

# Flowline Closure Checklist

## COGCC Rule 911.a.(4) Environmental Site Closure Assessment Field Form

Additional Attachments:		Tank Battery Closure		Wellhead Closure		Pit Closure		Partially Buried Vault Closure
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Site Name & COGCC Facility Number: Stroh H 12-03	Date: 5/26/23, 5/30/23, 5/31/23, 6/1/23	Remediation Project #: 27717
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Associated Wells:	Age of Site:	Number of Photos Attached: 20
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Starting point: (GPS coordinates and descriptions)  
40.245244/ 104.620229

End point: (GPS coordinates and descriptions)  
40.245656/ 104.613515

USCS Soil Type: SW	Estimated Depth to Groundwater:> 7ft
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Hydrocarbon Impacted Soils / Spills: (Note estimated size and if impact appears to be surficial or extends to an unknown depth)  
none observed

Salt Crusted Soils or Impacted Vegetation: (Note estimated size and if impact appears to be surficial or extends to an unknown depth)  
none observed

### Flowlines

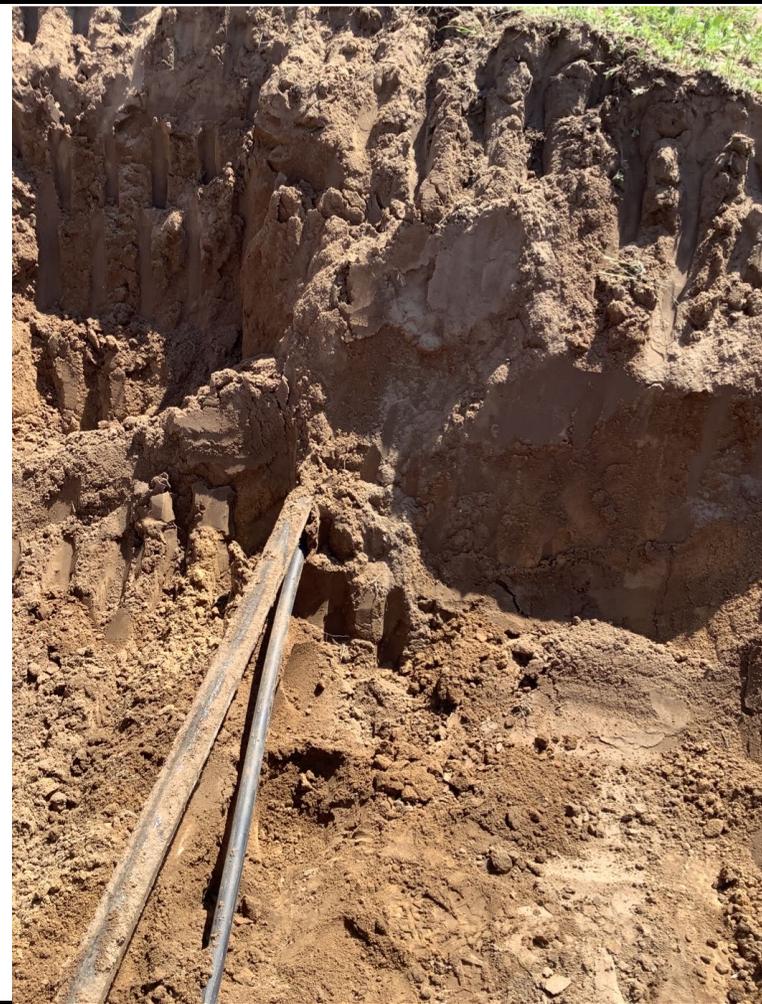
Flowline type	Oil / Gas / Water			
Depth	7 ft			
Age				
Length	1951 ft			
Construction Material	Steel			
Were flowlines pulled?	yes			
Visual Integrity of lines	good			
Visual impacts if trenched	None observed			
PID Readings if trenched	0.0 - 0.4			
Sample taken? Location/Sample ID#	yes, see below			
Photo Number(s)	20			

Other observations regarding on location flowlines:  
Flowline removal included the removal of previously abandoned Stroh H12-4 in common trench.  
Samples were taken at the wellhead (FL01-A@4') and at the separator (FL01-B@3.5') as well as along the flowline path (FL01-C@4' - FL01-T@5').

### Summary

Was impacted soil identified? <b>No</b>	
Total number of samples field screened: 20	Total number of samples collected: 20
Highest PID Reading: 0.4	Total number of samples submitted to lab for analysis: 4
If more than 10 cubic yards of impacted soil were observed:	
Vertical extent:	Estimated spill volume:
Lateral extent:	Volume of soil removed:
Is additional investigation required?	
Was groundwater encountered during the investigation? <b>No</b>	
Measured depth to groundwater:	Was remedial groundwater removal conducted?
Date Groundwater was encountered:	Commencement date of removal:
Sheen on groundwater?	Volume of groundwater removed prior to sampling:
Free product observed?	Volume of groundwater removed post sampling:
Total number of samples collected:	Total Volume of groundwater removed:
Total number of samples submitted to lab for analysis:	

Photographic Log



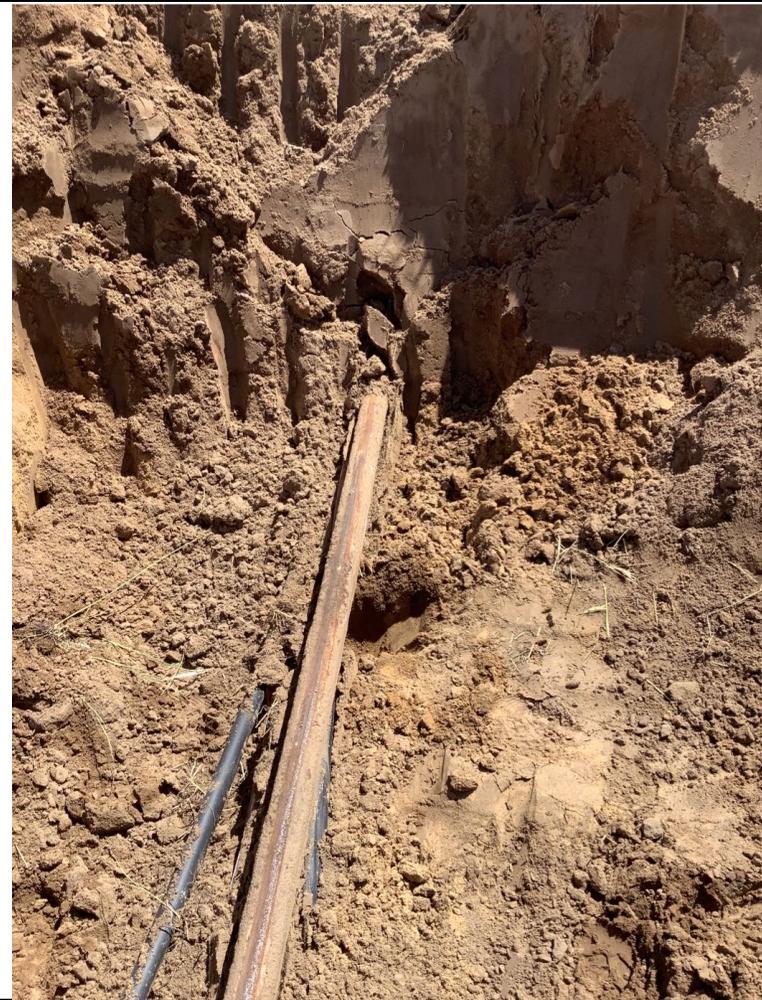
<b>Equipment ID:</b> FL01-A@4'		<b>Equipment Type:</b> Flowline	
<b>Material:</b>	<b>Volume:</b>	<b>Contents:</b>	
<b>Notes/Conditions:</b>			

<b>Equipment ID:</b> FL01-C@4'		<b>Equipment Type:</b> Flowline	
<b>Material:</b>	<b>Volume:</b>	<b>Contents:</b>	
<b>Notes/Conditions:</b>			

## Photographic Log

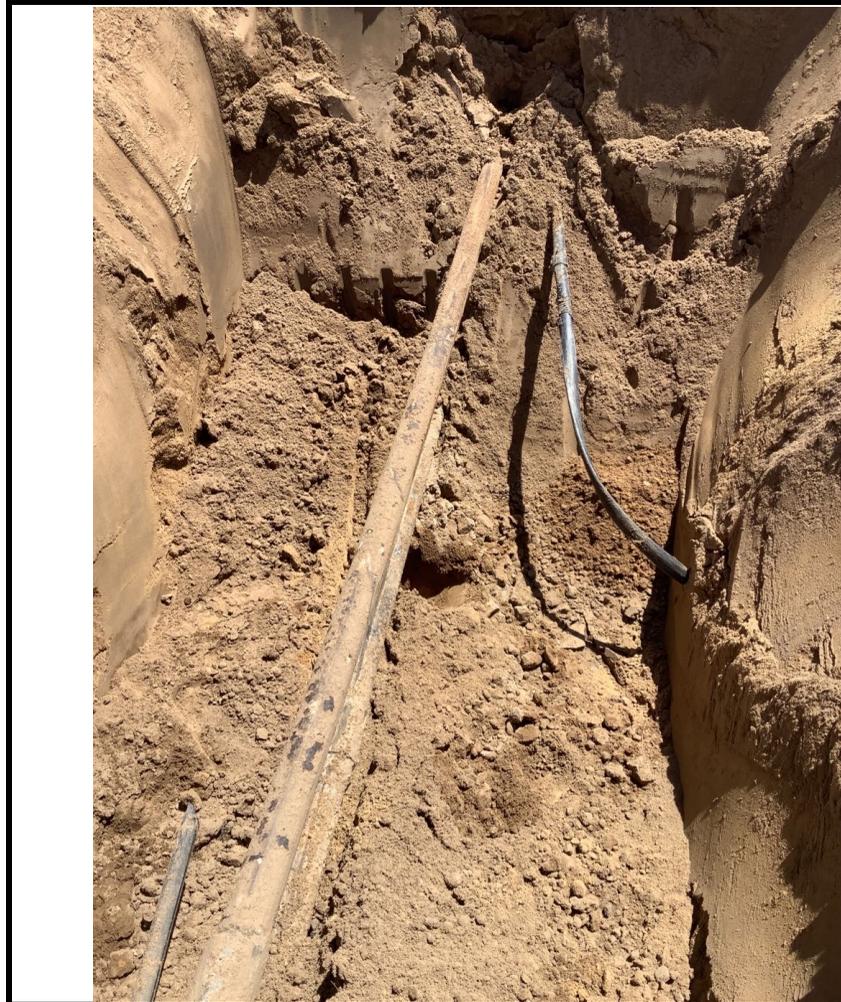
					
<b>Equipment ID:</b> FL01-D@5'		<b>Equipment Type:</b> Flowline			
<b>Material:</b>	<b>Volume:</b>	<b>Contents:</b>		<b>Material:</b>	<b>Volume:</b>
<b>Notes/Conditions:</b>			<b>Notes/Conditions:</b>		

## Photographic Log



<b>Equipment ID:</b> FL01-F@5'		<b>Equipment Type:</b> Flowline		<b>Equipment ID:</b> FL01-G@5'		<b>Equipment Type:</b> Flowline	
<b>Material:</b>	<b>Volume:</b>	<b>Contents:</b>		<b>Material:</b>	<b>Volume:</b>	<b>Contents:</b>	
<b>Notes/Conditions:</b>				<b>Notes/Conditions:</b>			

## Photographic Log

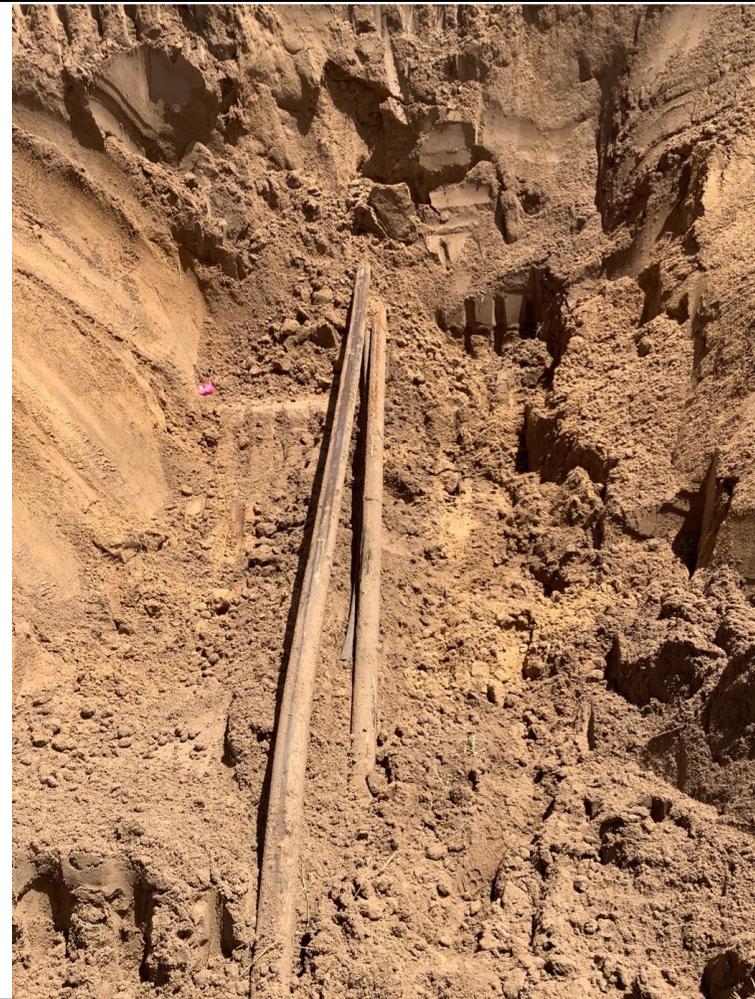


<b>Equipment ID:</b> FL01-H@5'		<b>Equipment Type:</b> Flowline		<b>Equipment ID:</b> FL01-I@5'		<b>Equipment Type:</b> Flowline	
<b>Material:</b>	<b>Volume:</b>	<b>Contents:</b>		<b>Material:</b>	<b>Volume:</b>	<b>Contents:</b>	
<b>Notes/Conditions:</b>				<b>Notes/Conditions:</b>			

