

SITE ASSESSMENT REPORT
HIGHLAND 12-20 FACILITY
ECMC SPILL TRACKING # 483859
ECMC REMEDIATION # 24052

Prepared for:



2115 117th Avenue
Greeley, CO 80631

Prepared by:



6855 W. 119th Ave
Broomfield, CO 80020

TABLES

TABLE 1
SOIL ANALYTICAL DATA
NOBLE ENERGY, INC. - HIGHLAND 12-20 FACILITY

[illegible]

TABLE 1
SOIL ANALYTICAL DATA
NOBLE ENERGY, INC. - HIGHLAND 12-20 FACILITY

Soil Sample ID	Date	pH	SAR	EC (mmhos/cm)	Boron (mg/L)
SSR ^{1,2}		6 - 8.3	<6	<4mmhos/cm	2
SS01@2.5'	02/02/23	8.43	0.177	0.457	<1.00
SS02@2.5'	02/02/23	8.39	0.117	0.189	<0.0996
SS03@2.5'	02/02/23	8.39	0.190	0.488	<0.981
SS04@2.5'	02/02/23	8.43	0.146	0.350	0.106
FS01@5.5'	02/02/23	8.50	0.676	0.481	<0.995
AST01@0.5'	02/02/23	8.34	0.143	1.15	0.128
SEP01-FL@3.5'	02/02/23	8.45	0.538	0.290	<0.0998
SEP01-DL@3.5'	02/02/23	8.45	1.32	0.452	0.186
BG01@2.5'	02/02/23	8.09	5.10	4.14	0.529
BG01@5'	02/02/23	8.33	8.40	2.28	0.240
BG01@5.5'	05/01/23	7.94	3.69	NA	NA
BG01@8-9'	05/01/23	8.26	8.25	NA	NA
BG02@5.5'	05/01/23	8.02	7.89	NA	NA
BG02@8-9'	05/01/23	8.25	8.23	NA	NA
BG03@5.5'	05/01/23	7.98	2.77	NA	NA
BG03@8-9'	05/01/23	8.17	7.78	NA	NA
BG04@5.5'	05/01/23	8.39	8.64	NA	NA
BG04@8-9'	05/01/23	8.25	8.50	NA	NA
BG05@5.5'	05/01/23	8.10	8.28	NA	NA
BG05@8-9'	05/01/23	8.19	7.79	NA	NA
BH01@0.5'	05/01/23	7.90	0.450	0.386	0.315
BH01@5.5'	05/01/23	8.03	0.403	0.392	0.360
BH01@8-9'	05/01/23	7.93	0.374	0.442	0.403
BH01@17-18'	05/01/23	8.19	7.48	2.32	0.391
BH02@0.5'	05/01/23	7.69	0.367	0.285	0.367
BH02@5.5'	05/01/23	8.30	0.842	0.440	0.945
BH02@8-9'	05/01/23	8.64	3.55	0.727	0.478
BH02@17-18'	05/01/23	8.41	7.21	1.66	0.220
BH03@0.5'	05/01/23	7.89	0.988	0.457	0.274
BH03@5.5'	05/01/23	7.87	0.447	1.41	0.871
BH03@8-9'	05/01/23	8.60	2.42	0.444	0.315
BH03@17-18'	05/01/23	8.37	6.78	1.56	0.352
BH04@0.5'	05/01/23	8.18	1.04	0.344	0.459
BH04@5.5'	05/01/23	7.93	0.696	1.60	0.392
BH04@8-9'	05/01/23	7.74	3.43	0.908	0.413
BH04@17-18'	05/01/23	8.30	6.24	1.87	0.362
BH05@0.5'	05/01/23	7.98	1.12	0.635	0.415
BH05@5.5'	05/01/23	8.15	0.840	0.332	0.277
BH05@8-9'	05/01/23	7.63	0.588	0.913	0.401
BH05@17-18'	05/01/23	8.30	7.22	1.76	0.388
BH06@0.5'	05/01/23	8.01	1.02	0.826	0.250
BH06@5.5'	05/01/23	8.08	3.48	1.56	0.544
BH06@8-9'	05/01/23	7.84	3.15	2.04	0.340
BH06@17-18'	05/01/23	8.14	6.47	2.54	0.250
BH07@0.5'	11/13/23	7.64	6.50	5.32	<2.00
BH07@5.5'	11/13/23	7.89	1.63	1.75	<2.00
BH07@8.9'	11/13/23	7.47	4.71	1.07	<2.00
BH07@17-18'	11/13/23	8.32	4.37	0.993	<2.00
Highest Background		8.39	8.64	-	-

Notes:

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

Soil Sample ID	Date	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 ^{1,2}		0.68	15,000	71	0.3	3,100	400	1,500	390	390	23,000
Protection of Groundwater SSL ^{1,2,3}		0.29	82	0.38	0.00067	46	14	26	0.26	0.8	370
AST01@0.5'	02/02/23	3.09	74.3	0.104	<0.502	<9.69	<9.69	<9.69	<0.0969	<0.0969	<96.9
BG01@5.5'	05/01/23	2.67	68.4	NA	NA	NA	NA	NA	NA	NA	NA
BG01@8-9'	05/01/23	4.69	64.3	NA	NA	NA	NA	NA	NA	NA	NA
BG02@5.5'	05/01/23	3.53	90.7	NA	NA	NA	NA	NA	NA	NA	NA
BG02@8-9'	05/01/23	3.54	90.3	NA	NA	NA	NA	NA	NA	NA	NA
BG03@5.5'	05/01/23	3.31	96.4	NA	NA	NA	NA	NA	NA	NA	NA
BG03@8-9'	05/01/23	4.84	98.9	NA	NA	NA	NA	NA	NA	NA	NA
BG04@5.5'	05/01/23	2.21	48.9	NA	NA	NA	NA	NA	NA	NA	NA
BG04@8-9'	05/01/23	4.14	56.7	NA	NA	NA	NA	NA	NA	NA	NA
BG05@5.5'	05/01/23	6.61	133	NA	NA	NA	NA	NA	NA	NA	NA
BG05@8-9'	05/01/23	5.30	98.7	NA	NA	NA	NA	NA	NA	NA	NA
BH01@0.5'	05/01/23	3.32	83.2	NA	NA	NA	NA	NA	NA	NA	NA
BH01@5.5'	05/01/23	3.21	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH01@8-9'	05/01/23	4.63	118	<0.221	NA	2.03	3.19	2.81	<0.194	<0.0221	8.21
BH01@17-18'	05/01/23	2.83	44.3	NA	NA	NA	NA	NA	NA	NA	NA
BH02@0.5'	05/01/23	2.81	58.4	NA	NA	NA	NA	NA	NA	NA	NA
BH02@5.5'	05/01/23	5.25	115	NA	NA	NA	NA	NA	NA	NA	NA
BH02@8-9'	05/01/23	3.70	212	NA	NA	NA	NA	NA	NA	NA	NA
BH02@17-18'	05/01/23	3.82	138	NA	NA	NA	NA	NA	NA	NA	NA
BH03@0.5'	05/01/23	3.00	84.5	NA	NA	NA	NA	NA	NA	NA	NA
BH03@5.5'	05/01/23	4.67	131	NA	NA	NA	NA	NA	NA	NA	NA
BH03@8-9'	05/01/23	4.21	117	NA	NA	NA	NA	NA	NA	NA	NA
BH03@17-18'	05/01/23	4.52	41.4	NA	NA	NA	NA	NA	NA	NA	NA
BH04@0.5'	05/01/23	3.68	191	NA	NA	NA	NA	NA	NA	NA	NA
BH04@5.5'	05/01/23	3.24	96.6	NA	NA	NA	NA	NA	NA	NA	NA
BH04@8-9'	05/01/23	4.69	69.4	NA	NA	NA	NA	NA	NA	NA	NA
BH04@17-18'	05/01/23	3.15	91.4	NA	NA	NA	NA	NA	NA	NA	NA
BH05@0.5'	05/01/23	2.60	73.6	NA	NA	NA	NA	NA	NA	NA	NA
BH05@5.5'	05/01/23	3.86	96.9	NA	NA	NA	NA	NA	NA	NA	NA
BH05@8-9'	05/01/23	3.99	221	NA	NA	NA	NA	NA	NA	NA	NA
BH05@17-18'	05/01/23	3.58	47.1	NA	NA	NA	NA	NA	NA	NA	NA
BH06@0.5'	05/01/23	2.86	80.2	NA	NA	NA	NA	NA	NA	NA	NA
BH06@5.5'	05/01/23	6.29	104	NA	NA	NA	NA	NA	NA	NA	NA
BH06@8-9'	05/01/23	1.37	63.1	NA	NA	NA	NA	NA	NA	NA	NA
BH06@17-18'	05/01/23	2.74	82.7	NA	NA	NA	NA	NA	NA	NA	NA
BH07@0.5'	11/13/23	1.10	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH07@5.5'	11/13/23	1.22	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH07@8.9'	11/13/23	0.900	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH07@17-18'	11/13/23	0.929	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mean Background Concentration		4.08	84.63	-	-	-	-	-	-	-	-
Mean Background x1.25		5.11	105.79	-	-	-	-	-	-	-	-
Highest Background		6.61	133	-	-	-	-	-	-	-	-
Highest Background x1.25		8.26	166.25	-	-	-	-	-	-	-	-

Definitions:

COGCC = Colorado Oil and Gas Conservation Commission

TPH-GRO = Total petroleum hydrocarbons - gasoline range organics

TPH-DRO = Total petroleum hydrocarbons - diesel range organics

TPH-ORO = Total petroleum hydrocarbons - oil range organics

mg/kg = Milligrams per kilogram

SAR = Sodium Adsorption Ratio

EC = Electrical Conductivity

mmhos/cm = Millimhos per centimeter

mg/L = Milligrams per liter

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

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

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

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

Benz(a) = Benzanthracene

Benzo(b) = Benzofluoranthene

Benzo(k) = Benzofluoranthene

Benzo(a) = Benzopyrene

A,H = Dibenzoanthracene

1,2,3-CD = Indenopyrene

1-M = 1-methylnaphthalene

2-M = 2-methylnaphthalene

NA = Not analyzed

FIGURES

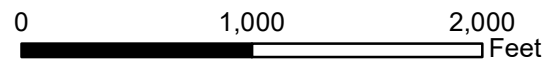
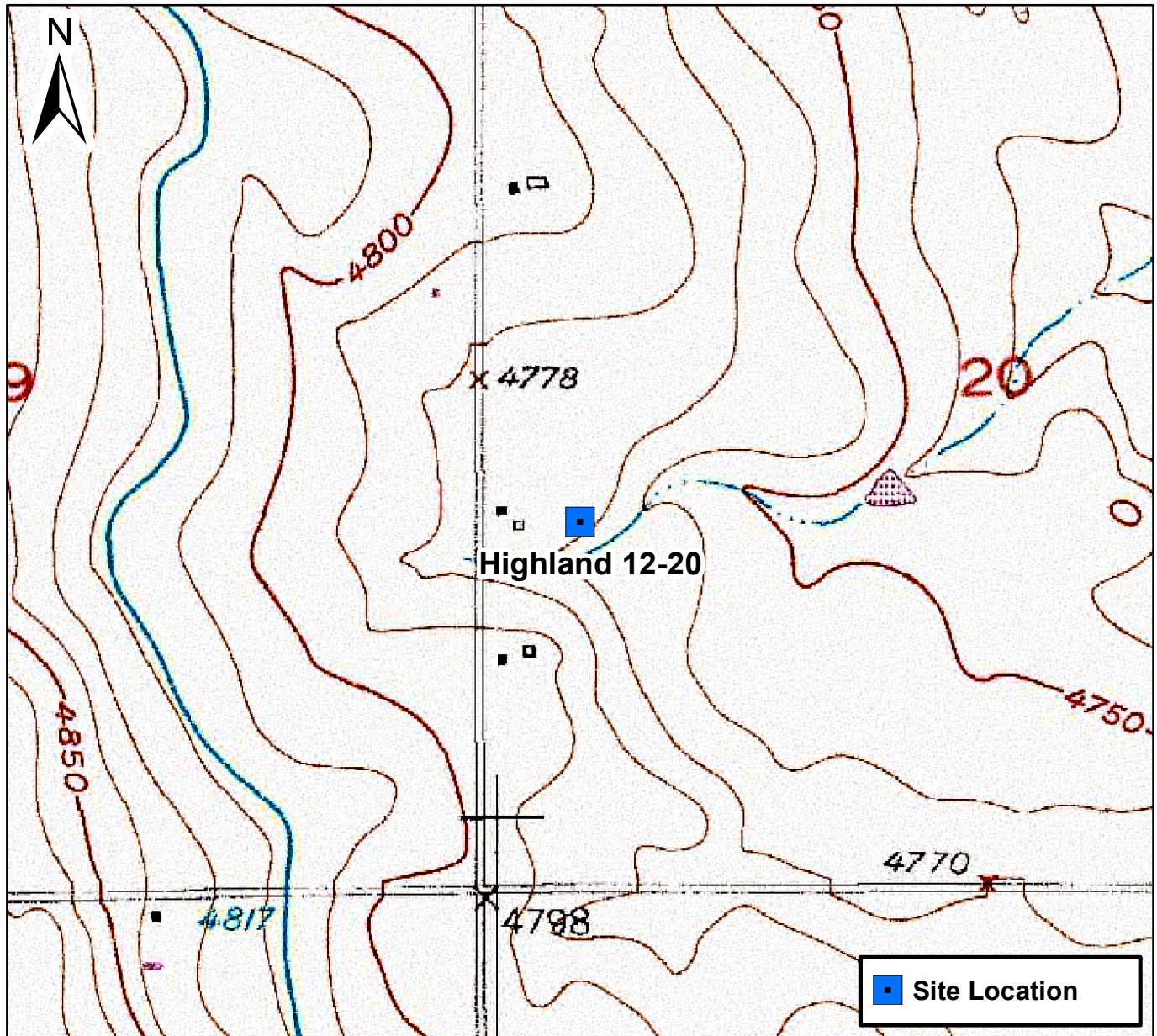



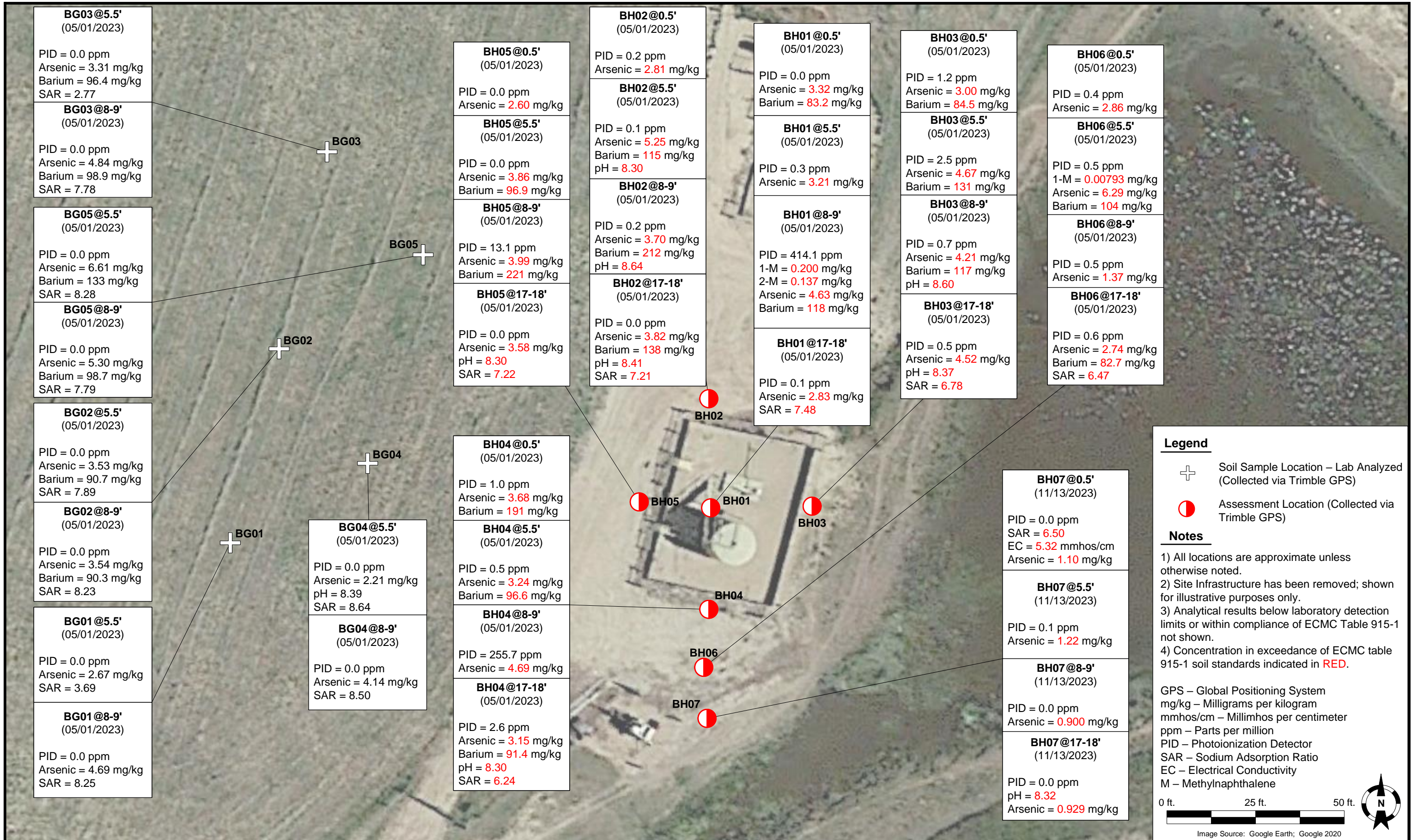
Figure 1

Site Location Map
 Highland 12-20 Facility
 NWSW S20 T4N R64W
 Weld County, Colorado






DATE:	2/10/2023	 TASMAN Tasman, Inc. 6855 W 119 th Avenue Broomfield, CO 80020	Noble Energy, Inc. – DJ Basin Highland 12-20 Facility NWSW, Section 20, Township 4 North, Range 64 West Weld County, Colorado	Decommissioning & Soil Analytical Results Map (02/02/2023)	FIGURE 2
DESIGNED BY:	JW				
DRAWN BY:	HM				





DATE:	07/11/2024	<div><div>Tasman, Inc. 6855 W 119th Avenue Broomfield, CO 80020</div></div>	Noble Energy, Inc. – DJ Basin Highland 12-20 Facility NWSW, Section 20, Township 4 North, Range 64 West Weld County, Colorado	Proposed Soil Boring Location	FIGURE 4
DESIGNED BY:	ES				
DRAWN BY:	ES				

ATTACHMENT A
LABORATORY SOIL ANALYTICAL DATA REPORTS

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

November 03, 2023

Jacob Whritenour

Tasman Geosciences

6855 W. 119th Ave.

Broomfield, CO 80020

RE: Noble - Highland 12-20

Work Order #2305020

Enclosed are the results of analyses for samples received by Summit Scientific on 05/01/23 18:10. 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 - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BG01@5.5'	2305020-01	Soil	05/01/23 16:00	05/01/23 18:10
BG01@8-9'	2305020-02	Soil	05/01/23 16:02	05/01/23 18:10
BG02@5.5'	2305020-03	Soil	05/01/23 16:04	05/01/23 18:10
BG02@8-9'	2305020-04	Soil	05/01/23 16:06	05/01/23 18:10
BG03@5.5'	2305020-05	Soil	05/01/23 16:08	05/01/23 18:10
BG03@8-9'	2305020-06	Soil	05/01/23 16:10	05/01/23 18:10
BG04@5.5'	2305020-07	Soil	05/01/23 16:12	05/01/23 18:10
BG04@8-9'	2305020-08	Soil	05/01/23 16:14	05/01/23 18:10
BG05@5.5'	2305020-09	Soil	05/01/23 16:16	05/01/23 18:10
BG05@8-9'	2305020-10	Soil	05/01/23 16:18	05/01/23 18:10
BH01@0.5'	2305020-11	Soil	05/01/23 09:51	05/01/23 18:10
BH01@5.5'	2305020-12	Soil	05/01/23 10:15	05/01/23 18:10
BH01@8-9'	2305020-13	Soil	05/01/23 10:20	05/01/23 18:10
BH01@17-18'	2305020-14	Soil	05/01/23 10:25	05/01/23 18:10
BH02@0.5'	2305020-15	Soil	05/01/23 12:30	05/01/23 18:10
BH02@5.5'	2305020-16	Soil	05/01/23 12:45	05/01/23 18:10
BH02@8-9'	2305020-17	Soil	05/01/23 13:30	05/01/23 18:10
BH02@17-18'	2305020-18	Soil	05/01/23 14:00	05/01/23 18:10
BH03@0.5'	2305020-19	Soil	05/01/23 11:20	05/01/23 18:10
BH03@5.5'	2305020-20	Soil	05/01/23 11:30	05/01/23 18:10
BH03@8-9'	2305020-21	Soil	05/01/23 11:40	05/01/23 18:10
BH03@17-18'	2305020-22	Soil	05/01/23 11:57	05/01/23 18:10
BH04@0.5'	2305020-23	Soil	05/01/23 10:35	05/01/23 18:10
BH04@5.5'	2305020-24	Soil	05/01/23 11:00	05/01/23 18:10
BH04@8-9'	2305020-25	Soil	05/01/23 11:10	05/01/23 18:10
BH04@17-18'	2305020-26	Soil	05/01/23 11:15	05/01/23 18:10
BH05@0.5'	2305020-27	Soil	05/01/23 14:10	05/01/23 18:10

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 - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH05@5.5'	2305020-28	Soil	05/01/23 14:20	05/01/23 18:10
BH05@8-9'	2305020-29	Soil	05/01/23 14:30	05/01/23 18:10
BH05@17-18'	2305020-30	Soil	05/01/23 14:40	05/01/23 18:10
BH06@0.5'	2305020-31	Soil	05/01/23 14:45	05/01/23 18:10
BH06@5.5'	2305020-32	Soil	05/01/23 14:50	05/01/23 18:10
BH06@8-9'	2305020-33	Soil	05/01/23 15:00	05/01/23 18:10
BH06@17-18'	2305020-34	Soil	05/01/23 15:30	05/01/23 18:10

Case Narrative

Jonathan Ball requested SAR be added to samples BG01 through BG05 (10 samples total) on 5/31.
Jonathan Ball requested all metals be added to sample BH01@8-9' on 5/31.

