

Flowline Closure Checklist

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

Additional Attachments:		Tank Battery Closure		Wellhead Closure		Pit Closure		Partially Buried Vault Closure
Site Name & COGCC Facility Number: Roth 12-30		Date: 2/16/2023						Remediation Project #: 22292
Associated Wells:		Age of Site:						Number of Photos Attached: 1
Starting point: (GPS coordinates and descriptions) 40.455048, -104.599908								
End point: (GPS coordinates and descriptions) 40.455214, -104.600165								
USCS Soil Type: Poorly Graded Sand - SP					Estimated Depth to Groundwater: >4'			
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/Water/Gas							
Depth	4'							
Age								
Length	90'							
Construction Material	Steel							
Were flowlines pulled?	Yes							
Visual Integrity of lines	Good							
Visual impacts if trenched	NA							
PID Readings if trenched	NA							
Sample taken? Location/Sample ID#	Yes, see below							
Photo Number(s)	1							
Other observations regarding on location flowlines: Flowline sampled along flowline path starting at wellhead (FL01-A@4')								
Summary								
Was impacted soil identified? No Yes - less than 10 cubic yards Yes - more than 10 cubic yards								
Total number of samples field screened: 1					Total number of samples collected: 1			
Highest PID Reading: 0.0					Total number of samples submitted to lab for analysis: 1			
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? No Yes - not impacted or in contact with impacted soils Yes - groundwater impacted and/or in contact with impacted soils								
Measured depth to groundwater:					Was remedial groundwater removal conducted? Yes No			
Date Groundwater was encountered:					Commencement date of removal:			
Sheen on groundwater? Yes No					Volume of groundwater removed prior to sampling:			
Free product observed? Yes No					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


											
						Equipment ID: FL01-A@4'		Equipment Type: Flowline			
						Material: Steel	Volume:	Contents: Oil/Gas/Water	Equipment ID:	Equipment Type:	
						Notes/Conditions:			Notes/Conditions:		

TABLE 1
SOIL SAMPLE LOCATIONS
NOBLE ENERGY, INC. - ROTH 12-30

Soil Sample ID	Date	PID (ppm)	Visual	Olfactory	Sample Type (Grab/Lab)	Latitude ¹	Longitude	PDOP
FL01-A@4'	02/16/23	0.0	No Staining	No Odor	Lab	40.45504633	-104.5999343	1.0

Notes:

PID = Photo-ionization 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. - ROTH 12-30

Soil Sample ID	Date	¹ 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 ²		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 ^{2,3}		0.0026	0.69	0.78	9.9	0.0081	0.0087	0.0038	500			0.55	6	0.011	0.24	0.3	2.9	9	0.096	8.9	0.54	0.98	1.3	0.006	0.019
FL01-A@4'	02/16/23	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	<50	<50	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	

Soil Sample ID	Date	pH	SAR	EC (mmhos/cm)	Boron (mg/L)
Residential SSL ²		6 - 8.3	<6	<4mmhos/cm	2
FL01-A@4'	02/16/23	7.77	0.385	0.256	0.0913

Notes:

1. Compounds referenced from 2 CCR 404-1, Table 915-1, effective January 15, 2021.

2. Soil Screening Levels (SSL) referenced from EPA Regional Screening Levels (EPA RSLs) for Chemical Contaminants at Superfund Sites, effective November 2020.

3. SSLs are applicable if a pathway for communication with groundwater is present.

Definitions:

COGCC = Colorado Oil and Gas Conservation Commission

TPH-GRO = Total petroleum hydrocarbons - gasoline range organics

TPH-DRO = Total petroleum hydrocarbons - diesel range organics

TPH-ORO = Total petroleum hydrocarbons - oil range organics

mg/kg = Milligrams per kilogram

SAR = Sodium Adsorption Ratio

EC = Electrical Conductivity

mmhos/cm = Millmhos per centimeter

mg/L = Milligrams per liter

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

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

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

Benz(a) = Benzanthracene

Benzo(b) = Benzofluoranthene

Benzo(k) = Benzofluoranthene

Benzo(a) = Benzopyrene

A,H = Dibenzoanthracene

1,2,3-CD = Indenopyrene

1-M = 1-methylnaphthalene

2-M = 2-methylnaphthalene

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



Legend

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


Notes

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

GPS – Global Positioning System
mg/kg – Milligrams per kilogram
PID – Photo-ionization Detector
ppm – Parts per million

0 ft.20 ft.40 ft.