## Photographic Log

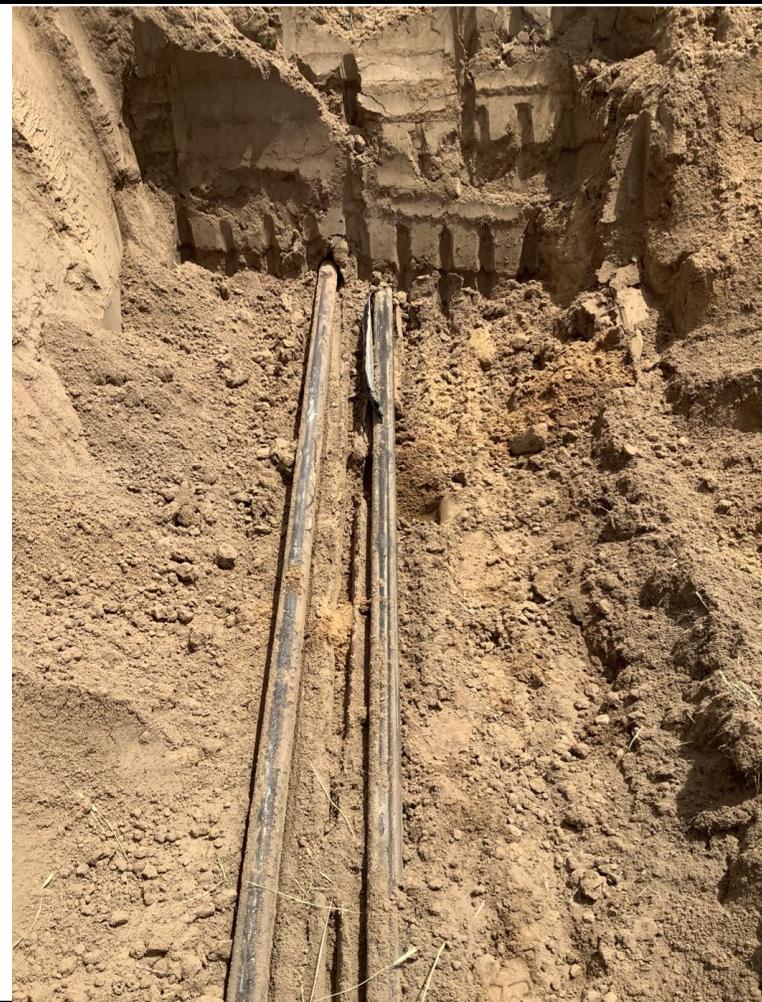
					
<b>Equipment ID:</b> FL01-J@5'		<b>Equipment Type:</b> Flowline			
<b>Material:</b>	<b>Volume:</b>	<b>Contents:</b>			
<b>Notes/Conditions:</b>			<b>Notes/Conditions:</b>		

Photographic Log



<b>Equipment ID:</b> FL01-B@3.5'		<b>Equipment Type:</b> Flowline		<b>Equipment ID:</b> FL01-L@5'		<b>Equipment Type:</b> Flowline	
<b>Material:</b>	<b>Volume:</b>	<b>Contents:</b>		<b>Material:</b>	<b>Volume:</b>	<b>Contents:</b>	
<b>Notes/Conditions:</b>				<b>Notes/Conditions:</b>			

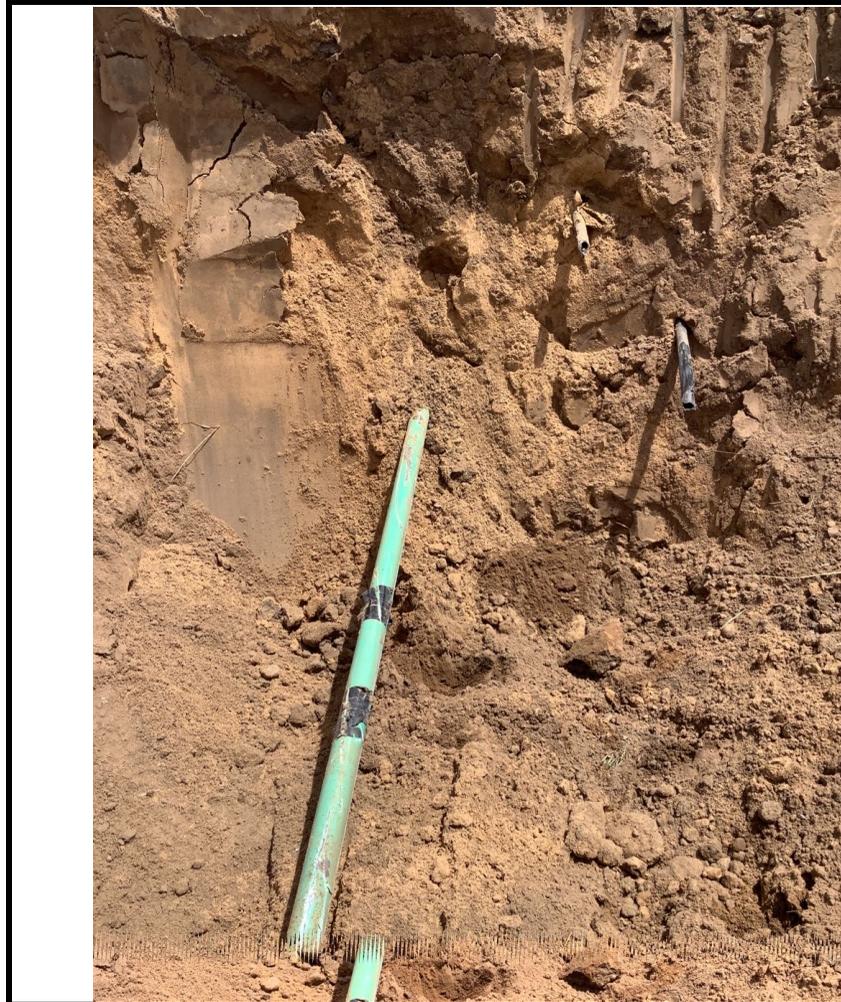
Photographic Log



<b>Equipment ID:</b> FL01-M@5'		<b>Equipment Type:</b> Flowline	
<b>Material:</b>	<b>Volume:</b>	<b>Contents:</b>	
<b>Notes/Conditions:</b>			

<b>Equipment ID:</b> FL01-N@5'		<b>Equipment Type:</b> Flowline	
<b>Material:</b>	<b>Volume:</b>	<b>Contents:</b>	
<b>Notes/Conditions:</b>			

## Photographic Log


**Equipment ID:** FL01-O@7'

**Equipment Type:** Flowline

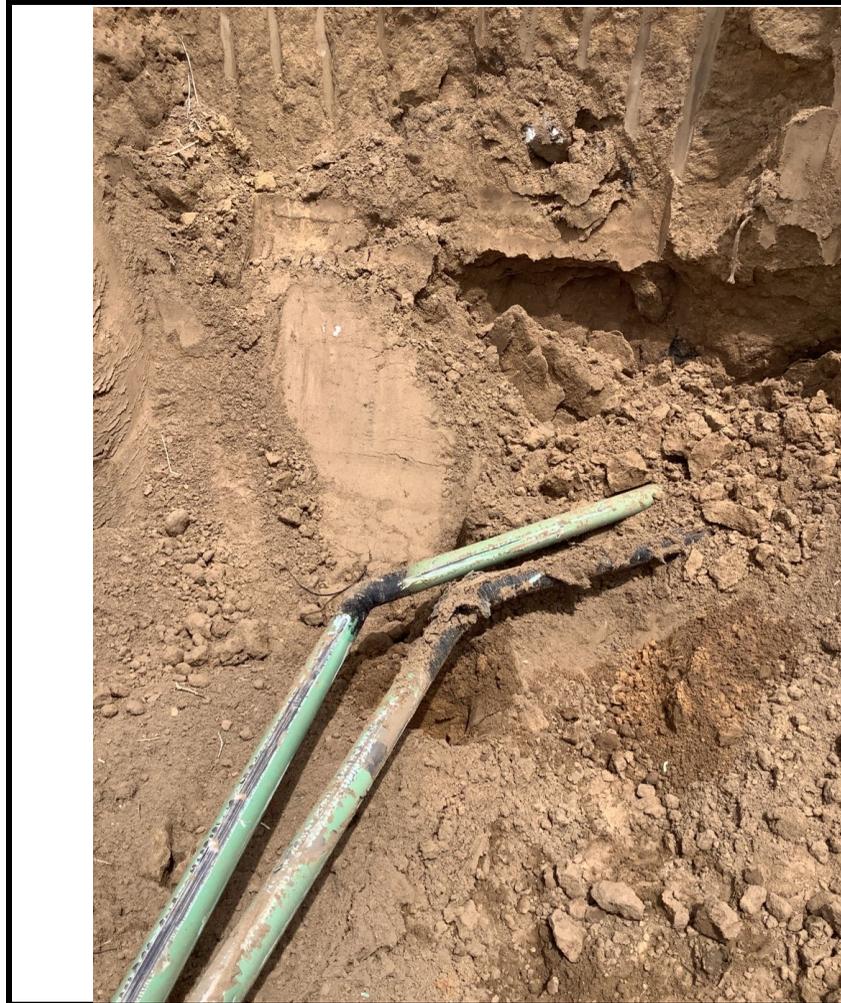
**Material:**
**Volume:**
**Contents:**
**Notes/Conditions:**

**Equipment ID:** FL01-P@5'

**Equipment Type:** Flowline

**Material:**
**Volume:**
**Contents:**
**Notes/Conditions:**

## Photographic Log



**Equipment ID:** FL01-Q@5'

**Equipment Type:** Flowline

**Material:**

**Volume:**

**Contents:**

**Notes/Conditions:** Direction change



**Equipment ID:** FL01-R@5'

**Equipment Type:** Flowline

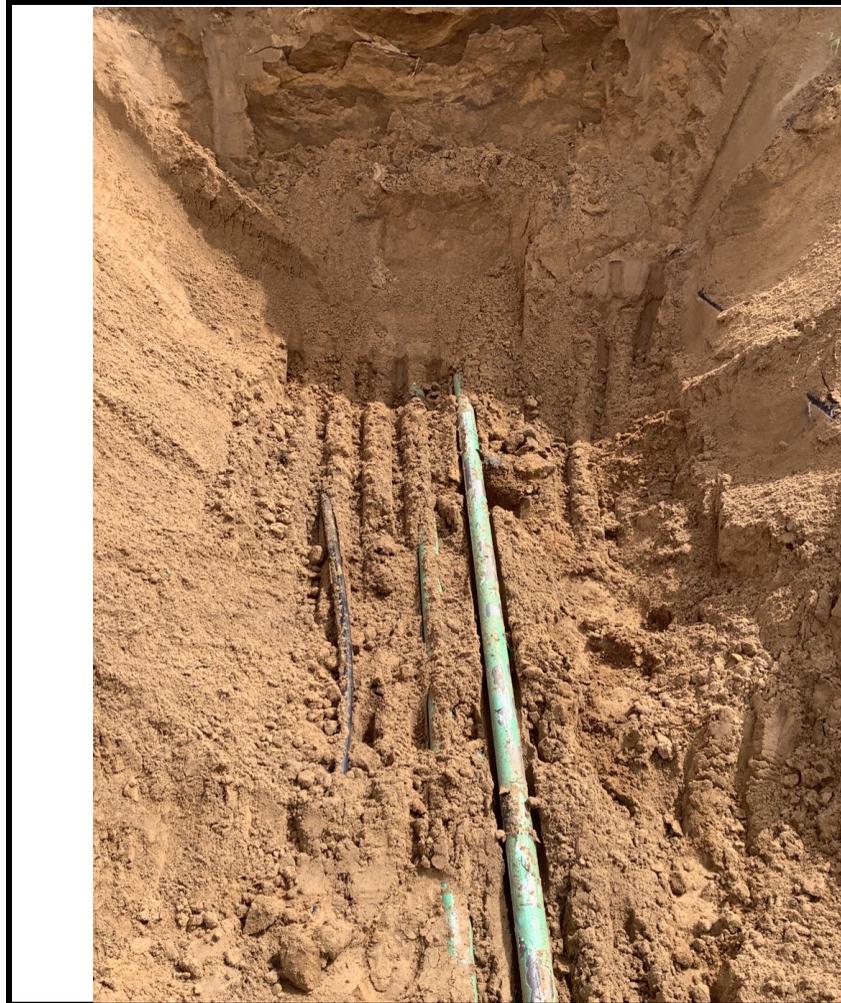
**Material:**

**Volume:**

**Contents:**

**Notes/Conditions:** Third flowline was remnant piece of previously abandoned flowline, this piece was pulled along with the other two flowlines during removal.

## Photographic Log



<b>Equipment ID:</b> FL01-S@5'		<b>Equipment Type:</b> Flowline			<b>Equipment ID:</b> FL01-T@5'		<b>Equipment Type:</b> Flowline		
<b>Material:</b>	<b>Volume:</b>	<b>Contents:</b>			<b>Material:</b>	<b>Volume:</b>	<b>Contents:</b>		
<b>Notes/Conditions:</b>					<b>Notes/Conditions:</b> Direction change relevant to location of B point				

**TABLE 1**  
**SOIL SAMPLE LOCATIONS**  
**NOBLE ENERGY, INC. - STROH H 12-03**

Soil Sample ID	Date	PID (ppm)	Visual	Olfactory	Sample Type (Grab/Lab)	Latitude <sup>1</sup>	Longitude	PDOP
FL01-A@4'	05/26/23	0.1	No Staining	No Odor	Lab	40.245656	-104.613556	1.0
FL01-C@4'	05/26/23	0.2	No Staining	No Odor	Grab	40.245644	-104.613885	0.9
FL01-D@5'	05/26/23	0.2	No Staining	No Odor	Grab	40.245667	-104.614188	0.9
FL01-E@5'	05/26/23	0.1	No Staining	No Odor	Grab	40.245656	-104.614535	1.1
FL01-F@5'	05/30/23	0.4	No Staining	No Odor	Grab	40.245675	-104.614863	1.6
FL01-G@5'	05/30/23	0.1	No Staining	No Odor	Grab	40.245679	-104.615150	1.0
FL01-H@5'	05/30/23	0.0	No Staining	No Odor	Grab	40.245678	-104.615502	0.9
FL01-I@5'	05/30/23	0.4	No Staining	No Odor	Grab	40.245679	-104.615808	0.9
FL01-J@5'	05/30/23	0.0	No Staining	No Odor	Grab	40.245673	-104.616147	0.9
FL01-K@5'	05/30/23	0.0	No Staining	No Odor	Grab	40.245675	-104.616460	1.1
FL01-B@3.5'	05/31/23	0.2	No Staining	No Odor	Lab	40.245247	-104.620241	0.9
FL01-L@5'	05/31/23	0.0	No Staining	No Odor	Grab	40.245678	-104.616924	0.9
FL01-M@5'	05/31/23	0.1	No Staining	No Odor	Grab	40.245681	-104.617361	0.9
FL01-N@5'	05/31/23	0.0	No Staining	No Odor	Grab	40.245679	-104.617664	1.0
FL01-O@7'	05/31/23	0.0	No Staining	No Odor	Grab	40.245694	-104.618021	1.0
FL01-P@5'	05/31/23	0.0	No Staining	No Odor	Grab	40.245697	-104.618412	1.0
FL01-Q@5'	05/31/23	0.1	No Staining	No Odor	Lab	40.245702	-104.618787	0.9
FL01-R@5'	06/01/23	0.3	No Staining	No Odor	Grab	40.245499	-104.619068	1.3
FL01-S@5'	06/01/23	0.0	No Staining	No Odor	Grab	40.245304	-104.619352	1.2
FL01-T@5'	06/01/23	0.0	No Staining	No Odor	Lab	40.245177	-104.619667	1.1

Notes:

PID = Photoionization detector

ppm = parts per million

PDOP = Position dilution of precision

HC = Hydrocarbon

1.) Latitude and longitude coordinates will be provided in decimal degrees with an accuracy and precision of 5 decimals of a degree using the North American Datum ("NAD") of 1983

TABLE 2  
SOIL ANALYTICAL DATA  
NOBLE ENERGY, INC. - STROH H 12-03

Soil Sample ID	Date	<sup>1</sup> Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	1,2,4 - TMB (mg/kg)	1,3,5 - TMB (mg/kg)	Naphthalene (mg/kg)	TPH-GRO (mg/kg)	TPH-DRO (mg/kg)	TPH-ORO (mg/kg)	Acenaphthene (mg/kg)	Anthracene (mg/kg)	Benz(a) (mg/kg)	Benzo(a) (mg/kg)	Benzo(b) (mg/kg)	Benzo(k) (mg/kg)	Chrysene (mg/kg)	A,H (mg/kg)	Fluoranthene (mg/kg)	Fluorene (mg/kg)	1,2,3-CD (mg/kg)	Pyrene (mg/kg)	1-M (mg/kg)	2-M (mg/kg)
Residential SSL <sup>2</sup>		1.2	490	5.8	58	30	27	2	500			360	1,800	1.1	0.11	1.1	11	110	0.11	240	240	1.1	180	18	24
Protection of Groundwater SSL <sup>2,3</sup>		0.0026	0.69	0.78	9.9	0.0081	0.0087	0.0038	500			0.55	6	0.011	0.24	0.3	2.9	9	0.096	8.9	0.54	0.98	1.3	0.006	0.019
FL01-A@4'	05/26/23	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	<50	<50	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.00616	<0.00500	<0.00500	0.00670	<0.00500	<0.00500
FL01-B@3.5'	05/31/23	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	<50	<50	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
FL01-Q@5'	05/31/23	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	<50	<50	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
FL01-T@5'	06/01/23	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	<50	<50	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500

Soil Sample ID	Date	pH	SAR	EC (mmhos/cm)	Boron (mg/L)
Residential SSL <sup>2</sup>		6 - 8.3	<6	<4mmhos/cm	2
FL01-A@4'	05/26/23	5.85	0.0475	0.321	0.110
FL01-B@3.5'	05/31/23	7.19	0.0354	0.164	0.139
FL01-Q@5'	05/31/23	7.47	1.42	0.440	0.133
FL01-T@5'	06/01/23	6.74	0.0365	0.0384	0.0713

Notes:

- Compounds referenced from 2 CCR 404-1, Table 915-1, effective January 15, 2021.
- Soil Screening Levels (SSL) referenced from EPA Regional Screening Levels (EPA RSLs) for Chemical Contaminants at Superfund Sites, effective November 2020.
- SSLs are applicable if a pathway for communication with groundwater is present.

Definitions:

COGCC = Colorado Oil and Gas Conservation Commission

TPH-GRO = Total petroleum hydrocarbons - gasoline range organics

TPH-DRO = Total petroleum hydrocarbons - diesel range organics

TPH-ORO = Total petroleum hydrocarbons - oil range organics

mg/kg = Milligrams per kilogram

SAR = Sodium Adsorption Ratio

EC = Electrical Conductivity

mmhos/cm = Millimhos per centimeter

mg/L = Milligrams per liter

< = Analytical result is less than the indicated laboratory reporting limit

Highlighted results are equal to or exceed the COGCC Table 915-1 standard

1,2,4 - TMB = 1,2,4 Trimethylbenzene

1,3,5 - TMB = 1,3,5 Trimethylbenzene

Benz(a) = Benzanthracene

Benzo(b) = Benzofluoranthene

Benzo(k) = Benzofluoranthene

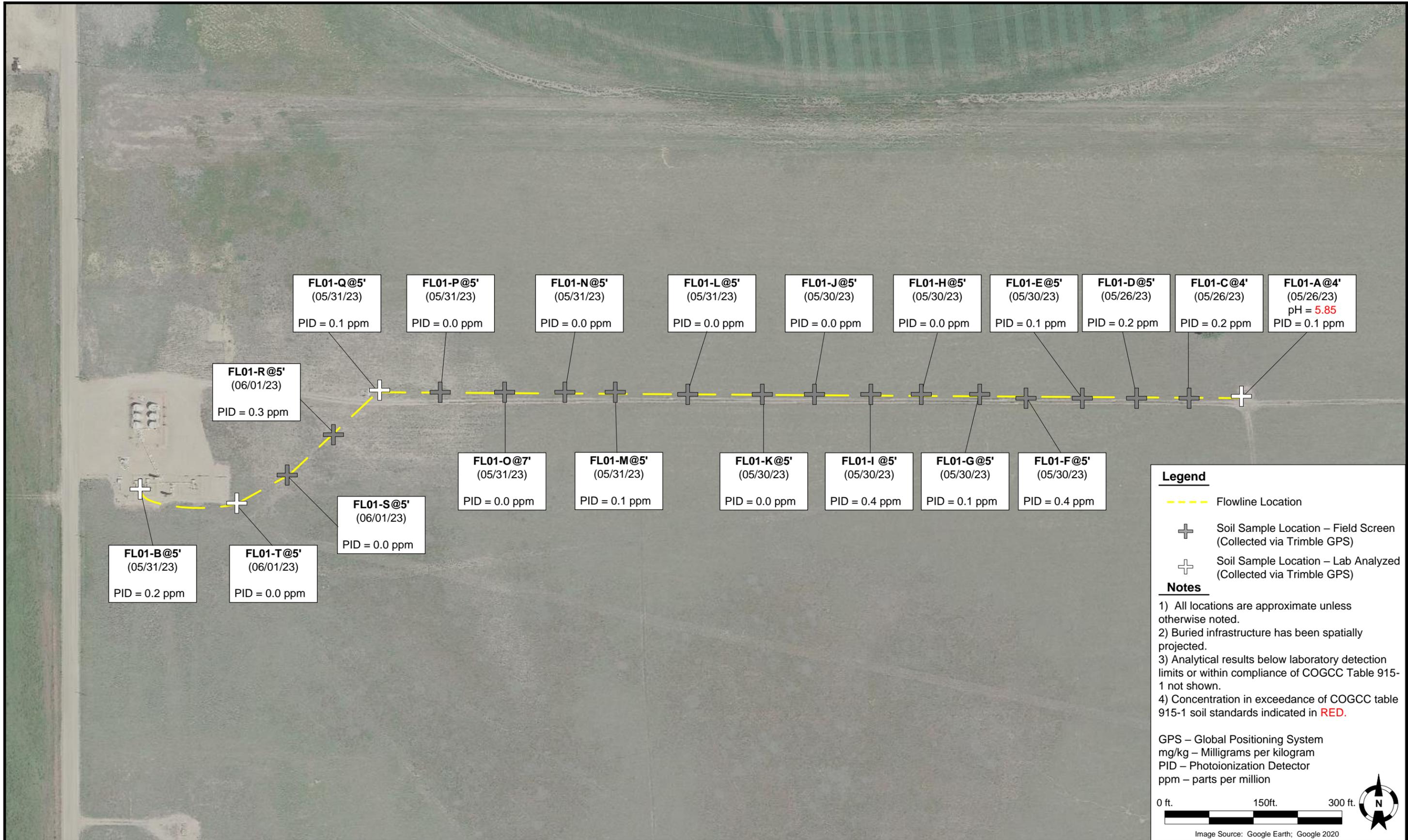
Benzo(a) = Benzopyrene

A,H = Dibenzoanthracene

1,2,3-CD = Indenopyrene

1-M = 1-methylnaphthalene

2-M = 2-methylnaphthalene



**Legend**

- Flowline Location
- + Soil Sample Location – Field Screen (Collected via Trimble GPS)
- + Soil Sample Location – Lab Analyzed (Collected via Trimble GPS)

**Notes**

- 1) All locations are approximate unless otherwise noted.
- 2) Buried infrastructure has been spatially projected.
- 3) Analytical results below laboratory detection limits or within compliance of COGCC Table 915-1 not shown.
- 4) Concentration in exceedance of COGCC table 915-1 soil standards indicated in **RED**.

GPS – Global Positioning System  
 mg/kg – Milligrams per kilogram  
 PID – Photoionization Detector  
 ppm – parts per million

0 ft. 150ft. 300 ft.

Image Source: Google Earth; Google 2020

DATE: 6/27/23

DESIGNED BY: JW

DRAWN BY: EH

**TASMAN**  
GEOSCIENCES

Tasman Geosciences, Inc.  
6855 W 119<sup>th</sup> Avenue  
Broomfield, CO 80020

**Noble Energy, Inc. – DJ Basin**  
**Stroh H 12-03**  
 NWNW, Section 12, Township 3 North, Range 65 West  
 Weld County, Colorado

Flowline Closure & Soil  
 Analytical Results Map  
 (5/26/23, 5/30/23,  
 5/31/23, 6/1/23)

**FIGURE**  
1

# Summit Scientific

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4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

June 16, 2023

Jacob Whritenour  
Tasman Geosciences  
6855 W. 119th Ave.  
Broomfield, CO 80020  
RE: Noble - Stroh H12-03  
Work Order #2305635

Enclosed are the results of analyses for samples received by Summit Scientific on 05/26/23 17:56. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Scott Sheely For Paul Shrewsbury  
President



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

Project: Noble - Stroh H12-03  
Project Number: UWRWE-A3080-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
06/16/23 12:16

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FL01-A@4'	2305635-01	Soil	05/26/23 11:12	05/26/23 17:56

### Case Narrative

Dale Brokaw requested a rerun for sample FL01-A@4' on 6/9 for pH. This report has those results.

Elyse Hossink canceled all analyses for FL01-C@4', FL01-D@5', FL01-E@5' on 5/30.

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.*

# Summit Scientific

S<sub>2</sub>

4653 Table Mountain Drive ♦ Golden, Colorado 80403  
303-277-9310

Client: Noble / Tasman Geosciences Project Manager: Jake Whritenour, Invoice:  
Address: 6855 W. 119th Ave. E-Mail: Jwhritenour@tasman-geo.com  
City/State/Zip: Broomfield / CO/ 80020  
Phone: 231-292-2576 Project Name: STROH H12-03  
Sampler Name: Elyse Hossink Project Number: UWRWE - A3080 - ABN

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	SAR, EC, pH	Boron - HWS	HOLD		
1	FL01-A @ 4'	5/26/23	1122	2			X			X				X	X	X	X	X		PH, EC, SAR by saturated paste
2	FL01-C @ 4'	I	1118	I			X			I				I	I	I	I			
3	FL01-D @ 5'	I	1121	I			X			I				I	I	I	I			
4	FL01-E @ 5'	I	1124	I			X			I				I	I	I	I			
5																				
6																				
7																				
8																				
9																				
10																				

Relinquished by: Elyse Hossink	Date/Time: 5/26/23 1500	Received by: Tasman's Lock Box	Date/Time: 5/26/23 1500	<b>Turn Around Time (Check)</b> ___ Same Day ___ 72 hours ___ 24 hours ___ <u>Standard</u> ___ 48 hours ___ <b>Sample Integrity:</b> Temperature Upon Receipt: <u>9.8</u> Samples Intact: <u>Yes</u> No	<b>Notes:</b>
Relinquished by: Tasman's Lock Box	Date/Time: 5/26/23 1750	Received by: [Signature]	Date/Time: 5/26/23 1750		
Relinquished by:	Date/Time:	Received by:	Date/Time:		

S<sub>2</sub>

Sample Receipt Checklist

S2 Work Order# 2305635

Client: None Truman Client Project ID: Stroh H12-03

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"/>	
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 type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Samples 2, 3+4 missing
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

5/26/23  
Date/Time



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

Project: Noble - Stroh H12-03  
Project Number: UWRWE-A3080-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
06/16/23 12:16

**FL01-A@4'**  
**2305635-01 (Soil)**

**Summit Scientific**

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

Date Sampled: **05/26/23 11:12**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	BGE1085	05/31/23	06/01/23	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: **05/26/23 11:12**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	0.0492	123 %		50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0370	92.5 %		50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0414	104 %		50-150		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **05/26/23 11:12**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	ND	50		mg/kg	1	BGE1088	05/31/23	06/01/23	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **05/26/23 11:12**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl	11.5	91.9 %		30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

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

Project: Noble - Stroh H12-03  
Project Number: UWRWE-A3080-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
06/16/23 12:16

**FL01-A@4'**  
**2305635-01 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **05/26/23 11:12**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BGE1052	05/31/23	06/01/23	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	"	"	"	"	"	"	
<b>Fluoranthene</b>	<b>0.00616</b>	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
<b>Pyrene</b>	<b>0.00670</b>	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **05/26/23 11:12**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0144	43.2 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0183	54.9 %	40-150		"	"	"	"	

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

Date Sampled: **05/26/23 11:12**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Boron</b>	<b>0.110</b>	0.0100	mg/L	1	BGF0046	06/01/23	06/03/23	EPA 6020B	

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

Date Sampled: **05/26/23 11:12**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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6855 W. 119th Ave.  
Broomfield CO, 80020

Project: Noble - Stroh H12-03  
Project Number: UWRWE-A3080-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
06/16/23 12:16

**FL01-A@4'**  
**2305635-01 (Soil)**

**Summit Scientific**

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	145	0.0567	mg/L dry	1	BGF0096	06/02/23	06/07/23	EPA 6020B	
Magnesium	22.7	0.0567	"	"	"	"	"	"	
Sodium	2.33	0.0567	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **05/26/23 11:12**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.0475	0.00100	units	1	BGF0248	06/07/23	06/07/23	Calculation	

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

Date Sampled: **05/26/23 11:12**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	88.2		%	1	BGF0067	06/02/23	06/02/23	Calculation	

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

Date Sampled: **05/26/23 11:12**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.321	0.0100	mmhos/cm	1	BGF0128	06/05/23	06/06/23	EPA 120.1	

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 Project Manager: Jacob Whritenour

**Reported:**  
 06/16/23 12:16

**FL01-A@4'**  
**2305635-01RE1 (Soil)**

**Summit Scientific**

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

Date Sampled: **05/26/23 11:12**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
<b>pH</b>	<b>5.85</b>		pH Units	1	BGF0583	06/05/23	06/15/23	EPA 9045D	

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Project: Noble - Stroh H12-03  
Project Number: UWRWE-A3080-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
06/16/23 12:16

### 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 BGE1085 - EPA 5030 Soil MS

##### Blank (BGE1085-BLK1)

Prepared: 05/31/23 Analyzed: 06/01/23

Benzene	ND	0.0020	mg/kg							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
1,2,4-Trimethylbenzene	ND	0.0050	"							
1,3,5-Trimethylbenzene	ND	0.0050	"							
Naphthalene	ND	0.0038	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
Surrogate: 1,2-Dichloroethane-d4	0.0378		"	0.0400		94.5	50-150			
Surrogate: Toluene-d8	0.0381		"	0.0400		95.2	50-150			
Surrogate: 4-Bromofluorobenzene	0.0368		"	0.0400		92.1	50-150			

##### LCS (BGE1085-BS1)

Prepared: 05/31/23 Analyzed: 06/01/23

Benzene	0.0924	0.0020	mg/kg	0.0750	ND	123	70-130			
Toluene	0.0787	0.0050	"	0.0750	ND	105	70-130			
Ethylbenzene	0.0764	0.0050	"	0.0750	ND	102	70-130			
m,p-Xylene	0.150	0.010	"	0.150	ND	100	70-130			
o-Xylene	0.0709	0.0050	"	0.0750	ND	94.5	70-130			
1,2,4-Trimethylbenzene	0.0640	0.0050	"	0.0750	ND	85.3	70-130			
1,3,5-Trimethylbenzene	0.0790	0.0050	"	0.0750	ND	105	70-130			
Naphthalene	0.0583	0.0038	"	0.0750	ND	77.7	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0497		"	0.0400		124	50-150			
Surrogate: Toluene-d8	0.0381		"	0.0400		95.2	50-150			
Surrogate: 4-Bromofluorobenzene	0.0410		"	0.0400		103	50-150			

##### Matrix Spike (BGE1085-MS1)

Source: 2305633-01

Prepared: 05/31/23 Analyzed: 06/01/23

Benzene	0.0903	0.0020	mg/kg	0.0750	ND	120	70-130			
Toluene	0.0833	0.0050	"	0.0750	ND	111	70-130			
Ethylbenzene	0.0871	0.0050	"	0.0750	ND	116	70-130			
m,p-Xylene	0.172	0.010	"	0.150	ND	114	70-130			
o-Xylene	0.0817	0.0050	"	0.0750	ND	109	70-130			
1,2,4-Trimethylbenzene	0.0731	0.0050	"	0.0750	ND	97.5	70-130			
1,3,5-Trimethylbenzene	0.0900	0.0050	"	0.0750	ND	120	70-130			
Naphthalene	0.0765	0.0038	"	0.0750	ND	102	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0515		"	0.0400		129	50-150			
Surrogate: Toluene-d8	0.0360		"	0.0400		90.0	50-150			
Surrogate: 4-Bromofluorobenzene	0.0402		"	0.0400		101	50-150			

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Project: Noble - Stroh H12-03  
Project Number: UWRWE-A3080-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
06/16/23 12:16

**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 BGE1085 - EPA 5030 Soil MS**

<b>Matrix Spike Dup (BGE1085-MSD1)</b>	<b>Source: 2305633-01</b>			Prepared: 05/31/23		Analyzed: 06/01/23				
Benzene	0.0901	0.0020	mg/kg	0.0750	ND	120	70-130	0.266	30	
Toluene	0.0826	0.0050	"	0.0750	ND	110	70-130	0.832	30	
Ethylbenzene	0.0919	0.0050	"	0.0750	ND	123	70-130	5.43	30	
m,p-Xylene	0.181	0.010	"	0.150	ND	120	70-130	5.14	30	
o-Xylene	0.0858	0.0050	"	0.0750	ND	114	70-130	4.91	30	
1,2,4-Trimethylbenzene	0.0778	0.0050	"	0.0750	ND	104	70-130	6.16	30	
1,3,5-Trimethylbenzene	0.0952	0.0050	"	0.0750	ND	127	70-130	5.67	30	
Naphthalene	0.0874	0.0038	"	0.0750	ND	117	70-130	13.4	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0547</i>		<i>"</i>	<i>0.0400</i>		<i>137</i>	<i>50-150</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0352</i>		<i>"</i>	<i>0.0400</i>		<i>88.1</i>	<i>50-150</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0393</i>		<i>"</i>	<i>0.0400</i>		<i>98.2</i>	<i>50-150</i>			

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Broomfield CO, 80020

Project: Noble - Stroh H12-03  
Project Number: UWRWE-A3080-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
06/16/23 12:16

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

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

**Batch BGE1088 - EPA 3550A**

**Blank (BGE1088-BLK1)**

Prepared & Analyzed: 05/31/23

C10-C28 (DRO)	ND	50	mg/kg								
C28-C36 (ORO)	ND	50	"								
Surrogate: <i>o</i> -Terphenyl	11.9		"	12.5		95.1	30-150				

**LCS (BGE1088-BS1)**

Prepared & Analyzed: 05/31/23

C10-C28 (DRO)	404	50	mg/kg	500		80.8	70-130				
Surrogate: <i>o</i> -Terphenyl	12.6		"	12.5		101	30-150				

**Matrix Spike (BGE1088-MS1)**

Source: 2305633-01

Prepared & Analyzed: 05/31/23

C10-C28 (DRO)	371	50	mg/kg	500	6.71	72.9	70-130				
Surrogate: <i>o</i> -Terphenyl	11.6		"	12.5		92.8	30-150				

**Matrix Spike Dup (BGE1088-MSD1)**

Source: 2305633-01

Prepared & Analyzed: 05/31/23

C10-C28 (DRO)	397	50	mg/kg	500	6.71	78.0	70-130	6.63	20		
Surrogate: <i>o</i> -Terphenyl	11.9		"	12.5		95.3	30-150				

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Project: Noble - Stroh H12-03  
Project Number: UWRWE-A3080-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
06/16/23 12:16

**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 BGE1052 - EPA 5030 Soil MS**

**Blank (BGE1052-BLK1)**

Prepared & Analyzed: 05/31/23

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	"							
Surrogate: 2-Methylnaphthalene-d10	0.0239		"	0.0333		71.6	40-150			
Surrogate: Fluoranthene-d10	0.0306		"	0.0333		91.9	40-150			

**LCS (BGE1052-BS1)**

Prepared & Analyzed: 05/31/23

Acenaphthene	0.0284	0.00500	mg/kg	0.0333		85.3	31-137			
Anthracene	0.0272	0.00500	"	0.0333		81.5	30-120			
Benzo (a) anthracene	0.0242	0.00500	"	0.0333		72.5	30-120			
Benzo (a) pyrene	0.0255	0.00500	"	0.0333		76.4	30-120			
Benzo (b) fluoranthene	0.0243	0.00500	"	0.0333		72.8	30-120			
Benzo (k) fluoranthene	0.0271	0.00500	"	0.0333		81.3	30-120			
Chrysene	0.0293	0.00500	"	0.0333		87.8	30-120			
Dibenz (a,h) anthracene	0.0289	0.00500	"	0.0333		86.6	30-120			
Fluoranthene	0.0266	0.00500	"	0.0333		79.7	30-120			
Fluorene	0.0248	0.00500	"	0.0333		74.4	30-120			
Indeno (1,2,3-cd) pyrene	0.0274	0.00500	"	0.0333		82.3	30-120			
Pyrene	0.0283	0.00500	"	0.0333		84.9	35-142			
1-Methylnaphthalene	0.0260	0.00500	"	0.0333		78.0	35-142			
2-Methylnaphthalene	0.0265	0.00500	"	0.0333		79.5	35-142			
Surrogate: 2-Methylnaphthalene-d10	0.0249		"	0.0333		74.8	40-150			
Surrogate: Fluoranthene-d10	0.0262		"	0.0333		78.5	40-150			

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Project: Noble - Stroh H12-03  
Project Number: UWRWE-A3080-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
06/16/23 12:16

**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 BGE1052 - EPA 5030 Soil MS**

<b>Matrix Spike (BGE1052-MS1)</b>	<b>Source: 2305608-01</b>			<b>Prepared &amp; Analyzed: 05/31/23</b>								
Acenaphthene	0.0148	0.00500	mg/kg	0.0333	ND	44.3	31-137					
Anthracene	0.0192	0.00500	"	0.0333	ND	57.5	30-120					
Benzo (a) anthracene	0.0153	0.00500	"	0.0333	ND	45.9	30-120					
Benzo (a) pyrene	0.0179	0.00500	"	0.0333	ND	53.8	30-120					
Benzo (b) fluoranthene	0.0135	0.00500	"	0.0333	ND	40.5	30-120					
Benzo (k) fluoranthene	0.0148	0.00500	"	0.0333	ND	44.3	30-120					
Chrysene	0.0151	0.00500	"	0.0333	ND	45.2	30-120					
Dibenz (a,h) anthracene	0.0149	0.00500	"	0.0333	ND	44.6	30-120					
Fluoranthene	0.0136	0.00500	"	0.0333	ND	40.9	30-120					
Fluorene	0.0141	0.00500	"	0.0333	ND	42.2	30-120					
Indeno (1,2,3-cd) pyrene	0.0166	0.00500	"	0.0333	ND	49.8	30-120					
Pyrene	0.0153	0.00500	"	0.0333	ND	46.0	35-142					
1-Methylnaphthalene	0.0156	0.00500	"	0.0333	ND	46.8	15-130					
2-Methylnaphthalene	0.0152	0.00500	"	0.0333	ND	45.5	15-130					
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0155</i>		<i>"</i>	<i>0.0333</i>		<i>46.6</i>	<i>40-150</i>					
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0136</i>		<i>"</i>	<i>0.0333</i>		<i>40.8</i>	<i>40-150</i>					

<b>Matrix Spike Dup (BGE1052-MSD1)</b>	<b>Source: 2305608-01</b>			<b>Prepared &amp; Analyzed: 05/31/23</b>								
Acenaphthene	0.0142	0.00500	mg/kg	0.0333	ND	42.5	31-137	4.19	30			
Anthracene	0.0154	0.00500	"	0.0333	ND	46.2	30-120	21.8	30			
Benzo (a) anthracene	0.0144	0.00500	"	0.0333	ND	43.2	30-120	6.17	30			
Benzo (a) pyrene	0.0165	0.00500	"	0.0333	ND	49.6	30-120	8.14	30			
Benzo (b) fluoranthene	0.0159	0.00500	"	0.0333	ND	47.6	30-120	16.2	30			
Benzo (k) fluoranthene	0.0134	0.00500	"	0.0333	ND	40.3	30-120	9.46	30			
Chrysene	0.0137	0.00500	"	0.0333	ND	41.0	30-120	9.68	30			
Dibenz (a,h) anthracene	0.0176	0.00500	"	0.0333	ND	52.9	30-120	16.9	30			
Fluoranthene	0.0183	0.00500	"	0.0333	ND	54.8	30-120	29.1	30			
Fluorene	0.0168	0.00500	"	0.0333	ND	50.3	30-120	17.5	30			
Indeno (1,2,3-cd) pyrene	0.0162	0.00500	"	0.0333	ND	48.7	30-120	2.21	30			
Pyrene	0.0137	0.00500	"	0.0333	ND	41.0	35-142	11.3	30			
1-Methylnaphthalene	0.0139	0.00500	"	0.0333	ND	41.7	15-130	11.5	50			
2-Methylnaphthalene	0.0155	0.00500	"	0.0333	ND	46.6	15-130	2.42	50			
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0138</i>		<i>"</i>	<i>0.0333</i>		<i>41.4</i>	<i>40-150</i>					
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0134</i>		<i>"</i>	<i>0.0333</i>		<i>40.2</i>	<i>40-150</i>					

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**Reported:**  
06/16/23 12:16

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

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

**Batch BGF0046 - EPA 3050B**

**Blank (BGF0046-BLK1)**

Prepared: 06/01/23 Analyzed: 06/03/23

Boron ND 0.0100 mg/L

**LCS (BGF0046-BS1)**

Prepared: 06/01/23 Analyzed: 06/03/23

Boron 5.31 0.0100 mg/L 5.00 106 80-120

**Duplicate (BGF0046-DUP1)**

Source: 2305611-01

Prepared: 06/01/23 Analyzed: 06/03/23

Boron 0.147 0.0100 mg/L 0.159 8.21 20

**Matrix Spike (BGF0046-MS1)**

Source: 2305611-01

Prepared: 06/01/23 Analyzed: 06/03/23

Boron 5.46 0.0100 mg/L 5.00 0.159 106 75-125

**Matrix Spike Dup (BGF0046-MSD1)**

Source: 2305611-01

Prepared: 06/01/23 Analyzed: 06/03/23

Boron 5.41 0.0100 mg/L 5.00 0.159 105 75-125 0.954 25

Summit Scientific

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

Project: Noble - Stroh H12-03  
Project Number: UWRWE-A3080-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
06/16/23 12:16

**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 BGF0096 - General Preparation**

**Blank (BGF0096-BLK1)**

Prepared: 06/02/23 Analyzed: 06/07/23

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

**LCS (BGF0096-BS1)**

Prepared: 06/02/23 Analyzed: 06/07/23

Calcium	5.34	0.0500	mg/L wet	5.00	107	70-130
Magnesium	4.83	0.0500	"	5.00	96.6	70-130
Sodium	4.91	0.0500	"	5.00	98.1	70-130

Summit Scientific

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

Project: Noble - Stroh H12-03  
 Project Number: UWRWE-A3080-ABN  
 Project Manager: Jacob Whritenour

**Reported:**  
 06/16/23 12:16

**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 BGF0067 - General Preparation**

<b>Duplicate (BGF0067-DUP1)</b>		<b>Source: 2305635-01</b>			<b>Prepared &amp; Analyzed: 06/02/23</b>				
% Solids	88.2		%		88.2		0.0892	20	

Summit Scientific

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

Project: Noble - Stroh H12-03  
Project Number: UWRWE-A3080-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
06/16/23 12:16

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

**Summit Scientific**

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

**Batch BGF0128 - General Preparation**

**Blank (BGF0128-BLK1)**

Prepared: 06/05/23 Analyzed: 06/06/23

Specific Conductance (EC) ND 0.0100 mmhos/cm

**LCS (BGF0128-BS1)**

Prepared: 06/05/23 Analyzed: 06/06/23

Specific Conductance (EC) 0.157 0.0100 mmhos/cm 0.150 104 95-105

**Duplicate (BGF0128-DUP1)**

**Source: 2305633-01**

Prepared: 06/05/23 Analyzed: 06/06/23

Specific Conductance (EC) 0.364 0.0100 mmhos/cm 0.393 7.50 20

Summit Scientific

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

Project: Noble - Stroh H12-03  
Project Number: UWRWE-A3080-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
06/16/23 12:16

**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 BGF0129 - General Preparation**

<b>LCS (BGF0129-BS1)</b>		Prepared: 06/05/23 Analyzed: 06/06/23										
pH	9.05		pH Units	9.18		98.6		95-105				
<b>Duplicate (BGF0129-DUP1)</b>		<b>Source: 2305633-01</b>		Prepared: 06/05/23 Analyzed: 06/06/23								
pH	8.25		pH Units			8.22			0.364		20	

**Batch BGF0583 - General Preparation**

<b>LCS (BGF0583-BS1)</b>		Prepared & Analyzed: 06/15/23										
pH	9.18		pH Units	9.18		100		95-105				
<b>Duplicate (BGF0583-DUP1)</b>		<b>Source: 2305633-02RE1</b>		Prepared & Analyzed: 06/15/23								
pH	8.53		pH Units			8.49			0.470		20	

Summit Scientific

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

Project: Noble - Stroh H12-03  
Project Number: UWRWE-A3080-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
06/16/23 12:16

### Notes and Definitions

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

# Summit Scientific

---

4653 Table Mountain Drive, Golden, Colorado 80401

303.277.9310

June 15, 2023

Jacob Whritenour

Tasman Geosciences

6855 W. 119th Ave.

Broomfield, CO 80020

RE: Noble - Stroh H12-03

Work Order # 2305701

Enclosed are the results of analyses for samples received by Summit Scientific on 05/31/23 18:11. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in blue ink that reads "Scott Sheely". The signature is written in a cursive style with a large initial "S".

Scott Sheely For Paul Shrewsbury

President



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

Project: Noble - Stroh H12-03

Project Number: UWRWE-A3080-ABN

Project Manager: Jacob Whritenour

**Reported:**  
06/15/23 11:44

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FL01-B@3.5'	2305701-01	Soil	05/31/23 11:05	05/31/23 18:11
FL01-Q@5'	2305701-02	Soil	05/31/23 12:45	05/31/23 18:11

Summit Scientific

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# Summit Scientific

S<sub>2</sub>

4653 Table Mountain Drive ♦ Golden, Colorado 80403  
303-277-9310

Client: Noble / Tasman Geosciences Project Manager: Jake Whritenour, Invoice:  
Address: 6855 W. 119th Ave. E-Mail: Jwhritenour@tasman-geo.com  
City/State/Zip: Broomfield / CO / 80020  
Phone: 231-292-2576 Project Name: Ston H12-03  
Sampler Name: Elyse Hossink Project Number: UWRWE-A3080-ABN 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	SAR, EC, pH	Boron - HWS		HOLD	
1	FL01-B@3.5'	5/31/23	1705	2			X			X				X	X	X	X	X		PH, EC, SAR by saturated paste
2	FL01-Q@5'	5/31/23	1245	2			X			X				X	X	X	X	X		
3																				
4																				
5																				
6																				
7																				
8																				
9																				
10																				

Relinquished by: <u>Elyse Hossink</u>	Date/Time: <u>5/31/23 1500</u>	Received by: <u>Tasman's Lock Box</u>	Date/Time: <u>5/31/23 1500</u>	<b>Turn Around Time</b> (Check) ___ Same Day ___ 72 hours ___ 24 hours ___ <u>Standard</u> ___ 48 hours ___ <b>Sample Integrity:</b> Temperature Upon Receipt: <u>10.8</u> Samples Intact: <u>Yes</u> No	<b>Notes:</b>
Relinquished by: <u>Tasman's Lock Box</u>	Date/Time: <u>5/31/23 1811</u>	Received by: <u>[Signature]</u>	Date/Time: <u>5/31/23 1811</u>		
Relinquished by:	Date/Time:	Received by:	Date/Time:		

S<sub>2</sub>

Sample Receipt Checklist

S2 Work Order# 2305701

Client: Noble F. Suman Client Project ID: Stroh H12-03

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

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

Temp (°C) 10.8 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"/>	on ICE
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

5/31/23  
Date/Time



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

Project: Noble - Stroh H12-03

Project Number: UWRWE-A3080-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
06/15/23 11:44

**FL01-B@3.5'**  
**2305701-01 (Soil)**

**Summit Scientific**

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

Date Sampled: **05/31/23 11:05**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Benzene	ND	0.0020		mg/kg	1	BGF0139	06/05/23	06/06/23	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: **05/31/23 11:05**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: 1,2-Dichloroethane-d4		132 %		50-150		"	"	"	"	
Surrogate: Toluene-d8		87.9 %		50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		109 %		50-150		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **05/31/23 11:05**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
C10-C28 (DRO)	ND	50		mg/kg	1	BGF0141	06/05/23	06/06/23	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **05/31/23 11:05**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: o-Terphenyl		96.9 %		30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

Summit Scientific

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

Project: Noble - Stroh H12-03

Project Number: UWRWE-A3080-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
06/15/23 11:44

**FL01-B@3.5'**  
**2305701-01 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **05/31/23 11:05**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Acenaphthene	ND	0.00500		mg/kg	1	BGF0065	06/02/23	06/03/23	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: **05/31/23 11:05**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: 2-Methylnaphthalene-d10		61.7 %		40-150		"	"	"	"	"
Surrogate: Fluoranthene-d10		42.8 %		40-150		"	"	"	"	"

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

Date Sampled: **05/31/23 11:05**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
<b>Boron</b>	<b>0.139</b>	0.0100		mg/L	1	BGF0173	06/06/23	06/14/23	EPA 6020B	

**Total Metals by EPA 6020B**

Date Sampled: **05/31/23 11:05**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							

Summit Scientific

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

Project: Noble - Stroh H12-03

Project Number: UWRWE-A3080-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
06/15/23 11:44

**FL01-B@3.5'**  
**2305701-01 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Analyte	Result	Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	0.653	0.225		mg/kg dry	1	BGF0164	06/06/23	06/09/23	EPA 6020B	
Barium	47.7	0.449		"	"	"	"	"	"	
Cadmium	0.407	0.225		"	"	"	"	"	"	
Copper	1.55	0.449		"	"	"	"	"	"	
Lead	4.15	0.225		"	"	"	"	"	"	
Nickel	1.52	0.449		"	"	"	"	"	"	
Selenium	ND	0.292	0.196	"	"	"	"	"	"	
Silver	ND	0.0225		"	"	"	"	"	"	
Zinc	6.48	0.449		"	"	"	"	"	"	

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **05/31/23 11:05**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30		mg/kg dry	1	BGF0297	06/08/23	06/08/23	EPA 7196A	

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

Date Sampled: **05/31/23 11:05**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	230	0.0561		mg/L dry	1	BGF0230	06/07/23	06/09/23	EPA 6020B	
Magnesium	38.4	0.0561		"	"	"	"	"	"	
Sodium	2.20	0.0561		"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **05/31/23 11:05**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.0354	0.00100		units	1	BGF0381	06/09/23	06/09/23	Calculation	

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

Summit Scientific

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

Project: Noble - Stroh H12-03

Project Number: UWRWE-A3080-ABN

Project Manager: Jacob Whritenour

**Reported:**  
06/15/23 11:44

**FL01-B@3.5'**  
**2305701-01 (Soil)**

**Summit Scientific**

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

Date Sampled: **05/31/23 11:05**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
% Solids	89.1			%	1	BGF0162	06/06/23	06/06/23	Calculation	

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

Date Sampled: **05/31/23 11:05**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Specific Conductance (EC)	0.164	0.0100		mmhos/cm	1	BGF0309	06/08/23	06/08/23	EPA 120.1	

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

Date Sampled: **05/31/23 11:05**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
pH	7.19			pH Units	1	BGF0310	06/08/23	06/08/23	EPA 9045D	

Summit Scientific

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

Project: Noble - Stroh H12-03

Project Number: UWRWE-A3080-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
06/15/23 11:44

**FL01-Q@5'**  
**2305701-02 (Soil)**

**Summit Scientific**

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

Date Sampled: **05/31/23 12:45**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Benzene	ND	0.0020		mg/kg	1	BGF0139	06/05/23	06/06/23	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: **05/31/23 12:45**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: 1,2-Dichloroethane-d4		134 %		50-150		"	"	"	"	
Surrogate: Toluene-d8		89.8 %		50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		109 %		50-150		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **05/31/23 12:45**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
C10-C28 (DRO)	ND	50		mg/kg	1	BGF0141	06/05/23	06/06/23	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **05/31/23 12:45**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: o-Terphenyl		96.2 %		30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

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

Project: Noble - Stroh H12-03

Project Number: UWRWE-A3080-ABN

Project Manager: Jacob Whritenour

**Reported:**  
06/15/23 11:44

**FL01-Q@5'**  
**2305701-02 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **05/31/23 12:45**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Acenaphthene	ND	0.00500		mg/kg	1	BGF0065	06/02/23	06/03/23	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: **05/31/23 12:45**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: 2-Methylnaphthalene-d10		59.2 %		40-150		"	"	"	"	"
Surrogate: Fluoranthene-d10		43.9 %		40-150		"	"	"	"	"

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

Date Sampled: **05/31/23 12:45**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
<b>Boron</b>	<b>0.133</b>	0.0100		mg/L	1	BGF0173	06/06/23	06/14/23	EPA 6020B	

**Total Metals by EPA 6020B**

Date Sampled: **05/31/23 12:45**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							

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

Project: Noble - Stroh H12-03

Project Number: UWRWE-A3080-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
06/15/23 11:44

**FL01-Q@5'**  
**2305701-02 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Analyte	Result	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method
Arsenic	0.455	0.211	mg/kg dry	1	BGF0164	06/06/23	06/09/23	EPA 6020B
Barium	41.7	0.423	"	"	"	"	"	"
Cadmium	ND	0.211	"	"	"	"	"	"
Copper	1.02	0.423	"	"	"	"	"	"
Lead	3.33	0.211	"	"	"	"	"	"
Nickel	1.13	0.423	"	"	"	"	"	"
Selenium	ND	0.275	0.185	"	"	"	"	"
Silver	ND	0.0211	"	"	"	"	"	"
Zinc	4.80	0.423	"	"	"	"	"	"

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: 05/31/23 12:45

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30		mg/kg dry	1	BGF0297	06/08/23	06/08/23	EPA 7196A	

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

Date Sampled: 05/31/23 12:45

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	23.4	0.0529		mg/L dry	1	BGF0230	06/07/23	06/09/23	EPA 6020B	
Magnesium	5.47	0.0529		"	"	"	"	"	"	
Sodium	29.4	0.0529		"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: 05/31/23 12:45

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	1.42	0.00100		units	1	BGF0381	06/09/23	06/09/23	Calculation	

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

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Project Number: UWRWE-A3080-ABN

Project Manager: Jacob Whritenour

**Reported:**  
06/15/23 11:44

**FL01-Q@5'**  
**2305701-02 (Soil)**

**Summit Scientific**

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

Date Sampled: **05/31/23 12:45**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
% Solids	94.6			%	1	BGF0162	06/06/23	06/06/23	Calculation	

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

Date Sampled: **05/31/23 12:45**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Specific Conductance (EC)	0.440	0.0100		mmhos/cm	1	BGF0309	06/08/23	06/08/23	EPA 120.1	

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

Date Sampled: **05/31/23 12:45**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
pH	7.47			pH Units	1	BGF0310	06/08/23	06/08/23	EPA 9045D	

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6855 W. 119th Ave.  
Broomfield CO, 80020

Project: Noble - Stroh H12-03

Project Number: UWRWE-A3080-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
06/15/23 11:44

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

#### Summit Scientific

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

#### Batch BGF0139 - EPA 5030 Soil MS

##### Blank (BGF0139-BLK1)

Prepared & Analyzed: 06/05/23

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>	<i>0.0548</i>		<i>"</i>	<i>0.0400</i>		<i>137</i>	<i>50-150</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0371</i>		<i>"</i>	<i>0.0400</i>		<i>92.7</i>	<i>50-150</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0434</i>		<i>"</i>	<i>0.0400</i>		<i>108</i>	<i>50-150</i>			

##### LCS (BGF0139-BS1)

Prepared & Analyzed: 06/05/23

Benzene	0.0964	0.0020	mg/kg	0.0750		129	70-130			
Toluene	0.0799	0.0050	"	0.0750		107	70-130			
Ethylbenzene	0.0803	0.0050	"	0.0750		107	70-130			
m,p-Xylene	0.142	0.010	"	0.150		94.6	70-130			
o-Xylene	0.0695	0.0050	"	0.0750		92.7	70-130			
1,2,4-Trimethylbenzene	0.0624	0.0050	"	0.0750		83.2	70-130			
1,3,5-Trimethylbenzene	0.0775	0.0050	"	0.0750		103	70-130			
Naphthalene	0.0601	0.0038	"	0.0750		80.1	70-130			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0510</i>		<i>"</i>	<i>0.0400</i>		<i>128</i>	<i>50-150</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0383</i>		<i>"</i>	<i>0.0400</i>		<i>95.8</i>	<i>50-150</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0451</i>		<i>"</i>	<i>0.0400</i>		<i>113</i>	<i>50-150</i>			

##### Matrix Spike (BGF0139-MS1)

Source: 2305699-01

Prepared & Analyzed: 06/05/23

Benzene	0.0721	0.0020	mg/kg	0.0750	ND	96.1	70-130			
Toluene	0.0840	0.0050	"	0.0750	ND	112	70-130			
Ethylbenzene	0.0896	0.0050	"	0.0750	ND	119	70-130			
m,p-Xylene	0.159	0.010	"	0.150	ND	106	70-130			
o-Xylene	0.0775	0.0050	"	0.0750	ND	103	70-130			
1,2,4-Trimethylbenzene	0.0712	0.0050	"	0.0750	ND	95.0	70-130			
1,3,5-Trimethylbenzene	0.0876	0.0050	"	0.0750	ND	117	70-130			
Naphthalene	0.0739	0.0038	"	0.0750	ND	98.6	70-130			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0517</i>		<i>"</i>	<i>0.0400</i>		<i>129</i>	<i>50-150</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0374</i>		<i>"</i>	<i>0.0400</i>		<i>93.4</i>	<i>50-150</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0440</i>		<i>"</i>	<i>0.0400</i>		<i>110</i>	<i>50-150</i>			

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

Project: Noble - Stroh H12-03

Project Number: UWRWE-A3080-ABN

Project Manager: Jacob Whritenour

**Reported:**  
06/15/23 11:44

### 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 BGF0139 - EPA 5030 Soil MS

Matrix Spike Dup (BGF0139-MSD1)	Source: 2305699-01			Prepared & Analyzed: 06/05/23						
Benzene	0.0774	0.0020	mg/kg	0.0750	ND	103	70-130	7.18	30	
Toluene	0.0874	0.0050	"	0.0750	ND	117	70-130	3.92	30	
Ethylbenzene	0.0938	0.0050	"	0.0750	ND	125	70-130	4.61	30	
m,p-Xylene	0.166	0.010	"	0.150	ND	111	70-130	4.25	30	
o-Xylene	0.0812	0.0050	"	0.0750	ND	108	70-130	4.76	30	
1,2,4-Trimethylbenzene	0.0733	0.0050	"	0.0750	ND	97.8	70-130	2.91	30	
1,3,5-Trimethylbenzene	0.0906	0.0050	"	0.0750	ND	121	70-130	3.37	30	
Naphthalene	0.0797	0.0038	"	0.0750	ND	106	70-130	7.50	30	
Surrogate: 1,2-Dichloroethane-d4	0.0522		"	0.0400		130	50-150			
Surrogate: Toluene-d8	0.0376		"	0.0400		94.0	50-150			
Surrogate: 4-Bromofluorobenzene	0.0423		"	0.0400		106	50-150			

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Project: Noble - Stroh H12-03

Project Number: UWRWE-A3080-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
06/15/23 11:44

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

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

**Batch BGF0141 - EPA 3550A**

**Blank (BGF0141-BLK1)**

Prepared & Analyzed: 06/05/23

C10-C28 (DRO)	ND	50	mg/kg								
C28-C36 (ORO)	ND	50	"								
Surrogate: <i>o</i> -Terphenyl	11.6		"	12.5		92.5	30-150				

**LCS (BGF0141-BS1)**

Prepared & Analyzed: 06/05/23

C10-C28 (DRO)	524	50	mg/kg	500		105	70-130				
Surrogate: <i>o</i> -Terphenyl	12.0		"	12.5		96.3	30-150				

**Matrix Spike (BGF0141-MS1)**

Source: 2305699-01

Prepared & Analyzed: 06/05/23

C10-C28 (DRO)	481	50	mg/kg	500	16.8	92.9	70-130				
Surrogate: <i>o</i> -Terphenyl	11.5		"	12.5		92.2	30-150				

**Matrix Spike Dup (BGF0141-MSD1)**

Source: 2305699-01

Prepared & Analyzed: 06/05/23

C10-C28 (DRO)	440	50	mg/kg	500	16.8	84.6	70-130	9.03	20		
Surrogate: <i>o</i> -Terphenyl	11.6		"	12.5		92.6	30-150				

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Project: Noble - Stroh H12-03

Project Number: UWRWE-A3080-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
06/15/23 11:44

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

**Summit Scientific**

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

**Batch BGF0065 - EPA 5030 Soil MS**

**Blank (BGF0065-BLK1)**

Prepared: 06/02/23 Analyzed: 06/03/23

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	"							
Surrogate: 2-Methylnaphthalene-d10	0.0355		"	0.0333		106	40-150			
Surrogate: Fluoranthene-d10	0.0322		"	0.0333		96.7	40-150			

**LCS (BGF0065-BS1)**

Prepared: 06/02/23 Analyzed: 06/03/23

Acenaphthene	0.0199	0.00500	mg/kg	0.0333	59.7	31-137				
Anthracene	0.0376	0.00500	"	0.0333	113	30-120				
Benzo (a) anthracene	0.0327	0.00500	"	0.0333	98.1	30-120				
Benzo (a) pyrene	0.0316	0.00500	"	0.0333	94.7	30-120				
Benzo (b) fluoranthene	0.0307	0.00500	"	0.0333	92.0	30-120				
Benzo (k) fluoranthene	0.0361	0.00500	"	0.0333	108	30-120				
Chrysene	0.0385	0.00500	"	0.0333	115	30-120				
Dibenz (a,h) anthracene	0.0387	0.00500	"	0.0333	116	30-120				
Fluoranthene	0.0327	0.00500	"	0.0333	98.0	30-120				
Fluorene	0.0387	0.00500	"	0.0333	116	30-120				
Indeno (1,2,3-cd) pyrene	0.0390	0.00500	"	0.0333	117	30-120				
Pyrene	0.0333	0.00500	"	0.0333	100	35-142				
1-Methylnaphthalene	0.0352	0.00500	"	0.0333	106	35-142				
2-Methylnaphthalene	0.0380	0.00500	"	0.0333	114	35-142				
Surrogate: 2-Methylnaphthalene-d10	0.0373		"	0.0333	112	40-150				
Surrogate: Fluoranthene-d10	0.0334		"	0.0333	100	40-150				

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Project Number: UWRWE-A3080-ABN  
Project Manager: Jacob Whritenour

Reported:  
06/15/23 11:44

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 BGF0065 - EPA 5030 Soil MS

Matrix Spike (BGF0065-MS1)

Source: 2305670-01

Prepared: 06/02/23 Analyzed: 06/03/23

Acenaphthene	0.0140	0.00500	mg/kg	0.0333	ND	42.1	31-137			
Anthracene	0.0172	0.00500	"	0.0333	ND	51.7	30-120			
Benzo (a) anthracene	0.0164	0.00500	"	0.0333	ND	49.1	30-120			
Benzo (a) pyrene	0.0160	0.00500	"	0.0333	ND	48.1	30-120			
Benzo (b) fluoranthene	0.0169	0.00500	"	0.0333	ND	50.8	30-120			
Benzo (k) fluoranthene	0.0202	0.00500	"	0.0333	ND	60.7	30-120			
Chrysene	0.0179	0.00500	"	0.0333	ND	53.7	30-120			
Dibenz (a,h) anthracene	0.0333	0.00500	"	0.0333	ND	99.8	30-120			
Fluoranthene	0.0141	0.00500	"	0.0333	ND	42.4	30-120			
Fluorene	0.0187	0.00500	"	0.0333	ND	56.0	30-120			
Indeno (1,2,3-cd) pyrene	0.0351	0.00500	"	0.0333	ND	105	30-120			
Pyrene	0.0325	0.00500	"	0.0333	ND	97.6	35-142			
1-Methylnaphthalene	0.0181	0.00500	"	0.0333	ND	54.4	15-130			
2-Methylnaphthalene	0.0188	0.00500	"	0.0333	ND	56.4	15-130			
Surrogate: 2-Methylnaphthalene-d10	0.0186		"	0.0333		55.7	40-150			
Surrogate: Fluoranthene-d10	0.0141		"	0.0333		42.4	40-150			

Matrix Spike Dup (BGF0065-MSD1)

Source: 2305670-01

Prepared: 06/02/23 Analyzed: 06/03/23

Acenaphthene	0.0164	0.00500	mg/kg	0.0333	ND	49.3	31-137	15.6	30	
Anthracene	0.0167	0.00500	"	0.0333	ND	50.2	30-120	2.89	30	
Benzo (a) anthracene	0.0159	0.00500	"	0.0333	ND	47.8	30-120	2.69	30	
Benzo (a) pyrene	0.0167	0.00500	"	0.0333	ND	50.2	30-120	4.33	30	
Benzo (b) fluoranthene	0.0155	0.00500	"	0.0333	ND	46.4	30-120	8.90	30	
Benzo (k) fluoranthene	0.0214	0.00500	"	0.0333	ND	64.1	30-120	5.37	30	
Chrysene	0.0181	0.00500	"	0.0333	ND	54.4	30-120	1.36	30	
Dibenz (a,h) anthracene	0.0367	0.00500	"	0.0333	ND	110	30-120	9.73	30	
Fluoranthene	0.0136	0.00500	"	0.0333	ND	40.7	30-120	4.13	30	
Fluorene	0.0182	0.00500	"	0.0333	ND	54.5	30-120	2.58	30	
Indeno (1,2,3-cd) pyrene	0.0352	0.00500	"	0.0333	ND	106	30-120	0.274	30	
Pyrene	0.0330	0.00500	"	0.0333	ND	99.0	35-142	1.37	30	
1-Methylnaphthalene	0.0184	0.00500	"	0.0333	ND	55.2	15-130	1.42	50	
2-Methylnaphthalene	0.0190	0.00500	"	0.0333	ND	56.9	15-130	0.874	50	
Surrogate: 2-Methylnaphthalene-d10	0.0180		"	0.0333		54.0	40-150			
Surrogate: Fluoranthene-d10	0.0143		"	0.0333		42.8	40-150			

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Broomfield CO, 80020

Project: Noble - Stroh H12-03

Project Number: UWRWE-A3080-ABN

Project Manager: Jacob Whritenour

**Reported:**  
06/15/23 11:44

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

**Summit Scientific**

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

**Batch BGF0173 - EPA 3050B**

**Blank (BGF0173-BLK1)**

Prepared: 06/06/23 Analyzed: 06/14/23

Boron ND 0.0100 mg/L

**LCS (BGF0173-BS1)**

Prepared: 06/06/23 Analyzed: 06/14/23

Boron 6.74 0.0100 mg/L 7.50 89.9 80-120

**Duplicate (BGF0173-DUP1)**

Source: 2305700-01

Prepared: 06/06/23 Analyzed: 06/14/23

Boron 0.142 0.0100 mg/L 0.153 7.75 20

**Matrix Spike (BGF0173-MS1)**

Source: 2305700-01

Prepared: 06/06/23 Analyzed: 06/14/23

Boron 7.08 0.0100 mg/L 7.50 0.153 92.4 75-125

**Matrix Spike Dup (BGF0173-MSD1)**

Source: 2305700-01

Prepared: 06/06/23 Analyzed: 06/14/23

Boron 6.98 0.0100 mg/L 7.50 0.153 91.0 75-125 1.54 25

Summit Scientific

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

Project: Noble - Stroh H12-03

Project Number: UWRWE-A3080-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
06/15/23 11:44

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

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

**Batch BGF0164 - EPA 3050B**

**Blank (BGF0164-BLK1)**

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

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	"							
Selenium	ND	0.260	"							
Silver	ND	0.0200	"							
Zinc	ND	0.400	"							

**LCS (BGF0164-BS1)**

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

Arsenic	37.9	0.200	mg/kg wet	40.0	94.8	80-120
Barium	42.1	0.400	"	40.0	105	80-120
Cadmium	2.10	0.200	"	2.00	105	80-120
Copper	38.3	0.400	"	40.0	95.8	80-120
Lead	21.2	0.200	"	20.0	106	80-120
Nickel	37.8	0.400	"	40.0	94.4	80-120
Selenium	3.66	0.260	"	4.00	91.5	80-120
Silver	2.10	0.0200	"	2.00	105	80-120
Zinc	37.7	0.400	"	40.0	94.3	80-120

**Duplicate (BGF0164-DUP1)**

Source: 2305700-01

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

Arsenic	0.473	0.227	mg/kg dry	0.507	7.04	20	
Barium	30.8	0.454	"	38.6	22.4	20	QR-03
Cadmium	0.0689	0.227	"	0.0744	7.59	20	
Copper	1.18	0.454	"	1.30	9.60	20	
Lead	2.91	0.227	"	3.55	19.8	20	
Nickel	0.953	0.454	"	1.06	10.5	20	
Selenium	ND	0.295	"	ND		20	
Silver	0.00907	0.0227	"	0.0109	18.2	20	
Zinc	4.12	0.454	"	4.60	11.0	20	

Summit Scientific

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

Project: Noble - Stroh H12-03

Project Number: UWRWE-A3080-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
06/15/23 11:44

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

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

**Batch BGF0164 - EPA 3050B**

**Matrix Spike (BGF0164-MS1)**

Source: 2305700-01

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

Arsenic	17.6	0.227	mg/kg dry	45.4	0.507	37.8	75-125			QM-05
Barium	105	0.454	"	45.4	38.6	147	75-125			QM-05
Cadmium	2.53	0.227	"	2.27	0.0744	108	75-125			
Copper	19.4	0.454	"	45.4	1.30	39.8	75-125			QM-05
Lead	27.7	0.227	"	22.7	3.55	107	75-125			
Nickel	19.2	0.454	"	45.4	1.06	40.1	75-125			QM-05
Selenium	4.09	0.295	"	4.54	ND	90.3	75-125			
Silver	2.30	0.0227	"	2.27	0.0109	101	75-125			
Zinc	24.5	0.454	"	45.4	4.60	43.8	75-125			QM-05

**Matrix Spike Dup (BGF0164-MSD1)**

Source: 2305700-01

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

Arsenic	18.0	0.227	mg/kg dry	45.4	0.507	38.6	75-125	1.99	25	QM-05
Barium	84.1	0.454	"	45.4	38.6	100	75-125	22.5	25	
Cadmium	2.30	0.227	"	2.27	0.0744	98.0	75-125	9.53	25	
Copper	19.3	0.454	"	45.4	1.30	39.6	75-125	0.495	25	QM-05
Lead	24.8	0.227	"	22.7	3.55	93.7	75-125	11.2	25	
Nickel	18.9	0.454	"	45.4	1.06	39.3	75-125	1.77	25	QM-05
Selenium	3.78	0.295	"	4.54	ND	83.3	75-125	8.00	25	
Silver	2.19	0.0227	"	2.27	0.0109	96.1	75-125	4.83	25	
Zinc	22.7	0.454	"	45.4	4.60	40.0	75-125	7.30	25	QM-05

Summit Scientific

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

Project: Noble - Stroh H12-03

Project Number: UWRWE-A3080-ABN

Project Manager: Jacob Whritenour

**Reported:**  
06/15/23 11:44

**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 BGF0297 - 3060A Mod**

**Blank (BGF0297-BLK1)**

Prepared & Analyzed: 06/08/23

Chromium, Hexavalent      ND      0.30    mg/kg wet

**LCS (BGF0297-BS1)**

Prepared & Analyzed: 06/08/23

Chromium, Hexavalent      21.4      0.30    mg/kg wet      25.0      85.4      80-120

**Duplicate (BGF0297-DUP1)**

**Source: 2305701-01**

Prepared & Analyzed: 06/08/23

Chromium, Hexavalent      ND      0.30    mg/kg dry      ND      20

**Matrix Spike (BGF0297-MS1)**

**Source: 2305701-01**

Prepared & Analyzed: 06/08/23

Chromium, Hexavalent      24.3      0.30    mg/kg dry      28.1      ND      86.6      75-125

**Matrix Spike Dup (BGF0297-MSD1)**

**Source: 2305701-01**

Prepared & Analyzed: 06/08/23

Chromium, Hexavalent      25.5      0.30    mg/kg dry      28.1      ND      91.0      75-125      4.95      20

Summit Scientific

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

Project: Noble - Stroh H12-03

Project Number: UWRWE-A3080-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
06/15/23 11:44

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

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

**Batch BGF0230 - General Preparation**

**Blank (BGF0230-BLK1)**

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

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

**LCS (BGF0230-BS1)**

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

Calcium	5.10	0.0500	mg/L wet	5.00		102	70-130			
Magnesium	5.01	0.0500	"	5.00		100	70-130			
Sodium	4.95	0.0500	"	5.00		98.9	70-130			

Summit Scientific

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

Project: Noble - Stroh H12-03

Project Number: UWRWE-A3080-ABN

Project Manager: Jacob Whritenour

**Reported:**  
 06/15/23 11:44

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

**Summit Scientific**

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

**Batch BGF0162 - General Preparation**

**Duplicate (BGF0162-DUP1)**

**Source: 2305701-01**

Prepared & Analyzed: 06/06/23

% Solids	89.8		%		89.1			0.871		20	
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Summit Scientific

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

Project: Noble - Stroh H12-03

Project Number: UWRWE-A3080-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
06/15/23 11:44

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

**Summit Scientific**

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

**Batch BGF0309 - General Preparation**

**Blank (BGF0309-BLK1)**

Prepared & Analyzed: 06/08/23

Specific Conductance (EC) ND 0.0100 mmhos/cm

**LCS (BGF0309-BS1)**

Prepared & Analyzed: 06/08/23

Specific Conductance (EC) 0.158 0.0100 mmhos/cm 0.150 105 95-105

**Duplicate (BGF0309-DUP1)**

Source: 2305690-01

Prepared & Analyzed: 06/08/23

Specific Conductance (EC) 0.331 0.0100 mmhos/cm 0.338 2.09 20

Summit Scientific

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

Project: Noble - Stroh H12-03

Project Number: UWRWE-A3080-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
06/15/23 11:44

**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 BGF0310 - General Preparation**

**LCS (BGF0310-BS1)**

Prepared & Analyzed: 06/08/23

pH	9.03	pH Units	9.18	98.4	95-105
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**Duplicate (BGF0310-DUP1)**

Source: 2305690-01

Prepared & Analyzed: 06/08/23

pH	7.83	pH Units	7.78	0.641	20
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Summit Scientific

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

Project: Noble - Stroh H12-03

Project Number: UWRWE-A3080-ABN

Project Manager: Jacob Whritenour

**Reported:**  
06/15/23 11:44

### Notes and Definitions

- QR-03 The RPD value for the sample duplicate or MS/MSD was outside of QC acceptance limits due to matrix interference. QC batch accepted based on LCS and/or LCSD recovery and/or RPD values.
- 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.
- 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

# Summit Scientific

---

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

June 13, 2023

Jacob Whritenour

Tasman Geosciences

6855 W. 119th Ave.

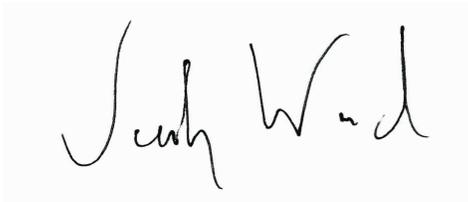
Broomfield, CO 80020

RE: Noble - Stroh H12-03

Work Order #2306022

Enclosed are the results of analyses for samples received by Summit Scientific on 06/01/23 18:09. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Jacob Wood". The signature is written in a cursive style with a large initial "J" and a distinct "W".

Jacob Wood For Paul Shrewsbury

President



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

Project: Noble - Stroh H12-03

Project Number: UWRWE-A3080-ABN

Project Manager: Jacob Whritenour

**Reported:**  
06/13/23 09:42

**ANALYTICAL REPORT FOR SAMPLES**

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FL01-T@5'	2306022-01	Soil	06/01/23 10:30	06/01/23 18:09

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.*

# Summit Scientific

S<sub>2</sub>

4653 Table Mountain Drive ♦ Golden, Colorado 80403  
303-277-9310

Client: Noble / Tasman Geosciences	Project Manager: Jake Whritenour, Invoice:
Address: 6855 W. 119th Ave.	E-Mail: Jwhritenour@tasman-geo.com
City/State/Zip: Broomfield / CO/ 80020	
Phone: 231-292-2576	Project Name: <i>Strom HI2-03</i>
Sampler Name: Elyse Hossink	Project Number: <i>UWRWE - A3080-ABN</i>

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	SAR, EC, pH	Boron - HWS		HOLD	
1	<i>FL01-T@5'</i>	<i>6/1/23</i>	<i>1030</i>	<i>2</i>			<i>X</i>			<i>X</i>				<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>		<i>pH, EC, SAR by saturated paste</i>
2																				
3																				
4																				
5																				
6																				
7																				
8																				
9																				
10																				

Relinquished by: <i>Elyse Hossink</i>	Date/Time: <i>6/2/23 1500</i>	Received by: <b>Tasman's Lock Box</b>	Date/Time: <i>6/2/23 1500</i>	Turn Around Time (Check)	Notes:
				<input type="checkbox"/> Same Day	
				<input type="checkbox"/> 24 hours	<input checked="" type="checkbox"/> 72 hours
				<input type="checkbox"/> 48 hours	<input checked="" type="checkbox"/> Standard
Relinquished by: <b>Tasman's Lock Box</b>	Date/Time: <i>6/2/23 1809</i>	Received by: <i>[Signature]</i>	Date/Time: <i>6/2/23 1809</i>	Sample Integrity:	
Relinquished by:	Date/Time:	Received by:	Date/Time:	Temperature Upon Receipt: <i>10.0</i>	
				Samples Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

S<sub>2</sub>

Sample Receipt Checklist

S2 Work Order# 2308022

Client: Noble Gasman

Client Project ID: Stroh H12-03

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"/>	
If custody seals are present, are they intact? <sup>(1)</sup>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	on ICE
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

6/1/23

Date/Time

120



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

Project: Noble - Stroh H12-03  
Project Number: UWRWE-A3080-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
06/13/23 09:42

**FL01-T@5'**  
**2306022-01 (Soil)**

**Summit Scientific**

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

Date Sampled: **06/01/23 10:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	BGF0181	06/06/23	06/07/23	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: **06/01/23 10:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	0.0402	101 %		50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0395	98.8 %		50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0374	93.5 %		50-150		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **06/01/23 10:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	ND	50		mg/kg	1	BGF0187	06/06/23	06/07/23	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **06/01/23 10:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl	12.6	101 %		30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

Summit Scientific

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

Project: Noble - Stroh H12-03  
Project Number: UWRWE-A3080-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
06/13/23 09:42

**FL01-T@5'**  
**2306022-01 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **06/01/23 10:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BGF0167	06/06/23	06/07/23	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: **06/01/23 10:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0180	54.0 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0189	56.6 %	40-150		"	"	"	"	

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

Date Sampled: **06/01/23 10:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Boron</b>	<b>0.0713</b>	0.0100	mg/L	1	BGF0229	06/07/23	06/10/23	EPA 6020B	

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

Date Sampled: **06/01/23 10:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Tasman Geosciences  
6855 W. 119th Ave.  
Broomfield CO, 80020

Project: Noble - Stroh H12-03  
Project Number: UWRWE-A3080-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
06/13/23 09:42

**FL01-T@5'**  
**2306022-01 (Soil)**

**Summit Scientific**

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	43.0	0.0515	mg/L dry	1	BGF0234	06/07/23	06/10/23	EPA 6020B	
Magnesium	15.7	0.0515	"	"	"	"	"	"	
Sodium	1.10	0.0515	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **06/01/23 10:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.0365	0.00100	units	1	BGF0429	06/12/23	06/12/23	Calculation	

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

Date Sampled: **06/01/23 10:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	97.2		%	1	BGF0224	06/07/23	06/07/23	Calculation	

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

Date Sampled: **06/01/23 10:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.0384	0.0100	mmhos/cm	1	BGF0283	06/08/23	06/08/23	EPA 120.1	

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

Date Sampled: **06/01/23 10:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	6.74		pH Units	1	BGF0284	06/08/23	06/08/23	EPA 9045D	

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

Project: Noble - Stroh H12-03  
Project Number: UWRWE-A3080-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
06/13/23 09:42

### 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 BGF0181 - EPA 5030 Soil MS

##### Blank (BGF0181-BLK1)

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

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>	<i>0.0356</i>		<i>"</i>	<i>0.0400</i>		<i>88.9</i>	<i>50-150</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0387</i>		<i>"</i>	<i>0.0400</i>		<i>96.8</i>	<i>50-150</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0383</i>		<i>"</i>	<i>0.0400</i>		<i>95.8</i>	<i>50-150</i>			

##### LCS (BGF0181-BS1)

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

Benzene	0.171	0.0020	mg/kg	0.150		114	70-130			
Toluene	0.154	0.0050	"	0.150		103	70-130			
Ethylbenzene	0.157	0.0050	"	0.150		104	70-130			
m,p-Xylene	0.309	0.010	"	0.300		103	70-130			
o-Xylene	0.165	0.0050	"	0.150		110	70-130			
1,2,4-Trimethylbenzene	0.162	0.0050	"	0.150		108	70-130			
1,3,5-Trimethylbenzene	0.159	0.0050	"	0.150		106	70-130			
Naphthalene	0.151	0.0038	"	0.150		101	70-130			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0409</i>		<i>"</i>	<i>0.0400</i>		<i>102</i>	<i>50-150</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0398</i>		<i>"</i>	<i>0.0400</i>		<i>99.6</i>	<i>50-150</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0412</i>		<i>"</i>	<i>0.0400</i>		<i>103</i>	<i>50-150</i>			

##### Matrix Spike (BGF0181-MS1)

Source: 2305703-01

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

Benzene	0.171	0.0020	mg/kg	0.150	ND	114	70-130			
Toluene	0.156	0.0050	"	0.150	ND	104	70-130			
Ethylbenzene	0.154	0.0050	"	0.150	ND	102	70-130			
m,p-Xylene	0.305	0.010	"	0.300	ND	102	70-130			
o-Xylene	0.164	0.0050	"	0.150	ND	109	70-130			
1,2,4-Trimethylbenzene	0.158	0.0050	"	0.150	ND	106	70-130			
1,3,5-Trimethylbenzene	0.155	0.0050	"	0.150	ND	103	70-130			
Naphthalene	0.157	0.0038	"	0.150	ND	104	70-130			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0398</i>		<i>"</i>	<i>0.0400</i>		<i>99.6</i>	<i>50-150</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0401</i>		<i>"</i>	<i>0.0400</i>		<i>100</i>	<i>50-150</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0394</i>		<i>"</i>	<i>0.0400</i>		<i>98.5</i>	<i>50-150</i>			

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

Project: Noble - Stroh H12-03  
Project Number: UWRWE-A3080-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
06/13/23 09:42

**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 BGF0181 - EPA 5030 Soil MS**

<b>Matrix Spike Dup (BGF0181-MSD1)</b>	<b>Source: 2305703-01</b>			<b>Prepared: 06/06/23 Analyzed: 06/07/23</b>						
Benzene	0.165	0.0020	mg/kg	0.150	ND	110	70-130	4.02	30	
Toluene	0.150	0.0050	"	0.150	ND	100	70-130	3.69	30	
Ethylbenzene	0.156	0.0050	"	0.150	ND	104	70-130	1.59	30	
m,p-Xylene	0.308	0.010	"	0.300	ND	103	70-130	1.10	30	
o-Xylene	0.162	0.0050	"	0.150	ND	108	70-130	1.25	30	
1,2,4-Trimethylbenzene	0.157	0.0050	"	0.150	ND	104	70-130	1.12	30	
1,3,5-Trimethylbenzene	0.156	0.0050	"	0.150	ND	104	70-130	1.00	30	
Naphthalene	0.156	0.0038	"	0.150	ND	104	70-130	0.576	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0397</i>		<i>"</i>	<i>0.0400</i>		<i>99.2</i>	<i>50-150</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0393</i>		<i>"</i>	<i>0.0400</i>		<i>98.2</i>	<i>50-150</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0401</i>		<i>"</i>	<i>0.0400</i>		<i>100</i>	<i>50-150</i>			

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Broomfield CO, 80020

Project: Noble - Stroh H12-03  
Project Number: UWRWE-A3080-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
06/13/23 09:42

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

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

**Batch BGF0187 - EPA 3550A**

**Blank (BGF0187-BLK1)**

Prepared & Analyzed: 06/06/23

C10-C28 (DRO)	ND	50	mg/kg								
C28-C36 (ORO)	ND	50	"								
Surrogate: <i>o</i> -Terphenyl	14.2		"	12.5	113	30-150					

**LCS (BGF0187-BS1)**

Prepared & Analyzed: 06/06/23

C10-C28 (DRO)	407	50	mg/kg	500	81.5	70-130					
Surrogate: <i>o</i> -Terphenyl	12.7		"	12.5	102	30-150					

**Matrix Spike (BGF0187-MS1)**

Source: 2305703-01

Prepared & Analyzed: 06/06/23

C10-C28 (DRO)	403	50	mg/kg	500	10.3	78.6	70-130				
Surrogate: <i>o</i> -Terphenyl	12.6		"	12.5	101	30-150					

**Matrix Spike Dup (BGF0187-MSD1)**

Source: 2305703-01

Prepared & Analyzed: 06/06/23

C10-C28 (DRO)	438	50	mg/kg	500	10.3	85.5	70-130	8.23	20		
Surrogate: <i>o</i> -Terphenyl	13.3		"	12.5	107	30-150					

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6855 W. 119th Ave.  
Broomfield CO, 80020

Project: Noble - Stroh H12-03  
Project Number: UWRWE-A3080-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
06/13/23 09:42

**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 BGF0167 - EPA 5030 Soil MS**

**Blank (BGF0167-BLK1)**

Prepared & Analyzed: 06/06/23

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>0.0198</i>		"	<i>0.0333</i>		<i>59.5</i>	<i>40-150</i>			
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0224</i>		"	<i>0.0333</i>		<i>67.1</i>	<i>40-150</i>			

**LCS (BGF0167-BS1)**

Prepared & Analyzed: 06/06/23

Acenaphthene	0.0276	0.00500	mg/kg	0.0333		82.7	31-137			
Anthracene	0.0269	0.00500	"	0.0333		80.7	30-120			
Benzo (a) anthracene	0.0244	0.00500	"	0.0333		73.3	30-120			
Benzo (a) pyrene	0.0246	0.00500	"	0.0333		73.9	30-120			
Benzo (b) fluoranthene	0.0292	0.00500	"	0.0333		87.5	30-120			
Benzo (k) fluoranthene	0.0289	0.00500	"	0.0333		86.8	30-120			
Chrysene	0.0273	0.00500	"	0.0333		81.8	30-120			
Dibenz (a,h) anthracene	0.0241	0.00500	"	0.0333		72.3	30-120			
Fluoranthene	0.0268	0.00500	"	0.0333		80.5	30-120			
Fluorene	0.0281	0.00500	"	0.0333		84.2	30-120			
Indeno (1,2,3-cd) pyrene	0.0339	0.00500	"	0.0333		102	30-120			
Pyrene	0.0285	0.00500	"	0.0333		85.4	35-142			
1-Methylnaphthalene	0.0155	0.00500	"	0.0333		46.6	35-142			
2-Methylnaphthalene	0.0394	0.00500	"	0.0333		118	35-142			
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0325</i>		"	<i>0.0333</i>		<i>97.5</i>	<i>40-150</i>			
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0282</i>		"	<i>0.0333</i>		<i>84.6</i>	<i>40-150</i>			

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6855 W. 119th Ave.  
Broomfield CO, 80020

Project: Noble - Stroh H12-03  
Project Number: UWRWE-A3080-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
06/13/23 09:42

**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 BGF0167 - EPA 5030 Soil MS**

**Matrix Spike (BGF0167-MS1)**

Source: 2305703-03

Prepared & Analyzed: 06/06/23

Acenaphthene	0.0179	0.00500	mg/kg	0.0333	ND	53.6	31-137			
Anthracene	0.0133	0.00500	"	0.0333	ND	40.0	30-120			
Benzo (a) anthracene	0.0114	0.00500	"	0.0333	ND	34.3	30-120			
Benzo (a) pyrene	0.0184	0.00500	"	0.0333	ND	55.1	30-120			
Benzo (b) fluoranthene	0.0120	0.00500	"	0.0333	ND	36.1	30-120			
Benzo (k) fluoranthene	0.0112	0.00500	"	0.0333	ND	33.6	30-120			
Chrysene	0.0138	0.00500	"	0.0333	ND	41.3	30-120			
Dibenz (a,h) anthracene	0.0187	0.00500	"	0.0333	ND	56.2	30-120			
Fluoranthene	0.0165	0.00500	"	0.0333	ND	49.5	30-120			
Fluorene	0.0169	0.00500	"	0.0333	ND	50.6	30-120			
Indeno (1,2,3-cd) pyrene	0.0183	0.00500	"	0.0333	ND	55.0	30-120			
Pyrene	0.0170	0.00500	"	0.0333	ND	50.9	35-142			
1-Methylnaphthalene	0.0209	0.00500	"	0.0333	ND	62.8	15-130			
2-Methylnaphthalene	0.0153	0.00500	"	0.0333	ND	46.0	15-130			
Surrogate: 2-Methylnaphthalene-d10	0.0158		"	0.0333		47.3	40-150			
Surrogate: Fluoranthene-d10	0.0142		"	0.0333		42.7	40-150			

**Matrix Spike Dup (BGF0167-MSD1)**

Source: 2305703-03

Prepared & Analyzed: 06/06/23

Acenaphthene	0.0211	0.00500	mg/kg	0.0333	ND	63.2	31-137	16.4	30
Anthracene	0.0168	0.00500	"	0.0333	ND	50.5	30-120	23.2	30
Benzo (a) anthracene	0.0141	0.00500	"	0.0333	ND	42.2	30-120	20.5	30
Benzo (a) pyrene	0.0188	0.00500	"	0.0333	ND	56.4	30-120	2.32	30
Benzo (b) fluoranthene	0.0161	0.00500	"	0.0333	ND	48.2	30-120	28.6	30
Benzo (k) fluoranthene	0.0142	0.00500	"	0.0333	ND	42.6	30-120	23.5	30
Chrysene	0.0173	0.00500	"	0.0333	ND	51.9	30-120	22.8	30
Dibenz (a,h) anthracene	0.0141	0.00500	"	0.0333	ND	42.3	30-120	28.4	30
Fluoranthene	0.0141	0.00500	"	0.0333	ND	42.4	30-120	15.5	30
Fluorene	0.0215	0.00500	"	0.0333	ND	64.5	30-120	24.1	30
Indeno (1,2,3-cd) pyrene	0.0177	0.00500	"	0.0333	ND	53.1	30-120	3.47	30
Pyrene	0.0218	0.00500	"	0.0333	ND	65.4	35-142	25.0	30
1-Methylnaphthalene	0.0204	0.00500	"	0.0333	ND	61.1	15-130	2.73	50
2-Methylnaphthalene	0.0140	0.00500	"	0.0333	ND	42.1	15-130	8.87	50
Surrogate: 2-Methylnaphthalene-d10	0.0140		"	0.0333		41.9	40-150		
Surrogate: Fluoranthene-d10	0.0193		"	0.0333		58.0	40-150		

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6855 W. 119th Ave.  
Broomfield CO, 80020

Project: Noble - Stroh H12-03  
Project Number: UWRWE-A3080-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
06/13/23 09:42

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

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

**Batch BGF0229 - EPA 3050B**

**Blank (BGF0229-BLK1)**

Prepared: 06/07/23 Analyzed: 06/10/23

Boron ND 0.0100 mg/L

**LCS (BGF0229-BS1)**

Prepared: 06/07/23 Analyzed: 06/10/23

Boron 4.84 0.0100 mg/L 5.00 96.8 80-120

**Duplicate (BGF0229-DUP1)**

**Source: 2306022-01**

Prepared: 06/07/23 Analyzed: 06/10/23

Boron 0.0593 0.0100 mg/L 0.0713 18.4 20

**Matrix Spike (BGF0229-MS1)**

**Source: 2306022-01**

Prepared: 06/07/23 Analyzed: 06/10/23

Boron 3.92 0.0100 mg/L 5.00 0.0713 77.1 75-125

**Matrix Spike Dup (BGF0229-MSD1)**

**Source: 2306022-01**

Prepared: 06/07/23 Analyzed: 06/10/23

Boron 4.00 0.0100 mg/L 5.00 0.0713 78.6 75-125 1.91 25

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Broomfield CO, 80020

Project: Noble - Stroh H12-03  
Project Number: UWRWE-A3080-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
06/13/23 09:42

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

**Summit Scientific**

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

**Batch BGF0234 - General Preparation**

**Blank (BGF0234-BLK1)**

Prepared: 06/07/23 Analyzed: 06/10/23

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

**LCS (BGF0234-BS1)**

Prepared: 06/07/23 Analyzed: 06/10/23

Calcium	4.68	0.0500	mg/L wet	5.00		93.6	70-130			
Magnesium	4.91	0.0500	"	5.00		98.3	70-130			
Sodium	4.63	0.0500	"	5.00		92.5	70-130			

Summit Scientific



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6855 W. 119th Ave.  
Broomfield CO, 80020

Project: Noble - Stroh H12-03

Project Number: UWRWE-A3080-ABN

Project Manager: Jacob Whritenour

**Reported:**  
06/13/23 09:42

**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 BGF0224 - General Preparation**

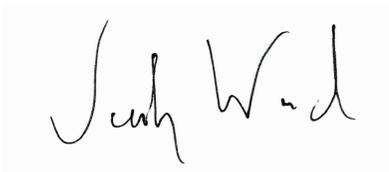
**Duplicate (BGF0224-DUP1)**

**Source: 2306022-01**

Prepared & Analyzed: 06/07/23

% Solids	96.7		%		97.2			0.452	20	
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Tasman Geosciences  
6855 W. 119th Ave.  
Broomfield CO, 80020

Project: Noble - Stroh H12-03  
Project Number: UWRWE-A3080-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
06/13/23 09:42

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

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

**Batch BGF0283 - General Preparation**

**Blank (BGF0283-BLK1)**

Prepared & Analyzed: 06/08/23

Specific Conductance (EC)      ND      0.0100    mmhos/cm

**LCS (BGF0283-BS1)**

Prepared & Analyzed: 06/08/23

Specific Conductance (EC)      0.153      0.0100    mmhos/cm      0.150      102      95-105

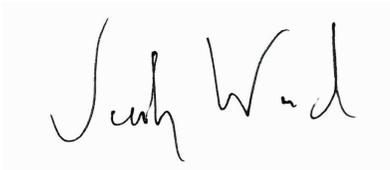
**Duplicate (BGF0283-DUP1)**

**Source: 2305709-01**

Prepared & Analyzed: 06/08/23

Specific Conductance (EC)      0.900      0.0100    mmhos/cm      0.900      0.00      20

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 - Stroh H12-03  
Project Number: UWRWE-A3080-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
06/13/23 09:42

**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 BGF0284 - General Preparation**

**LCS (BGF0284-BS1)**

Prepared & Analyzed: 06/08/23

pH 9.08 pH Units 9.18 98.9 95-105

**Duplicate (BGF0284-DUP1)**

Source: 2305709-01

Prepared & Analyzed: 06/08/23

pH 7.26 pH Units 7.26 0.00 20

Summit Scientific

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Project Number: UWRWE-A3080-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
06/13/23 09:42

### Notes and Definitions

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