Allan Engelhardt added Barium to all samples on 10/31/2023.

This report has those results.

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.

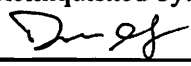

SUMMIT SCIENTIFIC

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

Lab ID	Page 1 of 3
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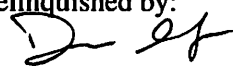


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Client: Noble/Tasman		Project Manager: Jake Whritenour	Company: Chevron
Address: 6855 W. 119th Ave.		E-Mail: Jwhritenour@tasman-geo.com	Project Name/Location:
City/State/Zip: Broomfield/CO/ 80020			AFE#:
Phone: 602-881-5716		Project Name: Highland 12-20	PO/Billing Codes:
Sampler Name: Dennis Gray		Project Number:	Contact: Dan Peterson

					Preservative				Matrix			Analysis Requested								Special Instructions	
ID	Sample Description	Date Sampled	Time Sampled	# of containers	HCl	HNO3	None	Other	Water	Soil	Air-Canister #	Other pH	Metals - 915	VOC - 915	TPH - 915	PAH - 915	SAR, EC, pH	Boron - HWS	HOLD	Arsenic	SAR, EC, pH by saturated paste
1	BG01 @ 5.5'		1600	1			X			X		X									
2	BG01 @ 8-9'		1602	1								X									X
3	BG02 @ 5.5'		1604	1								X									X
4	BG02 @ 8-9'		1606	1								X									X
5	BG03 @ 5.5'		1608	1								X									X
6	BG03 @ 8-9'		1610	1								X									X
7	BG04 @ 5.5'		1612	1								X									X
8	BG04 @ 8-9'		1614	1								X									X
9	BG05 @ 5.5'		1616	1								X									X
10	BG05 @ 8-9'		1618	1								X									X
11	BH01 @ 0.5'		951	2										X	X	X	X	X			X
12	BH01 @ 5.5'		1016	1										X	X	X	X	X			X
13	BH01 @ 8-9'		1020	1										X	X	X	X	X			X
14	BH01 @ 17-18'		1025	1										X	X	X	X	X			X
15	BH02 @ 0.5'		1230	1										X	X	X	X	X			X

Relinquished by: 	Date/Time: 5-1-23 1840	Received by: Tasman Lock Box	Date/Time: 5-1-23 1840	TAT Business Days	Field DO	Notes:
				Same Day	Field EC	
Relinquished by: Tasman Lock Box	Date/Time: 5/23 1810	Received by: 	Date/Time: 5/23 1810	1 Day	Field ORP	
				2 Days	Field pH	
Relinquished by:	Date/Time:	Received by:	Date/Time:	3 Days	Field Temp.	
				Standard	X Field Turb.	
Temperature Upon Receipt: 11.7		Corrected Temperature: 6		IR gun #: /		HNO3 lot #:

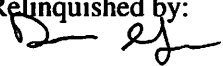
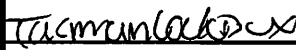


Client: Noble/Tasman		Send Data To:		Send Invoice To:	
Address: 6855 W. 119th Ave.		Project Manager: Jake Whritenour		Company: Chevron	
City/State/Zip: Broomfield/CO/ 80020		E-Mail: Jwhritenour@tasman-geo.com		Project Name/Location: Highland 12-20	
Phone: 602-881-5716		Project Name: Highland 12-20		AFE#:	
Sampler Name: Dennis Gray		Project Number:		PO/Billing Codes:	
				Contact: Dan Peterson	

					Preservative				Matrix			Analysis Requested								Special Instructions	
ID	Sample Description	Date Sampled	Time Sampled	# of containers	HCl	HNO3	None	Other	Water	Soil	Air-Canister #	Other	Metals - 915	VOC - 915	TPH - 915	PAH - 915	SAR, EC, pH	Boron - HWS	HOLD	Arsenic	SAR, EC, pH by saturated paste
1	BH02 @ 5.5'		1245	2			X			X				X	X	X	X	X		X	
2	BH02 @ 8-9'		1330																		
3	BH02 @ 17-18'		1400																		
4	BH03 @ 0.5'		1120																		
5	BH03 @ 5.5'		1130																		
6	BH03 @ 8-9'		1140																		
7	BH03 @ 17-18'		1157																		
8	BH04 @ 0.5'		1035																		
9	BH04 @ 5.5'		1100																		
10	BH04 @ 8-9'		1110																		
11	BH04 @ 17-18'		1115																		
12	BH05 @ 0.5'		1410																		
13	BH05 @ 5.5'		1420																		
14	BH05 @ 8-9'		1430																		
15	BH05 @ 17-18'		1440																		

Relinquished by: 	Date/Time: 5-1-23 1640	Received by: Tasman Lock Box	Date/Time: 1640 5-1-23	TAT Business Days	Field DO	Notes:
				Same Day	Field EC	
Relinquished by: Tasman Lock Box	Date/Time: 5123 1810	Received by: 	Date/Time: 5123 1810	1 Day	Field ORP	
				2 Days	Field pH	
Relinquished by:	Date/Time:	Received by:	Date/Time:	3 Days	Field Temp.	
				Standard	X Field Turb.	
Temperature Upon Receipt: 11.7	Corrected Temperature: 	IR gun #: _____	HNO3 lot #: _____			

		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:
City/State/Zip: Broomfield/CO/ 80020			AFE#:
Phone: 602-881-5716		Project Name: Highland 12-20	PO/Billing Codes:
Sampler Name: Dennis Gray		Project Number:	Contact:

					Preservative				Matrix			Analysis Requested								Special Instructions	
ID	Sample Description	Date Sampled	Time Sampled	# of containers	HCl	HNO3	None	Other _____	Water	Soil	Air-Canister #	Other _____	Metals - 915	VOC - 915	TPH - 915	PAH - 915	SAR, EC, pH	Boron - HWS	HOLD	Arsenic	SAR, EC, pH by saturated paste
1	BH06 @ 0.5'		1445	2			X			X				X	X	X	X	X		X	
2	BH06 @ 5.5'		1450	1										X	X	X	X	X		X	
3	BH06 @ 8-a'		1500	1										X	X	X	X	X		X	
4	BH06 @ 17-18'		1530	1										X	X	X	X	X		X	
5																					
6																					
7																					
8																					
9																					
10																					
11																					
12																					
13																					
14																					
15																					

Relinquished by: 	Date/Time: 5-1-23 1840	Received by: Tasman Lock Box	Date/Time:	TAT Business Days	Field DO	Notes:
				Same Day	Field EC	
Relinquished by: 	Date/Time: 5/23 1810	Received by: 	Date/Time: 5/23 1810	1 Day	Field ORP	
				2 Days	Field pH	
Relinquished by:	Date/Time:	Received by:	Date/Time:	3 Days	Field Temp.	
				Standard	X Field Turb.	
Temperature Upon Receipt: 11.7	Corrected Temperature: 	IR gun #: 1	HNO3 lot #:			

S₂

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Sample Receipt Checklist

S2 Work Order# 23050.20Client: Nobel GasmanClient Project ID: Highland 12-20Shipped 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"/>
--------------------------	-------------------------------------	--------------------------	--------------------------	--------------------------

Matrix (Check all that apply)

Air

☐

Soil/Solid

☐

Water

☐

Other

☐

Temp (°C)

11.7

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"/>	<u>none</u>
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 checked="" type="checkbox"/>	<input type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out Completely? ⁽¹⁾	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client w/ date and time recorded? ⁽¹⁾	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all samples received intact? ⁽¹⁾	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided? ⁽¹⁾	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received? ⁽¹⁾	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC? ⁽¹⁾	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling)? ⁽¹⁾ Note the type of preservative in the comments column – HCl, H ₂ SO ₄ , NaOH, HNO ₃ , etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If samples are acid preserved for metals, is the pH ≤ 2? ⁽¹⁾ Record the pH in Comments.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If dissolved metals are requested, were samples field filtered?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Additional Comments (if any):				

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

5/1/23
Date/Time



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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BG01@5.5'
2305020-01 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Date Sampled: **05/01/23 16:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	2.67	0.200	mg/kg dry	1	BGE0140	05/04/23	05/08/23	EPA 6020B	
Barium	68.4	0.400	"	"	"	"	"	"	

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

Date Sampled: **05/01/23 16:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	43.4	0.0500	mg/L dry	1	BGF0231	06/07/23	06/14/23	EPA 6020B	
Magnesium	16.0	0.0500	"	"	"	"	"	"	
Sodium	112	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **05/01/23 16:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	3.69	0.00100	units	1	BGF0562	06/15/23	06/15/23	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/01/23 16:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	93.0		%	1	BGE0119	05/03/23	05/03/23	Calculation	

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

Date Sampled: **05/01/23 16:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.94		pH Units	1	BGE0114	05/03/23	05/03/23	EPA 9045D	

Summit Scientific

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BG01@8-9'
2305020-02 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Date Sampled: **05/01/23 16:02**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	4.69	0.200	mg/kg dry	1	BGE0140	05/04/23	05/08/23	EPA 6020B	
Barium	64.3	0.400	"	"	"	"	"	"	

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

Date Sampled: **05/01/23 16:02**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Calcium	67.4	0.0500	mg/L dry	1	BGF0231	06/07/23	06/14/23	EPA 6020B	
Magnesium	88.2	0.0500	"	"	"	"	"	"	
Sodium	437	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **05/01/23 16:02**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Sodium Adsorption Ratio	8.25	0.00100	units	1	BGF0562	06/15/23	06/15/23	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/01/23 16:02**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	88.2		%	1	BGE0119	05/03/23	05/03/23	Calculation	

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

Date Sampled: **05/01/23 16:02**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
pH	8.26		pH Units	1	BGE0114	05/03/23	05/03/23	EPA 9045D	

Summit Scientific

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BG02@5.5'
2305020-03 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Date Sampled: **05/01/23 16:04**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	3.53	0.200	mg/kg dry	1	BGE0140	05/04/23	05/08/23	EPA 6020B	
Barium	90.7	0.400	"	"	"	"	"	"	

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

Date Sampled: **05/01/23 16:04**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Calcium	306	0.0500	mg/L dry	1	BGF0231	06/07/23	06/14/23	EPA 6020B	
Magnesium	277	0.0500	"	"	"	"	"	"	
Sodium	791	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **05/01/23 16:04**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Sodium Adsorption Ratio	7.89	0.00100	units	1	BGF0562	06/15/23	06/15/23	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/01/23 16:04**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	89.5		%	1	BGE0119	05/03/23	05/03/23	Calculation	

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

Date Sampled: **05/01/23 16:04**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
pH	8.02		pH Units	1	BGE0114	05/03/23	05/03/23	EPA 9045D	

Summit Scientific

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BG02@8-9'
2305020-04 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Date Sampled: **05/01/23 16:06**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	3.54	0.200	mg/kg dry	1	BGE0140	05/04/23	05/08/23	EPA 6020B	
Barium	90.3	0.400	"	"	"	"	"	"	

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

Date Sampled: **05/01/23 16:06**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Calcium	68.9	0.0500	mg/L dry	1	BGF0231	06/07/23	06/14/23	EPA 6020B	
Magnesium	84.1	0.0500	"	"	"	"	"	"	
Sodium	431	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **05/01/23 16:06**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Sodium Adsorption Ratio	8.23	0.00100	units	1	BGF0562	06/15/23	06/15/23	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/01/23 16:06**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	88.4		%	1	BGE0119	05/03/23	05/03/23	Calculation	

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

Date Sampled: **05/01/23 16:06**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
pH	8.25		pH Units	1	BGE0114	05/03/23	05/03/23	EPA 9045D	

Summit Scientific

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BG03@5.5'
2305020-05 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Date Sampled: **05/01/23 16:08**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	3.31	0.200	mg/kg dry	1	BGE0140	05/04/23	05/08/23	EPA 6020B	
Barium	96.4	0.400	"	"	"	"	"	"	

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

Date Sampled: **05/01/23 16:08**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Calcium	457	0.0500	mg/L dry	1	BGF0231	06/07/23	06/14/23	EPA 6020B	
Magnesium	166	0.0500	"	"	"	"	"	"	
Sodium	272	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **05/01/23 16:08**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Sodium Adsorption Ratio	2.77	0.00100	units	1	BGF0562	06/15/23	06/15/23	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/01/23 16:08**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	94.5		%	1	BGE0119	05/03/23	05/03/23	Calculation	

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

Date Sampled: **05/01/23 16:08**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
pH	7.98		pH Units	1	BGE0114	05/03/23	05/03/23	EPA 9045D	

Summit Scientific

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BG03@8-9'
2305020-06 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Date Sampled: **05/01/23 16:10**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	4.84	0.200	mg/kg dry	1	BGE0140	05/04/23	05/08/23	EPA 6020B	
Barium	98.9	0.400	"	"	"	"	"	"	

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

Date Sampled: **05/01/23 16:10**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Calcium	77.3	0.0500	mg/L dry	1	BGF0231	06/07/23	06/14/23	EPA 6020B	
Magnesium	88.5	0.0500	"	"	"	"	"	"	
Sodium	422	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **05/01/23 16:10**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Sodium Adsorption Ratio	7.78	0.00100	units	1	BGF0562	06/15/23	06/15/23	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/01/23 16:10**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	88.1		%	1	BGE0119	05/03/23	05/03/23	Calculation	

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

Date Sampled: **05/01/23 16:10**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
pH	8.17		pH Units	1	BGE0114	05/03/23	05/03/23	EPA 9045D	

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 - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BG04@5.5'
2305020-07 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Date Sampled: **05/01/23 16:12**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	2.21	0.200	mg/kg dry	1	BGE0140	05/04/23	05/08/23	EPA 6020B	
Barium	48.9	0.400	"	"	"	"	"	"	

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

Date Sampled: **05/01/23 16:12**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Calcium	96.1	0.0500	mg/L dry	1	BGF0231	06/07/23	06/14/23	EPA 6020B	
Magnesium	104	0.0500	"	"	"	"	"	"	
Sodium	513	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **05/01/23 16:12**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Sodium Adsorption Ratio	8.64	0.00100	units	1	BGF0562	06/15/23	06/15/23	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/01/23 16:12**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	96.4		%	1	BGE0119	05/03/23	05/03/23	Calculation	

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

Date Sampled: **05/01/23 16:12**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
pH	8.39		pH Units	1	BGE0114	05/03/23	05/03/23	EPA 9045D	

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 - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BG04@8-9'
2305020-08 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Date Sampled: **05/01/23 16:14**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	4.14	0.200	mg/kg dry	1	BGE0140	05/04/23	05/08/23	EPA 6020B	
Barium	56.7	0.400	"	"	"	"	"	"	

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

Date Sampled: **05/01/23 16:14**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	83.5	0.0500	mg/L dry	1	BGF0231	06/07/23	06/14/23	EPA 6020B	
Magnesium	95.5	0.0500	"	"	"	"	"	"	
Sodium	479	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **05/01/23 16:14**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	8.50	0.00100	units	1	BGF0562	06/15/23	06/15/23	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/01/23 16:14**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	88.9		%	1	BGE0119	05/03/23	05/03/23	Calculation	

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

Date Sampled: **05/01/23 16:14**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.25		pH Units	1	BGE0114	05/03/23	05/03/23	EPA 9045D	

Summit Scientific

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BG05@5.5'
2305020-09 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Date Sampled: **05/01/23 16:16**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	6.61	0.200	mg/kg dry	1	BGE0140	05/04/23	05/08/23	EPA 6020B	
Barium	133	0.400	"	"	"	"	"	"	

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

Date Sampled: **05/01/23 16:16**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Calcium	325	0.0500	mg/L dry	1	BGF0231	06/07/23	06/14/23	EPA 6020B	
Magnesium	264	0.0500	"	"	"	"	"	"	
Sodium	829	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **05/01/23 16:16**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Sodium Adsorption Ratio	8.28	0.00100	units	1	BGF0562	06/15/23	06/15/23	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/01/23 16:16**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	87.0		%	1	BGE0119	05/03/23	05/03/23	Calculation	

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

Date Sampled: **05/01/23 16:16**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
pH	8.10		pH Units	1	BGE0114	05/03/23	05/03/23	EPA 9045D	

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 - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BG05@8-9'
2305020-10 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Date Sampled: **05/01/23 16:18**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	5.30	0.200	mg/kg dry	1	BGE0140	05/04/23	05/08/23	EPA 6020B	
Barium	98.7	0.400	"	"	"	"	"	"	

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

Date Sampled: **05/01/23 16:18**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Calcium	75.7	0.0500	mg/L dry	1	BGF0231	06/07/23	06/14/23	EPA 6020B	
Magnesium	83.9	0.0500	"	"	"	"	"	"	
Sodium	413	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **05/01/23 16:18**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Sodium Adsorption Ratio	7.79	0.00100	units	1	BGF0562	06/15/23	06/15/23	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/01/23 16:18**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	87.9		%	1	BGE0119	05/03/23	05/03/23	Calculation	

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

Date Sampled: **05/01/23 16:18**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
pH	8.19		pH Units	1	BGE0114	05/03/23	05/03/23	EPA 9045D	

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 - Highland 12-20

Project Number: [none]

Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH01@0.5'
2305020-11 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/01/23 09:51**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BGE0115	05/03/23	05/05/23	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **05/01/23 09:51**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	0.0422	106 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0394	98.6 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0397	99.2 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/01/23 09:51**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BGE0116	"	05/04/23	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **05/01/23 09:51**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl	11.2	89.3 %	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 - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH01@0.5'
2305020-11 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **05/01/23 09:51**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BGE0046	05/02/23	05/04/23	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **05/01/23 09:51**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0161	48.4 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0271	81.2 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **05/01/23 09:51**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.315	0.0100	mg/L	1	BGE0243	05/08/23	05/09/23	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **05/01/23 09:51**

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

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



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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH01@0.5'
2305020-11 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Arsenic	3.32	0.200	mg/kg dry	1	BGE0140	05/04/23	05/08/23	EPA 6020B
Barium	83.2	0.400	"	"	"	"	"	"

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

Date Sampled: **05/01/23 09:51**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	43.5	0.0500	mg/L dry	1	BGE0201	05/05/23	05/11/23	EPA 6020B	
Magnesium	10.8	0.0500	"	"	"	"	"	"	
Sodium	12.8	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **05/01/23 09:51**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.450	0.00100	units	1	BGE0420	05/12/23	05/12/23	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/01/23 09:51**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	87.5		%	1	BGE0119	05/03/23	05/03/23	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **05/01/23 09:51**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.386	0.0100	mmhos/cm	1	BGE0257	05/08/23	05/08/23	EPA 120.1	

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

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 - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH01@0.5'
2305020-11 (Soil)

Summit Scientific

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

Date Sampled: **05/01/23 09:51**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
pH	7.90			pH Units	1	BGE0259	05/08/23	05/08/23	EPA 9045D	

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 - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH01@5.5'
2305020-12 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/01/23 10:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BGE0115	05/03/23	05/05/23	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **05/01/23 10:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	0.0385	96.3 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0394	98.6 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0388	96.9 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/01/23 10:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BGE0116	"	05/04/23	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **05/01/23 10:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl	9.28	74.3 %	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 - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH01@5.5'
2305020-12 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **05/01/23 10:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BGE0046	05/02/23	05/04/23	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **05/01/23 10:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0134	40.3 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0177	53.2 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **05/01/23 10:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.360	0.0100	mg/L	1	BGE0243	05/08/23	05/09/23	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **05/01/23 10:15**

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

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



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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH01@5.5'
2305020-12 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Arsenic	3.21	0.200	mg/kg dry	1	BGE0140	05/04/23	05/08/23	EPA 6020B
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Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction

Date Sampled: **05/01/23 10:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	44.2	0.0500	mg/L dry	1	BGE0201	05/05/23	05/11/23	EPA 6020B	
Magnesium	11.3	0.0500	"	"	"	"	"	"	
Sodium	11.6	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **05/01/23 10:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.403	0.00100	units	1	BGE0420	05/12/23	05/12/23	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/01/23 10:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	87.0		%	1	BGE0119	05/03/23	05/03/23	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **05/01/23 10:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.392	0.0100	mmhos/cm	1	BGE0257	05/08/23	05/08/23	EPA 120.1	

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

Date Sampled: **05/01/23 10:15**

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

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



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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH01@5.5'
2305020-12 (Soil)

Summit Scientific

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

pH	8.03	pH Units	1	BGE0259	05/08/23	05/08/23	EPA 9045D
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Summit Scientific



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



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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH01@8-9'
2305020-13 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/01/23 10:20**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BGE0115	05/03/23	05/05/23	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	2.7	0.50	"	"	"	"	"	"	

Date Sampled: **05/01/23 10:20**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	0.0375	93.8 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0402	100 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0500	125 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/01/23 10:20**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BGE0116	"	05/04/23	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **05/01/23 10:20**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl	8.06	64.5 %	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 - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH01@8-9'
2305020-13 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **05/01/23 10:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BGE0046	05/02/23	05/04/23	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	0.00541	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	0.200	0.00500	"	"	"	"	"	"	E
2-Methylnaphthalene	0.137	0.00500	"	"	"	"	"	"	

Date Sampled: **05/01/23 10:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0375	112 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0275	82.6 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **05/01/23 10:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.403	0.0100	mg/L	1	BGE0243	05/08/23	05/09/23	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **05/01/23 10:20**

