

# Flowline Closure Checklist

## ECMC 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 & ECMC Facility Number: HSR HOFFMAN 3-24	Date: 1/18/2024	Remediation Project #: 27990
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Associated Wells:	Age of Site:	Number of Photos Attached: 12
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Starting point: (GPS coordinates and descriptions)  
40.215762,-104.613793

End point: (GPS coordinates and descriptions)  
40.215914,-104.620740

USCS Soil Type: SW      Estimated Depth to Groundwater:>2'

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	2'			
Age	-			
Length	1,946'			
Construction Material	Steel			
Were flowlines pulled?	Yes			
Visual Integrity of lines	Good			
Visual impacts if trenched	None			
PID Readings if trenched	0.0-0.9			
Sample taken? Location/Sample ID#	Yes, see below			
Photo Number(s)	1-12			

Other observations regarding on location flowlines:  
Flowline pulled from wellhead (FL01-A@2) to separator (FL01-B sampled on 1/19/23 during facility decommissioning as SEP01-FL@2', REM# 27982). Additional samples taken at points before and after water body crossing (FL01-H@2', FL01-I@2').

### Summary

Was impacted soil identified? <b>No</b>	
Total number of samples field screened: 12	Total number of samples collected: 3
Highest PID Reading: 0.9	Total number of samples submitted to lab for analysis: 3
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:	

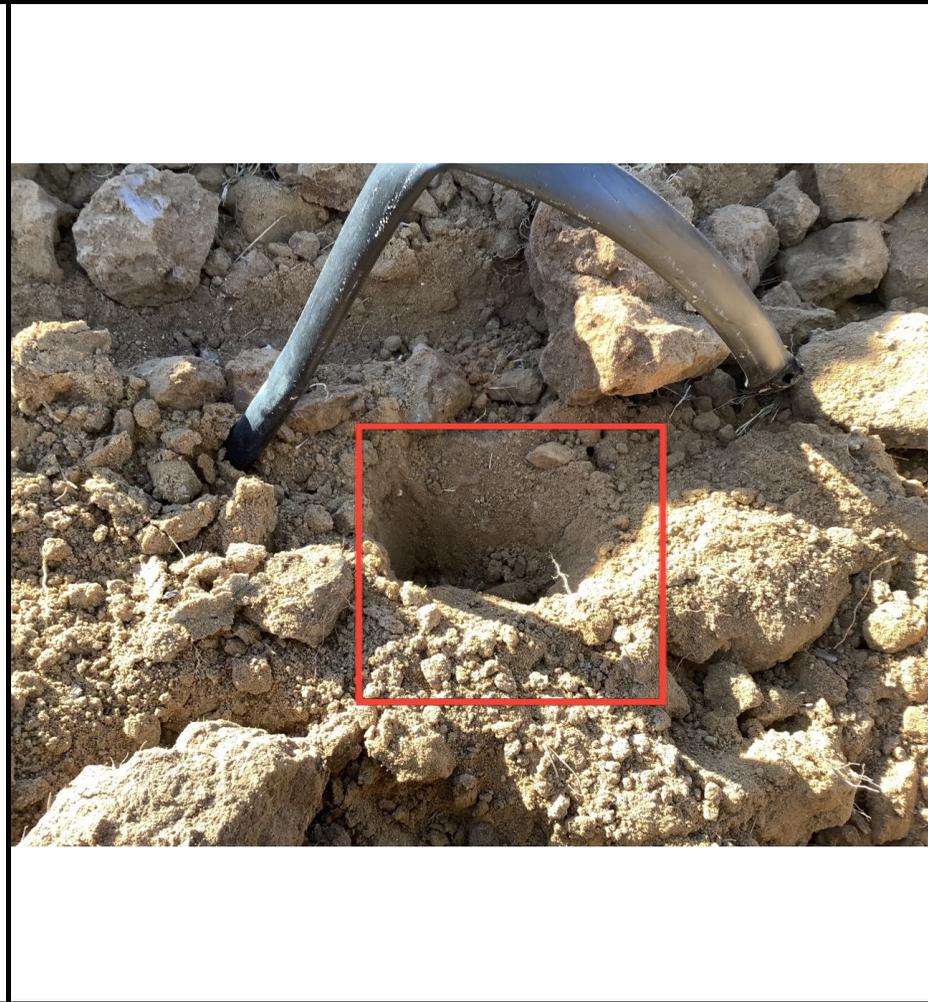
**Photographic Log**



<b>Equipment ID:</b> FL01-A@2'		<b>Equipment Type:</b>	
<b>Material:</b>	<b>Volume:</b>	<b>Contents:</b>	
<b>Notes/Conditions:</b> FACING WEST			

<b>Equipment ID:</b> FL01-M@2'		<b>Equipment Type:</b>	
<b>Material:</b>	<b>Volume:</b>	<b>Contents:</b>	
<b>Notes/Conditions:</b> FACING WEST			

Photographic Log



<b>Equipment ID:</b> FL01-C@2'		<b>Equipment Type:</b>	
<b>Material:</b>	<b>Volume:</b>	<b>Contents:</b>	
<b>Notes/Conditions:</b> Facing west			

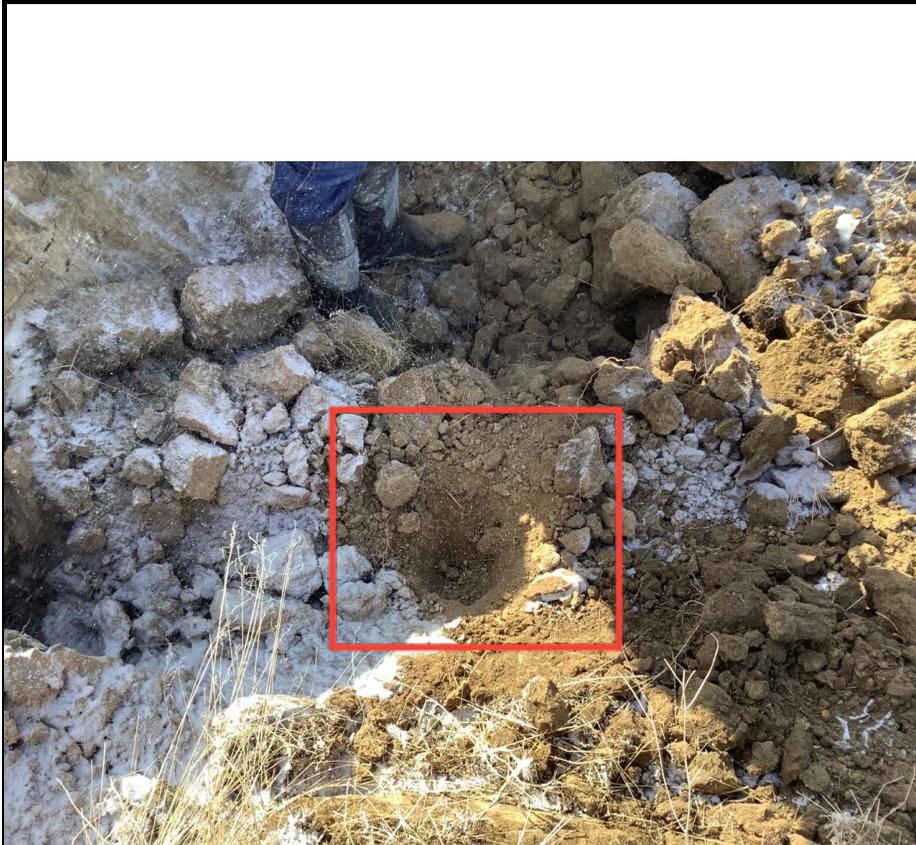
<b>Equipment ID:</b> FL01-D@2'		<b>Equipment Type:</b>	
<b>Material:</b>	<b>Volume:</b>	<b>Contents:</b>	
<b>Notes/Conditions:</b> FACING WEST			

Photographic Log



<b>Equipment ID:</b> FL01-E@2'		<b>Equipment Type:</b>	
<b>Material:</b>	<b>Volume:</b>	<b>Contents:</b>	
<b>Notes/Conditions:</b> FACING NORTH			

<b>Equipment ID:</b> FL01-F@2'		<b>Equipment Type:</b>	
<b>Material:</b>	<b>Volume:</b>	<b>Contents:</b>	
<b>Notes/Conditions:</b> FACING NORTH			

**Photographic Log**


<b>Equipment ID:</b> FL01-G@2'		<b>Equipment Type:</b>	
<b>Material:</b>	<b>Volume:</b>	<b>Contents:</b>	
<b>Notes/Conditions:</b> FACING WEST			

<b>Equipment ID:</b> FL01-H@3'		<b>Equipment Type:</b>	
<b>Material:</b>	<b>Volume:</b>	<b>Contents:</b>	
<b>Notes/Conditions:</b> FACING EAST			

Photographic Log

					
<b>Material:</b>	<b>Volume:</b>	<b>Contents:</b>	<b>Material:</b>	<b>Volume:</b>	<b>Contents:</b>
<b>Notes/Conditions:</b> FACING EAST			<b>Notes/Conditions:</b> FACING WEST		

**Photographic Log**

					
<b>Material:</b>	<b>Volume:</b>	<b>Contents:</b>	<b>Material:</b>	<b>Volume:</b>	<b>Contents:</b>
<b>Notes/Conditions:</b> FACING WEST			<b>Notes/Conditions:</b> FACING WEST		

**TABLE 1**  
**SOIL SAMPLE LOCATIONS**  
**NOBLE ENERGY, INC. - HSR-HOFFMAN 3-24**

Soil Sample ID	Date	PID (ppm)	Visual	Olfactory	Sample Type (Grab/Lab)	Latitude <sup>1</sup>	Longitude	PDOP
FL01-A@2'	01/18/24	0.0	No Staining	No Odor	Lab	40.215763	-104.613813	NC
FL01-C@2'	01/18/24	0.5	No Staining	No Odor	Grab	40.215906	-104.620389	0.9
FL01-D@2'	01/18/24	0.4	No Staining	No Odor	Grab	40.215834	-104.619829	NC
FL01-E@2'	01/18/24	0.0	No Staining	No Odor	Grab	40.215824	-104.619070	NC
FL01-F@2'	01/18/24	0.1	No Staining	No Odor	Grab	40.215803	-104.618140	0.9
FL01-G@2'	01/18/24	0.0	HC Staining	No Odor	Grab	40.215769	-104.617179	NC
FL01-H@2'	01/18/24	0.6	No Staining	No Odor	Lab	40.215748	-104.616556	NC
FL01-I@2'	01/18/24	0.0	No Staining	No Odor	Lab	40.215730	-104.616018	NC
FL01-J@2'	01/18/24	0.9	No Staining	No Odor	Grab	40.215737	-104.615549	0.8
FL01-K@2'	01/18/24	0.0	No Staining	No Odor	Grab	40.215736	-104.615127	0.7
FL01-L@2'	01/18/24	0.1	No Staining	No Odor	Grab	40.215736	-104.614809	NC
FL01-M@2'	01/18/24	0.2	No Staining	No Odor	Grab	40.215749	-104.614351	NC

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. - HSR-HOFFMAN 3-24

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>1,2</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>1,2,3</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@2'	01/18/24	<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-H@2'	01/18/24	<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-I@2'	01/18/24	<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)
SSR <sup>1,2</sup>		6 - 8.3	<6	<4mmhos/cm	2
FL01-A@2'	01/18/24	8.63	0.194	0.152	<2.00
FL01-H@2'	01/18/24	7.98	0.611	1.95	<2.00
FL01-I@2'	01/18/24	8.49	3.12	1.27	<2.00

Sample ID	Date Sampled	Arsenic (mg/kg)	Barium (mg/kg)	Cadmium (mg/kg)	Chromium (VI) (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Nickel (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)	Zinc (mg/kg)
Residential SSL <sup>1,2</sup>		0.68	15,000	71	0.3	3,100	400	1,500	390	390	23,000
Protection of Groundwater SSL <sup>1,2,3</sup>		0.29	82	0.38	0.00067	46	14	26	0.26	0.8	370
FL01-A@2'	01/18/24	1.66	44.1	0.272	<0.30	5.51	7.15	3.41	<0.260	0.0249	13.0
FL01-H@2'	01/18/24	2.87	87.9	0.288	<0.30	5.61	7.79	6.01	0.297	0.0327	18.8
FL01-I@2'	01/18/24	1.71	42.0	<0.200	<0.30	3.01	3.88	3.24	<0.260	0.0218	10.9

Notes:

- Compounds referenced from 2 CCR 404-1, Table 915-1, effective January 15, 2021.
- Soil Screening Levels (SSL) and Soil Suitability for Reclamation (SSR) standards 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:

ECMC = Energy and Carbon Management 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 ECMC Table 915-1 standard**

1,2,4 - TMB = 1,2,4 Trimethylbenzene  
 1,3,5 - TMB = 1,3,5 Trimethylbenzene  
 Benz(a) = Benzo(a)anthracene  
 Benzo(b) = Benzo(b)fluoranthene  
 Benzo(k) = Benzo(k)fluoranthene  
 Benzo(a) = Benzo(a)pyrene  
 A,H = Dibenzo(a,h)anthracene  
 1,2,3-CD = Indeno(1,2,3-cd)pyrene  
 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**

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

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

0 ft. 150 ft. 300 ft.