Image Source: Google Earth; Google 2020

DATE: 03/24/2023	<div><div>TASMAN GEOSCIENCES</div><div>Tasman Geosciences, Inc. 6855 W 119th Avenue Broomfield, CO 80020</div></div>	<div>Noble Energy, Inc. – DJ Basin Roth 12-30 NWSW, Section 30, Township 6 North, Range 64 West Weld County, Colorado</div>	<div>Flowline Closure & Soil Analytical Results Map (02/16/2023)</div>	<div>FIGURE 1</div>
DESIGNED BY: JW				
DRAWN BY: HM				

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

February 27, 2023

Jacob Whritenour

Tasman Geosciences

6855 W. 119th Ave.

Broomfield, CO 80020

RE: Noble - Roth 12-30

Work Order #2302336

Enclosed are the results of analyses for samples received by Summit Scientific on 02/16/23 17:55. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "Scott Sheely". The signature is fluid and cursive, with the first name "Scott" and last name "Sheely" clearly distinguishable.

Scott Sheely For Paul Shrewsbury
President



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

Project: Noble - Roth 12-30
Project Number: UWRWE-A1643-ABN
Project Manager: Jacob Whritenour

Reported:
02/27/23 10:47

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FL01-A@4'	2302336-01	Soil	02/16/23 11:52	02/16/23 17:55

Summit Scientific

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

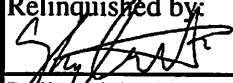
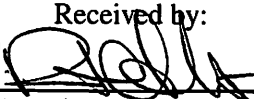
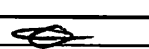
SUMMIT SCIENTIFIC

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

Lab ID	Page <u>1</u> of <u>1</u>
2302336	

Send Data To:		Send Invoice To:
Client: Noble / Tasman	Project Manager: Jake Whritenour	Company: Chevron
Address: 6855 W. 119th Ave	E-Mail: Jwhritenour@tasman-geo.com	Project Name/Location: Both 12-30
City/State/Zip: Broomfield, CO 80020		AFE#:
Phone: 303-261-6246	Project Name: Both 12-30	PO/Billing Codes:
Sampler Name: Stanley Gilbert	Project Number: UW RWE-A1643-ABN	Contact: Jeff White

					Preservative				Matrix				Analysis Requested								Special Instructions
ID	Sample Description	Date Sampled	Time Sampled	# of containers	HCl	HNO3	None	Other _____	Water	Soil	Air-Canister #	Other _____	VOC - 915	TPH - 915	PAH - 915	pH,EC,SAR	Boron - HWS	Metals - 915	HOLD		
1	FLO1-A64'	2/16/23	11:52	2			X			X			X	X	X	X	X				pH, EC, SAR by saturated paste
2																					
3																					
4																					
5																					
6																					
7																					
8																					
9																					
10																					
11																					
12																					
13																					
14																					
15																					

Relinquished by: 	Date/Time: 2/16/23 13:45	Received by:	Date/Time: 2/16/23 13:45	TAT Business Days	Field DO	Notes:
Relinquished by: Tasman Lect Box	Date/Time: 2/16/23 1755	Received by: 	Date/Time: 2/16/23 1755	Same Day	Field EC	
Relinquished by:	Date/Time:	Received by:	Date/Time:	1 Day	Field ORP	
				2 Days	Field pH	
				3 Days	Field Temp.	
				Standard	X Field Turb.	
Temperature Upon Receipt: 8.1	Corrected Temperature: 	IR gun #: 1	HNO3 lot #:			

S₂

Sample Receipt Checklist

S2 Work Order# 2302336Client: Noble/AsmanClient Project ID: Roth 12-30Shipped Via: H.D./P.U./FedEx/UPS/USPS/Other ☐Airbill #:

<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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Matrix (Check all that apply)

Air

☐

Spill/Solid

☐

Water

☐

Other

☐

Temp (°C)