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

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



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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH01@8-9'
2305020-13 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Arsenic	4.63	0.200	mg/kg dry	1	BGE0140	05/04/23	05/08/23	EPA 6020B
Arsenic	1.79	0.200	"	"	BGF0013	06/01/23	06/03/23	"
Barium	212	0.400	"	"	BGE0140	05/04/23	05/08/23	"
Barium	118	0.400	"	"	BGF0013	06/01/23	06/03/23	"
Cadmium	ND	0.200	"	"	"	"	"	"
Copper	2.03	0.400	"	"	"	"	"	"
Lead	3.19	0.200	"	"	"	"	"	"
Nickel	2.81	0.400	"	"	"	"	"	"
Selenium	ND	0.260	"	"	"	"	"	"
Silver	ND	0.0200	"	"	"	"	"	"
Zinc	8.21	0.400	"	"	"	"	"	"

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

Date Sampled: **05/01/23 10:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	24.1	0.0500	mg/L dry	1	BGE0201	05/05/23	05/11/23	EPA 6020B	
Magnesium	35.1	0.0500	"	"	"	"	"	"	
Sodium	12.3	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **05/01/23 10:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.374	0.00100	units	1	BGE0420	05/12/23	05/12/23	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/01/23 10:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	90.3		%	1	BGE0119	05/03/23	05/03/23	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

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 - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH01@8-9'
2305020-13 (Soil)

Summit Scientific

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **05/01/23 10:20**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Specific Conductance (EC)	0.442	0.0100		mmhos/cm	1	BGE0257	05/08/23	05/08/23	EPA 120.1	

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

Date Sampled: **05/01/23 10:20**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
pH	7.93			pH Units	1	BGE0259	05/08/23	05/08/23	EPA 9045D	

Summit Scientific

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH01@17-18'
2305020-14 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/01/23 10:25**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BGE0115	05/03/23	05/05/23	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **05/01/23 10:25**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	0.0389	97.2 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0394	98.6 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0394	98.4 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/01/23 10:25**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BGE0116	"	05/04/23	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **05/01/23 10:25**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl	13.2	106 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH01@17-18'
2305020-14 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **05/01/23 10:25**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Acenaphthene	ND	0.00500	mg/kg	1	BGE0046	05/02/23	05/04/23	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **05/01/23 10:25**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 2-Methylnaphthalene-d10	0.0133	40.0 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0247	74.0 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **05/01/23 10:25**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Boron	0.391	0.0100	mg/L	1	BGE0243	05/08/23	05/09/23	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **05/01/23 10:25**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							

Summit Scientific

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH01@17-18'
2305020-14 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Arsenic	2.83	0.200	mg/kg dry	1	BGE0140	05/04/23	05/08/23	EPA 6020B
Barium	44.3	0.400	"	"	"	"	"	"

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

Date Sampled: **05/01/23 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	64.3	0.0500	mg/L dry	1	BGE0201	05/05/23	05/11/23	EPA 6020B	
Magnesium	63.9	0.0500	"	"	"	"	"	"	
Sodium	354	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **05/01/23 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	7.48	0.00100	units	1	BGE0420	05/12/23	05/12/23	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/01/23 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	85.7		%	1	BGE0119	05/03/23	05/03/23	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **05/01/23 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	2.32	0.0100	mmhos/cm	1	BGE0257	05/08/23	05/08/23	EPA 120.1	

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

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH01@17-18'
2305020-14 (Soil)

Summit Scientific

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

Date Sampled: **05/01/23 10:25**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
pH	8.19			pH Units	1	BGE0259	05/08/23	05/08/23	EPA 9045D	

Summit Scientific

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6855 W. 119th Ave.
Broomfield CO, 80020

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH02@0.5'
2305020-15 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/01/23 12:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BGE0115	05/03/23	05/05/23	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **05/01/23 12:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	0.0428	107 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0399	99.8 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0396	99.1 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/01/23 12:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BGE0116	"	05/04/23	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **05/01/23 12:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl	12.4	99.1 %	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 - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH02@0.5'
2305020-15 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **05/01/23 12:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BGE0046	05/02/23	05/04/23	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **05/01/23 12:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0141	42.3 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0208	62.4 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **05/01/23 12:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.367	0.0100	mg/L	1	BGE0243	05/08/23	05/09/23	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **05/01/23 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 - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH02@0.5'
2305020-15 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Arsenic	2.81	0.200	mg/kg dry	1	BGE0140	05/04/23	05/08/23	EPA 6020B
Barium	58.4	0.400	"	"	"	"	"	"

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

Date Sampled: **05/01/23 12:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	28.2	0.0500	mg/L dry	1	BGE0201	05/05/23	05/11/23	EPA 6020B	
Magnesium	9.61	0.0500	"	"	"	"	"	"	
Sodium	8.84	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **05/01/23 12:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.367	0.00100	units	1	BGE0420	05/12/23	05/12/23	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/01/23 12:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	92.9		%	1	BGE0119	05/03/23	05/03/23	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **05/01/23 12:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.285	0.0100	mmhos/cm	1	BGE0257	05/08/23	05/08/23	EPA 120.1	

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

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH02@0.5'
2305020-15 (Soil)

Summit Scientific

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

Date Sampled: **05/01/23 12:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
pH	7.69			pH Units	1	BGE0259	05/08/23	05/08/23	EPA 9045D	

Summit Scientific

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH02@5.5'
2305020-16 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/01/23 12:45**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BGE0115	05/03/23	05/05/23	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **05/01/23 12:45**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	0.0400	100 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0401	100 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0406	102 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/01/23 12:45**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BGE0116	"	05/04/23	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **05/01/23 12:45**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl	14.0	112 %	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 - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH02@5.5'
2305020-16 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **05/01/23 12:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BGE0046	05/02/23	05/04/23	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **05/01/23 12:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0138	41.4 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0211	63.3 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **05/01/23 12:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.945	0.0100	mg/L	1	BGE0243	05/08/23	05/09/23	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **05/01/23 12:45**

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 - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH02@5.5'
2305020-16 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Arsenic	5.25	0.200	mg/kg dry	1	BGE0140	05/04/23	05/08/23	EPA 6020B
Barium	115	0.400	"	"	"	"	"	"

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

Date Sampled: **05/01/23 12:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	25.0	0.0500	mg/L dry	1	BGE0201	05/05/23	05/11/23	EPA 6020B	
Magnesium	25.4	0.0500	"	"	"	"	"	"	
Sodium	25.0	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **05/01/23 12:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.842	0.00100	units	1	BGE0420	05/12/23	05/12/23	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/01/23 12:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	86.7		%	1	BGE0119	05/03/23	05/03/23	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **05/01/23 12:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.440	0.0100	mmhos/cm	1	BGE0257	05/08/23	05/08/23	EPA 120.1	

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

Summit Scientific

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH02@5.5'
2305020-16 (Soil)

Summit Scientific

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

Date Sampled: **05/01/23 12:45**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
pH	8.30			pH Units	1	BGE0259	05/08/23	05/08/23	EPA 9045D	

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 - Highland 12-20

Project Number: [none]

Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH02@8-9'
2305020-17 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/01/23 13:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BGE0115	05/03/23	05/05/23	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **05/01/23 13:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	0.0411	103 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0410	102 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0416	104 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/01/23 13:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BGE0116	"	05/04/23	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **05/01/23 13:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl	9.16	73.3 %	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 - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH02@8-9'
2305020-17 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **05/01/23 13:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BGE0046	05/02/23	05/04/23	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **05/01/23 13:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0140	42.1 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0222	66.5 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **05/01/23 13:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.478	0.0100	mg/L	1	BGE0243	05/08/23	05/09/23	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **05/01/23 13:30**

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

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



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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH02@8-9'
2305020-17 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Arsenic	3.70	0.200	mg/kg dry	1	BGE0140	05/04/23	05/08/23	EPA 6020B
Barium	212	0.400	"	"	"	"	"	"

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

Date Sampled: **05/01/23 13:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	29.8	0.0500	mg/L dry	1	BGE0201	05/05/23	05/11/23	EPA 6020B	
Magnesium	20.6	0.0500	"	"	"	"	"	"	
Sodium	103	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **05/01/23 13:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	3.55	0.00100	units	1	BGE0420	05/12/23	05/12/23	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/01/23 13:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	85.7		%	1	BGE0119	05/03/23	05/03/23	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **05/01/23 13:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.727	0.0100	mmhos/cm	1	BGE0257	05/08/23	05/08/23	EPA 120.1	

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

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 - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH02@8-9'
2305020-17 (Soil)

Summit Scientific

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

Date Sampled: **05/01/23 13:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
pH	8.64			pH Units	1	BGE0259	05/08/23	05/08/23	EPA 9045D	

Summit Scientific

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH02@17-18'
2305020-18 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/01/23 14:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BGE0115	05/03/23	05/05/23	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **05/01/23 14:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	0.0368	92.1 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0393	98.2 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0394	98.6 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/01/23 14:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BGE0116	"	05/04/23	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **05/01/23 14:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl	9.65	77.2 %	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 - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH02@17-18'
2305020-18 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **05/01/23 14:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BGE0046	05/02/23	05/04/23	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **05/01/23 14:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0142	42.5 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0242	72.7 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **05/01/23 14:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.220	0.0100	mg/L	1	BGE0243	05/08/23	05/09/23	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **05/01/23 14:00**

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

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



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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH02@17-18'
2305020-18 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Arsenic	3.82	0.200	mg/kg dry	1	BGE0140	05/04/23	05/09/23	EPA 6020B
Barium	138	0.400	"	"	"	"	"	"

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

Date Sampled: **05/01/23 14:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	36.1	0.0500	mg/L dry	1	BGE0201	05/05/23	05/11/23	EPA 6020B	
Magnesium	41.7	0.0500	"	"	"	"	"	"	
Sodium	268	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **05/01/23 14:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	7.21	0.00100	units	1	BGE0420	05/12/23	05/12/23	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/01/23 14:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	82.4		%	1	BGE0119	05/03/23	05/03/23	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **05/01/23 14:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	1.66	0.0100	mmhos/cm	1	BGE0257	05/08/23	05/08/23	EPA 120.1	

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

Summit Scientific

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH02@17-18'
2305020-18 (Soil)

Summit Scientific

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

Date Sampled: **05/01/23 14:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
pH	8.41			pH Units	1	BGE0259	05/08/23	05/08/23	EPA 9045D	

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 - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH03@0.5'
2305020-19 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/01/23 11:20**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BGE0115	05/03/23	05/05/23	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **05/01/23 11:20**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	0.0394	98.4 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0386	96.4 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0390	97.6 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/01/23 11:20**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BGE0116	"	05/04/23	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **05/01/23 11:20**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl	8.28	66.2 %	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 - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH03@0.5'
2305020-19 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **05/01/23 11:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BGE0046	05/02/23	05/04/23	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **05/01/23 11:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0135	40.5 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0204	61.1 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **05/01/23 11:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.274	0.0100	mg/L	1	BGE0243	05/08/23	05/09/23	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **05/01/23 11:20**

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

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



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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH03@0.5'
2305020-19 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Arsenic	3.00	0.200	mg/kg dry	1	BGE0140	05/04/23	05/09/23	EPA 6020B
Barium	84.5	0.400	"	"	"	"	"	"

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

Date Sampled: **05/01/23 11:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	41.8	0.0500	mg/L dry	1	BGE0201	05/05/23	05/11/23	EPA 6020B	
Magnesium	10.8	0.0500	"	"	"	"	"	"	
Sodium	27.7	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **05/01/23 11:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.988	0.00100	units	1	BGE0420	05/12/23	05/12/23	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/01/23 11:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	89.8		%	1	BGE0119	05/03/23	05/03/23	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **05/01/23 11:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.457	0.0100	mmhos/cm	1	BGE0257	05/08/23	05/08/23	EPA 120.1	

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

Summit Scientific

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH03@0.5'
2305020-19 (Soil)

Summit Scientific

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

Date Sampled: **05/01/23 11:20**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
pH	7.89			pH Units	1	BGE0259	05/08/23	05/08/23	EPA 9045D	

Summit Scientific

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH03@5.5'
2305020-20 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/01/23 11:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BGE0115	05/03/23	05/05/23	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **05/01/23 11:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	0.0393	98.2 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0391	97.6 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0399	99.7 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/01/23 11:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BGE0116	"	05/04/23	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **05/01/23 11:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl	4.72	37.8 %	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 - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH03@5.5'
2305020-20 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **05/01/23 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BGE0046	05/02/23	05/04/23	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **05/01/23 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0136	40.7 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0236	70.8 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **05/01/23 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.871	0.0100	mg/L	1	BGE0243	05/08/23	05/09/23	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **05/01/23 11:30**

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

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



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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH03@5.5'
2305020-20 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Arsenic	4.67	0.200	mg/kg dry	1	BGE0140	05/04/23	05/09/23	EPA 6020B
Barium	131	0.400	"	"	"	"	"	"

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

Date Sampled: **05/01/23 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	197	0.0500	mg/L dry	1	BGE0201	05/05/23	05/11/23	EPA 6020B	
Magnesium	61.2	0.0500	"	"	"	"	"	"	
Sodium	28.1	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **05/01/23 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.447	0.00100	units	1	BGE0420	05/12/23	05/12/23	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/01/23 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	84.3		%	1	BGE0119	05/03/23	05/03/23	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **05/01/23 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	1.41	0.0100	mmhos/cm	1	BGE0257	05/08/23	05/08/23	EPA 120.1	

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

Summit Scientific

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH03@5.5'
2305020-20 (Soil)

Summit Scientific

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

Date Sampled: **05/01/23 11:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
pH	7.87			pH Units	1	BGE0259	05/08/23	05/08/23	EPA 9045D	

Summit Scientific

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH03@8-9'
2305020-21 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/01/23 11:40**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BGE0115	05/03/23	05/05/23	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **05/01/23 11:40**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	0.0454	114 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0405	101 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0425	106 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/01/23 11:40**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BGE0116	"	05/04/23	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **05/01/23 11:40**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl	8.12	64.9 %	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 - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH03@8-9'
2305020-21 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **05/01/23 11:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BGE0046	05/02/23	05/04/23	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **05/01/23 11:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0135	40.4 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0258	77.3 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **05/01/23 11:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.315	0.0100	mg/L	1	BGE0243	05/08/23	05/09/23	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **05/01/23 11:40**

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 - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH03@8-9'
2305020-21 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Arsenic	4.21	0.200	mg/kg dry	1	BGE0141	05/04/23	05/09/23	EPA 6020B
Barium	117	0.400	"	"	"	"	"	"

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

Date Sampled: **05/01/23 11:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	20.2	0.0500	mg/L dry	1	BGE0201	05/05/23	05/11/23	EPA 6020B	
Magnesium	13.5	0.0500	"	"	"	"	"	"	
Sodium	57.2	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **05/01/23 11:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	2.42	0.00100	units	1	BGE0420	05/12/23	05/12/23	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/01/23 11:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	88.8		%	1	BGE0142	05/04/23	05/04/23	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **05/01/23 11:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.444	0.0100	mmhos/cm	1	BGE0257	05/08/23	05/08/23	EPA 120.1	

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

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH03@8-9'
2305020-21 (Soil)

Summit Scientific

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

Date Sampled: **05/01/23 11:40**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
pH	8.60			pH Units	1	BGE0259	05/08/23	05/08/23	EPA 9045D	

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 - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH03@17-18'
2305020-22 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/01/23 11:57**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BGE0115	05/03/23	05/05/23	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **05/01/23 11:57**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	0.0430	108 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0401	100 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0416	104 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/01/23 11:57**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BGE0116	"	05/04/23	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **05/01/23 11:57**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl	12.3	98.7 %	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 - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH03@17-18'
2305020-22 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **05/01/23 11:57**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BGE0046	05/02/23	05/04/23	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **05/01/23 11:57**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0140	41.9 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0234	70.1 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **05/01/23 11:57**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.352	0.0100	mg/L	1	BGE0243	05/08/23	05/09/23	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **05/01/23 11:57**

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

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



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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH03@17-18'
2305020-22 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Arsenic	4.52	0.200	mg/kg dry	1	BGE0141	05/04/23	05/09/23	EPA 6020B
Barium	41.4	0.400	"	"	"	"	"	"

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

Date Sampled: **05/01/23 11:57**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	37.1	0.0500	mg/L dry	1	BGE0201	05/05/23	05/11/23	EPA 6020B	
Magnesium	35.6	0.0500	"	"	"	"	"	"	
Sodium	240	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **05/01/23 11:57**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	6.78	0.00100	units	1	BGE0420	05/12/23	05/12/23	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/01/23 11:57**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	84.7		%	1	BGE0142	05/04/23	05/04/23	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **05/01/23 11:57**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	1.56	0.0100	mmhos/cm	1	BGE0257	05/08/23	05/08/23	EPA 120.1	

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

Summit Scientific

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH03@17-18'
2305020-22 (Soil)

Summit Scientific

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

Date Sampled: **05/01/23 11:57**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
pH	8.37			pH Units	1	BGE0259	05/08/23	05/08/23	EPA 9045D	

Summit Scientific

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH04@0.5'
2305020-23 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/01/23 10:35**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BGE0115	05/03/23	05/05/23	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **05/01/23 10:35**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	0.0375	93.8 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0393	98.2 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0397	99.3 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/01/23 10:35**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BGE0116	"	05/04/23	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **05/01/23 10:35**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl	12.1	97.2 %	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 - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH04@0.5'
2305020-23 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **05/01/23 10:35**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Acenaphthene	ND	0.00500	mg/kg	1	BGE0046	05/02/23	05/04/23	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **05/01/23 10:35**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 2-Methylnaphthalene-d10	0.0136	40.8 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0243	72.8 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **05/01/23 10:35**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Boron	0.459	0.0100	mg/L	1	BGE0243	05/08/23	05/09/23	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **05/01/23 10:35**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							

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 - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH04@0.5'
2305020-23 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Arsenic	3.68	0.200	mg/kg dry	1	BGE0141	05/04/23	05/09/23	EPA 6020B
Barium	191	0.400	"	"	"	"	"	"

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

Date Sampled: **05/01/23 10:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	35.4	0.0500	mg/L dry	1	BGE0201	05/05/23	05/11/23	EPA 6020B	
Magnesium	7.27	0.0500	"	"	"	"	"	"	
Sodium	26.0	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **05/01/23 10:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	1.04	0.00100	units	1	BGE0420	05/12/23	05/12/23	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/01/23 10:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	89.4		%	1	BGE0142	05/04/23	05/04/23	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **05/01/23 10:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.344	0.0100	mmhos/cm	1	BGE0257	05/08/23	05/08/23	EPA 120.1	

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

Summit Scientific

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH04@0.5'
2305020-23 (Soil)

Summit Scientific

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

Date Sampled: **05/01/23 10:35**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
pH	8.18			pH Units	1	BGE0259	05/08/23	05/08/23	EPA 9045D	

Summit Scientific

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH04@5.5'
2305020-24 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/01/23 11:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BGE0115	05/03/23	05/05/23	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **05/01/23 11:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	0.0418	104 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0398	99.6 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0412	103 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/01/23 11:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BGE0116	"	05/04/23	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **05/01/23 11:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl	11.1	88.5 %	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 - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH04@5.5'
2305020-24 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **05/01/23 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BGE0046	05/02/23	05/04/23	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **05/01/23 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0146	43.7 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0247	74.0 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **05/01/23 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.392	0.0100	mg/L	1	BGE0243	05/08/23	05/09/23	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **05/01/23 11:00**

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

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



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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH04@5.5'
2305020-24 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Arsenic	3.24	0.200	mg/kg dry	1	BGE0141	05/04/23	05/09/23	EPA 6020B
Barium	96.6	0.400	"	"	"	"	"	"

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

Date Sampled: **05/01/23 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	232	0.0500	mg/L dry	1	BGE0201	05/05/23	05/11/23	EPA 6020B	
Magnesium	47.3	0.0500	"	"	"	"	"	"	
Sodium	44.5	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **05/01/23 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.696	0.00100	units	1	BGE0420	05/12/23	05/12/23	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/01/23 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	88.4		%	1	BGE0142	05/04/23	05/04/23	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **05/01/23 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	1.60	0.0100	mmhos/cm	1	BGE0257	05/08/23	05/08/23	EPA 120.1	

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

Summit Scientific

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH04@5.5'
2305020-24 (Soil)

Summit Scientific

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

Date Sampled: **05/01/23 11:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
pH	7.93			pH Units	1	BGE0259	05/08/23	05/08/23	EPA 9045D	

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 - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH04@8-9'
2305020-25 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/01/23 11:10**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BGE0115	05/03/23	05/05/23	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **05/01/23 11:10**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	0.0425	106 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0399	99.7 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0410	102 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/01/23 11:10**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BGE0116	"	05/04/23	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **05/01/23 11:10**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl	6.82	54.5 %	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 - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH04@8-9'
2305020-25 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **05/01/23 11:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BGE0046	05/02/23	05/04/23	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **05/01/23 11:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0167	50.1 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0228	68.3 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **05/01/23 11:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.413	0.0100	mg/L	1	BGE0243	05/08/23	05/09/23	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **05/01/23 11:10**

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

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



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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH04@8-9'
2305020-25 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Arsenic	4.69	0.200	mg/kg dry	1	BGE0141	05/04/23	05/09/23	EPA 6020B
Barium	69.4	0.400	"	"	"	"	"	"

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

Date Sampled: **05/01/23 11:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	39.8	0.0500	mg/L dry	1	BGE0201	05/05/23	05/11/23	EPA 6020B	
Magnesium	24.8	0.0500	"	"	"	"	"	"	
Sodium	112	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **05/01/23 11:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	3.43	0.00100	units	1	BGE0420	05/12/23	05/12/23	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/01/23 11:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	84.4		%	1	BGE0142	05/04/23	05/04/23	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **05/01/23 11:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.908	0.0100	mmhos/cm	1	BGE0257	05/08/23	05/08/23	EPA 120.1	

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

Summit Scientific

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH04@8-9'
2305020-25 (Soil)

Summit Scientific

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

Date Sampled: **05/01/23 11:10**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
pH	7.74			pH Units	1	BGE0259	05/08/23	05/08/23	EPA 9045D	

Summit Scientific

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH04@17-18'
2305020-26 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/01/23 11:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BGE0115	05/03/23	05/06/23	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **05/01/23 11:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	0.0410	102 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0398	99.4 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0405	101 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/01/23 11:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BGE0116	"	05/04/23	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **05/01/23 11:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl	10.0	80.2 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH04@17-18'
2305020-26 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **05/01/23 11:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BGE0046	05/02/23	05/04/23	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **05/01/23 11:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0156	46.8 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0278	83.3 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **05/01/23 11:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.362	0.0100	mg/L	1	BGE0243	05/08/23	05/09/23	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **05/01/23 11:15**

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 - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH04@17-18'
2305020-26 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Arsenic	3.15	0.200	mg/kg dry	1	BGE0141	05/04/23	05/09/23	EPA 6020B
Barium	91.4	0.400	"	"	"	"	"	"

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

Date Sampled: **05/01/23 11:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	65.3	0.0500	mg/L dry	1	BGE0201	05/05/23	05/11/23	EPA 6020B	
Magnesium	51.1	0.0500	"	"	"	"	"	"	
Sodium	277	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **05/01/23 11:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	6.24	0.00100	units	1	BGE0420	05/12/23	05/12/23	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/01/23 11:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	85.5		%	1	BGE0142	05/04/23	05/04/23	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **05/01/23 11:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	1.87	0.0100	mmhos/cm	1	BGE0257	05/08/23	05/08/23	EPA 120.1	

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

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH04@17-18'
2305020-26 (Soil)

Summit Scientific

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

Date Sampled: **05/01/23 11:15**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
pH	8.30			pH Units	1	BGE0259	05/08/23	05/08/23	EPA 9045D	

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

Project: Noble - Highland 12-20

Project Number: [none]

Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH05@0.5'
2305020-27 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/01/23 14:10**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BGE0115	05/03/23	05/06/23	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **05/01/23 14:10**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	0.0418	104 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0384	96.0 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0412	103 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/01/23 14:10**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BGE0116	"	05/04/23	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **05/01/23 14:10**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl	7.41	59.3 %	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 - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH05@0.5'
2305020-27 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **05/01/23 14:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BGE0046	05/02/23	05/04/23	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **05/01/23 14:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0151	45.2 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0228	68.3 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **05/01/23 14:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.415	0.0100	mg/L	1	BGE0243	05/08/23	05/09/23	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **05/01/23 14:10**

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 - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH05@0.5'
2305020-27 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Arsenic	2.60	0.200	mg/kg dry	1	BGE0141	05/04/23	05/09/23	EPA 6020B
Barium	73.6	0.400	"	"	"	"	"	"

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

Date Sampled: **05/01/23 14:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	59.3	0.0500	mg/L dry	1	BGE0201	05/05/23	05/11/23	EPA 6020B	
Magnesium	13.3	0.0500	"	"	"	"	"	"	
Sodium	36.5	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **05/01/23 14:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	1.12	0.00100	units	1	BGE0420	05/12/23	05/12/23	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/01/23 14:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	86.1		%	1	BGE0142	05/04/23	05/04/23	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **05/01/23 14:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.635	0.0100	mmhos/cm	1	BGE0257	05/08/23	05/08/23	EPA 120.1	

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

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6855 W. 119th Ave.
Broomfield CO, 80020

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH05@0.5'
2305020-27 (Soil)

Summit Scientific

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

Date Sampled: **05/01/23 14:10**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
pH	7.98			pH Units	1	BGE0259	05/08/23	05/08/23	EPA 9045D	

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6855 W. 119th Ave.
Broomfield CO, 80020

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH05@5.5'
2305020-28 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/01/23 14:20**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BGE0115	05/03/23	05/06/23	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **05/01/23 14:20**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	0.0421	105 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0389	97.2 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0399	99.7 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/01/23 14:20**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BGE0116	"	05/04/23	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **05/01/23 14:20**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl	7.52	60.2 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH05@5.5'
2305020-28 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **05/01/23 14:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BGE0046	05/02/23	05/04/23	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **05/01/23 14:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0158	47.4 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0209	62.6 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **05/01/23 14:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.277	0.0100	mg/L	1	BGE0243	05/08/23	05/09/23	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **05/01/23 14:20**

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 - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH05@5.5'
2305020-28 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Arsenic	3.86	0.200	mg/kg dry	1	BGE0141	05/04/23	05/09/23	EPA 6020B
Barium	96.9	0.400	"	"	"	"	"	"

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

Date Sampled: **05/01/23 14:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	35.4	0.0500	mg/L dry	1	BGE0201	05/05/23	05/11/23	EPA 6020B	
Magnesium	7.28	0.0500	"	"	"	"	"	"	
Sodium	21.0	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **05/01/23 14:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.840	0.00100	units	1	BGE0420	05/12/23	05/12/23	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/01/23 14:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	85.2		%	1	BGE0142	05/04/23	05/04/23	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **05/01/23 14:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.332	0.0100	mmhos/cm	1	BGE0257	05/08/23	05/08/23	EPA 120.1	

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

Summit Scientific

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH05@5.5'
2305020-28 (Soil)

Summit Scientific

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

Date Sampled: **05/01/23 14:20**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
pH	8.15			pH Units	1	BGE0259	05/08/23	05/08/23	EPA 9045D	

Summit Scientific

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

Project: Noble - Highland 12-20

Project Number: [none]

Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH05@8-9'
2305020-29 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/01/23 14:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BGE0115	05/03/23	05/06/23	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **05/01/23 14:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	0.0384	96.0 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0391	97.7 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0402	100 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/01/23 14:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BGE0116	"	05/04/23	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **05/01/23 14:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl	8.88	71.0 %	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 - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH05@8-9'
2305020-29 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **05/01/23 14:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BGE0046	05/02/23	05/04/23	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **05/01/23 14:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0316	94.8 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0277	83.0 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **05/01/23 14:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.401	0.0100	mg/L	1	BGE0243	05/08/23	05/09/23	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **05/01/23 14:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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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 - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH05@8-9'
2305020-29 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Arsenic	3.99	0.200	mg/kg dry	1	BGE0141	05/04/23	05/09/23	EPA 6020B
Barium	221	0.400	"	"	"	"	"	"

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

Date Sampled: **05/01/23 14:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	106	0.0500	mg/L dry	1	BGE0201	05/05/23	05/11/23	EPA 6020B	
Magnesium	37.9	0.0500	"	"	"	"	"	"	
Sodium	27.7	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **05/01/23 14:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.588	0.00100	units	1	BGE0420	05/12/23	05/12/23	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/01/23 14:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	84.2		%	1	BGE0142	05/04/23	05/04/23	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **05/01/23 14:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.913	0.0100	mmhos/cm	1	BGE0257	05/08/23	05/08/23	EPA 120.1	

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

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH05@8-9'
2305020-29 (Soil)

Summit Scientific

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

Date Sampled: **05/01/23 14:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
pH	7.63			pH Units	1	BGE0259	05/08/23	05/08/23	EPA 9045D	

Summit Scientific

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH05@17-18'
2305020-30 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/01/23 14:40**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BGE0115	05/03/23	05/06/23	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **05/01/23 14:40**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	0.0366	91.4 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0388	97.0 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0400	100 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/01/23 14:40**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BGE0116	"	05/04/23	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **05/01/23 14:40**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl	12.3	98.1 %	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 - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH05@17-18'
2305020-30 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **05/01/23 14:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BGE0046	05/02/23	05/04/23	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **05/01/23 14:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0145	43.5 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0277	83.1 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **05/01/23 14:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.388	0.0100	mg/L	1	BGE0243	05/08/23	05/09/23	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **05/01/23 14:40**

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 - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH05@17-18'
2305020-30 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Arsenic	3.58	0.200	mg/kg dry	1	BGE0141	05/04/23	05/09/23	EPA 6020B
Barium	47.1	0.400	"	"	"	"	"	"

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

Date Sampled: **05/01/23 14:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	43.5	0.0500	mg/L dry	1	BGE0201	05/05/23	05/11/23	EPA 6020B	
Magnesium	41.4	0.0500	"	"	"	"	"	"	
Sodium	277	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **05/01/23 14:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	7.22	0.00100	units	1	BGE0420	05/12/23	05/12/23	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/01/23 14:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	85.9		%	1	BGE0142	05/04/23	05/04/23	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **05/01/23 14:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	1.76	0.0100	mmhos/cm	1	BGE0257	05/08/23	05/08/23	EPA 120.1	

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

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH05@17-18'
2305020-30 (Soil)

Summit Scientific

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

Date Sampled: **05/01/23 14:40**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
pH	8.30			pH Units	1	BGE0259	05/08/23	05/08/23	EPA 9045D	

Summit Scientific

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6855 W. 119th Ave.
Broomfield CO, 80020

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH06@0.5'
2305020-31 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/01/23 14:45**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BGE0100	05/03/23	05/04/23	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **05/01/23 14:45**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	0.0465	116 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0461	115 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0382	95.6 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/01/23 14:45**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BGE0102	05/03/23	05/04/23	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **05/01/23 14:45**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl	7.39	59.2 %	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 - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH06@0.5'
2305020-31 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **05/01/23 14:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BGE0092	05/03/23	05/03/23	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **05/01/23 14:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0176	52.8 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0169	50.6 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **05/01/23 14:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.250	0.0100	mg/L	1	BGE0243	05/08/23	05/09/23	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **05/01/23 14:45**

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 - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH06@0.5'
2305020-31 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Arsenic	2.86	0.200	mg/kg dry	1	BGE0141	05/04/23	05/09/23	EPA 6020B
Barium	80.2	0.400	"	"	"	"	"	"

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

Date Sampled: **05/01/23 14:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	72.7	0.0500	mg/L dry	1	BGE0201	05/05/23	05/11/23	EPA 6020B	
Magnesium	19.7	0.0500	"	"	"	"	"	"	
Sodium	38.0	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **05/01/23 14:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	1.02	0.00100	units	1	BGE0420	05/12/23	05/12/23	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/01/23 14:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	91.9		%	1	BGE0142	05/04/23	05/04/23	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **05/01/23 14:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.826	0.0100	mmhos/cm	1	BGE0257	05/08/23	05/08/23	EPA 120.1	

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

Summit Scientific

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH06@0.5'
2305020-31 (Soil)

Summit Scientific

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

Date Sampled: **05/01/23 14:45**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
pH	8.01			pH Units	1	BGE0259	05/08/23	05/08/23	EPA 9045D	

Summit Scientific

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH06@5.5'
2305020-32 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/01/23 14:50**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BGE0100	05/03/23	05/04/23	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **05/01/23 14:50**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	0.0460	115 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0440	110 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0382	95.6 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/01/23 14:50**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BGE0102	05/03/23	05/04/23	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **05/01/23 14:50**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl	10.7	85.6 %	30-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

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 - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH06@5.5'
2305020-32 (Soil)

Summit Scientific

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **05/01/23 14:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.544	0.0100	mg/L	1	BGE0243	05/08/23	05/09/23	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **05/01/23 14:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	6.29	0.200	mg/kg dry	1	BGE0141	05/04/23	05/09/23	EPA 6020B	
Barium	104	0.400	"	"	"	"	"	"	

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

Date Sampled: **05/01/23 14:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	107	0.0500	mg/L dry	1	BGE0201	05/05/23	05/11/23	EPA 6020B	
Magnesium	51.7	0.0500	"	"	"	"	"	"	
Sodium	175	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **05/01/23 14:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	3.48	0.00100	units	1	BGE0420	05/12/23	05/12/23	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/01/23 14:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	77.9		%	1	BGE0142	05/04/23	05/04/23	Calculation	

Summit Scientific

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH06@5.5'
2305020-32 (Soil)

Summit Scientific

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **05/01/23 14:50**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Specific Conductance (EC)	1.56	0.0100		mmhos/cm	1	BGE0257	05/08/23	05/08/23	EPA 120.1	

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

Date Sampled: **05/01/23 14:50**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
pH	8.08			pH Units	1	BGE0259	05/08/23	05/08/23	EPA 9045D	

Summit Scientific

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH06@5.5'
2305020-32RE1 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **05/01/23 14:50**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Acenaphthene	ND	0.00500	mg/kg	1	BGF0250	06/07/23	06/08/23	EPA 8270D SIM	I-04
Anthracene	ND	0.00500	"	"	"	"	"	"	I-04
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	I-04
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	I-04
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	I-04
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	I-04
Chrysene	ND	0.00500	"	"	"	"	"	"	I-04
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	I-04
Fluoranthene	ND	0.00500	"	"	"	"	"	"	I-04
Fluorene	ND	0.00500	"	"	"	"	"	"	I-04
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	I-04
Pyrene	ND	0.00500	"	"	"	"	"	"	I-04
1-Methylnaphthalene	0.00793	0.00500	"	"	"	"	"	"	I-04
2-Methylnaphthalene	0.00913	0.00500	"	"	"	"	"	"	I-04

Date Sampled: **05/01/23 14:50**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 2-Methylnaphthalene-d10	0.0136	40.7 %	40-150		"	"	"	"	I-04
Surrogate: Fluoranthene-d10	0.0149	44.8 %	40-150		"	"	"	"	I-04

Summit Scientific

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH06@8-9'
2305020-33 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/01/23 15:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BGE0100	05/03/23	05/04/23	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **05/01/23 15:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	0.0421	105 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0449	112 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0378	94.6 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/01/23 15:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BGE0102	05/03/23	05/04/23	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **05/01/23 15:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl	9.58	76.7 %	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 - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH06@8-9'
2305020-33 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **05/01/23 15:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BGE0092	05/03/23	05/03/23	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **05/01/23 15:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0197	59.0 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0185	55.4 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **05/01/23 15:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.340	0.0100	mg/L	1	BGE0243	05/08/23	05/09/23	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **05/01/23 15:00**

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

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



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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH06@8-9'
2305020-33 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Arsenic	1.37	0.200	mg/kg dry	1	BGE0141	05/04/23	05/09/23	EPA 6020B
Barium	63.1	0.400	"	"	"	"	"	"

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

Date Sampled: **05/01/23 15:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	176	0.0500	mg/L dry	1	BGE0201	05/05/23	05/11/23	EPA 6020B	
Magnesium	52.9	0.0500	"	"	"	"	"	"	
Sodium	186	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **05/01/23 15:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	3.15	0.00100	units	1	BGE0420	05/12/23	05/12/23	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/01/23 15:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	89.8		%	1	BGE0142	05/04/23	05/04/23	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **05/01/23 15:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	2.04	0.0100	mmhos/cm	1	BGE0257	05/08/23	05/08/23	EPA 120.1	

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

Summit Scientific

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH06@8-9'
2305020-33 (Soil)

Summit Scientific

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

Date Sampled: **05/01/23 15:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
pH	7.84			pH Units	1	BGE0259	05/08/23	05/08/23	EPA 9045D	

Summit Scientific

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH06@17-18'
2305020-34 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/01/23 15:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BGE0100	05/03/23	05/04/23	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **05/01/23 15:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	0.0467	117 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0445	111 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0373	93.2 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/01/23 15:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BGE0102	05/03/23	05/04/23	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **05/01/23 15:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl	9.60	76.8 %	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 - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH06@17-18'
2305020-34 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **05/01/23 15:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BGE0092	05/03/23	05/03/23	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **05/01/23 15:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0199	59.8 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0173	51.9 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **05/01/23 15:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.250	0.0100	mg/L	1	BGE0243	05/08/23	05/09/23	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **05/01/23 15:30**

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

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



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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH06@17-18'
2305020-34 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Arsenic	2.74	0.200	mg/kg dry	1	BGE0141	05/04/23	05/09/23	EPA 6020B
Barium	82.7	0.400	"	"	"	"	"	"

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

Date Sampled: **05/01/23 15:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	96.8	0.0500	mg/L dry	1	BGE0201	05/05/23	05/11/23	EPA 6020B	
Magnesium	80.3	0.0500	"	"	"	"	"	"	
Sodium	355	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **05/01/23 15:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	6.47	0.00100	units	1	BGE0420	05/12/23	05/12/23	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/01/23 15:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	84.6		%	1	BGE0142	05/04/23	05/04/23	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **05/01/23 15:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	2.54	0.0100	mmhos/cm	1	BGE0257	05/08/23	05/08/23	EPA 120.1	

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

Summit Scientific

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

BH06@17-18'
2305020-34 (Soil)

Summit Scientific

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

Date Sampled: **05/01/23 15:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
pH	8.14			pH Units	1	BGE0259	05/08/23	05/08/23	EPA 9045D	

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 - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

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 BGE0100 - EPA 5030 Soil MS

Blank (BGE0100-BLK1)

Prepared & Analyzed: 05/03/23

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	0.0516		"	0.0400		129	50-150			
Surrogate: Toluene-d8	0.0426		"	0.0400		106	50-150			
Surrogate: 4-Bromofluorobenzene	0.0402		"	0.0400		100	50-150			

LCS (BGE0100-BS1)

Prepared & Analyzed: 05/03/23

Benzene	0.105	0.0020	mg/kg	0.125		83.9	70-130			
Toluene	0.106	0.0050	"	0.125		84.7	70-130			
Ethylbenzene	0.153	0.0050	"	0.125		123	70-130			
m,p-Xylene	0.309	0.010	"	0.250		124	70-130			
o-Xylene	0.145	0.0050	"	0.125		116	70-130			
1,2,4-Trimethylbenzene	0.139	0.0050	"	0.125		111	70-130			
1,3,5-Trimethylbenzene	0.156	0.0050	"	0.125		125	70-130			
Naphthalene	0.162	0.0038	"	0.125		129	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0530		"	0.0400		133	50-150			
Surrogate: Toluene-d8	0.0424		"	0.0400		106	50-150			
Surrogate: 4-Bromofluorobenzene	0.0391		"	0.0400		97.8	50-150			

Matrix Spike (BGE0100-MS1)

Source: 2304649-01

Prepared & Analyzed: 05/03/23

Benzene	0.105	0.0020	mg/kg	0.125	ND	83.7	70-130			
Toluene	0.105	0.0050	"	0.125	ND	84.4	70-130			
Ethylbenzene	0.156	0.0050	"	0.125	ND	125	70-130			
m,p-Xylene	0.312	0.010	"	0.250	ND	125	70-130			
o-Xylene	0.150	0.0050	"	0.125	ND	120	70-130			
1,2,4-Trimethylbenzene	0.142	0.0050	"	0.125	ND	113	70-130			
1,3,5-Trimethylbenzene	0.157	0.0050	"	0.125	ND	126	70-130			
Naphthalene	0.155	0.0038	"	0.125	ND	124	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0526		"	0.0400		132	50-150			
Surrogate: Toluene-d8	0.0425		"	0.0400		106	50-150			
Surrogate: 4-Bromofluorobenzene	0.0398		"	0.0400		99.6	50-150			

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Broomfield CO, 80020

Project: Noble - Highland 12-20

Project Number: [none]

Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

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 BGE0100 - EPA 5030 Soil MS

Matrix Spike Dup (BGE0100-MSD1)

Source: 2304649-01

Prepared & Analyzed: 05/03/23

Benzene	0.104	0.0020	mg/kg	0.125	ND	83.1	70-130	0.691	30	
Toluene	0.105	0.0050	"	0.125	ND	84.0	70-130	0.399	30	
Ethylbenzene	0.156	0.0050	"	0.125	ND	125	70-130	0.0384	30	
m,p-Xylene	0.313	0.010	"	0.250	ND	125	70-130	0.125	30	
o-Xylene	0.147	0.0050	"	0.125	ND	118	70-130	2.08	30	
1,2,4-Trimethylbenzene	0.138	0.0050	"	0.125	ND	111	70-130	2.55	30	
1,3,5-Trimethylbenzene	0.159	0.0050	"	0.125	ND	127	70-130	1.12	30	
Naphthalene	0.161	0.0038	"	0.125	ND	129	70-130	3.56	30	
Surrogate: 1,2-Dichloroethane-d4	0.0541		"	0.0400		135	50-150			
Surrogate: Toluene-d8	0.0438		"	0.0400		110	50-150			
Surrogate: 4-Bromofluorobenzene	0.0394		"	0.0400		98.6	50-150			

Batch BGE0115 - EPA 5030 Soil MS

Blank (BGE0115-BLK1)

Prepared: 05/03/23 Analyzed: 05/05/23

Benzene	ND	0.0020	mg/kg							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
1,2,4-Trimethylbenzene	ND	0.0050	"							
1,3,5-Trimethylbenzene	ND	0.0050	"							
Naphthalene	ND	0.0038	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
Surrogate: 1,2-Dichloroethane-d4	0.0376		"	0.0400		94.1	50-150			
Surrogate: Toluene-d8	0.0387		"	0.0400		96.8	50-150			
Surrogate: 4-Bromofluorobenzene	0.0397		"	0.0400		99.3	50-150			

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Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

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 BGE0115 - EPA 5030 Soil MS

LCS (BGE0115-BS1)

Prepared: 05/03/23 Analyzed: 05/05/23

Benzene	0.0765	0.0020	mg/kg	0.100		76.5	70-130			
Toluene	0.0890	0.0050	"	0.100		89.0	70-130			
Ethylbenzene	0.104	0.0050	"	0.100		104	70-130			
m,p-Xylene	0.212	0.010	"	0.200		106	70-130			
o-Xylene	0.102	0.0050	"	0.100		102	70-130			
1,2,4-Trimethylbenzene	0.111	0.0050	"	0.100		111	70-130			
1,3,5-Trimethylbenzene	0.113	0.0050	"	0.100		113	70-130			
Naphthalene	0.0824	0.0038	"	0.100		82.4	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0328		"	0.0400		82.0	50-150			
Surrogate: Toluene-d8	0.0394		"	0.0400		98.4	50-150			
Surrogate: 4-Bromofluorobenzene	0.0394		"	0.0400		98.6	50-150			

Matrix Spike (BGE0115-MS1)

Source: 2305020-11

Prepared: 05/03/23 Analyzed: 05/05/23

Benzene	0.0775	0.0020	mg/kg	0.100	ND	77.5	70-130			
Toluene	0.0933	0.0050	"	0.100	ND	93.3	70-130			
Ethylbenzene	0.107	0.0050	"	0.100	ND	107	70-130			
m,p-Xylene	0.219	0.010	"	0.200	ND	109	70-130			
o-Xylene	0.104	0.0050	"	0.100	ND	104	70-130			
1,2,4-Trimethylbenzene	0.115	0.0050	"	0.100	ND	115	70-130			
1,3,5-Trimethylbenzene	0.117	0.0050	"	0.100	ND	117	70-130			
Naphthalene	0.0904	0.0038	"	0.100	ND	90.4	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0347		"	0.0400		86.7	50-150			
Surrogate: Toluene-d8	0.0392		"	0.0400		98.0	50-150			
Surrogate: 4-Bromofluorobenzene	0.0399		"	0.0400		99.7	50-150			

Matrix Spike Dup (BGE0115-MSD1)

Source: 2305020-11

Prepared: 05/03/23 Analyzed: 05/05/23

Benzene	0.0735	0.0020	mg/kg	0.100	ND	73.5	70-130	5.21	30	
Toluene	0.0858	0.0050	"	0.100	ND	85.8	70-130	8.44	30	
Ethylbenzene	0.106	0.0050	"	0.100	ND	106	70-130	1.24	30	
m,p-Xylene	0.216	0.010	"	0.200	ND	108	70-130	1.42	30	
o-Xylene	0.102	0.0050	"	0.100	ND	102	70-130	2.09	30	
1,2,4-Trimethylbenzene	0.113	0.0050	"	0.100	ND	113	70-130	0.974	30	
1,3,5-Trimethylbenzene	0.115	0.0050	"	0.100	ND	115	70-130	1.65	30	
Naphthalene	0.0860	0.0038	"	0.100	ND	86.0	70-130	4.97	30	
Surrogate: 1,2-Dichloroethane-d4	0.0343		"	0.0400		85.8	50-150			
Surrogate: Toluene-d8	0.0383		"	0.0400		95.7	50-150			
Surrogate: 4-Bromofluorobenzene	0.0389		"	0.0400		97.2	50-150			

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Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

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 BGE0102 - EPA 3550A

Blank (BGE0102-BLK1)

Prepared & Analyzed: 05/03/23

C10-C28 (DRO)	ND	50	mg/kg							
C28-C36 (ORO)	ND	50	"							
Surrogate: o-Terphenyl	12.5		"	12.5		99.7	30-150			

LCS (BGE0102-BS1)

Prepared & Analyzed: 05/03/23

C10-C28 (DRO)	511	50	mg/kg	500		102	70-130			
Surrogate: o-Terphenyl	12.6		"	12.5		101	30-150			

Matrix Spike (BGE0102-MS1)

Source: 2304649-01

Prepared & Analyzed: 05/03/23

C10-C28 (DRO)	468	50	mg/kg	500	8.66	91.8	70-130			
Surrogate: o-Terphenyl	10.9		"	12.5		87.0	30-150			

Matrix Spike Dup (BGE0102-MSD1)

Source: 2304649-01

Prepared & Analyzed: 05/03/23

C10-C28 (DRO)	530	50	mg/kg	500	8.66	104	70-130	12.4	20	
Surrogate: o-Terphenyl	11.2		"	12.5		89.6	30-150			

Batch BGE0116 - EPA 3550A

Blank (BGE0116-BLK1)

Prepared: 05/03/23 Analyzed: 05/04/23

C10-C28 (DRO)	ND	50	mg/kg							
C28-C36 (ORO)	ND	50	"							
Surrogate: o-Terphenyl	13.2		"	12.5		105	30-150			

LCS (BGE0116-BS1)

Prepared: 05/03/23 Analyzed: 05/04/23

C10-C28 (DRO)	438	50	mg/kg	500		87.5	70-130			
Surrogate: o-Terphenyl	13.6		"	12.5		109	30-150			

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Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

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 BGE0116 - EPA 3550A

Matrix Spike (BGE0116-MS1)		Source: 2305020-11			Prepared: 05/03/23 Analyzed: 05/04/23					
C10-C28 (DRO)	486	50	mg/kg	500	ND	97.1	70-130			
Surrogate: o-Terphenyl	11.0		"	12.5		88.3	30-150			
Matrix Spike Dup (BGE0116-MSD1)		Source: 2305020-11			Prepared: 05/03/23 Analyzed: 05/04/23					
C10-C28 (DRO)	451	50	mg/kg	500	ND	90.2	70-130	7.36	20	
Surrogate: o-Terphenyl	12.5		"	12.5		100	30-150			

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Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

PAH by EPA Method 8270D SIM - Quality Control

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

Batch BGE0046 - EPA 5030 Soil MS

Blank (BGE0046-BLK1)

Prepared: 05/02/23 Analyzed: 05/04/23

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	0.0206		"	0.0333		61.8	40-150			
Surrogate: Fluoranthene-d10	0.0342		"	0.0333		103	40-150			

LCS (BGE0046-BS1)

Prepared: 05/02/23 Analyzed: 05/04/23

Acenaphthene	0.0260	0.00500	mg/kg	0.0333		78.0	31-137			
Anthracene	0.0311	0.00500	"	0.0333		93.3	30-120			
Benzo (a) anthracene	0.0312	0.00500	"	0.0333		93.6	30-120			
Benzo (a) pyrene	0.0265	0.00500	"	0.0333		79.4	30-120			
Benzo (b) fluoranthene	0.0268	0.00500	"	0.0333		80.3	30-120			
Benzo (k) fluoranthene	0.0288	0.00500	"	0.0333		86.5	30-120			
Chrysene	0.0338	0.00500	"	0.0333		101	30-120			
Dibenz (a,h) anthracene	0.0241	0.00500	"	0.0333		72.3	30-120			
Fluoranthene	0.0302	0.00500	"	0.0333		90.7	30-120			
Fluorene	0.0392	0.00500	"	0.0333		118	30-120			
Indeno (1,2,3-cd) pyrene	0.0226	0.00500	"	0.0333		67.9	30-120			
Pyrene	0.0389	0.00500	"	0.0333		117	35-142			
1-Methylnaphthalene	0.0205	0.00500	"	0.0333		61.6	35-142			
2-Methylnaphthalene	0.0265	0.00500	"	0.0333		79.5	35-142			
Surrogate: 2-Methylnaphthalene-d10	0.0169		"	0.0333		50.6	40-150			
Surrogate: Fluoranthene-d10	0.0311		"	0.0333		93.4	40-150			

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Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

PAH by EPA Method 8270D SIM - Quality Control

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

Batch BGE0046 - EPA 5030 Soil MS

Matrix Spike (BGE0046-MS1)			Source: 2305020-11		Prepared: 05/02/23 Analyzed: 05/04/23					
Acenaphthene	0.0136	0.00500	mg/kg	0.0333	ND	40.8	31-137			
Anthracene	0.0176	0.00500	"	0.0333	ND	52.8	30-120			
Benzo (a) anthracene	0.0201	0.00500	"	0.0333	0.00286	51.6	30-120			
Benzo (a) pyrene	0.0137	0.00500	"	0.0333	ND	41.0	30-120			
Benzo (b) fluoranthene	0.0136	0.00500	"	0.0333	0.00289	32.3	30-120			
Benzo (k) fluoranthene	0.0161	0.00500	"	0.0333	0.00176	43.0	30-120			
Chrysene	0.0190	0.00500	"	0.0333	0.00226	50.3	30-120			
Dibenz (a,h) anthracene	0.0157	0.00500	"	0.0333	ND	47.2	30-120			
Fluoranthene	0.0175	0.00500	"	0.0333	0.00360	41.6	30-120			
Fluorene	0.0264	0.00500	"	0.0333	ND	79.1	30-120			
Indeno (1,2,3-cd) pyrene	0.0148	0.00500	"	0.0333	ND	44.3	30-120			
Pyrene	0.0199	0.00500	"	0.0333	0.00324	49.9	35-142			
1-Methylnaphthalene	0.0134	0.00500	"	0.0333	ND	40.1	15-130			
2-Methylnaphthalene	0.0156	0.00500	"	0.0333	ND	46.8	15-130			
Surrogate: 2-Methylnaphthalene-d10	0.0304		"	0.0333		91.2	40-150			
Surrogate: Fluoranthene-d10	0.0196		"	0.0333		58.7	40-150			

Matrix Spike Dup (BGE0046-MSD1)			Source: 2305020-11		Prepared: 05/02/23 Analyzed: 05/04/23					
Acenaphthene	0.0177	0.00500	mg/kg	0.0333	ND	53.1	31-137	26.2	30	
Anthracene	0.0216	0.00500	"	0.0333	ND	64.7	30-120	20.3	30	
Benzo (a) anthracene	0.0248	0.00500	"	0.0333	0.00286	65.9	30-120	21.1	30	
Benzo (a) pyrene	0.0174	0.00500	"	0.0333	ND	52.3	30-120	24.2	30	
Benzo (b) fluoranthene	0.0153	0.00500	"	0.0333	0.00289	37.3	30-120	11.6	30	
Benzo (k) fluoranthene	0.0164	0.00500	"	0.0333	0.00176	44.0	30-120	1.96	30	
Chrysene	0.0217	0.00500	"	0.0333	0.00226	58.4	30-120	13.3	30	
Dibenz (a,h) anthracene	0.0156	0.00500	"	0.0333	ND	46.8	30-120	0.934	30	
Fluoranthene	0.0203	0.00500	"	0.0333	0.00360	50.0	30-120	14.8	30	
Fluorene	0.0244	0.00500	"	0.0333	ND	73.1	30-120	7.86	30	
Indeno (1,2,3-cd) pyrene	0.0158	0.00500	"	0.0333	ND	47.4	30-120	6.55	30	
Pyrene	0.0231	0.00500	"	0.0333	0.00324	59.6	35-142	14.9	30	
1-Methylnaphthalene	0.0166	0.00500	"	0.0333	ND	49.8	15-130	21.5	50	
2-Methylnaphthalene	0.0196	0.00500	"	0.0333	ND	58.7	15-130	22.5	50	
Surrogate: 2-Methylnaphthalene-d10	0.0210		"	0.0333		63.1	40-150			
Surrogate: Fluoranthene-d10	0.0223		"	0.0333		67.0	40-150			

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6855 W. 119th Ave.
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Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

PAH by EPA Method 8270D SIM - Quality Control

Summit Scientific

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

Batch BGE0092 - EPA 5030 Soil MS

Blank (BGE0092-BLK1)

Prepared & Analyzed: 05/03/23

Acenaphthene	ND	0.00500	mg/kg								
Anthracene	ND	0.00500	"								
Benzo (a) anthracene	ND	0.00500	"								
Benzo (a) pyrene	ND	0.00500	"								
Benzo (b) fluoranthene	ND	0.00500	"								
Benzo (k) fluoranthene	ND	0.00500	"								
Chrysene	ND	0.00500	"								
Dibenz (a,h) anthracene	ND	0.00500	"								
Fluoranthene	ND	0.00500	"								
Fluorene	ND	0.00500	"								
Indeno (1,2,3-cd) pyrene	ND	0.00500	"								
Pyrene	ND	0.00500	"								
1-Methylnaphthalene	ND	0.00500	"								
2-Methylnaphthalene	ND	0.00500	"								
Surrogate: 2-Methylnaphthalene-d10	0.0376		"	0.0333		113		40-150			
Surrogate: Fluoranthene-d10	0.0358		"	0.0333		107		40-150			

LCS (BGE0092-BS1)

Prepared & Analyzed: 05/03/23

Acenaphthene	0.0306	0.00500	mg/kg	0.0333		91.8		31-137			
Anthracene	0.0343	0.00500	"	0.0333		103		30-120			
Benzo (a) anthracene	0.0334	0.00500	"	0.0333		100		30-120			
Benzo (a) pyrene	0.0337	0.00500	"	0.0333		101		30-120			
Benzo (b) fluoranthene	0.0366	0.00500	"	0.0333		110		30-120			
Benzo (k) fluoranthene	0.0389	0.00500	"	0.0333		117		30-120			
Chrysene	0.0327	0.00500	"	0.0333		98.1		30-120			
Dibenz (a,h) anthracene	0.0294	0.00500	"	0.0333		88.3		30-120			
Fluoranthene	0.0353	0.00500	"	0.0333		106		30-120			
Fluorene	0.0377	0.00500	"	0.0333		113		30-120			
Indeno (1,2,3-cd) pyrene	0.0268	0.00500	"	0.0333		80.3		30-120			
Pyrene	0.0362	0.00500	"	0.0333		108		35-142			
1-Methylnaphthalene	0.0313	0.00500	"	0.0333		93.8		35-142			
2-Methylnaphthalene	0.0325	0.00500	"	0.0333		97.5		35-142			
Surrogate: 2-Methylnaphthalene-d10	0.0332		"	0.0333		99.5		40-150			
Surrogate: Fluoranthene-d10	0.0342		"	0.0333		103		40-150			

Summit Scientific

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

PAH by EPA Method 8270D SIM - Quality Control

Summit Scientific

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

Batch BGE0092 - EPA 5030 Soil MS

Matrix Spike (BGE0092-MS1)

Source: 2305020-31

Prepared & Analyzed: 05/03/23

Acenaphthene	0.0169	0.00500	mg/kg	0.0333	ND	50.8	31-137				
Anthracene	0.0173	0.00500	"	0.0333	ND	51.9	30-120				
Benzo (a) anthracene	0.0173	0.00500	"	0.0333	ND	52.0	30-120				
Benzo (a) pyrene	0.0168	0.00500	"	0.0333	ND	50.4	30-120				
Benzo (b) fluoranthene	0.0180	0.00500	"	0.0333	ND	54.0	30-120				
Benzo (k) fluoranthene	0.0207	0.00500	"	0.0333	ND	62.0	30-120				
Chrysene	0.0187	0.00500	"	0.0333	ND	56.0	30-120				
Dibenz (a,h) anthracene	0.0135	0.00500	"	0.0333	ND	40.5	30-120				
Fluoranthene	0.0193	0.00500	"	0.0333	ND	57.9	30-120				
Fluorene	0.0208	0.00500	"	0.0333	ND	62.4	30-120				
Indeno (1,2,3-cd) pyrene	0.0141	0.00500	"	0.0333	ND	42.4	30-120				
Pyrene	0.0217	0.00500	"	0.0333	ND	65.1	35-142				
1-Methylnaphthalene	0.0197	0.00500	"	0.0333	ND	59.0	15-130				
2-Methylnaphthalene	0.0195	0.00500	"	0.0333	ND	58.4	15-130				
Surrogate: 2-Methylnaphthalene-d10	0.0192		"	0.0333		57.5	40-150				
Surrogate: Fluoranthene-d10	0.0187		"	0.0333		56.2	40-150				

Matrix Spike Dup (BGE0092-MSD1)

Source: 2305020-31

Prepared & Analyzed: 05/03/23

Acenaphthene	0.0228	0.00500	mg/kg	0.0333	ND	68.5	31-137	29.6	30
Anthracene	0.0225	0.00500	"	0.0333	ND	67.4	30-120	26.0	30
Benzo (a) anthracene	0.0227	0.00500	"	0.0333	ND	68.1	30-120	26.8	30
Benzo (a) pyrene	0.0224	0.00500	"	0.0333	ND	67.3	30-120	28.7	30
Benzo (b) fluoranthene	0.0232	0.00500	"	0.0333	ND	69.7	30-120	25.4	30
Benzo (k) fluoranthene	0.0255	0.00500	"	0.0333	ND	76.5	30-120	21.0	30
Chrysene	0.0232	0.00500	"	0.0333	ND	69.7	30-120	21.8	30
Dibenz (a,h) anthracene	0.0164	0.00500	"	0.0333	ND	49.3	30-120	19.7	30
Fluoranthene	0.0241	0.00500	"	0.0333	ND	72.3	30-120	22.1	30
Fluorene	0.0254	0.00500	"	0.0333	ND	76.3	30-120	20.0	30
Indeno (1,2,3-cd) pyrene	0.0144	0.00500	"	0.0333	ND	43.2	30-120	1.85	30
Pyrene	0.0263	0.00500	"	0.0333	ND	78.9	35-142	19.3	30
1-Methylnaphthalene	0.0236	0.00500	"	0.0333	ND	70.7	15-130	18.2	50
2-Methylnaphthalene	0.0252	0.00500	"	0.0333	ND	75.7	15-130	25.8	50
Surrogate: 2-Methylnaphthalene-d10	0.0235		"	0.0333		70.4	40-150		
Surrogate: Fluoranthene-d10	0.0246		"	0.0333		73.9	40-150		

Summit Scientific

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

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 BGE0243 - EPA 3050B

Blank (BGE0243-BLK1)

Prepared: 05/08/23 Analyzed: 05/09/23

Boron ND 0.0100 mg/L

LCS (BGE0243-BS1)

Prepared: 05/08/23 Analyzed: 05/09/23

Boron 4.96 0.0100 mg/L 5.00 99.2 80-120

Duplicate (BGE0243-DUP1)

Source: 2305020-11

Prepared: 05/08/23 Analyzed: 05/09/23

Boron 0.320 0.0100 mg/L 0.315 1.40 20

Matrix Spike (BGE0243-MS1)

Source: 2305020-11

Prepared: 05/08/23 Analyzed: 05/09/23

Boron 5.42 0.0100 mg/L 5.00 0.315 102 75-125

Matrix Spike Dup (BGE0243-MSD1)

Source: 2305020-11

Prepared: 05/08/23 Analyzed: 05/09/23

Boron 5.51 0.0100 mg/L 5.00 0.315 104 75-125 1.69 25

Summit Scientific

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

Total Metals by EPA 6020B - Quality Control
Summit Scientific

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

Batch BGE0140 - EPA 3050B

Blank (BGE0140-BLK1)

Prepared: 05/04/23 Analyzed: 05/08/23

Arsenic	ND	0.200	mg/kg wet
Barium	ND	0.400	"

LCS (BGE0140-BS1)

Prepared: 05/04/23 Analyzed: 05/08/23

Arsenic	42.5	0.200	mg/kg wet	40.0	106	80-120
Barium	41.6	0.400	"	40.0	104	80-120

Duplicate (BGE0140-DUP1)

Source: 2305020-01

Prepared: 05/04/23 Analyzed: 05/08/23

Arsenic	2.72	0.200	mg/kg dry	2.67	1.79	20
Barium	63.7	0.400	"	68.4	7.08	20

Matrix Spike (BGE0140-MS1)

Source: 2305020-01

Prepared: 05/04/23 Analyzed: 05/08/23

Arsenic	47.1	0.200	mg/kg dry	43.0	2.67	103	75-125
Barium	111	0.400	"	43.0	68.4	99.0	75-125

Matrix Spike Dup (BGE0140-MSD1)

Source: 2305020-01

Prepared: 05/04/23 Analyzed: 05/08/23

Arsenic	47.3	0.200	mg/kg dry	43.0	2.67	104	75-125	0.417	25
Barium	111	0.400	"	43.0	68.4	99.3	75-125	0.146	25

Post Spike (BGE0140-PS1)

Source: 2305020-01

Prepared: 05/04/23 Analyzed: 05/09/23

Arsenic	123		ug/l	100	6.22	117	75-125
Barium	268		"	100	159	109	75-125

Batch BGE0141 - EPA 3050B

Blank (BGE0141-BLK1)

Prepared: 05/04/23 Analyzed: 05/09/23

Arsenic	ND	0.200	mg/kg wet
Barium	ND	0.400	"

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 - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

Total Metals by EPA 6020B - Quality Control
Summit Scientific

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

Batch BGE0141 - EPA 3050B

LCS (BGE0141-BS1)

Prepared: 05/04/23 Analyzed: 05/09/23

Arsenic	44.3	0.200	mg/kg wet	40.0		111	80-120			
Barium	43.0	0.400	"	40.0		107	80-120			

Duplicate (BGE0141-DUP1)

Source: 2305013-13

Prepared: 05/04/23 Analyzed: 05/09/23

Arsenic	2.70	0.200	mg/kg dry		1.45			60.2	20	QR-04
Barium	103	0.400	"		41.1			85.8	20	QR-04

Matrix Spike (BGE0141-MS1)

Source: 2305013-13

Prepared: 05/04/23 Analyzed: 05/09/23

Arsenic	56.5	0.200	mg/kg dry	52.7	1.45	104	75-125			
Barium	146	0.400	"	52.7	41.1	199	75-125			QM-07

Matrix Spike Dup (BGE0141-MSD1)

Source: 2305013-13

Prepared: 05/04/23 Analyzed: 05/09/23

Arsenic	56.8	0.200	mg/kg dry	52.7	1.45	105	75-125	0.485	25	
Barium	148	0.400	"	52.7	41.1	202	75-125	1.15	25	QM-07

Post Spike (BGE0141-PS1)

Source: 2305013-13

Prepared: 05/04/23 Analyzed: 05/09/23

Barium	183		ug/l	100	77.9	105	75-125			
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Batch BGF0013 - EPA 3050B

Blank (BGF0013-BLK1)

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

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

Summit Scientific

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

Total Metals by EPA 6020B - Quality Control
Summit Scientific

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

Batch BGF0013 - EPA 3050B

LCS (BGF0013-BS1)

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

Arsenic	47.0	0.200	mg/kg wet	40.0		117	80-120			
Barium	32.1	0.400	"	40.0		80.3	80-120			
Cadmium	1.93	0.200	"	2.00		96.7	80-120			
Copper	42.2	0.400	"	40.0		105	80-120			
Lead	22.5	0.200	"	20.0		112	80-120			
Nickel	41.0	0.400	"	40.0		102	80-120			
Selenium	4.17	0.260	"	4.00		104	80-120			
Silver	1.66	0.0200	"	2.00		83.2	80-120			
Zinc	48.1	0.400	"	40.0		120	80-120			

Duplicate (BGF0013-DUP1)

Source: 2304458-31

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

Arsenic	0.544	0.200	mg/kg dry		0.513			5.85	20	
Barium	101	0.400	"		73.7			30.8	20	QR-03
Cadmium	0.125	0.200	"		0.0918			30.4	20	QR-01
Copper	2.44	0.400	"		2.73			11.5	20	
Lead	5.42	0.200	"		4.55			17.6	20	
Nickel	2.22	0.400	"		2.34			5.26	20	
Selenium	0.779	0.260	"		0.830			6.37	20	
Silver	0.0343	0.0200	"		0.0309			10.4	20	
Zinc	9.98	0.400	"		10.8			7.79	20	

Matrix Spike (BGF0013-MS1)

Source: 2304458-31

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

Arsenic	16.0	0.200	mg/kg dry	48.3	0.513	32.1	75-125			QM-07
Barium	102	0.400	"	48.3	73.7	59.2	75-125			QM-07
Cadmium	2.12	0.200	"	2.42	0.0918	84.1	75-125			
Copper	19.1	0.400	"	48.3	2.73	33.8	75-125			QM-07
Lead	21.5	0.200	"	24.2	4.55	70.1	75-125			QM-07
Nickel	19.3	0.400	"	48.3	2.34	35.1	75-125			QM-07
Selenium	8.19	0.260	"	4.83	0.830	152	75-125			QM-07
Silver	2.04	0.0200	"	2.42	0.0309	83.0	75-125			
Zinc	25.9	0.400	"	48.3	10.8	31.3	75-125			QM-07

Summit Scientific

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

Total Metals by EPA 6020B - Quality Control
Summit Scientific

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

Batch BGF0013 - EPA 3050B

Matrix Spike Dup (BGF0013-MSD1)		Source: 2304458-31			Prepared: 06/01/23 Analyzed: 06/03/23					
Arsenic	16.1	0.200	mg/kg dry	48.3	0.513	32.2	75-125	0.461	25	QM-07
Barium	93.3	0.400	"	48.3	73.7	40.6	75-125	9.19	25	QM-07
Cadmium	1.85	0.200	"	2.42	0.0918	72.9	75-125	13.7	25	QM-07
Copper	19.3	0.400	"	48.3	2.73	34.3	75-125	1.13	25	QM-07
Lead	19.6	0.200	"	24.2	4.55	62.5	75-125	9.03	25	QM-07
Nickel	19.5	0.400	"	48.3	2.34	35.5	75-125	1.01	25	QM-07
Selenium	8.42	0.260	"	4.83	0.830	157	75-125	2.69	25	QM-07
Silver	1.88	0.0200	"	2.42	0.0309	76.5	75-125	8.12	25	
Zinc	26.3	0.400	"	48.3	10.8	32.1	75-125	1.34	25	QM-07

Summit Scientific

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

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 BGE0201 - General Preparation

Blank (BGE0201-BLK1)

Prepared: 05/05/23 Analyzed: 05/11/23

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

LCS (BGE0201-BS1)

Prepared: 05/05/23 Analyzed: 05/11/23

Calcium	6.27	0.0500	mg/L wet	5.00	125	70-130
Magnesium	6.02	0.0500	"	5.00	120	70-130
Sodium	6.01	0.0500	"	5.00	120	70-130

Batch BGF0231 - General Preparation

Blank (BGF0231-BLK1)

Prepared: 06/07/23 Analyzed: 06/15/23

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

LCS (BGF0231-BS1)

Prepared: 06/07/23 Analyzed: 06/15/23

Calcium	5.93	0.0500	mg/L wet	5.00	119	70-130
Magnesium	5.75	0.0500	"	5.00	115	70-130
Sodium	4.90	0.0500	"	5.00	98.0	70-130

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 - Highland 12-20

Project Number: [none]

Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

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 BGE0119 - General Preparation

Duplicate (BGE0119-DUP1)		Source: 2305020-01			Prepared & Analyzed: 05/03/23					
% Solids	93.1		%		93.0			0.158	20	

Batch BGE0142 - General Preparation

Duplicate (BGE0142-DUP1)		Source: 2305020-21			Prepared & Analyzed: 05/04/23					
% Solids	88.3		%		88.8			0.621	20	

Summit Scientific

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

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 BGE0257 - General Preparation

Blank (BGE0257-BLK1)

Prepared & Analyzed: 05/08/23

Specific Conductance (EC) ND 0.0100 mmhos/cm

LCS (BGE0257-BS1)

Prepared & Analyzed: 05/08/23

Specific Conductance (EC) 0.152 0.0100 mmhos/cm 0.150 101 95-105

Duplicate (BGE0257-DUP1)

Source: 2305020-11

Prepared & Analyzed: 05/08/23

Specific Conductance (EC) 0.379 0.0100 mmhos/cm 0.386 1.67 20

Summit Scientific

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

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

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

Batch BGE0114 - General Preparation

LCS (BGE0114-BS1)

Prepared & Analyzed: 05/03/23

pH	9.08		pH Units	9.18		98.9	95-105		
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Duplicate (BGE0114-DUP1)

Source: 2304372-03

Prepared & Analyzed: 05/03/23

pH	7.88		pH Units		8.00			1.51	20
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Batch BGE0259 - General Preparation

LCS (BGE0259-BS1)

Prepared & Analyzed: 05/08/23

pH	9.01		pH Units	9.18		98.1	95-105		
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Duplicate (BGE0259-DUP1)

Source: 2305020-11

Prepared & Analyzed: 05/08/23

pH	8.08		pH Units		7.90			2.25	20
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Summit Scientific

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



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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/03/23 12:14

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-03	The RPD value for the sample duplicate or MS/MSD was outside of QC acceptance limits due to matrix interference. QC batch accepted based on LCS and/or LCSD recovery and/or RPD values.
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.
I-04	Sample was analyzed out of recommended holding time per clients request.
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

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

November 28, 2023

Jacob Whritenour

Tasman Geosciences

6855 W. 119th Ave.

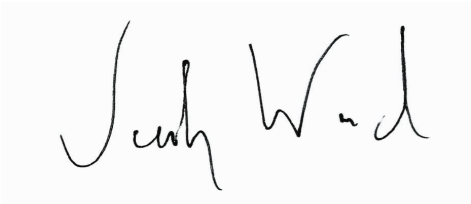
Broomfield, CO 80020

RE: Noble - Highland 12-20

Work Order #2311259

Enclosed are the results of analyses for samples received by Summit Scientific on 11/13/23 17:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

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

Jacob Wood For Paul Shrewsbury

President



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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/28/23 10:43

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH07@0.5'	2311259-01	Soil	11/13/23 12:45	11/13/23 17:30
BH07@5.5'	2311259-02	Soil	11/13/23 12:50	11/13/23 17:30
BH07@8.9'	2311259-03	Soil	11/13/23 12:55	11/13/23 17:30
BH07@17-18'	2311259-04	Soil	11/13/23 13:00	11/13/23 17:30

Summit Scientific

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

SUMMIT SCIENTIFIC

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

Lab ID	Page 1 of 1
2311259	

Client: Noble/Tasman	Send Data To: Project Manager: Jake Whritenour	Send Invoice To: Company: Noble/Chevron
Address: 6855 W. 119th Avenue	E-Mail: jwhritenour@tasman-geo.com	Project Name/Location: Highland 12-20
City/State/Zip: Broomfield, CO 80020		AFE#:
Phone: 303-487-1228	Project Name: Highland 12-20	PO/Billing Codes:
Sampler Name: G. Semenza	Project Number:	Contact: Dan Peterson

					Preservative				Matrix				Analysis Requested								Special Instructions
ID	Sample Description	Date Sampled	Time Sampled	# of containers	HCl	HNO3	None	Other _____	Water	Soil	Air-Canister #	Other _____	915-VOC	915-PAH	915-TPH	pH, EC, SAR	Boron	915-Metals	Arsenic		
1	BH07 @ 0.5'	11/13/23	1245	2			X			X			X	X	X	X	X		X		
2	BH07 @ 5.5'	↓	1250	↓			↓			↓			↓	↓	↓	↓	↓		↓		
3	BH07 @ 8-9'	↓	1255	↓			↓			↓			↓	↓	↓	↓	↓		↓		
4	BH07 @ 17-18'	↓	1300	↓			↓			↓			↓	↓	↓	↓	↓		↓		
5																					
6																					
7																					
8																					
9																					
10																					
11																					
12																					
13																					
14																					
15																					

Relinquished by: <u>G. Semenza</u>	Date/Time: <u>11/13/23 1530</u>	Received by: <u>Tasman Lockbox</u>	Date/Time: <u>11/13/23 1530</u>	TAT Business Days	Field DO	Notes:
				Same Day	Field EC	
Relinquished by: <u>Tasman Lockbox</u>	Date/Time: <u>11/13/23 1730</u>	Received by: <u>[Signature]</u>	Date/Time: <u>11/13/23 1730</u>	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: <u>10.7</u>	Corrected Temperature: <u>0</u>	IR gun #: <u>1</u>	HNO3 lot #:			

S₂

Sample Receipt Checklist

S2 Work Order# 2311259Client: Nobu IwasanClient Project ID: Highland 12-20Shipped Via: H.D./P.U./FedEx/UPS/USPS/Other ☐Airbill #:

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

Matrix (Check all that apply)

Air ☐Soil/Solid ☒Water ☐Other ☐

Temp (°C)

10.7

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"/>	
If custody seals are present, are they intact? ⁽¹⁾	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>NOTE</u>
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 checked="" type="checkbox"/>	<input type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out Completely? ⁽¹⁾	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client w/ date and time recorded? ⁽¹⁾	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all samples received intact? ⁽¹⁾	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided? ⁽¹⁾	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received? ⁽¹⁾	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC? ⁽¹⁾	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling)? ⁽¹⁾ Note the type of preservative in the comments column – HCl, H ₂ SO ₄ , NaOH, HNO ₃ , etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If samples are acid preserved for metals, is the pH ≤ 2? ⁽¹⁾ Record the pH in Comments.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If dissolved metals are requested, were samples field filtered?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Additional Comments (if any):				

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

Custodian Printed Name

Date/Time

AS

11/13/23



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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/28/23 10:43

BH07@0.5'
2311259-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/13/23 12:45**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	BGK0496	11/14/23	11/16/23	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: **11/13/23 12:45**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	0.0522	130 %		50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0429	107 %		50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0431	108 %		50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/13/23 12:45**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	ND	50		mg/kg	1	BGK0497	11/14/23	11/16/23	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **11/13/23 12:45**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl	17.9	144 %		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 - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/28/23 10:43

BH07@0.5'
2311259-01 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **11/13/23 12:45**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Acenaphthene	ND	0.00500	mg/kg	1	BGK0488	11/14/23	11/14/23	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: **11/13/23 12:45**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 2-Methylnaphthalene-d10	0.0169	50.8 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0167	50.1 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **11/13/23 12:45**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Boron	ND	2.00	mg/L	1	BGK0670	11/17/23	11/18/23	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **11/13/23 12:45**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							

Summit Scientific

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/28/23 10:43

BH07@0.5'
2311259-01 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Arsenic	1.10	0.200	mg/kg dry	1	BGK0811	11/21/23	11/22/23	EPA 6020B
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Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction

Date Sampled: **11/13/23 12:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	507	0.0500	mg/L dry	1	BGK0742	11/20/23	11/23/23	EPA 6020B	
Magnesium	214	0.0500	"	"	"	"	"	"	
Sodium	692	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **11/13/23 12:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	6.50	0.00100	units	1	BGK0972	11/27/23	11/27/23	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **11/13/23 12:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	89.8		%	1	BGK0712	11/19/23	11/20/23	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **11/13/23 12:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	5.32	0.0100	mmhos/cm	1	BGK0792	11/21/23	11/21/23	EPA 120.1	

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

Date Sampled: **11/13/23 12:45**

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 - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/28/23 10:43

BH07@0.5'
2311259-01 (Soil)

Summit Scientific

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

pH	7.64	pH Units	1	BGK0791	11/21/23	11/21/23	EPA 9045D
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Tasman Geosciences
6855 W. 119th Ave.
Broomfield CO, 80020

Project: Noble - Highland 12-20

Project Number: [none]

Project Manager: Jacob Whritenour

Reported:
11/28/23 10:43

BH07@5.5'
2311259-02 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/13/23 12:50**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BGK0496	11/14/23	11/16/23	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: **11/13/23 12:50**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	0.0508	127 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0428	107 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0421	105 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/13/23 12:50**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BGK0497	11/14/23	11/16/23	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **11/13/23 12:50**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl	16.3	130 %	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 - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/28/23 10:43

BH07@5.5'
2311259-02 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **11/13/23 12:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BGK0488	11/14/23	11/14/23	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: **11/13/23 12:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0146	43.9 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0137	41.2 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **11/13/23 12:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	2.00	mg/L	1	BGK0670	11/17/23	11/18/23	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **11/13/23 12:50**

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 - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/28/23 10:43

BH07@5.5'
2311259-02 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Arsenic	1.22	0.200	mg/kg dry	1	BGK0811	11/21/23	11/22/23	EPA 6020B
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Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction

Date Sampled: **11/13/23 12:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	291	0.0500	mg/L dry	1	BGK0742	11/20/23	11/23/23	EPA 6020B	
Magnesium	49.7	0.0500	"	"	"	"	"	"	
Sodium	114	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **11/13/23 12:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	1.63	0.00100	units	1	BGK0972	11/27/23	11/27/23	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **11/13/23 12:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	86.0		%	1	BGK0712	11/19/23	11/20/23	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **11/13/23 12:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	1.75	0.0100	mmhos/cm	1	BGK0792	11/21/23	11/21/23	EPA 120.1	

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

Date Sampled: **11/13/23 12:50**

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 - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/28/23 10:43

BH07@5.5'
2311259-02 (Soil)

Summit Scientific

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

pH	7.89	pH Units	1	BGK0791	11/21/23	11/21/23	EPA 9045D
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Summit Scientific

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/28/23 10:43

BH07@8.9'
2311259-03 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/13/23 12:55**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BGK0496	11/14/23	11/16/23	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: **11/13/23 12:55**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	0.0532	133 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0439	110 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0417	104 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/13/23 12:55**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BGK0497	11/14/23	11/16/23	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **11/13/23 12:55**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl	13.4	107 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

Summit Scientific

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6855 W. 119th Ave.
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Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/28/23 10:43

BH07@8.9'
2311259-03 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: 11/13/23 12:55

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BGK0488	11/14/23	11/14/23	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: 11/13/23 12:55

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0155	46.5 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0159	47.6 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: 11/13/23 12:55

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	2.00	mg/L	1	BGK0670	11/17/23	11/18/23	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: 11/13/23 12:55

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 - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/28/23 10:43

BH07@8.9'
2311259-03 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Arsenic	0.900	0.200	mg/kg dry	1	BGK0811	11/21/23	11/22/23	EPA 6020B
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Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction

Date Sampled: **11/13/23 12:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	63.5	0.0500	mg/L dry	1	BGK0742	11/20/23	11/23/23	EPA 6020B	
Magnesium	25.7	0.0500	"	"	"	"	"	"	
Sodium	176	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **11/13/23 12:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	4.71	0.00100	units	1	BGK0972	11/27/23	11/27/23	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **11/13/23 12:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	82.9		%	1	BGK0712	11/19/23	11/20/23	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **11/13/23 12:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	1.07	0.0100	mmhos/cm	1	BGK0792	11/21/23	11/21/23	EPA 120.1	

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

Date Sampled: **11/13/23 12:55**

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 - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/28/23 10:43

BH07@8.9'
2311259-03 (Soil)

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

pH	7.47	pH Units	1	BGK0791	11/21/23	11/21/23	EPA 9045D
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6855 W. 119th Ave.
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Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/28/23 10:43

BH07@17-18'
2311259-04 (Soil)

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Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/13/23 13:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BGK0496	11/14/23	11/16/23	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: **11/13/23 13:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	0.0510	127 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0434	108 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0424	106 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/13/23 13:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BGK0497	11/14/23	11/16/23	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **11/13/23 13:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl	12.4	99.2 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/28/23 10:43

BH07@17-18'
2311259-04 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **11/13/23 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BGK0488	11/14/23	11/14/23	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: **11/13/23 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0140	42.0 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0155	46.6 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **11/13/23 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	2.00	mg/L	1	BGK0670	11/17/23	11/18/23	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **11/13/23 13:00**

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 - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/28/23 10:43

BH07@17-18'
2311259-04 (Soil)

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Total Metals by EPA 6020B

Arsenic	0.929	0.200	mg/kg dry	1	BGK0811	11/21/23	11/22/23	EPA 6020B
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Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction

Date Sampled: **11/13/23 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	46.6	0.0500	mg/L dry	1	BGK0742	11/20/23	11/23/23	EPA 6020B	
Magnesium	27.3	0.0500	"	"	"	"	"	"	
Sodium	152	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **11/13/23 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	4.37	0.00100	units	1	BGK0972	11/27/23	11/27/23	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **11/13/23 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	87.7		%	1	BGK0712	11/19/23	11/20/23	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **11/13/23 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.993	0.0100	mmhos/cm	1	BGK0792	11/21/23	11/21/23	EPA 120.1	

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

Date Sampled: **11/13/23 13:00**

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/28/23 10:43

BH07@17-18'
2311259-04 (Soil)

Summit Scientific

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

pH	8.32	pH Units	1	BGK0791	11/21/23	11/21/23	EPA 9045D
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6855 W. 119th Ave.
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Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/28/23 10:43

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 BGK0496 - EPA 5030 Soil MS

Blank (BGK0496-BLK1)

Prepared & Analyzed: 11/14/23

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	0.0420		"	0.0400		105	50-150			
Surrogate: Toluene-d8	0.0405		"	0.0400		101	50-150			
Surrogate: 4-Bromofluorobenzene	0.0386		"	0.0400		96.6	50-150			

LCS (BGK0496-BS1)

Prepared & Analyzed: 11/14/23

Benzene	0.107	0.0020	mg/kg	0.100		107	70-130			
Toluene	0.0950	0.0050	"	0.100		95.0	70-130			
Ethylbenzene	0.0963	0.0050	"	0.100		96.3	70-130			
m,p-Xylene	0.189	0.010	"	0.200		94.6	70-130			
o-Xylene	0.0912	0.0050	"	0.100		91.2	70-130			
1,2,4-Trimethylbenzene	0.0898	0.0050	"	0.100		89.8	70-130			
1,3,5-Trimethylbenzene	0.0898	0.0050	"	0.100		89.8	70-130			
Naphthalene	0.0795	0.0038	"	0.100		79.5	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0443		"	0.0400		111	50-150			
Surrogate: Toluene-d8	0.0387		"	0.0400		96.8	50-150			
Surrogate: 4-Bromofluorobenzene	0.0382		"	0.0400		95.4	50-150			

Matrix Spike (BGK0496-MS1)

Source: 2311239-01

Prepared & Analyzed: 11/14/23

Benzene	0.0839	0.0020	mg/kg	0.100	ND	83.9	70-130			
Toluene	0.0741	0.0050	"	0.100	ND	74.1	70-130			
Ethylbenzene	0.0760	0.0050	"	0.100	ND	76.0	70-130			
m,p-Xylene	0.148	0.010	"	0.200	ND	73.9	70-130			
o-Xylene	0.0707	0.0050	"	0.100	ND	70.7	70-130			
1,2,4-Trimethylbenzene	0.0702	0.0050	"	0.100	ND	70.2	70-130			
1,3,5-Trimethylbenzene	0.0710	0.0050	"	0.100	ND	71.0	70-130			
Naphthalene	0.0710	0.0038	"	0.100	ND	71.0	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0460		"	0.0400		115	50-150			
Surrogate: Toluene-d8	0.0393		"	0.0400		98.2	50-150			
Surrogate: 4-Bromofluorobenzene	0.0393		"	0.0400		98.2	50-150			

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Broomfield CO, 80020

Project: Noble - Highland 12-20

Project Number: [none]

Project Manager: Jacob Whritenour

Reported:
11/28/23 10:43

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 BGK0496 - EPA 5030 Soil MS

Matrix Spike Dup (BGK0496-MSD1)	Source: 2311239-01			Prepared & Analyzed: 11/14/23						
Benzene	0.0820	0.0020	mg/kg	0.100	ND	82.0	70-130	2.32	30	
Toluene	0.0741	0.0050	"	0.100	ND	74.1	70-130	0.00	30	
Ethylbenzene	0.0747	0.0050	"	0.100	ND	74.7	70-130	1.75	30	
m,p-Xylene	0.146	0.010	"	0.200	ND	72.9	70-130	1.43	30	
o-Xylene	0.0704	0.0050	"	0.100	ND	70.4	70-130	0.340	30	
1,2,4-Trimethylbenzene	0.0705	0.0050	"	0.100	ND	70.5	70-130	0.427	30	
1,3,5-Trimethylbenzene	0.0706	0.0050	"	0.100	ND	70.6	70-130	0.551	30	
Naphthalene	0.0693	0.0038	"	0.100	ND	69.3	70-130	2.44	30	QM-07
Surrogate: 1,2-Dichloroethane-d4	0.0459		"	0.0400		115	50-150			
Surrogate: Toluene-d8	0.0390		"	0.0400		97.4	50-150			
Surrogate: 4-Bromofluorobenzene	0.0400		"	0.0400		100	50-150			

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Broomfield CO, 80020

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/28/23 10:43

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 BGK0497 - EPA 3550A

Blank (BGK0497-BLK1)

Prepared: 11/14/23 Analyzed: 11/15/23

C10-C28 (DRO)	ND	50	mg/kg							
C28-C36 (ORO)	ND	50	"							
Surrogate: o-Terphenyl	13.0		"	12.5		104	30-150			

LCS (BGK0497-BS1)

Prepared: 11/14/23 Analyzed: 11/15/23

C10-C28 (DRO)	354	50	mg/kg	500		70.8	70-130			
Surrogate: o-Terphenyl	9.55		"	12.5		76.4	30-150			

Matrix Spike (BGK0497-MS1)

Source: 2311258-01

Prepared: 11/14/23 Analyzed: 11/15/23

C10-C28 (DRO)	412	50	mg/kg	500	35.0	75.4	70-130			
Surrogate: o-Terphenyl	11.3		"	12.5		90.8	30-150			

Matrix Spike Dup (BGK0497-MSD1)

Source: 2311258-01

Prepared: 11/14/23 Analyzed: 11/16/23

C10-C28 (DRO)	395	50	mg/kg	500	35.0	72.0	70-130	4.27	20	
Surrogate: o-Terphenyl	10.0		"	12.5		80.1	30-150			

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Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/28/23 10:43

PAH by EPA Method 8270D SIM - Quality Control

Summit Scientific

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

Batch BGK0488 - EPA 5030 Soil MS

Blank (BGK0488-BLK1)

Prepared & Analyzed: 11/14/23

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	0.0233		"	0.0333		69.8		40-150			
Surrogate: Fluoranthene-d10	0.0335		"	0.0333		101		40-150			

LCS (BGK0488-BS1)

Prepared & Analyzed: 11/14/23

Acenaphthene	0.0305	0.00500	mg/kg	0.0333		91.5		31-137			
Anthracene	0.0297	0.00500	"	0.0333		89.2		30-120			
Benzo (a) anthracene	0.0270	0.00500	"	0.0333		80.9		30-120			
Benzo (a) pyrene	0.0272	0.00500	"	0.0333		81.5		30-120			
Benzo (b) fluoranthene	0.0296	0.00500	"	0.0333		88.7		30-120			
Benzo (k) fluoranthene	0.0319	0.00500	"	0.0333		95.6		30-120			
Chrysene	0.0313	0.00500	"	0.0333		94.0		30-120			
Dibenz (a,h) anthracene	0.0277	0.00500	"	0.0333		83.2		30-120			
Fluoranthene	0.0295	0.00500	"	0.0333		88.6		30-120			
Fluorene	0.0302	0.00500	"	0.0333		90.5		30-120			
Indeno (1,2,3-cd) pyrene	0.0377	0.00500	"	0.0333		113		30-120			
Pyrene	0.0372	0.00500	"	0.0333		112		35-142			
1-Methylnaphthalene	0.0261	0.00500	"	0.0333		78.4		35-142			
2-Methylnaphthalene	0.0350	0.00500	"	0.0333		105		35-142			
Surrogate: 2-Methylnaphthalene-d10	0.0259		"	0.0333		77.7		40-150			
Surrogate: Fluoranthene-d10	0.0298		"	0.0333		89.5		40-150			

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6855 W. 119th Ave.
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Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/28/23 10:43

PAH by EPA Method 8270D SIM - Quality Control

Summit Scientific

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

Batch BGK0488 - EPA 5030 Soil MS

Matrix Spike (BGK0488-MS1)

Source: 2311258-01

Prepared & Analyzed: 11/14/23

Acenaphthene	0.0160	0.00500	mg/kg	0.0333	ND	47.9	31-137				
Anthracene	0.0166	0.00500	"	0.0333	ND	49.8	30-120				
Benzo (a) anthracene	0.0139	0.00500	"	0.0333	ND	41.6	30-120				
Benzo (a) pyrene	0.0153	0.00500	"	0.0333	ND	46.0	30-120				
Benzo (b) fluoranthene	0.0155	0.00500	"	0.0333	ND	46.4	30-120				
Benzo (k) fluoranthene	0.0151	0.00500	"	0.0333	ND	45.4	30-120				
Chrysene	0.0162	0.00500	"	0.0333	ND	48.5	30-120				
Dibenz (a,h) anthracene	0.0192	0.00500	"	0.0333	ND	57.5	30-120				
Fluoranthene	0.0165	0.00500	"	0.0333	ND	49.5	30-120				
Fluorene	0.0163	0.00500	"	0.0333	ND	48.9	30-120				
Indeno (1,2,3-cd) pyrene	0.0210	0.00500	"	0.0333	ND	62.9	30-120				
Pyrene	0.0208	0.00500	"	0.0333	ND	62.5	35-142				
1-Methylnaphthalene	0.0176	0.00500	"	0.0333	ND	52.8	15-130				
2-Methylnaphthalene	0.0206	0.00500	"	0.0333	ND	61.7	15-130				
Surrogate: 2-Methylnaphthalene-d10	0.0164		"	0.0333		49.1	40-150				
Surrogate: Fluoranthene-d10	0.0163		"	0.0333		49.0	40-150				

Matrix Spike Dup (BGK0488-MSD1)

Source: 2311258-01

Prepared & Analyzed: 11/14/23

Acenaphthene	0.0180	0.00500	mg/kg	0.0333	ND	54.0	31-137	11.9	30
Anthracene	0.0157	0.00500	"	0.0333	ND	47.2	30-120	5.27	30
Benzo (a) anthracene	0.0168	0.00500	"	0.0333	ND	50.5	30-120	19.4	30
Benzo (a) pyrene	0.0180	0.00500	"	0.0333	ND	54.0	30-120	16.0	30
Benzo (b) fluoranthene	0.0196	0.00500	"	0.0333	ND	58.8	30-120	23.7	30
Benzo (k) fluoranthene	0.0191	0.00500	"	0.0333	ND	57.4	30-120	23.4	30
Chrysene	0.0191	0.00500	"	0.0333	ND	57.2	30-120	16.6	30
Dibenz (a,h) anthracene	0.0210	0.00500	"	0.0333	ND	63.0	30-120	9.23	30
Fluoranthene	0.0157	0.00500	"	0.0333	ND	47.0	30-120	5.21	30
Fluorene	0.0179	0.00500	"	0.0333	ND	53.7	30-120	9.36	30
Indeno (1,2,3-cd) pyrene	0.0206	0.00500	"	0.0333	ND	61.7	30-120	2.01	30
Pyrene	0.0235	0.00500	"	0.0333	ND	70.5	35-142	12.0	30
1-Methylnaphthalene	0.0173	0.00500	"	0.0333	ND	51.8	15-130	1.93	50
2-Methylnaphthalene	0.0206	0.00500	"	0.0333	ND	61.8	15-130	0.168	50
Surrogate: 2-Methylnaphthalene-d10	0.0179		"	0.0333		53.8	40-150		
Surrogate: Fluoranthene-d10	0.0154		"	0.0333		46.1	40-150		

Summit Scientific

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/28/23 10:43

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 BGK0670 - EPA 3050B

Blank (BGK0670-BLK1)

Prepared: 11/17/23 Analyzed: 11/18/23

Boron ND 2.00 mg/L

LCS (BGK0670-BS1)

Prepared: 11/17/23 Analyzed: 11/18/23

Boron 4.21 2.00 mg/L 5.00 84.3 80-120

Duplicate (BGK0670-DUP1)

Source: 2311106-01

Prepared: 11/17/23 Analyzed: 11/18/23

Boron 0.439 2.00 mg/L 0.342 24.8 20 QR-01

Matrix Spike (BGK0670-MS1)

Source: 2311106-01

Prepared: 11/17/23 Analyzed: 11/18/23

Boron 4.47 2.00 mg/L 5.00 0.342 82.5 75-125

Matrix Spike Dup (BGK0670-MSD1)

Source: 2311106-01

Prepared: 11/17/23 Analyzed: 11/18/23

Boron 5.18 2.00 mg/L 5.00 0.342 96.8 75-125 14.8 25

Summit Scientific

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/28/23 10:43

Total Metals by EPA 6020B - Quality Control
Summit Scientific

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

Batch BGK0811 - EPA 3050B

Blank (BGK0811-BLK1)

Prepared: 11/21/23 Analyzed: 11/22/23

Arsenic ND 0.200 mg/kg wet

LCS (BGK0811-BS1)

Prepared: 11/21/23 Analyzed: 11/22/23

Arsenic 46.2 0.200 mg/kg wet 40.0 115 80-120

Duplicate (BGK0811-DUP1)

Source: 2311256-01

Prepared: 11/21/23 Analyzed: 11/22/23

Arsenic 0.910 0.200 mg/kg dry 0.964 5.77 20

Matrix Spike (BGK0811-MS1)

Source: 2311256-01

Prepared: 11/21/23 Analyzed: 11/22/23

Arsenic 21.5 0.200 mg/kg dry 46.6 0.964 44.2 75-125 QM-07

Matrix Spike Dup (BGK0811-MSD1)

Source: 2311256-01

Prepared: 11/21/23 Analyzed: 11/22/23

Arsenic 21.1 0.200 mg/kg dry 46.6 0.964 43.2 75-125 2.19 25 QM-07

Summit Scientific

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/28/23 10:43

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 BGK0742 - General Preparation

Blank (BGK0742-BLK1)

Prepared: 11/20/23 Analyzed: 11/23/23

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

LCS (BGK0742-BS1)

Prepared: 11/20/23 Analyzed: 11/23/23

Calcium	5.60	0.0500	mg/L wet	5.00	112	70-130
Magnesium	4.55	0.0500	"	5.00	91.0	70-130
Sodium	5.85	0.0500	"	5.00	117	70-130

Summit Scientific

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/28/23 10:43

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 BGK0712 - General Preparation

Duplicate (BGK0712-DUP1)

Source: 2311106-01

Prepared: 11/19/23 Analyzed: 11/20/23

% Solids	89.2	%	88.6	0.617	20
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Summit Scientific

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/28/23 10:43

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 BGK0792 - General Preparation

Blank (BGK0792-BLK1)

Prepared & Analyzed: 11/21/23

Specific Conductance (EC) ND 0.0100 mmhos/cm

LCS (BGK0792-BS1)

Prepared & Analyzed: 11/21/23

Specific Conductance (EC) 0.148 0.0100 mmhos/cm 0.150 98.6 95-105

Duplicate (BGK0792-DUP1)

Source: 2311259-01

Prepared & Analyzed: 11/21/23

Specific Conductance (EC) 5.32 0.0100 mmhos/cm 5.32 0.00 20

Summit Scientific

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



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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/28/23 10:43

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

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

Batch BGK0791 - General Preparation

LCS (BGK0791-BS1)

Prepared & Analyzed: 11/21/23

pH	9.17	pH Units	9.18	99.9	95-105
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Duplicate (BGK0791-DUP1)

Source: 2311259-01

Prepared & Analyzed: 11/21/23

pH	7.64	pH Units	7.64	0.00	20
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Summit Scientific

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/28/23 10:43

Notes and Definitions

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

ATTACHMENT B
BORING LOGS



TASMAN

6855 W. 119th Ave.
Broomfield, CO 80020

CLIENT: Noble

LOGGED BY: Dennis Gray

PROJECT MANAGER: Jake Whritenour

DRILLING CONTRACTOR: Tasman

DRILLING EQUIPMENT: Geoprobe

DRILL BIT SIZE (INCHES): 2.375"

DATE STARTED - COMPLETED: 5/1/23 - 5/1/23

TOTAL WELL DEPTH (FT. BGS): 18

DEPTH TO WATER (FT. BGS): 9'

Highland 12-20 Facility

BORING / WELL ID: BH01

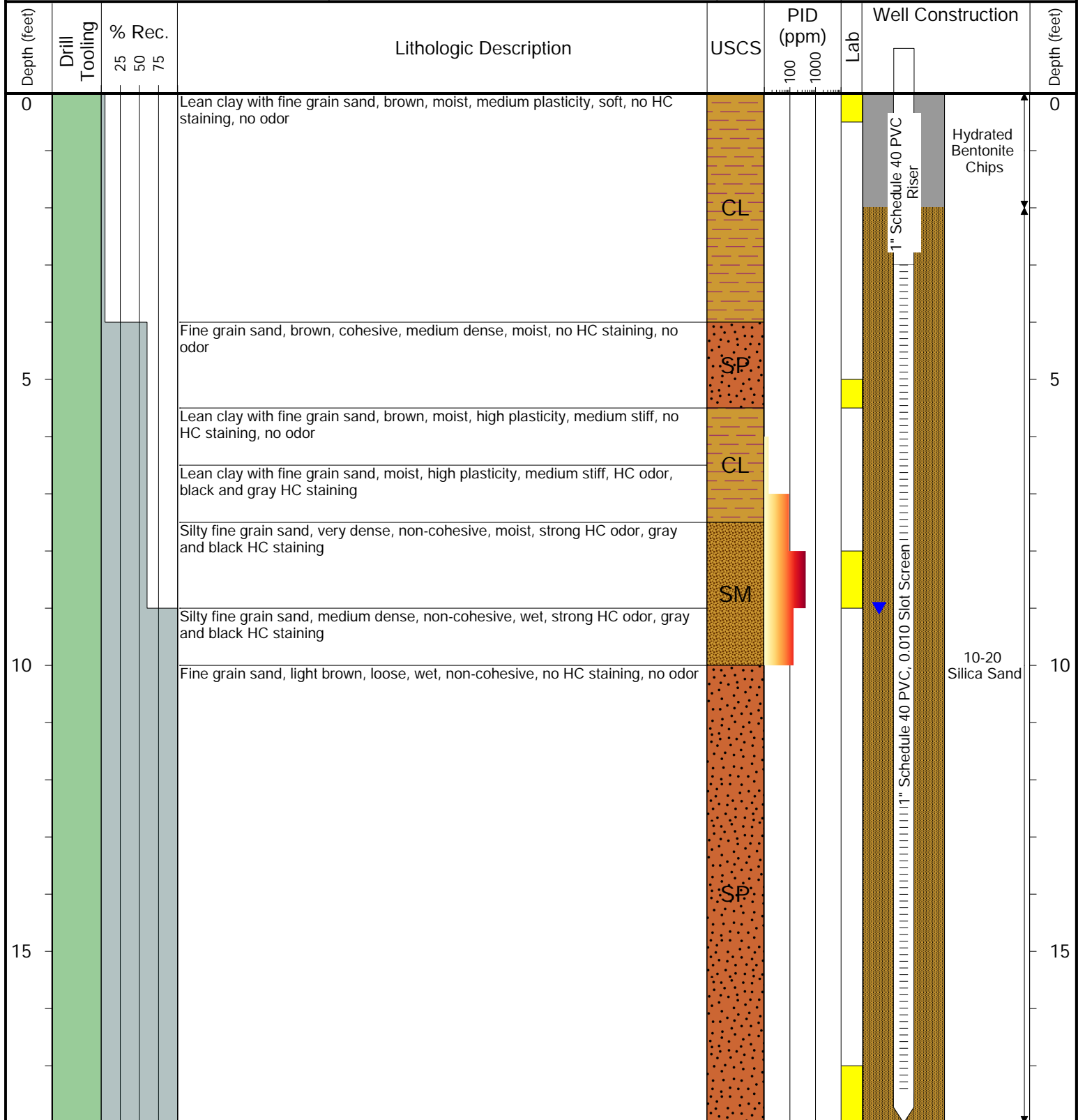
LOCATION: Weld County, Colorado

LATITUDE (WGS 84): 40.296356666

LONGITUDE (WGS 84): -104.577154091

CASING ELEVATION (FT. AMSL): 4722.731936

GROUND ELEVATION (FT. AMSL): 4722.911936



Drilling / Sample Method:

Macro-Core

Hollow Stem Auger

Solid Stem Auger

Hand Auger

Laboratory Sample Types:

Geotechnical Lab

Analytical Chemistry Lab

Geotechnical & Analytical Chemistry Lab



TASMAN

6855 W. 119th Ave.
Broomfield, CO 80020

CLIENT: Noble

LOGGED BY: Dennis Gray

PROJECT MANAGER: Jake Whritenour

DRILLING CONTRACTOR: Tasman

DRILLING EQUIPMENT: Geoprobe

DRILL BIT SIZE (INCHES): 2.375"

DATE STARTED - COMPLETED: 5/1/23 - 5/1/23

TOTAL WELL DEPTH (FT. BGS): 18

DEPTH TO WATER (FT. BGS): 9'

Highland 12-20 Facility

BORING / WELL ID: BH02

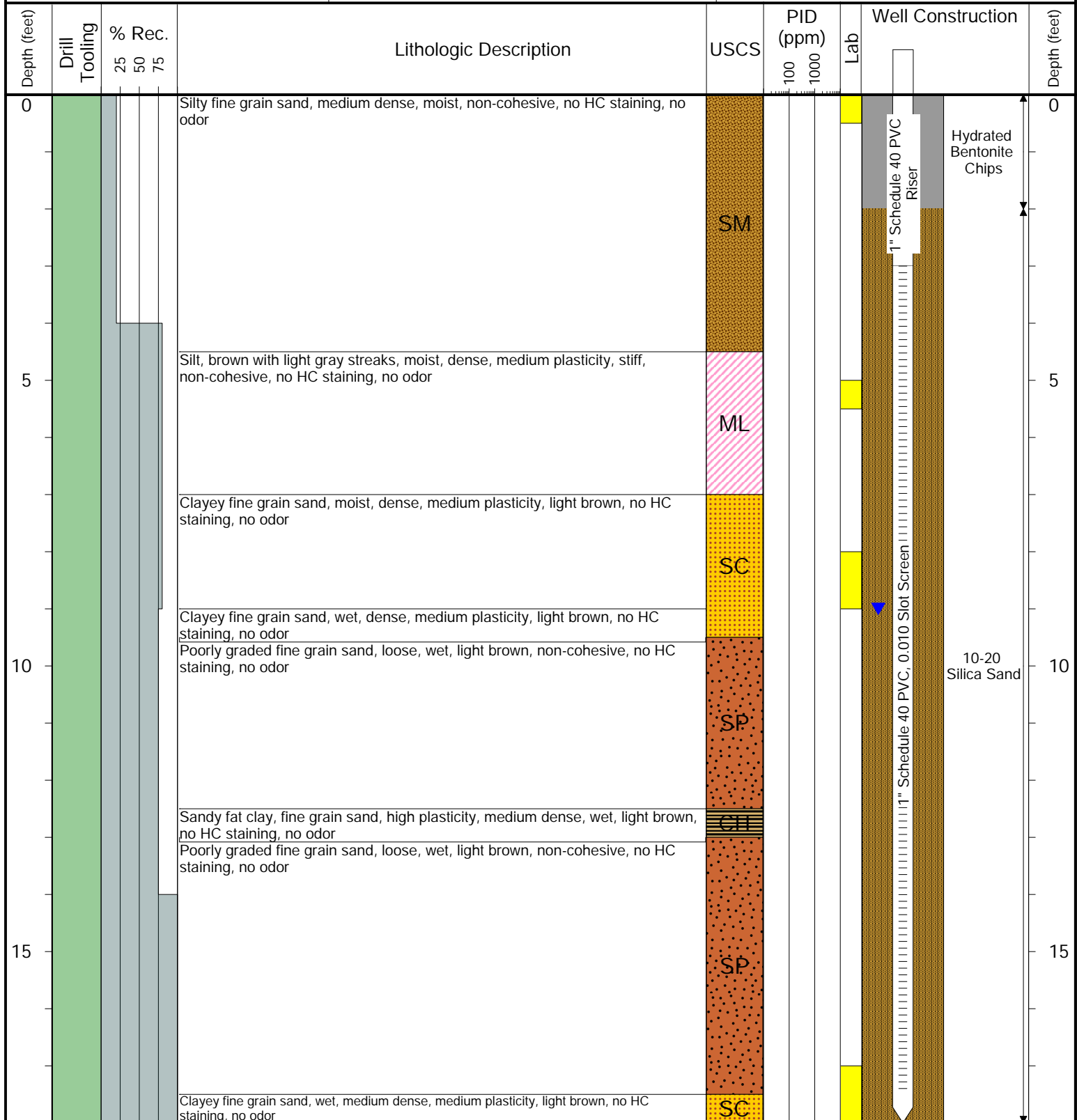
LOCATION: Weld County, Colorado

LATITUDE (WGS 84): 40.296440456

LONGITUDE (WGS 84): -104.577156348

CASING ELEVATION (FT. AMSL): 4725.331936

GROUND ELEVATION (FT. AMSL): 4722.971936



Drilling / Sample Method:

Macro-Core

Hollow Stem Auger

Solid Stem Auger

Hand Auger

Laboratory Sample Types:

Geotechnical Lab

Analytical Chemistry Lab

Geotechnical & Analytical Chemistry Lab



TASMAN

6855 W. 119th Ave.
Broomfield, CO 80020

CLIENT: Noble

LOGGED BY: Dennis Gray

PROJECT MANAGER: Jake Whritenour

DRILLING CONTRACTOR: Tasman

DRILLING EQUIPMENT: Geoprobe

DRILL BIT SIZE (INCHES): 2.375"

DATE STARTED - COMPLETED: 5/1/23 - 5/1/23

TOTAL WELL DEPTH (FT. BGS): 18

DEPTH TO WATER (FT. BGS): 8'

Highland 12-20 Facility

BORING / WELL ID: BH03

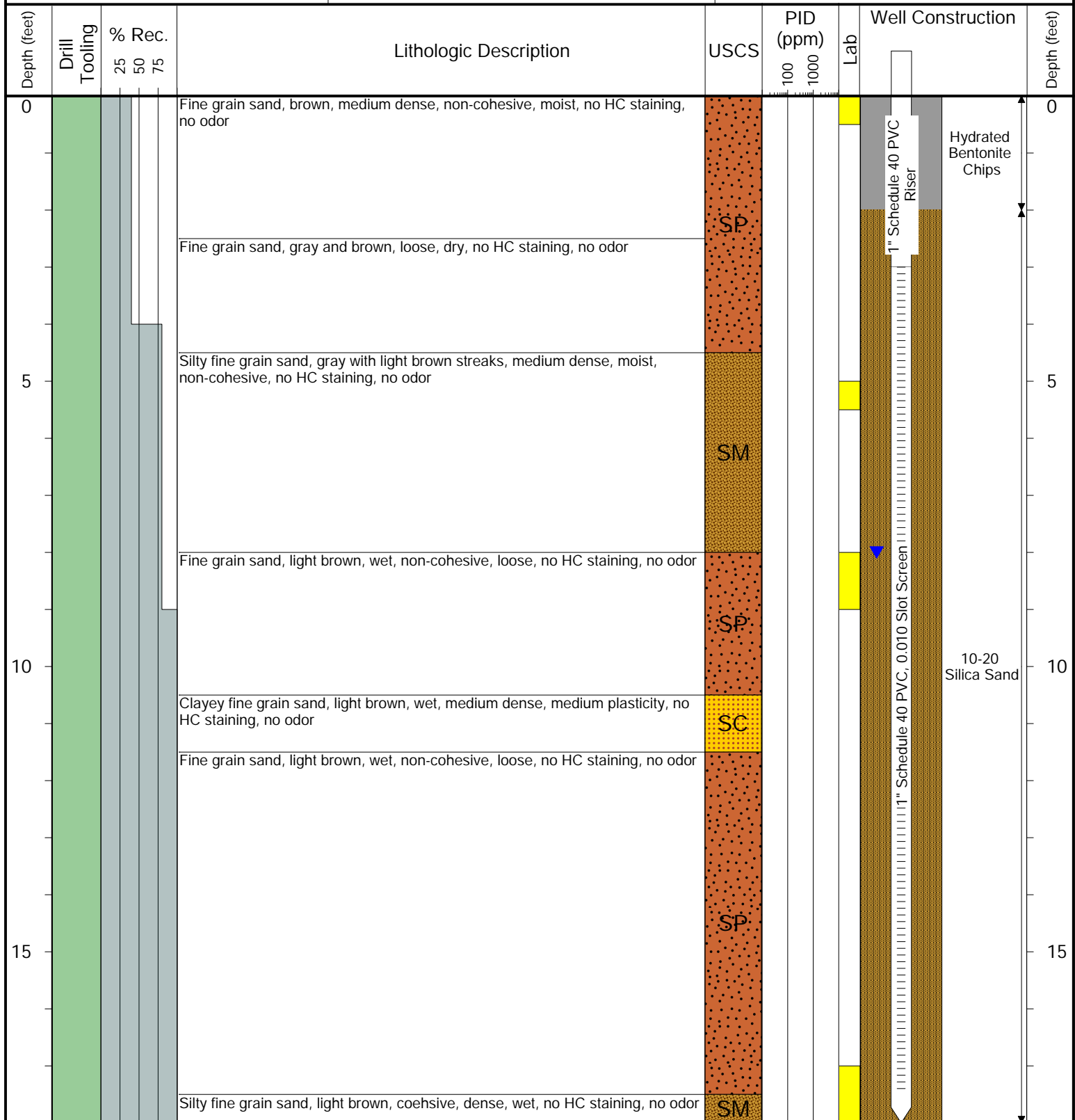
LOCATION: Weld County, Colorado

LATITUDE (WGS 84): 40.296357651

LONGITUDE (WGS 84): -104.57705053

CASING ELEVATION (FT. AMSL): 4721.391936

GROUND ELEVATION (FT. AMSL): 4721.531936



Drilling / Sample Method:

Macro-Core

Hollow Stem Auger

Solid Stem Auger

Hand Auger

Laboratory Sample Types:

Geotechnical Lab

Analytical Chemistry Lab

Geotechnical & Analytical Chemistry Lab



TASMAN

6855 W. 119th Ave.
Broomfield, CO 80020

CLIENT: Noble

LOGGED BY: Dennis Gray

PROJECT MANAGER: Jake Whritenour

DRILLING CONTRACTOR: Tasman

DRILLING EQUIPMENT: Geoprobe

DRILL BIT SIZE (INCHES): 2.375"

DATE STARTED - COMPLETED: 5/1/23 - 5/1/23

TOTAL WELL DEPTH (FT. BGS): 18

DEPTH TO WATER (FT. BGS): 8'

Highland 12-20 Facility

BORING / WELL ID: BH04

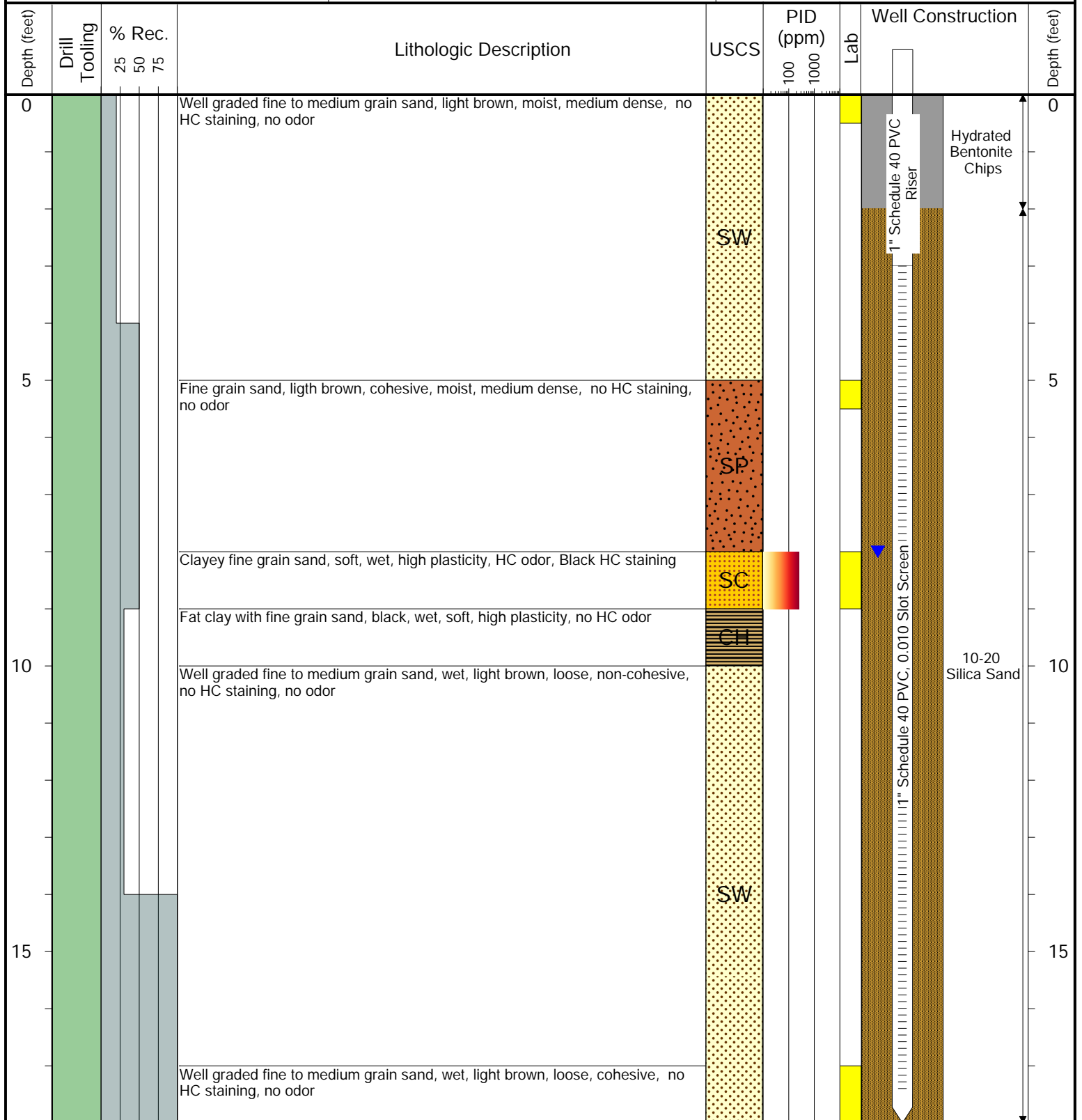
LOCATION: Weld County, Colorado

LATITUDE (WGS 84): 40.296277302

LONGITUDE (WGS 84): -104.577156076

CASING ELEVATION (FT. AMSL): 4722.871936

GROUND ELEVATION (FT. AMSL): 4723.031936



Drilling / Sample Method:

Macro-Core

Hollow Stem Auger

Solid Stem Auger

Hand Auger

Laboratory Sample Types:

Geotechnical Lab

Analytical Chemistry Lab

Geotechnical & Analytical Chemistry Lab



TASMAN

6855 W. 119th Ave.
Broomfield, CO 80020

CLIENT: Noble

LOGGED BY: Dennis Gray

PROJECT MANAGER: Jake Whrittenour

DRILLING CONTRACTOR: Tasman

DRILLING EQUIPMENT: Geoprobe

DRILL BIT SIZE (INCHES): 2.375"

DATE STARTED - COMPLETED: 5/1/23 - 5/1/23

TOTAL WELL DEPTH (FT. BGS): 18

DEPTH TO WATER (FT. BGS): 9.5'

Highland 12-20 Facility

BORING / WELL ID: BH05

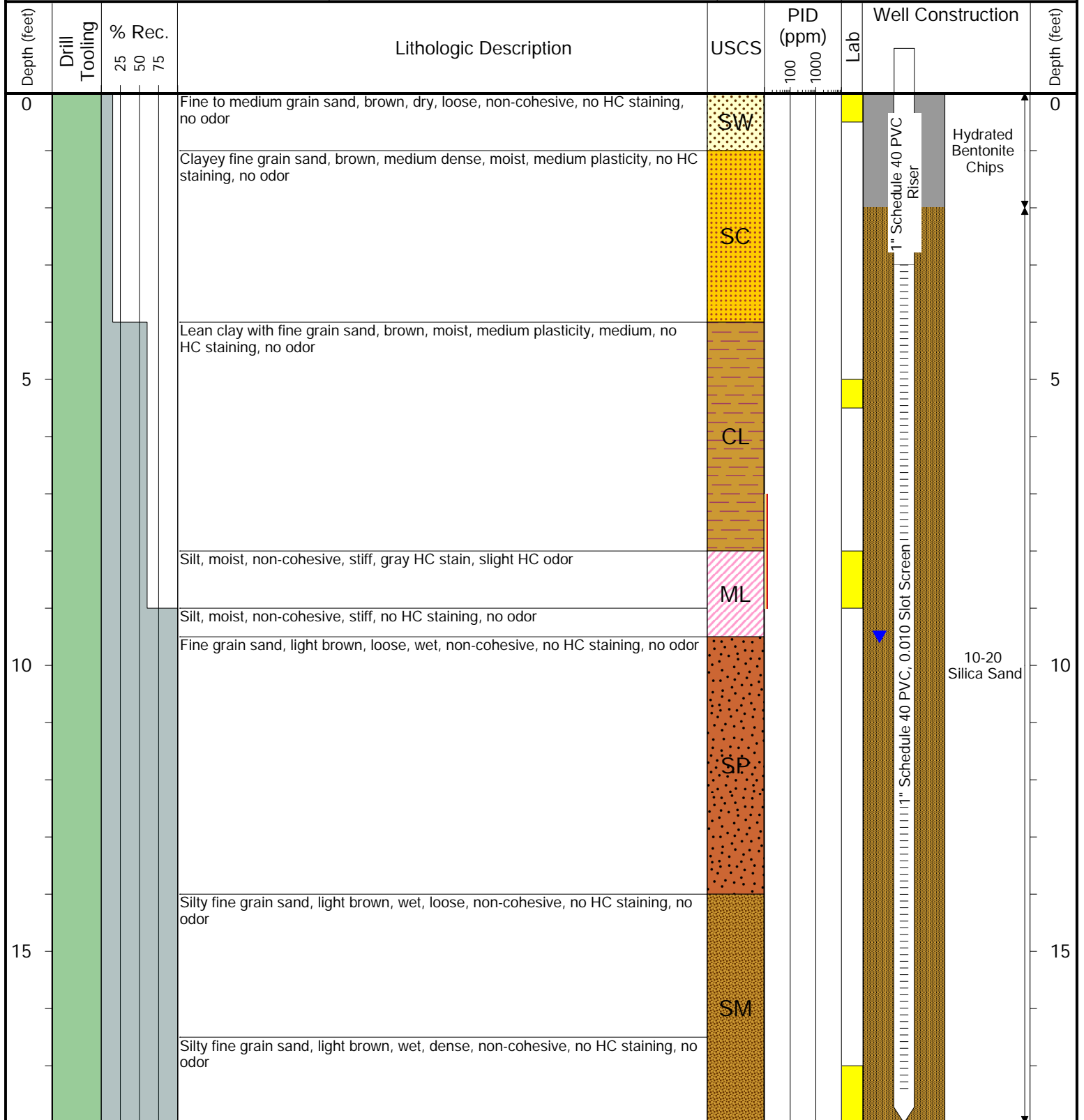
LOCATION: Weld County, Colorado

LATITUDE (WGS 84): 40.296361222

LONGITUDE (WGS 84): -104.577225425

CASING ELEVATION (FT. AMSL): 4723.501936

GROUND ELEVATION (FT. AMSL): 4723.681936



Drilling / Sample Method:

Macro-Core

Hollow Stem Auger

Solid Stem Auger

Hand Auger

Laboratory Sample Types:

Geotechnical Lab

Analytical Chemistry Lab

Geotechnical & Analytical Chemistry Lab



TASMAN

6855 W. 119th Ave.
Broomfield, CO 80020

CLIENT: Noble

LOGGED BY: Dennis Gray

PROJECT MANAGER: Jake Whritenour

DRILLING CONTRACTOR: Tasman

DRILLING EQUIPMENT: Geoprobe

DRILL BIT SIZE (INCHES): 2.375"

DATE STARTED - COMPLETED: 5/1/23 - 5/1/23

TOTAL WELL DEPTH (FT. BGS): 18

DEPTH TO WATER (FT. BGS): 10'

Highland 12-20 Facility

BORING / WELL ID: BH06

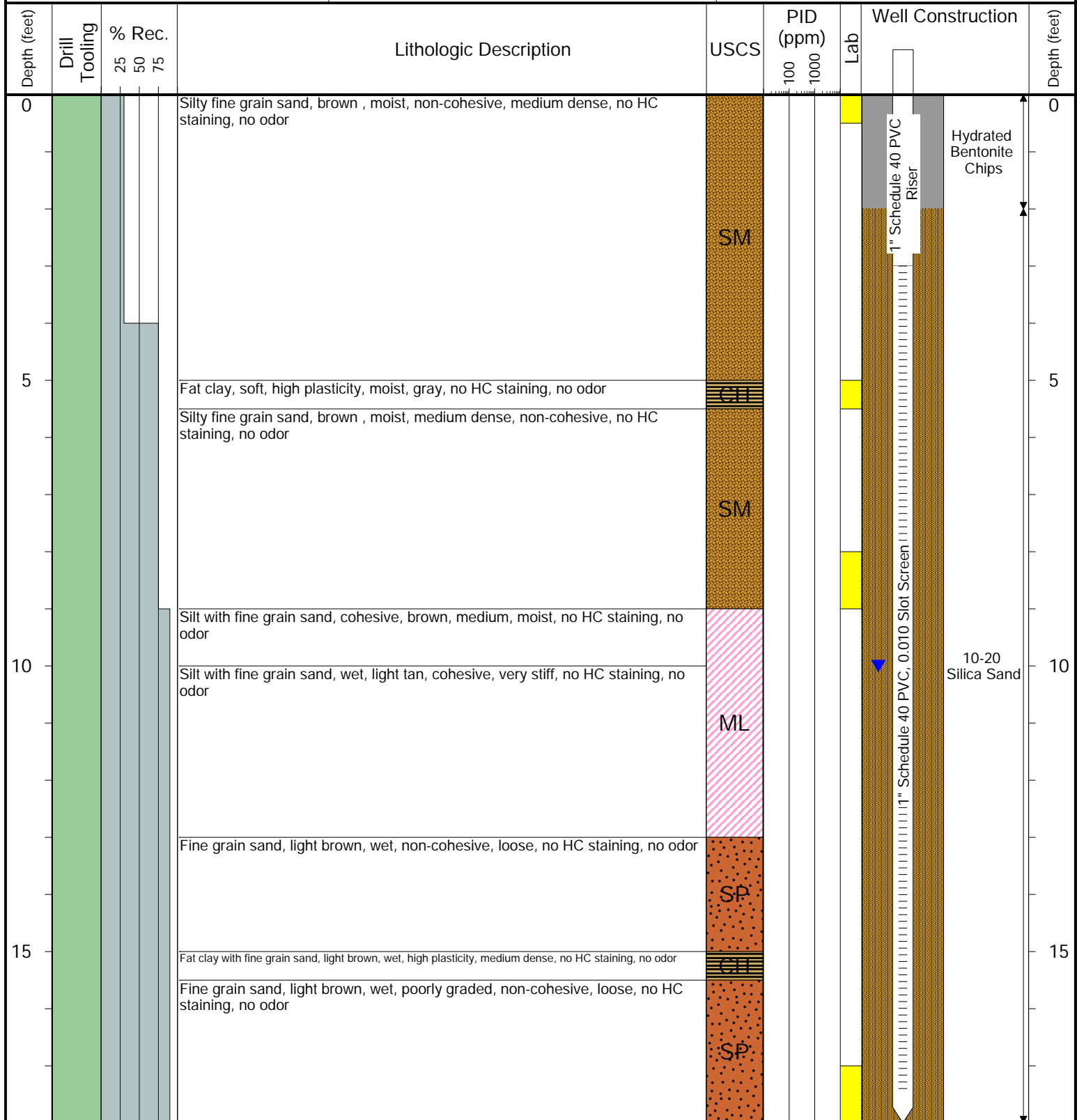
LOCATION: Weld County, Colorado

LATITUDE (WGS 84): 40.296232429

LONGITUDE (WGS 84): -104.577160812

CASING ELEVATION (FT. AMSL): 4723.571936

GROUND ELEVATION (FT. AMSL): 4723.771936



Drilling / Sample Method:

Macro-Core

Hollow Stem Auger

Solid Stem Auger

Hand Auger

Laboratory Sample Types:

Geotechnical Lab

Analytical Chemistry Lab

Geotechnical & Analytical Chemistry Lab



TASMAN

6855 W. 119th Ave.
Broomfield, CO 80020

CLIENT: Noble

LOGGED BY: Elyse Hossink

PROJECT MANAGER: Jake Whritenour

DRILLING CONTRACTOR: Tasman

DRILLING EQUIPMENT: Geoprobe

DRILL BIT SIZE (INCHES): 3.25"

DATE STARTED - COMPLETED: 11/13/23 - 11/13/23

TOTAL WELL DEPTH (FT. BGS): 18

DEPTH TO WATER (FT. BGS): 8.5

Highland 12-20 Facility

BORING / WELL ID: BH07

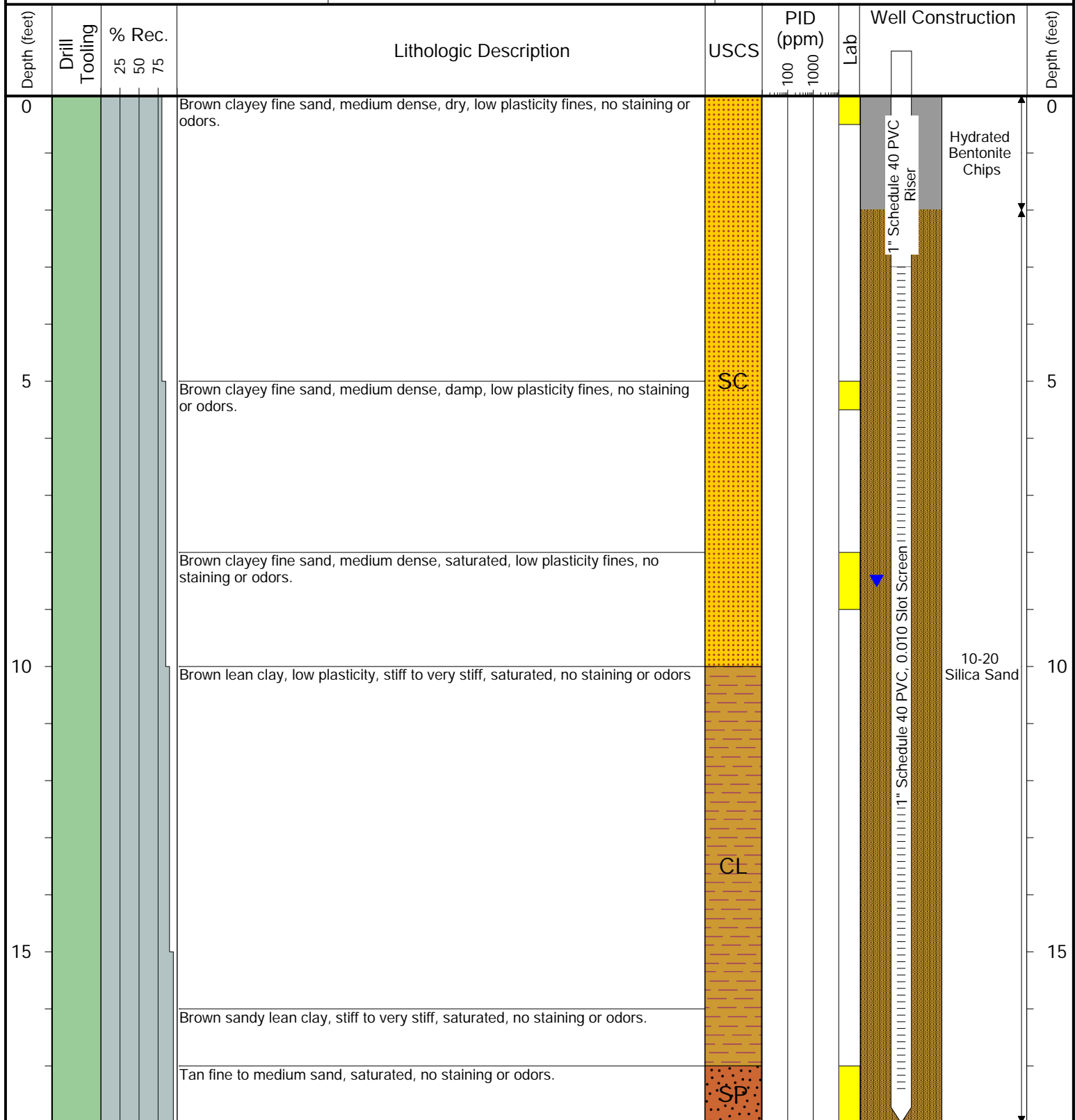
LOCATION: Weld County, Colorado

LATITUDE (WGS 84): 40.296195167399

LONGITUDE (WGS 84): -104.57715782922

CASING ELEVATION (FT. AMSL): 4723.581936

GROUND ELEVATION (FT. AMSL): 4723.841936



Drilling / Sample Method:

Macro-Core

Hollow Stem Auger

Solid Stem Auger

Hand Auger

Laboratory Sample Types:

Geotechnical Lab

Analytical Chemistry Lab

Geotechnical & Analytical Chemistry Lab