Image Source: Google Earth; Google 2020

DATE: 01/30/2024

DESIGNED BY: JW

DRAWN BY: SB

**TASMAN**  
GEOSCIENCES

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

**Noble Energy, Inc. – HSR-Hoffman 3-24**  
 NENW, Section 24, Township 3 North, Range 65 West  
 Weld County, Colorado

Flowline Closure & Soil  
 Analytical Results Map  
 (01/18/2024)

FIGURE  
1

# Summit Scientific

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4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

January 24, 2024

Jacob Whritenour

Tasman Geosciences

6855 W. 119th Ave.

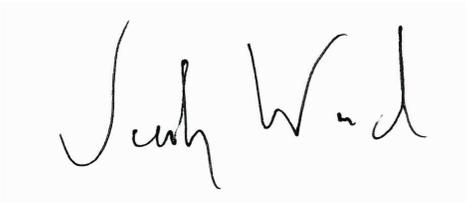
Broomfield, CO 80020

RE: Noble - HSR Hoffman 03-24

Work Order #2401298

Enclosed are the results of analyses for samples received by Summit Scientific on 01/18/24 17:56. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in blue 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 - HSR Hoffman 03-24

Project Number: UWRWE-A3150-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
01/24/24 10:33

**ANALYTICAL REPORT FOR SAMPLES**

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FL01-A@2'	2401298-01	Soil	01/18/24 12:30	01/18/24 17:56
FL01-H@2'	2401298-02	Soil	01/18/24 10:40	01/18/24 17:56
FL01-I@2'	2401298-03	Soil	01/18/24 10:50	01/18/24 17:56

Summit Scientific

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*



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

Lab ID  
 2401298  
 Page 1 of 1

Client: Noble/Tasman		Project Manager: Jake Whritenour		Company: <b>Chevron</b>	
Address: 6855 W. 119th Ave.		E-Mail: Jwhritenour@tasman-geo.com		Project Name/Location:	
City/State/Zip: Broomfield/CO/ 80020		Project Name: <b>HSR Hoffman 03-24</b>		AFE#: <b>UWRWF-A3150-ABN</b>	
Phone: 978-857-4408		Project Number:		PO/Billing Codes:	
Sampler Name: Matthew Wentzel		Project Number:		Contact: <b>Dan Peterson</b>	

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix			Analysis Requested							Special Instructions	
					HCl	HNO3	None	Other	Water	Soil	Air-Canister #	Other	Metals - 915	VOC - 915	TPH - 915	PAH - 915	SAR, EC, pH	Boron - HWS		HOLD
1	FL01-A@2'	1.18.24	1230	3			X			X			X	X	X	X	X	X		SAR, EC, pH by saturated paste
2	FL01-H@2'	I	1040	I			I			I			I	I	I	I	I	I		
3	FL01-I@2'	I	1050	I			I			I			I	I	I	I	I	I		
4																				
5																				
6																				
7																				
8																				
9																				
10																				
11																				
12																				
13																				
14																				
15																				

Relinquished by:	Date/Time: 1.18.24 1420	Received by: Tasman Lock Box	Date/Time: 1.18.24 1420	TAT Business Days	Field DO	Notes:
				Same Day	Field EC	
Relinquished by: Tasman/ccccx	Date/Time: 1.18.24 1730	Received by:	Date/Time: 1.18.24 1730	1 Day	Field ORP	
				2 Days	Field pH	
Relinquished by:	Date/Time:	Received by:	Date/Time:	3 Days	Field Temp.	
Temperature Upon Receipt: 8.1	Corrected Temperature: 8	IR gun #: 1	HNO3 lot #:	Standard	X Field Turb.	

S<sub>2</sub>

Sample Receipt Checklist

S2 Work Order# 2401298

Client: Noble Tasmann Client Project ID: HSR Hoffman 03-24

Shipped Via: H.D./P.U./FedEx/UPS/USPS/Other [ ] Airbill #: [ ]

[ ] - [ ] [ ] [ ]

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

Temp (°C) [ 8.1 ]

Thermometer # [ 1 ]

	Yes	No	N/A	Comments (if any)
If samples require cooling, is the temperature < 6°C? <sup>(1)</sup> <b>NOTE:</b> If samples are delivered the same day of sampling, this requirement is met if there is evidence that cooling has begun.	-			on ice
If custody seals are present, are they intact? <sup>(1)</sup>	-			
Are samples due within 48 hours present?		-		
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		-		
Is a chain-of-custody (COC) form present and filled out completely? <sup>(1)</sup>	-			
Is the COC properly relinquished by the client w/ date and time recorded? <sup>(1)</sup>	-			
Were all samples received intact? <sup>(1)</sup>	✓			
Was adequate sample volume provided? <sup>(1)</sup>	✓			
Does the COC agree with the number and type of sample bottles received? <sup>(1)</sup>	✓			
Do the sample IDs on the bottle labels match the COC? <sup>(1)</sup>	✓			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.			✓	
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.			✓	
If samples are acid preserved for metals, is the pH ≤ 2? <sup>(1)</sup> Record the pH in Comments.			✓	
If dissolved metals are requested, were samples field filtered?			✓	
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

1/18/24  
Date/Time



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

Project: Noble - HSR Hoffman 03-24

Project Number: UWRWE-A3150-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
01/24/24 10:33

**FL01-A@2'**  
**2401298-01 (Soil)**

**Summit Scientific**

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

Date Sampled: **01/18/24 12:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	BHA0690	01/19/24	01/20/24	EPA 8260B	
Toluene	ND	0.0050		"	"	"	"	"	"	
Ethylbenzene	ND	0.0050		"	"	"	"	"	"	
Xylenes (total)	ND	0.010		"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050		"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050		"	"	"	"	"	"	
Naphthalene	ND	0.0038		"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50		"	"	"	"	"	"	

Date Sampled: **01/18/24 12:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	0.0382	95.6 %		50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0410	103 %		50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0410	103 %		50-150		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **01/18/24 12:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	ND	50		mg/kg	1	BHA0692	01/19/24	01/19/24	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **01/18/24 12:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl	7.94	63.6 %		30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

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 - HSR Hoffman 03-24

Project Number: UWRWE-A3150-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
01/24/24 10:33

**FL01-A@2'**  
**2401298-01 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **01/18/24 12:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BHA0683	01/19/24	01/19/24	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **01/18/24 12:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0140	42.0 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0165	49.4 %	40-150		"	"	"	"	

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

Date Sampled: **01/18/24 12:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	2.00	mg/L	1	BHA0672	01/19/24	01/19/24	EPA 6020B	

**Total Metals by EPA 6020B**

Date Sampled: **01/18/24 12:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Summit Scientific

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

Project: Noble - HSR Hoffman 03-24

Project Number: UWRWE-A3150-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
01/24/24 10:33

**FL01-A@2'**  
**2401298-01 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Arsenic	1.66	0.200	mg/kg dry	1	BHA0710	01/22/24	01/23/24	EPA 6020B
Barium	44.1	0.400	"	"	"	"	"	"
Cadmium	0.272	0.200	"	"	"	"	"	"
Copper	5.51	0.400	"	"	"	"	"	"
Lead	7.15	0.200	"	"	"	"	"	"
Nickel	3.41	0.400	"	"	"	"	"	"
Silver	0.0249	0.0200	"	"	"	"	"	"
Zinc	13.0	0.400	"	"	"	"	"	"
Selenium	ND	0.260	"	"	"	"	"	"

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **01/18/24 12:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BHA0739	01/22/24	01/23/24	EPA 7196A	

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

Date Sampled: **01/18/24 12:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	48.2	0.0500	mg/L dry	1	BHA0702	01/19/24	01/23/24	EPA 6020B	
Magnesium	9.80	0.0500	"	"	"	"	"	"	
Sodium	5.66	0.0500	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **01/18/24 12:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.194	0.00100	units	1	BHA0804	01/23/24	01/23/24	Calculation	

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

Date Sampled: **01/18/24 12:30**

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 - HSR Hoffman 03-24

Project Number: UWRWE-A3150-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
01/24/24 10:33

**FL01-A@2'**  
**2401298-01 (Soil)**

**Summit Scientific**

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

% Solids	93.3	%	1	BHA0707	01/22/24	01/22/24	Calculation
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**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction**

Date Sampled: **01/18/24 12:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.152	0.0100	mmhos/cm	1	BHA0728	01/22/24	01/23/24	EPA 120.1	

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

Date Sampled: **01/18/24 12:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.63		pH Units	1	BHA0729	01/22/24	01/23/24	EPA 9045D	

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

Project: Noble - HSR Hoffman 03-24

Project Number: UWRWE-A3150-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
01/24/24 10:33

**FL01-H@2'**  
**2401298-02 (Soil)**

**Summit Scientific**

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

Date Sampled: **01/18/24 10:40**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	BHA0690	01/19/24	01/20/24	EPA 8260B	
Toluene	ND	0.0050		"	"	"	"	"	"	
Ethylbenzene	ND	0.0050		"	"	"	"	"	"	
Xylenes (total)	ND	0.010		"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050		"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050		"	"	"	"	"	"	
Naphthalene	ND	0.0038		"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50		"	"	"	"	"	"	

Date Sampled: **01/18/24 10:40**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	0.0317	79.2 %		50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0423	106 %		50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0403	101 %		50-150		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **01/18/24 10:40**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	ND	50		mg/kg	1	BHA0692	01/19/24	01/19/24	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **01/18/24 10:40**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl	8.07	64.5 %		30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

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

Project: Noble - HSR Hoffman 03-24

Project Number: UWRWE-A3150-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
01/24/24 10:33

**FL01-H@2'**  
**2401298-02 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **01/18/24 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BHA0683	01/19/24	01/19/24	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **01/18/24 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0134	40.2 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0155	46.5 %	40-150		"	"	"	"	

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

Date Sampled: **01/18/24 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	2.00	mg/L	1	BHA0672	01/19/24	01/19/24	EPA 6020B	

**Total Metals by EPA 6020B**

Date Sampled: **01/18/24 10:40**

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 - HSR Hoffman 03-24

Project Number: UWRWE-A3150-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
01/24/24 10:33

**FL01-H@2'**  
**2401298-02 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	2.87	0.200	mg/kg dry	1	BHA0710	01/22/24	01/23/24	EPA 6020B	
Barium	87.9	0.400	"	"	"	"	"	"	
Cadmium	0.288	0.200	"	"	"	"	"	"	
Copper	5.61	0.400	"	"	"	"	"	"	
Lead	7.79	0.200	"	"	"	"	"	"	
Nickel	6.01	0.400	"	"	"	"	"	"	
Silver	0.0327	0.0200	"	"	"	"	"	"	
Zinc	18.8	0.400	"	"	"	"	"	"	
Selenium	0.297	0.260	"	"	"	"	"	"	

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **01/18/24 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BHA0739	01/22/24	01/23/24	EPA 7196A	

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

Date Sampled: **01/18/24 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	270	0.0500	mg/L dry	1	BHA0702	01/19/24	01/23/24	EPA 6020B	
Magnesium	104	0.0500	"	"	"	"	"	"	
Sodium	46.6	0.0500	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **01/18/24 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.611	0.00100	units	1	BHA0804	01/23/24	01/23/24	Calculation	

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

Date Sampled: **01/18/24 10:40**

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 - HSR Hoffman 03-24

Project Number: UWRWE-A3150-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
01/24/24 10:33

**FL01-H@2'**  
**2401298-02 (Soil)**

**Summit Scientific**

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

% Solids	88.2	%	1	BHA0707	01/22/24	01/22/24	Calculation
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**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction**

Date Sampled: **01/18/24 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	1.95	0.0100	mmhos/cm	1	BHA0728	01/22/24	01/23/24	EPA 120.1	

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

Date Sampled: **01/18/24 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.98		pH Units	1	BHA0729	01/22/24	01/23/24	EPA 9045D	

Summit Scientific

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

Project: Noble - HSR Hoffman 03-24

Project Number: UWRWE-A3150-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
01/24/24 10:33

**FL01-I@2'**  
**2401298-03 (Soil)**

**Summit Scientific**

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

Date Sampled: **01/18/24 10:50**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	0.0020	mg/kg	1	BHA0690	01/19/24	01/20/24	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **01/18/24 10:50**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4	0.0382	95.5 %	50-150	"	"	"	"	"	
Surrogate: Toluene-d8	0.0424	106 %	50-150	"	"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0396	99.0 %	50-150	"	"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **01/18/24 10:50**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
C10-C28 (DRO)	ND	50	mg/kg	1	BHA0692	01/19/24	01/19/24	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **01/18/24 10:50**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: o-Terphenyl	7.17	57.4 %	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 - HSR Hoffman 03-24

Project Number: UWRWE-A3150-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
01/24/24 10:33

**FL01-I@2'**  
**2401298-03 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **01/18/24 10:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BHA0683	01/19/24	01/20/24	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **01/18/24 10:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0136	40.8 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0157	47.1 %	40-150		"	"	"	"	

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

Date Sampled: **01/18/24 10:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	2.00	mg/L	1	BHA0672	01/19/24	01/19/24	EPA 6020B	

**Total Metals by EPA 6020B**

Date Sampled: **01/18/24 10:50**

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

Project: Noble - HSR Hoffman 03-24

Project Number: UWRWE-A3150-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
01/24/24 10:33

**FL01-I@2'**  
**2401298-03 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Arsenic	1.71	0.200	mg/kg dry	1	BHA0710	01/22/24	01/23/24	EPA 6020B
Barium	42.0	0.400	"	"	"	"	"	"
Cadmium	ND	0.200	"	"	"	"	"	"
Copper	3.01	0.400	"	"	"	"	"	"
Lead	3.88	0.200	"	"	"	"	"	"
Nickel	3.24	0.400	"	"	"	"	"	"
Silver	0.0218	0.0200	"	"	"	"	"	"
Zinc	10.9	0.400	"	"	"	"	"	"
Selenium	ND	0.260	"	"	"	"	"	"

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **01/18/24 10:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BHA0739	01/22/24	01/23/24	EPA 7196A	

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

Date Sampled: **01/18/24 10:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	86.3	0.0500	mg/L dry	1	BHA0702	01/19/24	01/23/24	EPA 6020B	
Magnesium	31.1	0.0500	"	"	"	"	"	"	
Sodium	133	0.0500	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **01/18/24 10:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	3.12	0.00100	units	1	BHA0804	01/23/24	01/23/24	Calculation	

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

Summit Scientific

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6855 W. 119th Ave.  
Broomfield CO, 80020

Project: Noble - HSR Hoffman 03-24

Project Number: UWRWE-A3150-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
01/24/24 10:33

**FL01-I@2'**  
**2401298-03 (Soil)**

**Summit Scientific**

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

Date Sampled: **01/18/24 10:50**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
% Solids	89.8			%	1	BHA0707	01/22/24	01/22/24	Calculation	

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

Date Sampled: **01/18/24 10:50**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Specific Conductance (EC)	1.27	0.0100		mmhos/cm	1	BHA0728	01/22/24	01/23/24	EPA 120.1	

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

Date Sampled: **01/18/24 10:50**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
pH	8.49			pH Units	1	BHA0729	01/22/24	01/23/24	EPA 9045D	

Summit Scientific

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

Project: Noble - HSR Hoffman 03-24

Project Number: UWRWE-A3150-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
01/24/24 10:33

### 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 BHA0690 - EPA 5030 Soil MS

##### Blank (BHA0690-BLK1)

Prepared: 01/19/24 Analyzed: 01/20/24

Benzene	ND	0.0020	mg/kg							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
1,2,4-Trimethylbenzene	ND	0.0050	"							
1,3,5-Trimethylbenzene	ND	0.0050	"							
Naphthalene	ND	0.0038	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
Surrogate: 1,2-Dichloroethane-d4	0.0353		"	0.0400		88.4	50-150			
Surrogate: Toluene-d8	0.0424		"	0.0400		106	50-150			
Surrogate: 4-Bromofluorobenzene	0.0403		"	0.0400		101	50-150			

##### LCS (BHA0690-BS1)

Prepared: 01/19/24 Analyzed: 01/20/24

Benzene	0.0752	0.0020	mg/kg	0.100		75.2	70-130			
Toluene	0.0981	0.0050	"	0.100		98.1	70-130			
Ethylbenzene	0.0886	0.0050	"	0.100		88.6	70-130			
m,p-Xylene	0.179	0.010	"	0.200		89.3	70-130			
o-Xylene	0.0904	0.0050	"	0.100		90.4	70-130			
1,2,4-Trimethylbenzene	0.0807	0.0050	"	0.100		80.7	70-130			
1,3,5-Trimethylbenzene	0.0837	0.0050	"	0.100		83.7	70-130			
Naphthalene	0.0995	0.0038	"	0.100		99.5	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0334		"	0.0400		83.5	50-150			
Surrogate: Toluene-d8	0.0434		"	0.0400		109	50-150			
Surrogate: 4-Bromofluorobenzene	0.0395		"	0.0400		98.7	50-150			

##### Matrix Spike (BHA0690-MS1)

Source: 2401298-01

Prepared: 01/19/24 Analyzed: 01/20/24

Benzene	0.0960	0.0020	mg/kg	0.100	ND	96.0	70-130			
Toluene	0.0849	0.0050	"	0.100	ND	84.9	70-130			
Ethylbenzene	0.0744	0.0050	"	0.100	ND	74.4	70-130			
m,p-Xylene	0.147	0.010	"	0.200	ND	73.7	70-130			
o-Xylene	0.0753	0.0050	"	0.100	ND	75.3	70-130			
1,2,4-Trimethylbenzene	0.0605	0.0050	"	0.100	ND	60.5	70-130			QM-07
1,3,5-Trimethylbenzene	0.0661	0.0050	"	0.100	ND	66.1	70-130			QM-07
Naphthalene	0.0463	0.0038	"	0.100	ND	46.3	70-130			QM-07
Surrogate: 1,2-Dichloroethane-d4	0.0328		"	0.0400		82.0	50-150			
Surrogate: Toluene-d8	0.0427		"	0.0400		107	50-150			
Surrogate: 4-Bromofluorobenzene	0.0396		"	0.0400		98.9	50-150			

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

Project: Noble - HSR Hoffman 03-24

Project Number: UWRWE-A3150-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
01/24/24 10:33

**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 BHA0690 - EPA 5030 Soil MS**

<b>Matrix Spike Dup (BHA0690-MSD1)</b>	<b>Source: 2401298-01</b>			<b>Prepared: 01/19/24 Analyzed: 01/20/24</b>						
Benzene	0.0703	0.0020	mg/kg	0.100	ND	70.3	70-130	30.9	30	QM-07
Toluene	0.0884	0.0050	"	0.100	ND	88.4	70-130	4.05	30	
Ethylbenzene	0.0774	0.0050	"	0.100	ND	77.4	70-130	3.91	30	
m,p-Xylene	0.151	0.010	"	0.200	ND	75.7	70-130	2.67	30	
o-Xylene	0.0766	0.0050	"	0.100	ND	76.6	70-130	1.78	30	
1,2,4-Trimethylbenzene	0.0629	0.0050	"	0.100	ND	62.9	70-130	3.79	30	QM-07
1,3,5-Trimethylbenzene	0.0676	0.0050	"	0.100	ND	67.6	70-130	2.25	30	QM-07
Naphthalene	0.0412	0.0038	"	0.100	ND	41.2	70-130	11.6	30	QM-07
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0330</i>		<i>"</i>	<i>0.0400</i>		<i>82.5</i>	<i>50-150</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0427</i>		<i>"</i>	<i>0.0400</i>		<i>107</i>	<i>50-150</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0407</i>		<i>"</i>	<i>0.0400</i>		<i>102</i>	<i>50-150</i>			

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Broomfield CO, 80020

Project: Noble - HSR Hoffman 03-24

Project Number: UWRWE-A3150-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
01/24/24 10:33

**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 BHA0692 - EPA 3550A**

**Blank (BHA0692-BLK1)**

Prepared & Analyzed: 01/19/24

C10-C28 (DRO)	ND	50	mg/kg								
C28-C36 (ORO)	ND	50	"								
Surrogate: <i>o</i> -Terphenyl	10.6		"	12.5		84.7	30-150				

**LCS (BHA0692-BS1)**

Prepared & Analyzed: 01/19/24

C10-C28 (DRO)	397	50	mg/kg	500		79.3	70-130				
Surrogate: <i>o</i> -Terphenyl	9.68		"	12.5		77.5	30-150				

**Matrix Spike (BHA0692-MS1)**

Source: 2401298-01

Prepared & Analyzed: 01/19/24

C10-C28 (DRO)	431	50	mg/kg	500	13.5	83.4	70-130				
Surrogate: <i>o</i> -Terphenyl	9.11		"	12.5		72.9	30-150				

**Matrix Spike Dup (BHA0692-MSD1)**

Source: 2401298-01

Prepared & Analyzed: 01/19/24

C10-C28 (DRO)	430	50	mg/kg	500	13.5	83.4	70-130	0.0490	20		
Surrogate: <i>o</i> -Terphenyl	9.16		"	12.5		73.3	30-150				

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6855 W. 119th Ave.  
Broomfield CO, 80020

Project: Noble - HSR Hoffman 03-24

Project Number: UWRWE-A3150-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
01/24/24 10:33

**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 BHA0683 - EPA 5030 Soil MS**

**Blank (BHA0683-BLK1)**

Prepared & Analyzed: 01/19/24

Acenaphthene	ND	0.00500	mg/kg							
Anthracene	ND	0.00500	"							
Benzo (a) anthracene	ND	0.00500	"							
Benzo (a) pyrene	ND	0.00500	"							
Benzo (b) fluoranthene	ND	0.00500	"							
Benzo (k) fluoranthene	ND	0.00500	"							
Chrysene	ND	0.00500	"							
Dibenz (a,h) anthracene	ND	0.00500	"							
Fluoranthene	ND	0.00500	"							
Fluorene	ND	0.00500	"							
Indeno (1,2,3-cd) pyrene	ND	0.00500	"							
Pyrene	ND	0.00500	"							
1-Methylnaphthalene	ND	0.00500	"							
2-Methylnaphthalene	ND	0.00500	"							
<i>Surrogate: 2-Methylnaphthalene-d10</i>	0.0272		"	0.0333		81.6	40-150			
<i>Surrogate: Fluoranthene-d10</i>	0.0267		"	0.0333		80.2	40-150			

**LCS (BHA0683-BS1)**

Prepared & Analyzed: 01/19/24

Acenaphthene	0.0316	0.00500	mg/kg	0.0333		94.9	31-137			
Anthracene	0.0298	0.00500	"	0.0333		89.5	30-120			
Benzo (a) anthracene	0.0289	0.00500	"	0.0333		86.8	30-120			
Benzo (a) pyrene	0.0278	0.00500	"	0.0333		83.5	30-120			
Benzo (b) fluoranthene	0.0311	0.00500	"	0.0333		93.4	30-120			
Benzo (k) fluoranthene	0.0315	0.00500	"	0.0333		94.4	30-120			
Chrysene	0.0301	0.00500	"	0.0333		90.4	30-120			
Dibenz (a,h) anthracene	0.0239	0.00500	"	0.0333		71.8	30-120			
Fluoranthene	0.0325	0.00500	"	0.0333		97.6	30-120			
Fluorene	0.0331	0.00500	"	0.0333		99.4	30-120			
Indeno (1,2,3-cd) pyrene	0.0179	0.00500	"	0.0333		53.8	30-120			
Pyrene	0.0344	0.00500	"	0.0333		103	35-142			
1-Methylnaphthalene	0.0328	0.00500	"	0.0333		98.3	35-142			
2-Methylnaphthalene	0.0309	0.00500	"	0.0333		92.7	35-142			
<i>Surrogate: 2-Methylnaphthalene-d10</i>	0.0324		"	0.0333		97.1	40-150			
<i>Surrogate: Fluoranthene-d10</i>	0.0331		"	0.0333		99.4	40-150			

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6855 W. 119th Ave.  
Broomfield CO, 80020

Project: Noble - HSR Hoffman 03-24

Project Number: UWRWE-A3150-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
01/24/24 10:33

**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 BHA0683 - EPA 5030 Soil MS**

**Matrix Spike (BHA0683-MS1)**

Source: 2401274-01

Prepared & Analyzed: 01/19/24

Acenaphthene	0.0140	0.00500	mg/kg	0.0333	ND	41.9	31-137			
Anthracene	0.0140	0.00500	"	0.0333	ND	42.1	30-120			
Benzo (a) anthracene	0.0149	0.00500	"	0.0333	ND	44.7	30-120			
Benzo (a) pyrene	0.0134	0.00500	"	0.0333	ND	40.1	30-120			
Benzo (b) fluoranthene	0.0151	0.00500	"	0.0333	ND	45.2	30-120			
Benzo (k) fluoranthene	0.0158	0.00500	"	0.0333	ND	47.3	30-120			
Chrysene	0.0149	0.00500	"	0.0333	ND	44.8	30-120			
Dibenz (a,h) anthracene	0.0135	0.00500	"	0.0333	ND	40.6	30-120			
Fluoranthene	0.0141	0.00500	"	0.0333	ND	42.4	30-120			
Fluorene	0.0139	0.00500	"	0.0333	ND	41.6	30-120			
Indeno (1,2,3-cd) pyrene	0.0151	0.00500	"	0.0333	ND	45.2	30-120			
Pyrene	0.0172	0.00500	"	0.0333	ND	51.6	35-142			
1-Methylnaphthalene	0.0179	0.00500	"	0.0333	ND	53.6	15-130			
2-Methylnaphthalene	0.0143	0.00500	"	0.0333	ND	42.8	15-130			
Surrogate: 2-Methylnaphthalene-d10	0.0137		"	0.0333		41.1	40-150			
Surrogate: Fluoranthene-d10	0.0136		"	0.0333		40.8	40-150			

**Matrix Spike Dup (BHA0683-MSD1)**

Source: 2401274-01

Prepared & Analyzed: 01/19/24

Acenaphthene	0.0183	0.00500	mg/kg	0.0333	ND	54.9	31-137	26.9	30	
Anthracene	0.0181	0.00500	"	0.0333	ND	54.3	30-120	25.3	30	
Benzo (a) anthracene	0.0184	0.00500	"	0.0333	ND	55.3	30-120	21.3	30	
Benzo (a) pyrene	0.0169	0.00500	"	0.0333	ND	50.7	30-120	23.4	30	
Benzo (b) fluoranthene	0.0186	0.00500	"	0.0333	ND	55.8	30-120	20.9	30	
Benzo (k) fluoranthene	0.0192	0.00500	"	0.0333	ND	57.5	30-120	19.5	30	
Chrysene	0.0186	0.00500	"	0.0333	ND	55.8	30-120	21.7	30	
Dibenz (a,h) anthracene	0.0161	0.00500	"	0.0333	ND	48.3	30-120	17.3	30	
Fluoranthene	0.0187	0.00500	"	0.0333	ND	56.0	30-120	27.6	30	
Fluorene	0.0193	0.00500	"	0.0333	ND	57.9	30-120	32.6	30	QR-02
Indeno (1,2,3-cd) pyrene	0.0170	0.00500	"	0.0333	ND	50.9	30-120	12.0	30	
Pyrene	0.0213	0.00500	"	0.0333	ND	63.8	35-142	21.2	30	
1-Methylnaphthalene	0.0167	0.00500	"	0.0333	ND	50.0	15-130	6.95	50	
2-Methylnaphthalene	0.0182	0.00500	"	0.0333	ND	54.6	15-130	24.2	50	
Surrogate: 2-Methylnaphthalene-d10	0.0172		"	0.0333		51.7	40-150			
Surrogate: Fluoranthene-d10	0.0180		"	0.0333		54.0	40-150			

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

Project: Noble - HSR Hoffman 03-24  
Project Number: UWRWE-A3150-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
01/24/24 10:33

**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		

**Batch BHA0672 - EPA 3050B**

**Blank (BHA0672-BLK1)**

Prepared & Analyzed: 01/19/24

Boron ND 2.00 mg/L

**LCS (BHA0672-BS1)**

Prepared & Analyzed: 01/19/24

Boron 4.16 2.00 mg/L 5.00 83.3 80-120

**Duplicate (BHA0672-DUP1)**

Source: 2401284-01

Prepared & Analyzed: 01/19/24

Boron 0.0474 2.00 mg/L 0.0629 28.2 20 QR-01

**Matrix Spike (BHA0672-MS1)**

Source: 2401284-01

Prepared & Analyzed: 01/19/24

Boron 4.60 2.00 mg/L 5.00 0.0629 90.7 75-125

**Matrix Spike Dup (BHA0672-MSD1)**

Source: 2401284-01

Prepared & Analyzed: 01/19/24

Boron 4.53 2.00 mg/L 5.00 0.0629 89.3 75-125 1.57 25

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6855 W. 119th Ave.  
Broomfield CO, 80020

Project: Noble - HSR Hoffman 03-24

Project Number: UWRWE-A3150-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
01/24/24 10:33

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

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

**Batch BHA0710 - EPA 3050B**

**Blank (BHA0710-BLK1)**

Prepared: 01/22/24 Analyzed: 01/23/24

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

**LCS (BHA0710-BS1)**

Prepared: 01/22/24 Analyzed: 01/23/24

Arsenic	37.2	0.200	mg/kg wet	40.0	92.9	80-120
Barium	37.0	0.400	"	40.0	92.6	80-120
Cadmium	1.82	0.200	"	2.00	91.0	80-120
Copper	38.1	0.400	"	40.0	95.2	80-120
Lead	22.0	0.200	"	20.0	110	80-120
Nickel	37.8	0.400	"	40.0	94.6	80-120
Silver	1.81	0.0200	"	2.00	90.6	80-120
Zinc	38.0	0.400	"	40.0	94.9	80-120
Selenium	3.29	0.260	"	4.00	82.2	80-120

**Duplicate (BHA0710-DUP1)**

Source: 2311398-11

Prepared: 01/22/24 Analyzed: 01/23/24

Arsenic	3.84	0.200	mg/kg dry	4.30	11.4	20	
Barium	83.4	0.400	"	108	25.4	20	QR-04
Cadmium	0.351	0.200	"	0.381	8.37	20	
Copper	4.73	0.400	"	4.92	3.96	20	
Lead	6.97	0.200	"	7.35	5.34	20	
Nickel	5.05	0.400	"	5.34	5.60	20	
Silver	0.0238	0.0200	"	0.0263	9.71	20	
Zinc	15.7	0.400	"	16.2	3.02	20	
Selenium	ND	0.260	"	ND		20	

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

Project: Noble - HSR Hoffman 03-24

Project Number: UWRWE-A3150-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
01/24/24 10:33

**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 BHA0710 - EPA 3050B**

**Matrix Spike (BHA0710-MS1)**

Source: 2311398-11

Prepared: 01/22/24 Analyzed: 01/23/24

Arsenic	40.8	0.200	mg/kg dry	48.6	4.30	75.1	75-125			
Barium	130	0.400	"	48.6	108	46.3	75-125			QM-07
Cadmium	2.30	0.200	"	2.43	0.381	79.0	75-125			
Copper	27.0	0.400	"	48.6	4.92	45.5	75-125			QM-07
Lead	24.9	0.200	"	24.3	7.35	72.0	75-125			QM-07
Nickel	27.7	0.400	"	48.6	5.34	45.9	75-125			QM-07
Silver	1.86	0.0200	"	2.43	0.0263	75.4	75-125			
Zinc	38.0	0.400	"	48.6	16.2	45.0	75-125			QM-07
Selenium	3.62	0.260	"	4.86	ND	74.5	75-125			QM-07

**Matrix Spike Dup (BHA0710-MSD1)**

Source: 2311398-11

Prepared: 01/22/24 Analyzed: 01/23/24

Arsenic	41.0	0.200	mg/kg dry	48.6	4.30	75.5	75-125	0.486	25	
Barium	130	0.400	"	48.6	108	46.2	75-125	0.0220	25	QM-07
Cadmium	2.31	0.200	"	2.43	0.381	79.3	75-125	0.295	25	
Copper	26.9	0.400	"	48.6	4.92	45.2	75-125	0.489	25	QM-07
Lead	25.0	0.200	"	24.3	7.35	72.8	75-125	0.756	25	QM-07
Nickel	27.6	0.400	"	48.6	5.34	45.7	75-125	0.264	25	QM-07
Silver	1.88	0.0200	"	2.43	0.0263	76.4	75-125	1.30	25	
Zinc	37.9	0.400	"	48.6	16.2	44.7	75-125	0.330	25	QM-07
Selenium	3.64	0.260	"	4.86	ND	74.9	75-125	0.495	25	QM-07

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

Project: Noble - HSR Hoffman 03-24

Project Number: UWRWE-A3150-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
01/24/24 10:33

**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 BHA0739 - 3060A Mod**

**Blank (BHA0739-BLK1)**

Prepared: 01/22/24 Analyzed: 01/23/24

Chromium, Hexavalent      ND      0.30    mg/kg wet

**LCS (BHA0739-BS1)**

Prepared: 01/22/24 Analyzed: 01/23/24

Chromium, Hexavalent      26.0      0.30    mg/kg wet      25.0      104      80-120

**Duplicate (BHA0739-DUP1)**

**Source: 2312139-17**

Prepared: 01/22/24 Analyzed: 01/23/24

Chromium, Hexavalent      ND      0.30    mg/kg dry      ND      ND      20

**Matrix Spike (BHA0739-MS1)**

**Source: 2312139-17**

Prepared: 01/22/24 Analyzed: 01/23/24

Chromium, Hexavalent      32.3      0.30    mg/kg dry      32.9      ND      98.2      75-125

**Matrix Spike Dup (BHA0739-MSD1)**

**Source: 2312139-17**

Prepared: 01/22/24 Analyzed: 01/23/24

Chromium, Hexavalent      33.0      0.30    mg/kg dry      32.9      ND      100      75-125      2.22      20

Summit Scientific

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

Project: Noble - HSR Hoffman 03-24

Project Number: UWRWE-A3150-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
01/24/24 10:33

**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 BHA0702 - General Preparation**

**Blank (BHA0702-BLK1)**

Prepared: 01/19/24 Analyzed: 01/23/24

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

**LCS (BHA0702-BS1)**

Prepared: 01/19/24 Analyzed: 01/23/24

Calcium	6.34	0.0500	mg/L wet	5.00	127	70-130
Magnesium	5.71	0.0500	"	5.00	114	70-130
Sodium	5.75	0.0500	"	5.00	115	70-130

Summit Scientific

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

Project: Noble - HSR Hoffman 03-24

Project Number: UWRWE-A3150-ABN  
 Project Manager: Jacob Whritenour

**Reported:**  
 01/24/24 10:33

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

**Summit Scientific**

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

**Batch BHA0707 - General Preparation**

**Duplicate (BHA0707-DUP1)**

**Source: 2311398-11**

Prepared & Analyzed: 01/22/24

% Solids	82.6		%		82.2			0.371		20	
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Summit Scientific



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

Project: Noble - HSR Hoffman 03-24

Project Number: UWRWE-A3150-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
01/24/24 10:33

**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 BHA0728 - General Preparation**

**Blank (BHA0728-BLK1)**

Prepared: 01/22/24 Analyzed: 01/23/24

Specific Conductance (EC) ND 0.0100 mmhos/cm

**LCS (BHA0728-BS1)**

Prepared: 01/22/24 Analyzed: 01/23/24

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

**Duplicate (BHA0728-DUP1)**

Source: 2401282-01

Prepared: 01/22/24 Analyzed: 01/23/24

Specific Conductance (EC) 3.22 0.0100 mmhos/cm 3.33 3.48 20

Summit Scientific

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

Project: Noble - HSR Hoffman 03-24

Project Number: UWRWE-A3150-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
01/24/24 10:33

**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 BHA0729 - General Preparation**

**LCS (BHA0729-BS1)**

Prepared: 01/22/24 Analyzed: 01/23/24

pH	9.00	pH Units	9.18	98.0	95-105
----	------	----------	------	------	--------

**Duplicate (BHA0729-DUP1)**

Source: 2401282-01

Prepared: 01/22/24 Analyzed: 01/23/24

pH	9.46	pH Units	9.52	0.632	20
----	------	----------	------	-------	----

Summit Scientific

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

Project: Noble - HSR Hoffman 03-24

Project Number: UWRWE-A3150-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
01/24/24 10:33

### Notes and Definitions

- QR-04 The RPD value for the sample duplicate or MS/MSD was outside of QC acceptance. QC batch accepted based on LCS and/or LCSD recovery and/or RPD values.
- QR-02 The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data.
- QR-01 Analyses are not controlled on RPD values from sample concentrations less than 10 times the reporting limit. QC batch accepted based on LCS and/or LCSD QC results.
- QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS/LCSD recovery.
- 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

January 29, 2024

Jacob Whritenour

Tasman Geosciences

6855 W. 119th Ave.

Broomfield, CO 80020

RE: Noble - HSR Hoffman 03-24 (FAC)

Work Order #2401334

Enclosed are the results of analyses for samples received by Summit Scientific on 01/19/24 17:41. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Mikayla Axtell For Paul Shrewsbury

President



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

Project: Noble - HSR Hoffman 03-24 (FAC)

Project Number: UWRWE-A3150-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
01/29/24 08:08

**ANALYTICAL REPORT FOR SAMPLES**

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SEP01-FL@2'	2401334-01	Soil	01/19/24 10:22	01/19/24 17:41
SEP01-DL@2'	2401334-02	Soil	01/19/24 10:29	01/19/24 17:41
AST01@0.5'	2401334-03	Soil	01/19/24 09:44	01/19/24 17:41
SS04@3'	2401334-07	Soil	01/19/24 10:02	01/19/24 17:41
FS01@5'	2401334-08	Soil	01/19/24 10:08	01/19/24 17:41

Summit Scientific

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		<b>Send Data To:</b>	<b>Send Invoice To:</b>
Client: Noble/Tasman	Project Manager: Jake Whritenour		Company: <b>Chevron</b>
Address: 6855 W. 119th Ave.	E-Mail: Jwhritenour@tasman-geo.com		Project Name/Location:
City/State/Zip: Broomfield/CO/ 80020			AFE#: <b>UURWE-A3150-ABN</b>
Phone: 978-857-4408	Project Name: <b>HSR Hoffman 03.24 (FAC)</b>		PO/Billing Codes:
Sampler Name: Matthew Wentzel	Project Number:		Contact: <b>Dan Peterson</b>

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix		Air-Canister #	Other	Analysis Requested							Special Instructions
					HCl	HNO3	None	Other	Water	Soil			Metals - 915	VOC - 915	TPH - 915	PAH - 915	SAR, EC, pH	Boron - HWS	HOLD	
1	SEP01-FL@2'	1.19.24	1022	3			X			X		X	X	X	X	X	X		SAR, EC, pH by saturated paste	
2	SEP01-DLE@2'		1025																	
3	AST01@0.5'		0944																	
4	SS01@3'		0949																	
5	SS02@3'		0953																	
6	SS03@3'		0958																	
7	SS04@3'		1002																	
8	FS01@5'		1008																	
9																				
10																				
11																				
12																				
13																				
14																				
15																				

Relinquished by: 	Date/Time: 1.19.24 1230	Received by: Tasman Lock Box	Date/Time: 1.19.24 1230	TAT Business Days	Field DO	Notes:
				Same Day	Field EC	
Relinquished by: 	Date/Time: 1.19.24 0741	Received by: 	Date/Time: 1.19.24 1741	1 Day	Field ORP	
				2 Days	Field pH	
Relinquished by:	Date/Time:	Received by:	Date/Time:	3 Days	Field Temp.	
				Standard	Field Turb.	
Temperature Upon Receipt: 9.0	Corrected Temperature: 6	IR gun #: 1	HNO3 lot #:			

S<sub>2</sub>

Sample Receipt Checklist

S2 Work Order# 2401334

Client: Noble Gasman Client Project ID: HSR Hoffman 03-24(FAC)

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"/>	all OK
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 1/19/24  
Custodian Printed Name Date/Time

0003



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

Project: Noble - HSR Hoffman 03-24 (FAC)

Project Number: UWRWE-A3150-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
01/29/24 08:08

**SEP01-FL@2'**  
**2401334-01 (Soil)**

**Summit Scientific**

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

Date Sampled: **01/19/24 10:22**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	BHA0754	01/22/24	01/23/24	EPA 8260B	
Toluene	ND	0.0050		"	"	"	"	"	"	
Ethylbenzene	ND	0.0050		"	"	"	"	"	"	
Xylenes (total)	ND	0.010		"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050		"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050		"	"	"	"	"	"	
Naphthalene	ND	0.0038		"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50		"	"	"	"	"	"	

Date Sampled: **01/19/24 10:22**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	0.0418	104 %		50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0408	102 %		50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0416	104 %		50-150		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **01/19/24 10:22**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	ND	50		mg/kg	1	BHA0756	01/22/24	01/23/24	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **01/19/24 10:22**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl	7.49	59.9 %		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 - HSR Hoffman 03-24 (FAC)

Project Number: UWRWE-A3150-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
01/29/24 08:08

**SEP01-FL@2'**  
**2401334-01 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **01/19/24 10:22**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BHA0779	01/23/24	01/24/24	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **01/19/24 10:22**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0157	47.2 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0199	59.8 %	40-150		"	"	"	"	

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

Date Sampled: **01/19/24 10:22**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	2.00	mg/L	1	BHA0774	01/23/24	01/25/24	EPA 6020B	

**Total Metals by EPA 6020B**

Date Sampled: **01/19/24 10:22**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Summit Scientific

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

Project: Noble - HSR Hoffman 03-24 (FAC)

Project Number: UWRWE-A3150-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
01/29/24 08:08

**SEP01-FL@2'**  
**2401334-01 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	1.05	0.200	mg/kg dry	1	BHA0810	01/23/24	01/25/24	EPA 6020B	
Barium	23.1	0.400	"	"	"	"	"	"	
Cadmium	ND	0.200	"	"	"	"	"	"	
Copper	2.04	0.400	"	"	"	"	"	"	
Lead	3.08	0.200	"	"	"	"	"	"	
Nickel	1.83	0.400	"	"	"	"	"	"	
Silver	ND	0.0200	"	"	"	"	"	"	
Zinc	7.71	0.400	"	"	"	"	"	"	
Selenium	ND	0.260	"	"	"	"	"	"	

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **01/19/24 10:22**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BHA0749	01/22/24	01/22/24	EPA 7196A	

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

Date Sampled: **01/19/24 10:22**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	100	0.0500	mg/L dry	1	BHA0781	01/23/24	01/25/24	EPA 6020B	
Magnesium	20.7	0.0500	"	"	"	"	"	"	
Sodium	0.731	0.0500	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **01/19/24 10:22**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.0174	0.00100	units	1	BHA0905	01/25/24	01/25/24	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 - HSR Hoffman 03-24 (FAC)

Project Number: UWRWE-A3150-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
01/29/24 08:08

**SEP01-FL@2'**  
**2401334-01 (Soil)**

**Summit Scientific**

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

Date Sampled: **01/19/24 10:22**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	<b>90.1</b>		%	1	BHA0775	01/23/24	01/23/24	Calculation	

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

Date Sampled: **01/19/24 10:22**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	<b>0.0287</b>	0.0100	mmhos/cm	1	BHA0832	01/24/24	01/24/24	EPA 120.1	

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

Date Sampled: **01/19/24 10:22**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	<b>5.64</b>		pH Units	1	BHA0831	01/24/24	01/24/24	EPA 9045D	

Summit Scientific

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

Project: Noble - HSR Hoffman 03-24 (FAC)

Project Number: UWRWE-A3150-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
01/29/24 08:08

**SEP01-DL@2'**  
**2401334-02 (Soil)**

**Summit Scientific**

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

Date Sampled: **01/19/24 10:29**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BHA0754	01/22/24	01/23/24	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **01/19/24 10:29**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4	0.0400	100 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0403	101 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0424	106 %	50-150		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **01/19/24 10:29**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BHA0756	01/22/24	01/23/24	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **01/19/24 10:29**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl	7.50	60.0 %	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 - HSR Hoffman 03-24 (FAC)

Project Number: UWRWE-A3150-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
01/29/24 08:08

**SEP01-DL@2'**  
**2401334-02 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **01/19/24 10:29**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BHA0779	01/23/24	01/24/24	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **01/19/24 10:29**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0136	40.9 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0178	53.4 %	40-150		"	"	"	"	

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

Date Sampled: **01/19/24 10:29**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	2.00	mg/L	1	BHA0774	01/23/24	01/25/24	EPA 6020B	

**Total Metals by EPA 6020B**

Date Sampled: **01/19/24 10:29**

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 - HSR Hoffman 03-24 (FAC)

Project Number: UWRWE-A3150-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
01/29/24 08:08

**SEP01-DL@2'**  
**2401334-02 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	1.11	0.200	mg/kg dry	1	BHA0810	01/23/24	01/25/24	EPA 6020B	
Barium	28.9	0.400	"	"	"	"	"	"	
Cadmium	ND	0.200	"	"	"	"	"	"	
Copper	2.26	0.400	"	"	"	"	"	"	
Lead	3.83	0.200	"	"	"	"	"	"	
Nickel	2.02	0.400	"	"	"	"	"	"	
Silver	ND	0.0200	"	"	"	"	"	"	
Zinc	8.79	0.400	"	"	"	"	"	"	
Selenium	ND	0.260	"	"	"	"	"	"	

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **01/19/24 10:29**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BHA0749	01/22/24	01/22/24	EPA 7196A	

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

Date Sampled: **01/19/24 10:29**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	109	0.0500	mg/L dry	1	BHA0781	01/23/24	01/25/24	EPA 6020B	
Magnesium	21.8	0.0500	"	"	"	"	"	"	
Sodium	1.99	0.0500	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **01/19/24 10:29**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.0455	0.00100	units	1	BHA0905	01/25/24	01/25/24	Calculation	

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

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

Project: Noble - HSR Hoffman 03-24 (FAC)

Project Number: UWRWE-A3150-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
01/29/24 08:08

**SEP01-DL@2'**  
**2401334-02 (Soil)**

**Summit Scientific**

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

Date Sampled: **01/19/24 10:29**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	88.5		%	1	BHA0775	01/23/24	01/23/24	Calculation	

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

Date Sampled: **01/19/24 10:29**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.0686	0.0100	mmhos/cm	1	BHA0832	01/24/24	01/24/24	EPA 120.1	

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

Date Sampled: **01/19/24 10:29**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	5.23		pH Units	1	BHA0831	01/24/24	01/24/24	EPA 9045D	

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

Project: Noble - HSR Hoffman 03-24 (FAC)

Project Number: UWRWE-A3150-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
01/29/24 08:08

**AST01@0.5'**  
**2401334-03 (Soil)**

**Summit Scientific**

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

Date Sampled: **01/19/24 09:44**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	BHA0754	01/22/24	01/23/24	EPA 8260B	
Toluene	ND	0.0050		"	"	"	"	"	"	
Ethylbenzene	ND	0.0050		"	"	"	"	"	"	
Xylenes (total)	ND	0.010		"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050		"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050		"	"	"	"	"	"	
Naphthalene	ND	0.0038		"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50		"	"	"	"	"	"	

Date Sampled: **01/19/24 09:44**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	0.0428	107 %		50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0417	104 %		50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0414	104 %		50-150		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **01/19/24 09:44**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
<b>C10-C28 (DRO)</b>	<b>140</b>	50		mg/kg	1	BHA0756	01/22/24	01/23/24	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **01/19/24 09:44**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl	11.6	93.0 %		30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

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

Project: Noble - HSR Hoffman 03-24 (FAC)  
Project Number: UWRWE-A3150-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
01/29/24 08:08

**AST01@0.5'**  
**2401334-03 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **01/19/24 09:44**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BHA0779	01/23/24	01/24/24	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
<b>Benzo (a) anthracene</b>	<b>0.00678</b>	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>0.00547</b>	0.00500	"	"	"	"	"	"	
<b>Fluorene</b>	<b>0.0383</b>	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
<b>1-Methylnaphthalene</b>	<b>0.109</b>	0.00500	"	"	"	"	"	"	
<b>2-Methylnaphthalene</b>	<b>0.337</b>	0.00500	"	"	"	"	"	"	E

Date Sampled: **01/19/24 09:44**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0220	66.0 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0290	86.9 %	40-150		"	"	"	"	

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

Date Sampled: **01/19/24 09:44**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	2.00	mg/L	1	BHA0774	01/23/24	01/25/24	EPA 6020B	

**Total Metals by EPA 6020B**

Date Sampled: **01/19/24 09:44**

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 - HSR Hoffman 03-24 (FAC)

Project Number: UWRWE-A3150-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
01/29/24 08:08

**AST01@0.5'**  
**2401334-03 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Arsenic	1.77	0.200	mg/kg dry	1	BHA0810	01/23/24	01/25/24	EPA 6020B
Barium	34.8	0.400	"	"	"	"	"	"
Cadmium	ND	0.200	"	"	"	"	"	"
Copper	4.27	0.400	"	"	"	"	"	"
Lead	7.48	0.200	"	"	"	"	"	"
Nickel	2.80	0.400	"	"	"	"	"	"
Silver	0.0267	0.0200	"	"	"	"	"	"
Zinc	15.0	0.400	"	"	"	"	"	"
Selenium	ND	0.260	"	"	"	"	"	"

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **01/19/24 09:44**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BHA0749	01/22/24	01/22/24	EPA 7196A	

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

Date Sampled: **01/19/24 09:44**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	31.7	0.0500	mg/L dry	1	BHA0781	01/23/24	01/25/24	EPA 6020B	
Magnesium	3.97	0.0500	"	"	"	"	"	"	
Sodium	13.1	0.0500	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **01/19/24 09:44**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.583	0.00100	units	1	BHA0905	01/25/24	01/25/24	Calculation	

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

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

Project: Noble - HSR Hoffman 03-24 (FAC)

Project Number: UWRWE-A3150-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
01/29/24 08:08

**AST01@0.5'**  
**2401334-03 (Soil)**

**Summit Scientific**

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

Date Sampled: **01/19/24 09:44**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	97.2		%	1	BHA0775	01/23/24	01/23/24	Calculation	

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

Date Sampled: **01/19/24 09:44**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.368	0.0100	mmhos/cm	1	BHA0832	01/24/24	01/24/24	EPA 120.1	

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

Date Sampled: **01/19/24 09:44**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.68		pH Units	1	BHA0831	01/24/24	01/24/24	EPA 9045D	

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

Project: Noble - HSR Hoffman 03-24 (FAC)

Project Number: UWRWE-A3150-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
01/29/24 08:08

**SS04@3'**  
**2401334-07 (Soil)**

**Summit Scientific**

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

Date Sampled: **01/19/24 10:02**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	BHA0754	01/22/24	01/24/24	EPA 8260B	
Toluene	ND	0.0050		"	"	"	"	"	"	
Ethylbenzene	ND	0.0050		"	"	"	"	"	"	
Xylenes (total)	ND	0.010		"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050		"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050		"	"	"	"	"	"	
Naphthalene	ND	0.0038		"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50		"	"	"	"	"	"	

Date Sampled: **01/19/24 10:02**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	0.0404	101 %		50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0407	102 %		50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0423	106 %		50-150		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **01/19/24 10:02**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
<b>C10-C28 (DRO)</b>	<b>280</b>	50		mg/kg	1	BHA0756	01/22/24	01/23/24	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **01/19/24 10:02**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl	8.33	66.6 %		30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

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

Project: Noble - HSR Hoffman 03-24 (FAC)

Project Number: UWRWE-A3150-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
01/29/24 08:08

**SS04@3'**  
**2401334-07 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **01/19/24 10:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BHA0779	01/23/24	01/24/24	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	"
<b>Benzo (a) anthracene</b>	<b>0.00636</b>	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>0.00512</b>	0.00500	"	"	"	"	"	"	"
Fluorene	ND	0.00500	"	"	"	"	"	"	"
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	"
Pyrene	ND	0.00500	"	"	"	"	"	"	"
<b>1-Methylnaphthalene</b>	<b>0.0270</b>	0.00500	"	"	"	"	"	"	"
<b>2-Methylnaphthalene</b>	<b>0.0564</b>	0.00500	"	"	"	"	"	"	"

Date Sampled: **01/19/24 10:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0250	75.1 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0289	86.8 %	40-150		"	"	"	"	

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

Date Sampled: **01/19/24 10:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	2.00	mg/L	1	BHA0774	01/23/24	01/25/24	EPA 6020B	

**Total Metals by EPA 6020B**

Date Sampled: **01/19/24 10:02**

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

Project: Noble - HSR Hoffman 03-24 (FAC)

Project Number: UWRWE-A3150-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
01/29/24 08:08

**SS04@3'**  
**2401334-07 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	1.94	0.200	mg/kg dry	1	BHA0810	01/23/24	01/25/24	EPA 6020B	
Barium	39.6	0.400	"	"	"	"	"	"	
Cadmium	ND	0.200	"	"	"	"	"	"	
Copper	6.67	0.400	"	"	"	"	"	"	
Lead	12.0	0.200	"	"	"	"	"	"	
Nickel	3.57	0.400	"	"	"	"	"	"	
Silver	0.0459	0.0200	"	"	"	"	"	"	
Zinc	20.7	0.400	"	"	"	"	"	"	
Selenium	ND	0.260	"	"	"	"	"	"	

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **01/19/24 10:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BHA0749	01/22/24	01/22/24	EPA 7196A	

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

Date Sampled: **01/19/24 10:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	127	0.0500	mg/L dry	1	BHA0781	01/23/24	01/25/24	EPA 6020B	
Magnesium	9.65	0.0500	"	"	"	"	"	"	
Sodium	2.34	0.0500	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **01/19/24 10:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.0539	0.00100	units	1	BHA0905	01/25/24	01/25/24	Calculation	

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

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

Project: Noble - HSR Hoffman 03-24 (FAC)

Project Number: UWRWE-A3150-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
01/29/24 08:08

**SS04@3'**  
**2401334-07 (Soil)**

**Summit Scientific**

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

Date Sampled: **01/19/24 10:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	91.5		%	1	BHA0775	01/23/24	01/23/24	Calculation	

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

Date Sampled: **01/19/24 10:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.126	0.0100	mmhos/cm	1	BHA0832	01/24/24	01/24/24	EPA 120.1	

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

Date Sampled: **01/19/24 10:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.59		pH Units	1	BHA0831	01/24/24	01/24/24	EPA 9045D	

Summit Scientific

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6855 W. 119th Ave.  
Broomfield CO, 80020

Project: Noble - HSR Hoffman 03-24 (FAC)

Project Number: UWRWE-A3150-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
01/29/24 08:08

**FS01@5'**  
**2401334-08 (Soil)**

**Summit Scientific**

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

Date Sampled: **01/19/24 10:08**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	BHA0754	01/22/24	01/24/24	EPA 8260B	
Toluene	ND	0.0050		"	"	"	"	"	"	
Ethylbenzene	ND	0.0050		"	"	"	"	"	"	
Xylenes (total)	ND	0.010		"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050		"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050		"	"	"	"	"	"	
Naphthalene	ND	0.0038		"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50		"	"	"	"	"	"	

Date Sampled: **01/19/24 10:08**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	0.0422	106 %		50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0402	100 %		50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0410	103 %		50-150		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **01/19/24 10:08**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	ND	50		mg/kg	1	BHA0756	01/22/24	01/23/24	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **01/19/24 10:08**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl	5.67	45.3 %		30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

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

Project: Noble - HSR Hoffman 03-24 (FAC)

Project Number: UWRWE-A3150-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
01/29/24 08:08

**FS01@5'**  
**2401334-08 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **01/19/24 10:08**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BHA0779	01/23/24	01/24/24	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **01/19/24 10:08**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0166	49.7 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0223	66.9 %	40-150		"	"	"	"	

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

Date Sampled: **01/19/24 10:08**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	2.00	mg/L	1	BHA0774	01/23/24	01/25/24	EPA 6020B	

**Total Metals by EPA 6020B**

Date Sampled: **01/19/24 10:08**

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 - HSR Hoffman 03-24 (FAC)

Project Number: UWRWE-A3150-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
01/29/24 08:08

**FS01@5'**  
**2401334-08 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	1.08	0.200	mg/kg dry	1	BHA0810	01/23/24	01/25/24	EPA 6020B	
Barium	50.0	0.400	"	"	"	"	"	"	
Cadmium	ND	0.200	"	"	"	"	"	"	
Copper	2.27	0.400	"	"	"	"	"	"	
Lead	3.58	0.200	"	"	"	"	"	"	
Nickel	1.98	0.400	"	"	"	"	"	"	
Silver	0.0284	0.0200	"	"	"	"	"	"	
Zinc	8.58	0.400	"	"	"	"	"	"	
Selenium	ND	0.260	"	"	"	"	"	"	

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **01/19/24 10:08**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BHA0749	01/22/24	01/22/24	EPA 7196A	

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

Date Sampled: **01/19/24 10:08**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	125	0.0500	mg/L dry	1	BHA0781	01/23/24	01/25/24	EPA 6020B	
Magnesium	21.6	0.0500	"	"	"	"	"	"	
Sodium	124	0.0500	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **01/19/24 10:08**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	2.69	0.00100	units	1	BHA0905	01/25/24	01/25/24	Calculation	

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

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**Reported:**  
01/29/24 08:08

**FS01@5'**  
**2401334-08 (Soil)**

**Summit Scientific**

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

Date Sampled: **01/19/24 10:08**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
% Solids	90.1			%	1	BHA0775	01/23/24	01/23/24	Calculation	

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

Date Sampled: **01/19/24 10:08**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Specific Conductance (EC)	0.364	0.0100		mmhos/cm	1	BHA0832	01/24/24	01/24/24	EPA 120.1	

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

Date Sampled: **01/19/24 10:08**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
pH	8.36			pH Units	1	BHA0831	01/24/24	01/24/24	EPA 9045D	

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Project Manager: Jacob Whritenour

**Reported:**  
01/29/24 08:08

### 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 BHA0754 - EPA 5030 Soil MS

##### Blank (BHA0754-BLK1)

Prepared & Analyzed: 01/22/24

Benzene	ND	0.0020	mg/kg							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
1,2,4-Trimethylbenzene	ND	0.0050	"							
1,3,5-Trimethylbenzene	ND	0.0050	"							
Naphthalene	ND	0.0038	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0404</i>		<i>"</i>	<i>0.0400</i>		<i>101</i>	<i>50-150</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0396</i>		<i>"</i>	<i>0.0400</i>		<i>99.1</i>	<i>50-150</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0420</i>		<i>"</i>	<i>0.0400</i>		<i>105</i>	<i>50-150</i>			

##### LCS (BHA0754-BS1)

Prepared & Analyzed: 01/22/24

Benzene	0.103	0.0020	mg/kg	0.100		103	70-130			
Toluene	0.100	0.0050	"	0.100		100	70-130			
Ethylbenzene	0.0971	0.0050	"	0.100		97.1	70-130			
m,p-Xylene	0.195	0.010	"	0.200		97.5	70-130			
o-Xylene	0.0954	0.0050	"	0.100		95.4	70-130			
1,2,4-Trimethylbenzene	0.0969	0.0050	"	0.100		96.9	70-130			
1,3,5-Trimethylbenzene	0.0947	0.0050	"	0.100		94.7	70-130			
Naphthalene	0.0862	0.0038	"	0.100		86.2	70-130			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0415</i>		<i>"</i>	<i>0.0400</i>		<i>104</i>	<i>50-150</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0408</i>		<i>"</i>	<i>0.0400</i>		<i>102</i>	<i>50-150</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0418</i>		<i>"</i>	<i>0.0400</i>		<i>104</i>	<i>50-150</i>			

##### Matrix Spike (BHA0754-MS1)

Source: 2401327-02

Prepared & Analyzed: 01/22/24

Benzene	0.0964	0.0020	mg/kg	0.100	ND	96.4	70-130			
Toluene	0.0952	0.0050	"	0.100	ND	95.2	70-130			
Ethylbenzene	0.0893	0.0050	"	0.100	ND	89.3	70-130			
m,p-Xylene	0.178	0.010	"	0.200	ND	89.1	70-130			
o-Xylene	0.0884	0.0050	"	0.100	ND	88.4	70-130			
1,2,4-Trimethylbenzene	0.0902	0.0050	"	0.100	ND	90.2	70-130			
1,3,5-Trimethylbenzene	0.0866	0.0050	"	0.100	ND	86.6	70-130			
Naphthalene	0.0880	0.0038	"	0.100	ND	88.0	70-130			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0441</i>		<i>"</i>	<i>0.0400</i>		<i>110</i>	<i>50-150</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0415</i>		<i>"</i>	<i>0.0400</i>		<i>104</i>	<i>50-150</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0424</i>		<i>"</i>	<i>0.0400</i>		<i>106</i>	<i>50-150</i>			

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6855 W. 119th Ave.  
Broomfield CO, 80020

Project: Noble - HSR Hoffman 03-24 (FAC)

Project Number: UWRWE-A3150-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
01/29/24 08:08

**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 BHA0754 - EPA 5030 Soil MS**

<b>Matrix Spike Dup (BHA0754-MSD1)</b>	<b>Source: 2401327-02</b>			<b>Prepared &amp; Analyzed: 01/22/24</b>						
Benzene	0.0926	0.0020	mg/kg	0.100	ND	92.6	70-130	4.09	30	
Toluene	0.0887	0.0050	"	0.100	ND	88.7	70-130	7.05	30	
Ethylbenzene	0.0892	0.0050	"	0.100	ND	89.2	70-130	0.134	30	
m,p-Xylene	0.175	0.010	"	0.200	ND	87.6	70-130	1.68	30	
o-Xylene	0.0855	0.0050	"	0.100	ND	85.5	70-130	3.31	30	
1,2,4-Trimethylbenzene	0.0854	0.0050	"	0.100	ND	85.4	70-130	5.54	30	
1,3,5-Trimethylbenzene	0.0819	0.0050	"	0.100	ND	81.9	70-130	5.48	30	
Naphthalene	0.0834	0.0038	"	0.100	ND	83.4	70-130	5.29	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0431</i>		<i>"</i>	<i>0.0400</i>		<i>108</i>	<i>50-150</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0402</i>		<i>"</i>	<i>0.0400</i>		<i>101</i>	<i>50-150</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0417</i>		<i>"</i>	<i>0.0400</i>		<i>104</i>	<i>50-150</i>			

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Broomfield CO, 80020

Project: Noble - HSR Hoffman 03-24 (FAC)

Project Number: UWRWE-A3150-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
01/29/24 08:08

**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 BHA0756 - EPA 3550A**

**Blank (BHA0756-BLK1)**

Prepared & Analyzed: 01/22/24

C10-C28 (DRO)	ND	50	mg/kg								
C28-C36 (ORO)	ND	50	"								
Surrogate: <i>o</i> -Terphenyl	13.3		"	12.5		106		30-150			

**LCS (BHA0756-BS1)**

Prepared & Analyzed: 01/22/24

C10-C28 (DRO)	436	50	mg/kg	500		87.2		70-130			
Surrogate: <i>o</i> -Terphenyl	13.4		"	12.5		107		30-150			

**Matrix Spike (BHA0756-MS1)**

Source: 2401327-02

Prepared & Analyzed: 01/22/24

C10-C28 (DRO)	390	50	mg/kg	500	44.4	69.2		70-130			QM-07
Surrogate: <i>o</i> -Terphenyl	11.0		"	12.5		87.8		30-150			

**Matrix Spike Dup (BHA0756-MSD1)**

Source: 2401327-02

Prepared & Analyzed: 01/22/24

C10-C28 (DRO)	453	50	mg/kg	500	44.4	81.7		70-130	14.8	20	
Surrogate: <i>o</i> -Terphenyl	12.4		"	12.5		99.1		30-150			

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Project: Noble - HSR Hoffman 03-24 (FAC)

Project Number: UWRWE-A3150-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
01/29/24 08:08

**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 BHA0779 - EPA 5030 Soil MS**

**Blank (BHA0779-BLK1)**

Prepared: 01/23/24 Analyzed: 01/24/24

Acenaphthene	ND	0.00500	mg/kg							
Anthracene	ND	0.00500	"							
Benzo (a) anthracene	ND	0.00500	"							
Benzo (a) pyrene	ND	0.00500	"							
Benzo (b) fluoranthene	ND	0.00500	"							
Benzo (k) fluoranthene	ND	0.00500	"							
Chrysene	ND	0.00500	"							
Dibenz (a,h) anthracene	ND	0.00500	"							
Fluoranthene	ND	0.00500	"							
Fluorene	ND	0.00500	"							
Indeno (1,2,3-cd) pyrene	ND	0.00500	"							
Pyrene	ND	0.00500	"							
1-Methylnaphthalene	ND	0.00500	"							
2-Methylnaphthalene	ND	0.00500	"							
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0149</i>		"	<i>0.0333</i>		<i>44.6</i>	<i>40-150</i>			
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0375</i>		"	<i>0.0333</i>		<i>112</i>	<i>40-150</i>			

**LCS (BHA0779-BS1)**

Prepared: 01/23/24 Analyzed: 01/24/24

Acenaphthene	0.0384	0.00500	mg/kg	0.0333	115	31-137
Anthracene	0.0371	0.00500	"	0.0333	111	30-120
Benzo (a) anthracene	0.0384	0.00500	"	0.0333	115	30-120
Benzo (a) pyrene	0.0373	0.00500	"	0.0333	112	30-120
Benzo (b) fluoranthene	0.0374	0.00500	"	0.0333	112	30-120
Benzo (k) fluoranthene	0.0353	0.00500	"	0.0333	106	30-120
Chrysene	0.0350	0.00500	"	0.0333	105	30-120
Dibenz (a,h) anthracene	0.0303	0.00500	"	0.0333	90.9	30-120
Fluoranthene	0.0397	0.00500	"	0.0333	119	30-120
Fluorene	0.0372	0.00500	"	0.0333	112	30-120
Indeno (1,2,3-cd) pyrene	0.0290	0.00500	"	0.0333	86.9	30-120
Pyrene	0.0369	0.00500	"	0.0333	111	35-142
1-Methylnaphthalene	0.0336	0.00500	"	0.0333	101	35-142
2-Methylnaphthalene	0.0366	0.00500	"	0.0333	110	35-142
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0350</i>		"	<i>0.0333</i>	<i>105</i>	<i>40-150</i>
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0405</i>		"	<i>0.0333</i>	<i>121</i>	<i>40-150</i>

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Project: Noble - HSR Hoffman 03-24 (FAC)

Project Number: UWRWE-A3150-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
01/29/24 08:08

**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 BHA0779 - EPA 5030 Soil MS**

<b>Matrix Spike (BHA0779-MS1)</b>	<b>Source: 2401334-01</b>			<b>Prepared: 01/23/24 Analyzed: 01/24/24</b>						
Acenaphthene	0.0266	0.00500	mg/kg	0.0333	ND	79.9	31-137			
Anthracene	0.0272	0.00500	"	0.0333	ND	81.6	30-120			
Benzo (a) anthracene	0.0285	0.00500	"	0.0333	ND	85.4	30-120			
Benzo (a) pyrene	0.0256	0.00500	"	0.0333	ND	76.8	30-120			
Benzo (b) fluoranthene	0.0281	0.00500	"	0.0333	ND	84.4	30-120			
Benzo (k) fluoranthene	0.0288	0.00500	"	0.0333	ND	86.4	30-120			
Chrysene	0.0270	0.00500	"	0.0333	ND	81.1	30-120			
Dibenz (a,h) anthracene	0.0186	0.00500	"	0.0333	ND	55.7	30-120			
Fluoranthene	0.0275	0.00500	"	0.0333	ND	82.6	30-120			
Fluorene	0.0284	0.00500	"	0.0333	ND	85.2	30-120			
Indeno (1,2,3-cd) pyrene	0.0177	0.00500	"	0.0333	ND	53.2	30-120			
Pyrene	0.0296	0.00500	"	0.0333	ND	88.9	35-142			
1-Methylnaphthalene	0.0256	0.00500	"	0.0333	ND	76.7	15-130			
2-Methylnaphthalene	0.0272	0.00500	"	0.0333	ND	81.5	15-130			
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0287</i>	<i>"</i>	<i>"</i>	<i>0.0333</i>	<i>"</i>	<i>86.0</i>	<i>40-150</i>			
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0286</i>	<i>"</i>	<i>"</i>	<i>0.0333</i>	<i>"</i>	<i>85.8</i>	<i>40-150</i>			