8.1

Thermometer #

1

	Yes	No	N/A	Comments (if any)
If samples require cooling, is the temperature < 6°C? ⁽¹⁾ NOTE: If samples are delivered the same day of sampling, this requirement is met if there is evidence that cooling has begun.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ON ICE
If custody seals are present, are they intact? ⁽¹⁾	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are samples due within 48 hours present?	<input 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 ²⁺), Hexavalent Chromium (Cr ⁶⁺ , Cr VI), COD/BOD, Total Coliform, E. Coli, Total Residual Chlorine (TRC), Dissolved Oxygen	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out Completely? ⁽¹⁾	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client w/ date and time recorded? ⁽¹⁾	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all samples received intact? ⁽¹⁾	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided? ⁽¹⁾	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received? ⁽¹⁾	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC? ⁽¹⁾	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling)? ⁽¹⁾ Note the type of preservative in the comments column – HCl, H ₂ SO ₄ , NaOH, HNO ₃ , etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If samples are acid preserved for metals, is the pH ≤ 2? ⁽¹⁾ Record the pH in Comments.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If dissolved metals are requested, were samples field filtered?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

Additional Comments (if any):

⁽¹⁾ If NO, then contact the client before proceeding with analysis and note in case narrative.
AS
Custodian Printed Name

2/16/23
Date/Time



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

Project: Noble - Roth 12-30
Project Number: UWRWE-A1643-ABN
Project Manager: Jacob Whritenour

Reported:
02/27/23 10:47

FL01-A@4'
2302336-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **02/16/23 11:52**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	BGB0524	02/17/23	02/17/23	EPA 8260B	
Toluene	ND	0.0050		"	"	"	"	"	"	
Ethylbenzene	ND	0.0050		"	"	"	"	"	"	
Xylenes (total)	ND	0.010		"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050		"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050		"	"	"	"	"	"	
Naphthalene	ND	0.0038		"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50		"	"	"	"	"	"	

Date Sampled: **02/16/23 11:52**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	0.0284	71.1 %		50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0331	82.8 %		50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0354	88.4 %		50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **02/16/23 11:52**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	ND	50		mg/kg	1	BGB0525	02/17/23	02/17/23	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **02/16/23 11:52**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl	13.7	110 %		30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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Project: Noble - Roth 12-30
Project Number: UWRWE-A1643-ABN
Project Manager: Jacob Whritenour

Reported:
02/27/23 10:47

FL01-A@4'
2302336-01 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **02/16/23 11:52**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BGB0602	02/20/23	02/21/23	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **02/16/23 11:52**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0258	77.3 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0191	57.3 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **02/16/23 11:52**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.0913	0.0100	mg/L	1	BGB0604	02/20/23	02/21/23	EPA 6020B	

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

Date Sampled: **02/16/23 11:52**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Project: Noble - Roth 12-30
Project Number: UWRWE-A1643-ABN
Project Manager: Jacob Whritenour

Reported:
02/27/23 10:47

FL01-A@4'
2302336-01 (Soil)

Summit Scientific

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

Calcium	29.8	0.0535	mg/L dry	1	BGB0722	02/22/23	02/23/23	EPA 6020B
Magnesium	6.44	0.0535	"	"	"	"	"	"
Sodium	8.88	0.0535	"	"	"	"	"	"

Calculated Analysis

Date Sampled: **02/16/23 11:52**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.385	0.00100	units	1	BGB0794	02/24/23	02/24/23	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **02/16/23 11:52**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	93.4		%	1	BGB0646	02/21/23	02/21/23	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **02/16/23 11:52**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.256	0.0100	mmhos/cm	1	BGB0742	02/23/23	02/23/23	EPA 120.1	

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

Date Sampled: **02/16/23 11:52**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.77		pH Units	1	BGB0743	02/23/23	02/23/23	EPA 9045D	

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Project: Noble - Roth 12-30
Project Number: UWRWE-A1643-ABN
Project Manager: Jacob Whritenour

Reported:
02/27/23 10:47

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch BGB0524 - EPA 5030 Soil MS

Blank (BGB0524-BLK1)

Prepared & Analyzed: 02/17/23

Benzene	ND	0.0020	mg/kg							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
1,2,4-Trimethylbenzene	ND	0.0050	"							
1,3,5-Trimethylbenzene	ND	0.0050	"							
Naphthalene	ND	0.0038	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
Surrogate: 1,2-Dichloroethane-d4	0.0281		"	0.0400		70.4	50-150			
Surrogate: Toluene-d8	0.0331		"	0.0400		82.7	50-150			
Surrogate: 4-Bromofluorobenzene	0.0355		"	0.0400		88.6	50-150			

LCS (BGB0524-BS1)

Prepared & Analyzed: 02/17/23

Benzene	0.0809	0.0020	mg/kg	0.100		80.9	70-130			
Toluene	0.0747	0.0050	"	0.100		74.7	70-130			
Ethylbenzene	0.102	0.0050	"	0.100		102	70-130			
m,p-Xylene	0.196	0.010	"	0.200		97.9	70-130			
o-Xylene	0.0916	0.0050	"	0.100		91.6	70-130			
1,2,4-Trimethylbenzene	0.0821	0.0050	"	0.100		82.1	70-130			
1,3,5-Trimethylbenzene	0.0869	0.0050	"	0.100		86.9	70-130			
Naphthalene	0.0887	0.0038	"	0.100		88.7	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0248		"	0.0400		61.9	50-150			
Surrogate: Toluene-d8	0.0316		"	0.0400		79.0	50-150			
Surrogate: 4-Bromofluorobenzene	0.0354		"	0.0400		88.6	50-150			

Matrix Spike (BGB0524-MS1)

Source: 2302325-01

Prepared & Analyzed: 02/17/23

Benzene	0.0822	0.0020	mg/kg	0.100	ND	82.2	70-130			
Toluene	0.0766	0.0050	"	0.100	ND	76.6	70-130			
Ethylbenzene	0.0996	0.0050	"	0.100	ND	99.6	70-130			
m,p-Xylene	0.194	0.010	"	0.200	ND	97.1	70-130			
o-Xylene	0.0905	0.0050	"	0.100	ND	90.5	70-130			
1,2,4-Trimethylbenzene	0.0816	0.0050	"	0.100	ND	81.6	70-130			
1,3,5-Trimethylbenzene	0.0868	0.0050	"	0.100	ND	86.8	70-130			
Naphthalene	0.0916	0.0038	"	0.100	ND	91.6	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0255		"	0.0400		63.8	50-150			
Surrogate: Toluene-d8	0.0325		"	0.0400		81.2	50-150			
Surrogate: 4-Bromofluorobenzene	0.0338		"	0.0400		84.6	50-150			

Summit Scientific

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

Project: Noble - Roth 12-30
Project Number: UWRWE-A1643-ABN
Project Manager: Jacob Whritenour

Reported:
02/27/23 10:47

Volatile Organic Compounds by EPA Method 8260B - Quality Control
Summit Scientific

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

Batch BGB0524 - EPA 5030 Soil MS

Matrix Spike Dup (BGB0524-MSD1)	Source: 2302325-01			Prepared & Analyzed: 02/17/23						
Benzene	0.0790	0.0020	mg/kg	0.100	ND	79.0	70-130	3.91	30	
Toluene	0.0739	0.0050	"	0.100	ND	73.9	70-130	3.63	30	
Ethylbenzene	0.102	0.0050	"	0.100	ND	102	70-130	1.97	30	
m,p-Xylene	0.199	0.010	"	0.200	ND	99.4	70-130	2.40	30	
o-Xylene	0.0909	0.0050	"	0.100	ND	90.9	70-130	0.397	30	
1,2,4-Trimethylbenzene	0.0827	0.0050	"	0.100	ND	82.7	70-130	1.35	30	
1,3,5-Trimethylbenzene	0.0874	0.0050	"	0.100	ND	87.4	70-130	0.723	30	
Naphthalene	0.0920	0.0038	"	0.100	ND	92.0	70-130	0.490	30	
Surrogate: 1,2-Dichloroethane-d4	0.0237		"	0.0400		59.2	50-150			
Surrogate: Toluene-d8	0.0314		"	0.0400		78.5	50-150			
Surrogate: 4-Bromofluorobenzene	0.0340		"	0.0400		85.1	50-150			

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Broomfield CO, 80020

Project: Noble - Roth 12-30
Project Number: UWRWE-A1643-ABN
Project Manager: Jacob Whritenour

Reported:
02/27/23 10:47

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch BGB0525 - EPA 3550A

Blank (BGB0525-BLK1)

Prepared & Analyzed: 02/17/23

C10-C28 (DRO)	ND	50	mg/kg							
C28-C36 (ORO)	ND	50	"							
Surrogate: <i>o</i> -Terphenyl	15.8		"	12.5		127	30-150			

LCS (BGB0525-BS1)

Prepared & Analyzed: 02/17/23

C10-C28 (DRO)	476	50	mg/kg	500		95.1	70-130			
Surrogate: <i>o</i> -Terphenyl	15.7		"	12.5		126	30-150			

Matrix Spike (BGB0525-MS1)

Source: 2302325-01

Prepared & Analyzed: 02/17/23

C10-C28 (DRO)	473	50	mg/kg	500	12.2	92.1	70-130			
Surrogate: <i>o</i> -Terphenyl	17.8		"	12.5		142	30-150			

Matrix Spike Dup (BGB0525-MSD1)

Source: 2302325-01

Prepared & Analyzed: 02/17/23

C10-C28 (DRO)	427	50	mg/kg	500	12.2	83.0	70-130	10.1	20	
Surrogate: <i>o</i> -Terphenyl	14.2		"	12.5		114	30-150			

Summit Scientific

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Project: Noble - Roth 12-30
Project Number: UWRWE-A1643-ABN
Project Manager: Jacob Whritenour

Reported:
02/27/23 10:47

PAH by EPA Method 8270D SIM - Quality Control

Summit Scientific

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

Batch BGB0602 - EPA 5030 Soil MS

Blank (BGB0602-BLK1)

Prepared: 02/20/23 Analyzed: 02/21/23

Acenaphthene	ND	0.00500	mg/kg							
Anthracene	ND	0.00500	"							
Benzo (a) anthracene	ND	0.00500	"							
Benzo (a) pyrene	ND	0.00500	"							
Benzo (b) fluoranthene	ND	0.00500	"							
Benzo (k) fluoranthene	ND	0.00500	"							
Chrysene	ND	0.00500	"							
Dibenz (a,h) anthracene	ND	0.00500	"							
Fluoranthene	ND	0.00500	"							
Fluorene	ND	0.00500	"							
Indeno (1,2,3-cd) pyrene	ND	0.00500	"							
Pyrene	ND	0.00500	"							
1-Methylnaphthalene	ND	0.00500	"							
2-Methylnaphthalene	ND	0.00500	"							
Surrogate: 2-Methylnaphthalene-d10	0.0366		"	0.0333		110	40-150			
Surrogate: Fluoranthene-d10	0.0287		"	0.0333		86.1	40-150			

LCS (BGB0602-BS1)

Prepared: 02/20/23 Analyzed: 02/21/23

Acenaphthene	0.0375	0.00500	mg/kg	0.0333		112	31-137			
Anthracene	0.0368	0.00500	"	0.0333		110	30-120			
Benzo (a) anthracene	0.0325	0.00500	"	0.0333		97.5	30-120			
Benzo (a) pyrene	0.0359	0.00500	"	0.0333		108	30-120			
Benzo (b) fluoranthene	0.0252	0.00500	"	0.0333		75.5	30-120			
Benzo (k) fluoranthene	0.0365	0.00500	"	0.0333		109	30-120			
Chrysene	0.0327	0.00500	"	0.0333		98.2	30-120			
Dibenz (a,h) anthracene	0.0380	0.00500	"	0.0333		114	30-120			
Fluoranthene	0.0371	0.00500	"	0.0333		111	30-120			
Fluorene	0.0304	0.00500	"	0.0333		91.1	30-120			
Indeno (1,2,3-cd) pyrene	0.0372	0.00500	"	0.0333		111	30-120			
Pyrene	0.0389	0.00500	"	0.0333		117	35-142			
1-Methylnaphthalene	0.0302	0.00500	"	0.0333		90.7	35-142			
2-Methylnaphthalene	0.0321	0.00500	"	0.0333		96.4	35-142			
Surrogate: 2-Methylnaphthalene-d10	0.0326		"	0.0333		97.8	40-150			
Surrogate: Fluoranthene-d10	0.0341		"	0.0333		102	40-150			

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Project: Noble - Roth 12-30
Project Number: UWRWE-A1643-ABN
Project Manager: Jacob Whritenour

Reported:
02/27/23 10:47

PAH by EPA Method 8270D SIM - Quality Control

Summit Scientific

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

Batch BGB0602 - EPA 5030 Soil MS

Matrix Spike (BGB0602-MS1)			Source: 2302309-01		Prepared: 02/20/23 Analyzed: 02/21/23	
Acenaphthene	0.0238	0.00500	mg/kg	0.0333	ND	71.5 31-137
Anthracene	0.0191	0.00500	"	0.0333	ND	57.3 30-120
Benzo (a) anthracene	0.0169	0.00500	"	0.0333	ND	50.8 30-120
Benzo (a) pyrene	0.0197	0.00500	"	0.0333	ND	59.2 30-120
Benzo (b) fluoranthene	0.0166	0.00500	"	0.0333	ND	49.9 30-120
Benzo (k) fluoranthene	0.0167	0.00500	"	0.0333	ND	50.2 30-120
Chrysene	0.0202	0.00500	"	0.0333	ND	60.7 30-120
Dibenz (a,h) anthracene	0.0167	0.00500	"	0.0333	ND	50.1 30-120
Fluoranthene	0.0209	0.00500	"	0.0333	ND	62.6 30-120
Fluorene	0.0156	0.00500	"	0.0333	ND	46.7 30-120
Indeno (1,2,3-cd) pyrene	0.0139	0.00500	"	0.0333	ND	41.7 30-120
Pyrene	0.0223	0.00500	"	0.0333	ND	66.8 35-142
1-Methylnaphthalene	0.0182	0.00500	"	0.0333	ND	54.7 15-130
2-Methylnaphthalene	0.0213	0.00500	"	0.0333	ND	64.0 15-130
Surrogate: 2-Methylnaphthalene-d10	0.0171	"		0.0333		51.2 40-150
Surrogate: Fluoranthene-d10	0.0184	"		0.0333		55.3 40-150

Matrix Spike Dup (BGB0602-MSD1)			Source: 2302309-01		Prepared: 02/20/23 Analyzed: 02/21/23	
Acenaphthene	0.0215	0.00500	mg/kg	0.0333	ND	64.5 31-137 10.3 30
Anthracene	0.0193	0.00500	"	0.0333	ND	57.9 30-120 1.00 30
Benzo (a) anthracene	0.0168	0.00500	"	0.0333	ND	50.5 30-120 0.468 30
Benzo (a) pyrene	0.0211	0.00500	"	0.0333	ND	63.3 30-120 6.69 30
Benzo (b) fluoranthene	0.0165	0.00500	"	0.0333	ND	49.6 30-120 0.488 30
Benzo (k) fluoranthene	0.0172	0.00500	"	0.0333	ND	51.5 30-120 2.64 30
Chrysene	0.0216	0.00500	"	0.0333	ND	64.9 30-120 6.76 30
Dibenz (a,h) anthracene	0.0169	0.00500	"	0.0333	ND	50.6 30-120 0.911 30
Fluoranthene	0.0229	0.00500	"	0.0333	ND	68.6 30-120 9.20 30
Fluorene	0.0147	0.00500	"	0.0333	ND	44.0 30-120 5.94 30
Indeno (1,2,3-cd) pyrene	0.0153	0.00500	"	0.0333	ND	45.8 30-120 9.56 30
Pyrene	0.0231	0.00500	"	0.0333	ND	69.2 35-142 3.45 30
1-Methylnaphthalene	0.0165	0.00500	"	0.0333	ND	49.6 15-130 9.76 50
2-Methylnaphthalene	0.0188	0.00500	"	0.0333	ND	56.3 15-130 12.9 50
Surrogate: 2-Methylnaphthalene-d10	0.0160	"		0.0333		48.0 40-150
Surrogate: Fluoranthene-d10	0.0195	"		0.0333		58.4 40-150

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

Project: Noble - Roth 12-30
Project Number: UWRWE-A1643-ABN
Project Manager: Jacob Whritenour

Reported:
02/27/23 10:47

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

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

Batch BGB0604 - EPA 3050B

Blank (BGB0604-BLK1)

Prepared: 02/20/23 Analyzed: 02/21/23

Boron ND 0.0100 mg/L

LCS (BGB0604-BS1)

Prepared: 02/20/23 Analyzed: 02/21/23

Boron 4.73 0.0100 mg/L 5.00 94.7 80-120

Duplicate (BGB0604-DUP1)

Source: 2302335-01

Prepared: 02/20/23 Analyzed: 02/21/23

Boron 0.0790 0.0100 mg/L 0.0813 2.89 20

Matrix Spike (BGB0604-MS1)

Source: 2302335-01

Prepared: 02/20/23 Analyzed: 02/21/23

Boron 4.60 0.0100 mg/L 5.00 0.0813 90.5 75-125

Matrix Spike Dup (BGB0604-MSD1)

Source: 2302335-01

Prepared: 02/20/23 Analyzed: 02/21/23

Boron 4.57 0.0100 mg/L 5.00 0.0813 89.8 75-125 0.741 25

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Broomfield CO, 80020

Project: Noble - Roth 12-30
Project Number: UWRWE-A1643-ABN
Project Manager: Jacob Whritenour

Reported:
02/27/23 10:47

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

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

Batch BGB0722 - General Preparation

Blank (BGB0722-BLK1)

Prepared: 02/22/23 Analyzed: 02/23/23

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

LCS (BGB0722-BS1)

Prepared: 02/22/23 Analyzed: 02/23/23

Calcium	4.62	0.0500	mg/L wet	5.00	92.3	70-130
Magnesium	4.88	0.0500	"	5.00	97.5	70-130
Sodium	4.99	0.0500	"	5.00	99.7	70-130

Summit Scientific

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Broomfield CO, 80020

Project: Noble - Roth 12-30

Project Number: UWRWE-A1643-ABN

Project Manager: Jacob Whritenour

Reported:
02/27/23 10:47

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

Summit Scientific

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

Batch BGB0646 - General Preparation

Duplicate (BGB0646-DUP1)		Source: 2302325-01			Prepared & Analyzed: 02/21/23					
% Solids	96.6		%		96.7		0.132		20	

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6855 W. 119th Ave.
Broomfield CO, 80020

Project: Noble - Roth 12-30
Project Number: UWRWE-A1643-ABN
Project Manager: Jacob Whritenour

Reported:
02/27/23 10:47

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

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

Batch BGB0742 - General Preparation

Blank (BGB0742-BLK1)

Prepared & Analyzed: 02/23/23

Specific Conductance (EC) ND 0.0100 mmhos/cm

LCS (BGB0742-BS1)

Prepared & Analyzed: 02/23/23

Specific Conductance (EC) 0.144 0.0100 mmhos/cm 0.150 96.2 95-105

Duplicate (BGB0742-DUP1)

Source: 2302325-01

Prepared & Analyzed: 02/23/23

Specific Conductance (EC) 0.240 0.0100 mmhos/cm 0.244 1.44 20

Summit Scientific

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

Project: Noble - Roth 12-30

Project Number: UWRWE-A1643-ABN

Project Manager: Jacob Whritenour

Reported:
02/27/23 10:47

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

Summit Scientific

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

Batch BGB0743 - General Preparation

LCS (BGB0743-BS1)

Prepared & Analyzed: 02/23/23

pH	9.11	pH Units	9.18	99.2	95-105
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Duplicate (BGB0743-DUP1)

Source: 2302325-01

Prepared & Analyzed: 02/23/23

pH	7.86	pH Units	7.94	1.01	20
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Tasman Geosciences
6855 W. 119th Ave.
Broomfield CO, 80020

Project: Noble - Roth 12-30
Project Number: UWRWE-A1643-ABN
Project Manager: Jacob Whritenour

Reported:
02/27/23 10:47

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference