepared: 08/22/24 Analyzed: 08/23/24

pH	9.07	pH Units	9.18	98.8	95-105
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Duplicate (BHH0675-DUP1)

Source: 2408123-08

Prepared: 08/22/24 Analyzed: 08/23/24

pH	8.05	pH Units	8.08	0.372	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:
08/27/24 11:11

Notes and Definitions

QR-02	The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data.
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