<b>Matrix Spike Dup (BHA0779-MSD1)</b>	<b>Source: 2401334-01</b>			<b>Prepared: 01/23/24 Analyzed: 01/24/24</b>						
Acenaphthene	0.0192	0.00500	mg/kg	0.0333	ND	57.5	31-137	32.7	30	QR-02
Anthracene	0.0201	0.00500	"	0.0333	ND	60.2	30-120	30.2	30	QR-02
Benzo (a) anthracene	0.0205	0.00500	"	0.0333	ND	61.5	30-120	32.6	30	QR-02
Benzo (a) pyrene	0.0183	0.00500	"	0.0333	ND	55.0	30-120	33.1	30	QR-02
Benzo (b) fluoranthene	0.0204	0.00500	"	0.0333	ND	61.1	30-120	32.1	30	QR-02
Benzo (k) fluoranthene	0.0206	0.00500	"	0.0333	ND	61.7	30-120	33.3	30	QR-02
Chrysene	0.0198	0.00500	"	0.0333	ND	59.3	30-120	31.1	30	QR-02
Dibenz (a,h) anthracene	0.0137	0.00500	"	0.0333	ND	41.1	30-120	30.1	30	QR-02
Fluoranthene	0.0205	0.00500	"	0.0333	ND	61.6	30-120	29.1	30	
Fluorene	0.0193	0.00500	"	0.0333	ND	57.8	30-120	38.3	30	QR-02
Indeno (1,2,3-cd) pyrene	0.0156	0.00500	"	0.0333	ND	46.7	30-120	13.0	30	
Pyrene	0.0219	0.00500	"	0.0333	ND	65.8	35-142	29.9	30	
1-Methylnaphthalene	0.0161	0.00500	"	0.0333	ND	48.2	15-130	45.6	50	
2-Methylnaphthalene	0.0196	0.00500	"	0.0333	ND	58.9	15-130	32.1	50	
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0170</i>	<i>"</i>	<i>"</i>	<i>0.0333</i>	<i>"</i>	<i>50.9</i>	<i>40-150</i>			
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0210</i>	<i>"</i>	<i>"</i>	<i>0.0333</i>	<i>"</i>	<i>63.1</i>	<i>40-150</i>			

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

Project: Noble - HSR Hoffman 03-24 (FAC)  
Project Number: UWRWE-A3150-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
01/29/24 08:08

**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 BHA0774 - EPA 3050B**

**Blank (BHA0774-BLK1)**

Prepared: 01/23/24 Analyzed: 01/25/24

Boron ND 2.00 mg/L

**LCS (BHA0774-BS1)**

Prepared: 01/23/24 Analyzed: 01/25/24

Boron 4.76 2.00 mg/L 5.00 95.1 80-120

**Duplicate (BHA0774-DUP1)**

**Source: 2401334-01**

Prepared: 01/23/24 Analyzed: 01/25/24

Boron ND 2.00 mg/L ND 20

**Matrix Spike (BHA0774-MS1)**

**Source: 2401334-01**

Prepared: 01/23/24 Analyzed: 01/25/24

Boron 4.66 2.00 mg/L 5.00 ND 93.1 75-125

**Matrix Spike Dup (BHA0774-MSD1)**

**Source: 2401334-01**

Prepared: 01/23/24 Analyzed: 01/25/24

Boron 4.69 2.00 mg/L 5.00 ND 93.7 75-125 0.687 25

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Project: Noble - HSR Hoffman 03-24 (FAC)

Project Number: UWRWE-A3150-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
01/29/24 08:08

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

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

**Batch BHA0810 - EPA 3050B**

**Blank (BHA0810-BLK1)**

Prepared: 01/23/24 Analyzed: 01/25/24

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

**LCS (BHA0810-BS1)**

Prepared: 01/23/24 Analyzed: 01/25/24

Arsenic	36.9	0.200	mg/kg wet	40.0	92.2	80-120
Barium	37.5	0.400	"	40.0	93.8	80-120
Cadmium	1.89	0.200	"	2.00	94.7	80-120
Copper	32.4	0.400	"	40.0	80.9	80-120
Lead	22.9	0.200	"	20.0	114	80-120
Nickel	32.1	0.400	"	40.0	80.3	80-120
Silver	1.91	0.0200	"	2.00	95.7	80-120
Zinc	32.4	0.400	"	40.0	80.9	80-120
Selenium	4.39	0.260	"	4.00	110	80-120

**Duplicate (BHA0810-DUP1)**

Source: 2401273-01

Prepared: 01/23/24 Analyzed: 01/25/24

Arsenic	2.30	0.200	mg/kg dry	2.42	4.92	20
Barium	43.9	0.400	"	53.1	18.9	20
Cadmium	0.177	0.200	"	0.207	15.6	20
Copper	5.34	0.400	"	5.73	7.03	20
Lead	6.30	0.200	"	7.30	14.7	20
Nickel	4.86	0.400	"	5.33	9.24	20
Silver	0.0283	0.0200	"	0.0365	25.2	20 QR-01
Zinc	16.1	0.400	"	17.9	10.6	20
Selenium	0.464	0.260	"	0.371	22.3	20 QR-01

Summit Scientific

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6855 W. 119th Ave.  
Broomfield CO, 80020

Project: Noble - HSR Hoffman 03-24 (FAC)  
Project Number: UWRWE-A3150-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
01/29/24 08:08

**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 BHA0810 - EPA 3050B**

**Matrix Spike (BHA0810-MS1)**

Source: 2401273-01

Prepared: 01/23/24 Analyzed: 01/25/24

Arsenic	29.9	0.200	mg/kg dry	54.4	2.42	50.5	75-125				QM-07
Barium	63.2	0.400	"	54.4	53.1	18.5	75-125				QM-07
Cadmium	1.63	0.200	"	2.72	0.207	52.4	75-125				QM-07
Copper	27.8	0.400	"	54.4	5.73	40.5	75-125				QM-07
Lead	19.4	0.200	"	27.2	7.30	44.6	75-125				QM-07
Nickel	28.2	0.400	"	54.4	5.33	42.0	75-125				QM-07
Silver	1.43	0.0200	"	2.72	0.0365	51.3	75-125				QM-07
Zinc	39.5	0.400	"	54.4	17.9	39.6	75-125				QM-07
Selenium	3.25	0.260	"	5.44	0.371	52.9	75-125				QM-07

**Matrix Spike Dup (BHA0810-MSD1)**

Source: 2401273-01

Prepared: 01/23/24 Analyzed: 01/25/24

Arsenic	30.7	0.200	mg/kg dry	54.4	2.42	52.0	75-125	2.71	25		QM-07
Barium	64.8	0.400	"	54.4	53.1	21.5	75-125	2.58	25		QM-07
Cadmium	1.68	0.200	"	2.72	0.207	54.0	75-125	2.70	25		QM-07
Copper	27.8	0.400	"	54.4	5.73	40.5	75-125	0.0314	25		QM-07
Lead	19.9	0.200	"	27.2	7.30	46.3	75-125	2.35	25		QM-07
Nickel	28.0	0.400	"	54.4	5.33	41.7	75-125	0.495	25		QM-07
Silver	1.48	0.0200	"	2.72	0.0365	53.1	75-125	3.32	25		QM-07
Zinc	39.1	0.400	"	54.4	17.9	38.9	75-125	0.977	25		QM-07
Selenium	3.41	0.260	"	5.44	0.371	55.8	75-125	4.72	25		QM-07

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

Project: Noble - HSR Hoffman 03-24 (FAC)

Project Number: UWRWE-A3150-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
01/29/24 08:08

**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 BHA0749 - 3060A Mod**

**Blank (BHA0749-BLK1)**

Prepared & Analyzed: 01/22/24

Chromium, Hexavalent      ND      0.30    mg/kg wet

**LCS (BHA0749-BS1)**

Prepared & Analyzed: 01/22/24

Chromium, Hexavalent      23.6      0.30    mg/kg wet      25.0      94.6      80-120

**Duplicate (BHA0749-DUP1)**

**Source: 2401274-01**

Prepared & Analyzed: 01/22/24

Chromium, Hexavalent      ND      0.30    mg/kg dry      ND      ND      20

**Matrix Spike (BHA0749-MS1)**

**Source: 2401274-01**

Prepared & Analyzed: 01/22/24

Chromium, Hexavalent      25.4      0.30    mg/kg dry      29.8      ND      85.4      75-125

**Matrix Spike Dup (BHA0749-MSD1)**

**Source: 2401274-01**

Prepared & Analyzed: 01/22/24

Chromium, Hexavalent      25.5      0.30    mg/kg dry      29.8      ND      85.6      75-125      0.234      20

Summit Scientific

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6855 W. 119th Ave.  
Broomfield CO, 80020

Project: Noble - HSR Hoffman 03-24 (FAC)

Project Number: UWRWE-A3150-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
01/29/24 08:08

**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 BHA0781 - General Preparation**

**Blank (BHA0781-BLK1)**

Prepared: 01/23/24 Analyzed: 01/25/24

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

**LCS (BHA0781-BS1)**

Prepared: 01/23/24 Analyzed: 01/25/24

Calcium	6.11	0.0500	mg/L wet	5.00	122	70-130
Magnesium	5.23	0.0500	"	5.00	105	70-130
Sodium	5.09	0.0500	"	5.00	102	70-130

Summit Scientific

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 Broomfield CO, 80020

Project: Noble - HSR Hoffman 03-24 (FAC)

Project Number: UWRWE-A3150-ABN  
 Project Manager: Jacob Whritenour

**Reported:**  
 01/29/24 08:08

**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 BHA0775 - General Preparation**

**Duplicate (BHA0775-DUP1)**

**Source: 2401326-01**

Prepared & Analyzed: 01/23/24

% Solids	93.3		%		93.3			0.000482	20	
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Summit Scientific

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

Project: Noble - HSR Hoffman 03-24 (FAC)

Project Number: UWRWE-A3150-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
01/29/24 08:08

**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 BHA0832 - General Preparation**

**Blank (BHA0832-BLK1)**

Prepared & Analyzed: 01/24/24

Specific Conductance (EC) ND 0.0100 mmhos/cm

**LCS (BHA0832-BS1)**

Prepared & Analyzed: 01/24/24

Specific Conductance (EC) 0.156 0.0100 mmhos/cm 0.150 104 95-105

**Duplicate (BHA0832-DUP1)**

Source: 2401328-01

Prepared & Analyzed: 01/24/24

Specific Conductance (EC) 0.0362 0.0100 mmhos/cm 0.0367 1.37 20

Summit Scientific

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

Project: Noble - HSR Hoffman 03-24 (FAC)

Project Number: UWRWE-A3150-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
01/29/24 08:08

**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 BHA0831 - General Preparation**

**LCS (BHA0831-BS1)**

Prepared & Analyzed: 01/24/24

pH	9.27	pH Units	9.18	101	95-105
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**Duplicate (BHA0831-DUP1)**

Source: 2401328-01

Prepared & Analyzed: 01/24/24

pH	6.85	pH Units	7.06	3.02	20
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Summit Scientific

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

Project: Noble - HSR Hoffman 03-24 (FAC)

Project Number: UWRWE-A3150-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
01/29/24 08:08

### Notes and Definitions

- QR-02 The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data.
- QR-01 Analyses are not controlled on RPD values from sample concentrations less than 10 times the reporting limit. QC batch accepted based on LCS and/or LCSD QC results.
- QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS/LCSD recovery.
- E The concentration indicated for this analyte is an estimated value above the calibration range of the instrument.
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference