

SITE ASSESSMENT REPORT
GUTTERSEN STATE DD08-11 FLOWLINE

COGCC SPILL TRACKING # 482997
COGCC REMEDIATION # 23722

Prepared for:



2115 117th Avenue
Greeley, CO 80631

Prepared by:



6855 W. 119th Ave
Broomfield, CO 80020

September 24, 2023

Mr. Dan Peterson
Environmental Specialist,
Chevron Rockies Business Unit
Noble Energy Inc.
2115 117th Avenue
Greeley, CO 80631

Re: Site Assessment Report
Guttersen State DD08-11 Flowline
Spill/Release Point ID: 482997
Remediation #: 23722
SWSE S8 T3N R63W
Weld County, Colorado

Dear Mr. Peterson:

Below please find a copy of the above referenced Site Assessment Report (Report) for the Guttersen State DD08-11 Flowline (Site) located in Weld County, Colorado. The text below describes flowline decommissioning, assessment, and associated soil sampling conducted by Tasman, Inc. (Tasman), on behalf of Noble Energy, Inc. (Noble) between September 13, 2022, and March 22, 2023.

Introduction

This document describes the results of soil sampling activities conducted at the Site to evaluate potential subsurface impacts. The activities described below were performed in response to the discovery of impacted material adjacent to the flowline during decommissioning activities conducted at the Site.

Site Background

The Site is located approximately 6.4 miles northwest of Roggen in Weld County, Colorado. The Site legal description is the southwest quarter of the southeast quarter of Section 8, Township 3 North, Range 63 West, 6th Principal Meridian. The Site is on terrain that slopes gradually to the west at latitude 40.233314° and longitude -104.458209° [North American Datum of 1983(NAD83)] and is located approximately 5.7 miles east of the intersection of County Road 53 and County Road 34 (Figure 1).

Tasman was initially retained by Noble on September 13, 2022, to complete soil sampling and documentation during Site decommissioning and abandonment activities along the flowline. As reported in the initial Form 19, historical impacts were confirmed adjacent to the flowline on September 26, 2022. The Form 19 was submitted to the Colorado Oil and Gas Conservation Commission (COGCC) on September 27, 2022. The COGCC subsequently issued Spill/Release Point ID Number 482997 for this event. The COGCC assigned Remediation Number 23722 for the project.

Site Decommissioning Activities

Between September 13-20, 2022, Tasman completed decommissioning soil sampling and documentation for the Guttersen State DD08-11 Flowline. The following 35 soil samples were collected along the flowline and field screened for volatile organic compounds (VOC) using a photoionization detector (PID) and standard headspace sampling techniques:

FL01-A@3'	FL01-B@3'	FL01-C@3'	FL01-D@3'	FL01-E@3'
FL01-F@3'	FL01-G@3'	FL01-H@3'	FL01-I@3'	FL01-J@3'
FL01-K@3'	FL01-L@3'	FL01-M@3'	FL01-N@3'	FL01-O@3'
FL01-P@3'	FL01-Q@3'	FL01-R@3'	FL01-S@3'	FL01-T@3'
FL01-U@3'	FL01-V@3'	FL01-W@3'	FL01-X@3'	FL01-Y@3'
FL01-Z@3'	FL01-1@3'	FL01-2@3'	FL01-3@3'	FL01-4@3'
FL01-5@3'	FL01-6@3'	FL01-7@3'	FL01-8@3'	FL01-9@3'

Decommissioning soil samples FL01-A@3', FL01-B@3', FL01-G@3', FL01-L@3', and FL01-1@3' were submitted to Summit Scientific (Summit) in Golden, Colorado for laboratory analysis. The samples were analyzed for COGCC Table 915-1 organic compounds in soil using United States Environmental Protection Agency (USEPA) Method 8260B and USEPA Method 8270D, and total petroleum hydrocarbons (TPH) using USEPA Methods 8260B and 8015D, pH, electrical conductivity (EC), sodium adsorption ratio (SAR) using USEPA saturated paste extraction method, and boron using the hot water-soluble soil extract method. Soil sample FL01-G@3' was also submitted to Summit for laboratory analysis of COGCC Table 915-1 metals in soil using USEPA Method 6020B. Groundwater was not encountered during decommissioning activities at the Site. Decommissioning soil analytical results are summarized on Table 1, illustrated on Figure 2, and the laboratory analytical reports are included in Attachment A.

Site Assessment Activities

On March 22, 2023, Tasman completed site assessment activities to delineate subsurface soil impacts identified at flowline decommissioning soil sample location FL01-G@3'. Tasman advanced a total of five soil borings (BH01-BH05) to six feet below ground surface (ft bgs) using a hand auger in the area of decommissioning soil sample FL01-G@3'. During soil boring operations, soil samples were collected and field screened for VOCs using a PID and standard headspace sampling techniques. The following soil samples were collected at depths corresponding to initial observed impacts, and the terminal depth of the borings:

Site Assessment Soil Borings

BH01@3'	BH02@3'	BH03@3'	BH04@3'	BH05@3'
BH01@6'	BH02@6'	BH03@6'	BH04@6'	BH05@6'

All 10 site assessment soil samples, shown above, were submitted to Summit for laboratory analysis of the COGCC Table 915-1 list of organic compounds in soil using USEPA Methods 8260B and

8270D, TPH using USEPA Methods 8260B and 8015D, COGCC Table 915-1 metals in soil using USEPA Method 6020B, pH, EC, SAR using USEPA saturated paste extraction method, and boron using the hot water-soluble soil extract method. Site assessment soil boring analytical results are summarized in Table 1 and illustrated on Figure 3. Laboratory analytical reports are included in Attachment A and the boring logs are included in Attachment B. Groundwater was not encountered during the site assessment. At the conclusion of the site assessment, boreholes BH01 through BH05 were backfilled with bentonite.

Results

Laboratory analytical results from flowline decommissioning soil sample FL01-G@3' identified concentrations of benzo(a)anthracene (benz(a)) above COGCC Table 915-1 Protection of Groundwater Soil Screening Levels (GW SSL). In the 10 soil samples collected during the site assessment, organic compounds and inorganic compounds were all in compliance with COGCC Table 915-1 GW SSLs and Soil Suitability for Reclamation (SSR) standards, respectively.

Arsenic was identified at concentrations above COGCC Table 915-1 GW SSLs in decommissioning sample FL01-G@3' and in all 10 site assessment soil samples. Additionally, barium and selenium were identified at concentrations above COGCC Table 915-1 GW SSLs in a combination of site assessment soil samples BH01@6', BH02@6', and BH04@6', and decommissioning soil sample FL01-G@3'.

Background soil samples were previously collected approximately 145 feet southeast of the Site during the *Guttersen State DD08-11, 13 Facility* site assessment and reported to the COGCC on 02/14/2023 on Supplemental Form 27 Document Number 403265399. During that site assessment, a total of ten background samples were collected from five discrete locations and analyzed for metals in soil per COGCC Table 915-1. The average background concentrations of arsenic, barium, and selenium with a 1.25 multiplier applied were calculated to be 2.09 milligrams per kilogram (mg/kg), 62.6 mg/kg, and 0.511 mg/kg, respectively. The average site assessment soil boring concentrations of arsenic, barium, and selenium were calculated to be 2.38 mg/kg, 74.6 mg/kg, and 0.260 mg/kg, respectively. In the case of calculating the average concentrations of selenium where selenium was not detected above the laboratory reporting limit, the reporting limit was used in the calculation. Average background concentrations for selenium were calculated to be higher than their average concentrations in the soil boring samples.

Although background concentrations for arsenic were initially calculated to be lower than the average concentrations in the decommissioning and site assessment samples, two abnormally high concentrations of arsenic were identified at soil sample locations BH02@6' and BH04@6'. At those sample locations, there is a distinct lack of evidence suggesting that the subsurface chemistry at has been altered due to oil and gas activity (i.e., elevated PID readings, hydrocarbon staining or odors, elevated pH, EC, SAR, and boron). Based on the lack of hydrocarbon and inorganic chemical alteration in the subsurface at soil sample locations BH02@6' and BH04@6', those abnormally high concentrations of arsenic should be considered background concentrations. By applying those concentrations to the average background calculations, the new average background concentration for arsenic was calculated to be 2.74 mg/kg, and the average site assessment soil boring concentration was calculated to be 1.74 mg/kg. Based on a comparison of metals concentrations in site assessment

soil samples to established background levels at the site, arsenic and selenium should not be considered contaminants of concern at the Site.

While concentrations of barium remain at the Site above COGCC Table 915-1 GW SSLs, groundwater was not encountered during the decommissioning or site assessment activities. As such, a desktop review of Colorado's Division of Water Resources (DWR) Well Permit Research Mapper was performed to determine the depth to water below ground surface in permitted water wells within a 0.5-mile radius of decommissioning sample FL01-G@3'. For a visual representation of the results of this inquiry refer to Figure 4. One permitted water well (permit ID 7895-) was identified within the 0.5-mile radius, approximately 1,737 ft to the north of FL01-G@3' and is at roughly the same ground surface elevation as the Site. According to the permit records, the static groundwater level in this well is 173 ft bgs. Since groundwater is recorded to be 173 ft bgs in the region of the Site, and since soil impacts at the Site are limited to less than 6 ft bgs, there is no pathway for contaminant migration to the groundwater table. As such, Noble proposes to utilize COGCC Table 915-1 Residential Soil Screening Levels (RSSLs) when evaluating soil sample analytical results. The use of COGCC Table 915-1 RSSLs eliminates barium in the site assessment soil samples and benz(a) in decommissioning soil sample FL01-G@3' as contaminants of concern.

Conclusions

Soil hydrocarbon impacts in exceedance of COGCC Table 915-1 GW SSLs identified in flowline decommissioning in soil sample FL01-G@3' have been successfully delineated vertically and laterally by site assessment soil borings BH01 through BH05. Based on the successful delineation and lack of a pathway to groundwater identified at the Site, Noble proposes to apply COGCC Table 915-1 RSSLs to the Site, which would eliminate benz(a) identified at FL01-G@3' and barium identified at BH01@6', BH02@6', and BH04@6' as contaminants of concern. Based on the metals evaluation presented in the Results section of this report, arsenic and selenium should not be considered contaminants of concern at the Site. As such, Noble requests a No Further Action (NFA) designation for the Site from the COGCC and proposes to leave the soil impacts above COGCC Table 915-1 GW SSLs identified during flowline decommissioning be left in place.

Remarks

The discussion and conclusions contained in this report represent the professional opinions of Tasman, Inc. These opinions are based on currently available information and are arrived at in accordance with currently accepted geologic and engineering practices.

Please contact me at (720) 616-8383 or at jwhritenour@tasman-geo.com if you require additional information.

Sincerely,
Tasman, Inc.



Jake Whritenour, Program Manager

Attachments:

Table 1 – Soil Analytical Data

Figure 1 – Site Location Map

Figure 2 – Decommissioning Soil Analytical Results Map (09/13/2022, 09/14/2022, 09/19/2022 & 09/20/2022)

Figure 3 – Site Assessment Soil Analytical Results Map (09/14/2022 & 03/22/2023)

Figure 4 – Water Well Investigation Location Map

Attachment A – Laboratory Soil Analytical Data Reports

Attachment B – Boring Logs

TABLES

TABLE 1
SOIL ANALYTICAL DATA
NOBLE ENERGY, INC. - GUTTERSEN STATE DD08-11 FLOWLINE

Soil Sample ID	Date	¹ Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	1,2,4 - TMB (mg/kg)	1,3,5 - TMB (mg/kg)	Naphthalene (mg/kg)	TPH-GRO (mg/kg)	TPH-DRO (mg/kg)	TPH-ORO (mg/kg)	Acenaphthene (mg/kg)	Anthracene (mg/kg)	Benz(a) (mg/kg)	Benzo(a) (mg/kg)	Benzo(b) (mg/kg)	Benzo(k) (mg/kg)	Chrysene (mg/kg)	A,H (mg/kg)	Fluoranthene (mg/kg)	Fluorene (mg/kg)	1,2,3-CD (mg/kg)	Pyrene (mg/kg)	1-M (mg/kg)	2-M (mg/kg)
Residential SSL ²		1.2	490	5.8	58	30	27	2	500			360	1,800	1.1	0.11	1.1	11	110	0.11	240	240	1.1	180	18	24
Protection of Groundwater SSL ^{2,3}		0.0026	0.69	0.78	9.9	0.0081	0.0087	0.0038	500			0.55	6	0.011	0.24	0.3	2.9	9	0.096	8.9	0.54	0.98	1.3	0.006	0.019
FL01-A@3'	09/13/22	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	<50	<50	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.00651	<0.00500	<0.00500	0.00557	<0.00500	<0.00500
FL01-G@3'	09/14/22	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	<50	<50	0.00863	0.0225	0.123	0.0741	0.107	0.0334	0.107	<0.00500	0.142	0.00757	0.0379	0.163	<0.00500	<0.00500
FL01-L@3'	09/19/22	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	<50	<50	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
FL01-1@3'	09/20/22	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	<50	<50	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
FL01-B@3'	09/20/22	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	<50	<50	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
BH01@3'	03/22/23	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	81	<50	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
BH01@6'	03/22/23	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	<50	<50	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
BH02@3'	03/22/23	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	<50	<50	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
BH02@6'	03/22/23	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	<50	<50	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
BH03@3'	03/22/23	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	<50	<50	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
BH03@6'	03/22/23	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	<50	<50	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
BH04@3'	03/22/23	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	<50	<50	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
BH04@6'	03/22/23	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	<50	<50	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
BH05@3'	03/22/23	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	<50	<50	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
BH05@6'	03/22/23	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	<50	<50	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500

Soil Sample ID	Date	pH	SAR	EC (mmhos/cm)	Boron (mg/L)
Residential SSL ²		6 - 8.3	<6	<4mmhos/cm	2
FL01-A@3'	09/13/22	7.56	0.335	0.582	0.0751
FL01-G@3'	09/14/22	7.81	0.279	0.207	0.0615
FL01-L@3'	09/19/22	7.71	0.124	0.140	0.0665
FL01-1@3'	09/20/22	6.84	0.145	0.0550	0.0475
FL01-B@3'	09/20/22	6.15	0.215	0.257	0.0361
BH01@3'	03/22/23	7.22	0.0769	0.250	0.0821
BH01@6'	03/22/23	6.97	0.0576	0.132	0.0669
BH02@3'	03/22/23	6.35	0.0950	0.145	0.103
BH02@6'	03/22/23	7.91	0.152	0.318	0.0615
BH03@3'	03/22/23	6.36	0.0409	0.226	0.116
BH03@6'	03/22/23	6.43	0.0413	0.121	0.0900
BH04@3'	03/22/23	6.62	0.0425	0.143	0.0475
BH04@6'	03/22/23	6.90	0.0491	0.0801	0.0443
BH05@3'	03/22/23	6.93	0.0814	0.218	0.137
BH05@6'	03/22/23	6.30	0.0558	0.190	0.0639

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 ²		0.68	15,000	71	0.3	3,100	400	1,500	390	390	23,000
Protection of Groundwater SSL ^{2,3}		0.29	82	0.38	0.00067	46	14	26	0.26	0.8	370
FL01-G@3'	09/14/22	1.49	42.7	<0.212	<0.30	3.33	2.92	3.14	0.614	<0.0212	14.6
BH01@3'	03/22/23	1.42	46.4	<0.219	<0.30	2.13	<0.219	2.44	<0.260	<0.0219	9.16
BH01@6'	03/22/23	2.22	88.2	<0.223	<0.30	2.94	4.39	3.65	<0.260	<0.0223	11.7
BH02@3'	03/22/23	1.78	60.8	<0.220	<0.30	2.37	4.21	3.05	<0.260	<0.0220	12.4
BH02@6'	03/22/23	3.72	182	0.282	<0.30	4.05	<0.228	5.21	<0.260	<0.0228	15.3
BH03@3'	03/22/23	1.56	62.7	<0.213	<0.30	2.19	3.94	2.78	<0.260	0.0226	11.5
BH03@6'	03/22/23	2.24	71.1	<0.214	<0.30	2.49	4.02	2.91	<0.260	<0.0214	10.9
BH04@3'	03/22/23	1.50	35.6	<0.219	<0.30	2.27	<0.219	2.53	<0.260	<0.0219	9.19
BH04@6'	03/22/23	5.85	110	0.226	<0.30	5.25	7.88	8.76	<0.260	0.0232	16.5
BH05@3'	03/22/23	1.69	39.8	<0.215	<0.30	2.39	3.70	2.75	<0.260	<0.0215	10.6
BH05@6'	03/22/23	1.77	49.7	<0.212	<0.30	2.46	3.49	2.94	<0.260	<0.0212	9.38

Notes:

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

Definitions:

COGCC = Colorado Oil and Gas Conservation Commission
 TPH-GRO = Total petroleum hydrocarbons - gasoline range organics
 TPH-DRO = Total petroleum hydrocarbons - diesel range organics
 TPH-ORO = Total petroleum hydrocarbons - oil range organics
 mg/kg = Milligrams per kilogram
 SAR = Sodium Adsorption Ratio
 EC = Electrical Conductivity
 mmhos/cm = Millimhos per centimeter
 mg/L = Milligrams per liter
 < = Analytical result is less than the indicated laboratory reporting limit

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

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

FIGURES

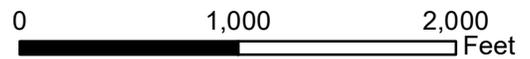
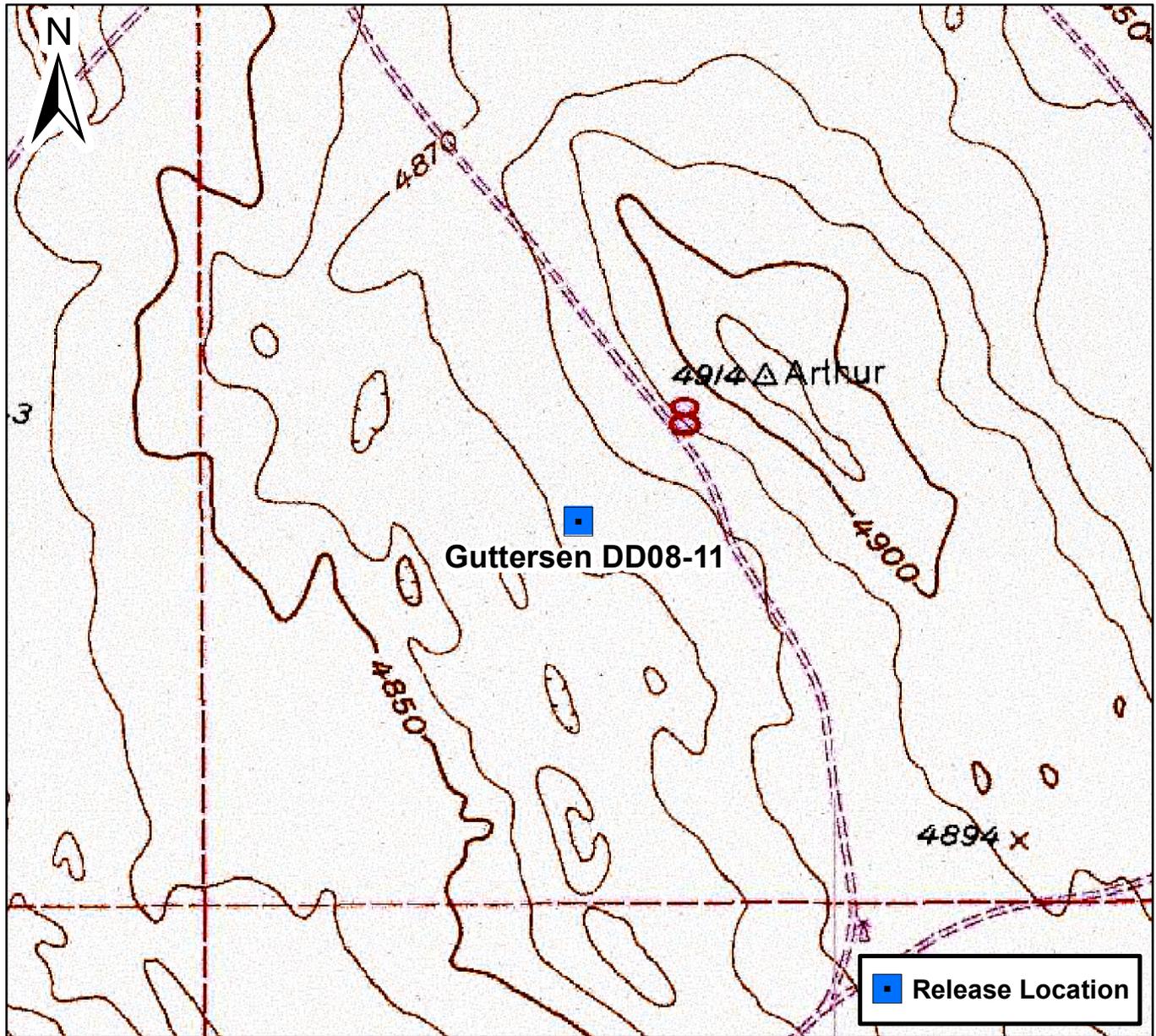
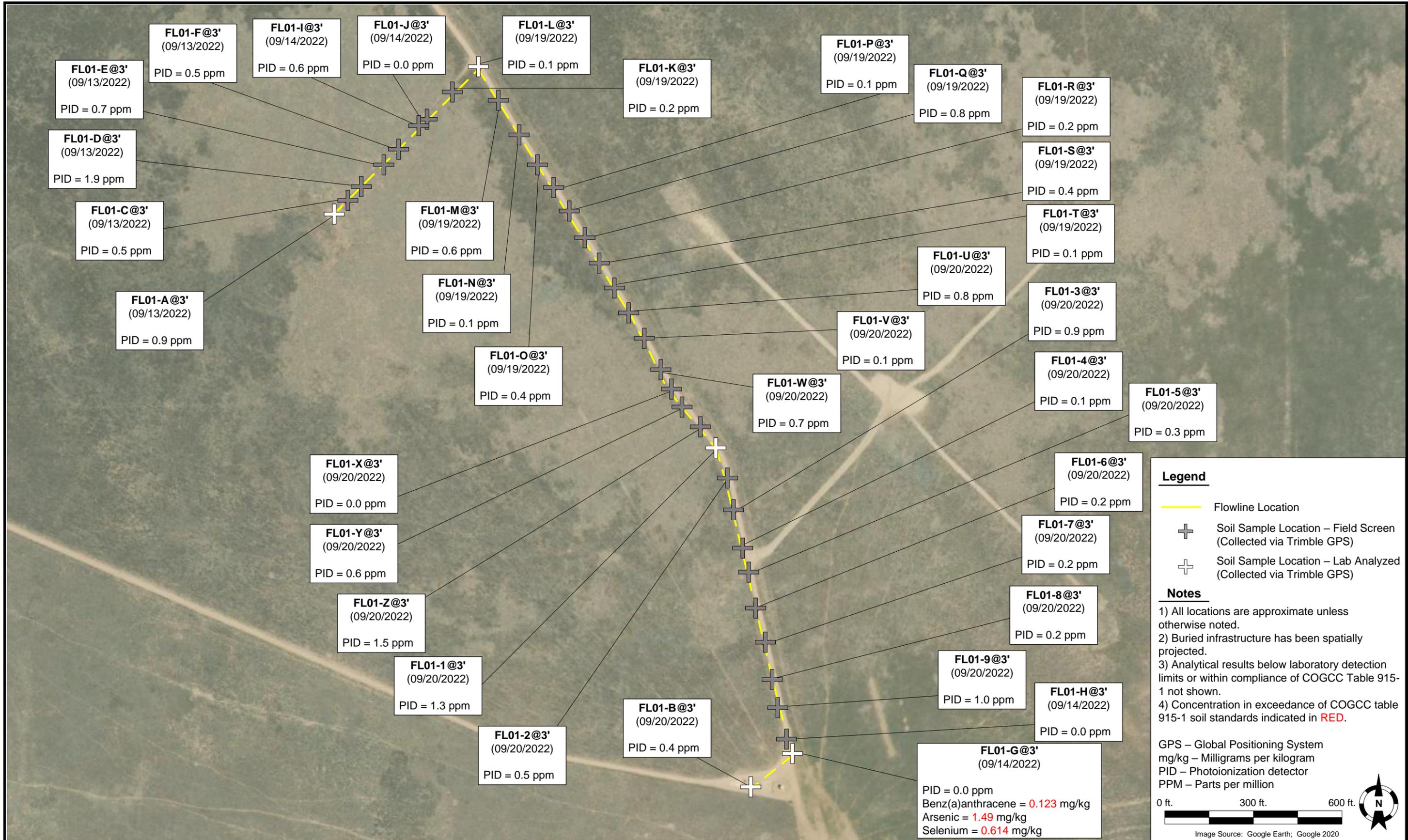


Figure 1

Site Location Map
 Gutteresen DD08-11 Flowline
 SWSE S8 T3N R63W Weld
 County, Colorado





Legend

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

Notes

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

GPS – Global Positioning System
 mg/kg – Milligrams per kilogram
 PID – Photoionization detector
 PPM – Parts per million

0 ft. 300 ft. 600 ft.

Image Source: Google Earth; Google 2020

DATE: 09/17/2022

DESIGNED BY: JW

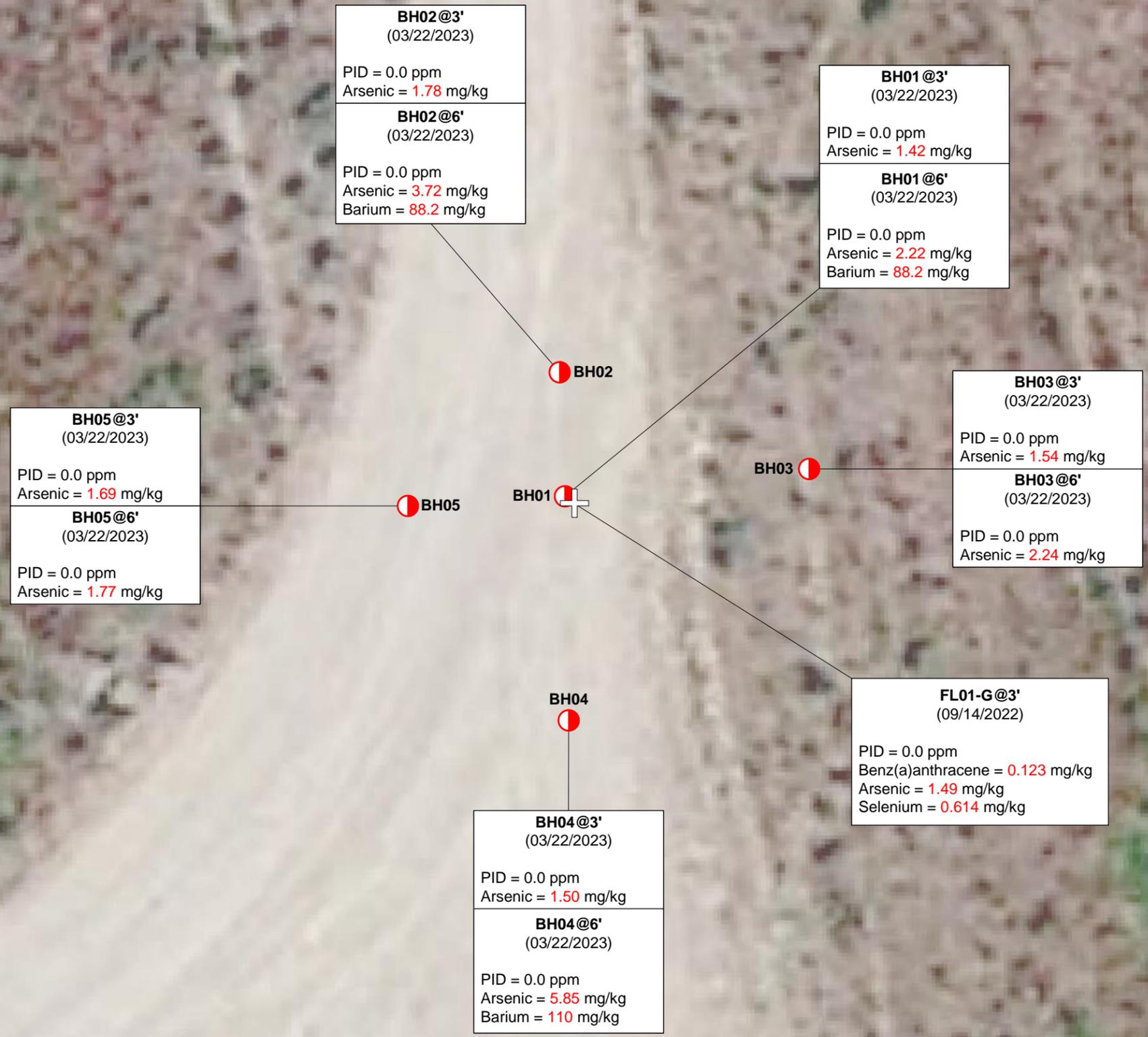
DRAWN BY: AE

TASMAN Tasman, Inc.
 6855 W 119th Avenue
 Broomfield, CO 80020

Noble Energy, Inc. – DJ Basin
Gutteresen State DD08-11 Flowline
 SWSE, Section 8, Township 3 North, Range 63 West
 Weld County, Colorado

Decommissioning
 Soil Analytical Results Map
 (09/13/2022, 09/14/2022,
 09/19/2022 & 09/20/2022)

FIGURE
 2



Legend

- Excavation Extent (Collected via Trimble GPS)
- Assessment Location (Collected via Trimble GPS)
- ⊕ Soil Sample Location – Lab Analyzed (Collected via Trimble GPS)

Notes

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

GPS – Global Positioning System
 mg/kg – Milligrams per kilogram
 PID – Photoionization detector
 PPM – Parts per million

0 ft. 10 ft. 20 ft.

Image Source: Google Earth; Google 2020

DATE: 09/18/2023

DESIGNED BY: JW

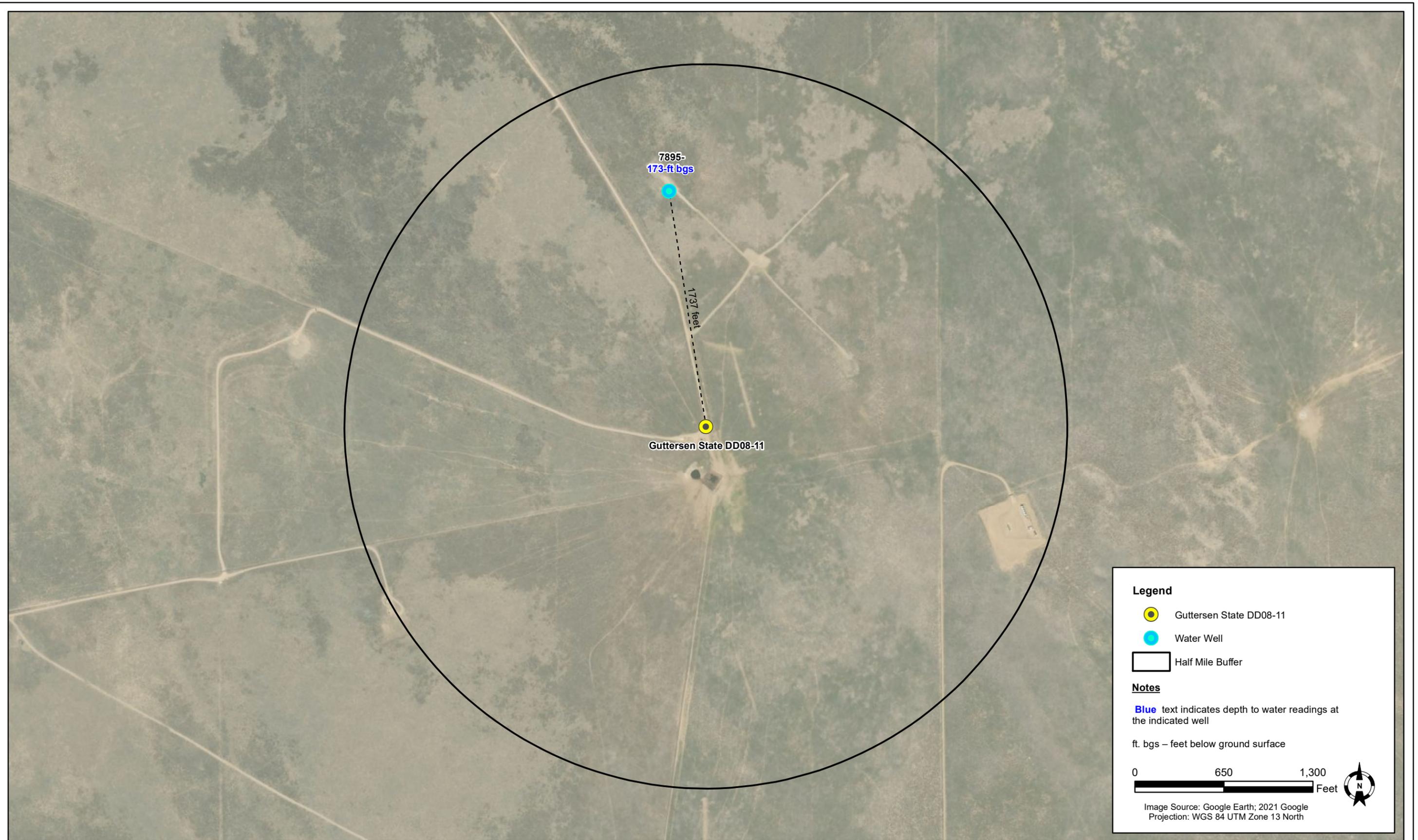
DRAWN BY: JB



Noble Energy, Inc. – DJ Basin
Guttersen State DD08-11 Flowline
 SWSE, Section 8, Township 3 North, Range 63 West
 Weld County, Colorado

Site Assessment
 Soil Analytical Results Map
 (09/14/2022 & 03/22/2023)

FIGURE
 3



DATE:	August 2023
DESIGNED BY:	JW
DRAWN BY:	JC


TASMAN Tasman, Inc.
 6855 W. 119th Avenue
 Broomfield, Colorado 80020

Noble Energy, Inc. – DJ Basin
Guttersen State DD08-11
 SWSE, Section 8, Township 3 North, Range 63 West
 Weld County, Colorado

WATER WELL INVESTIGATION
 LOCATION MAP

Figure
4

ATTACHMENT A
LABORATORY SOIL ANALYTICAL DATA REPORTS

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

September 26, 2022

Jacob Whritenour

Tasman Geosciences

6855 W. 119th Ave.

Broomfield, CO 80020

RE: Noble - Gutttersen State DD08-11, FL

Work Order #2209260

Enclosed are the results of analyses for samples received by Summit Scientific on 09/13/22 17:32. 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 - Gutterson State DD08-11, FL

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
09/26/22 15:52

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FL01-A@3'	2209260-01	Soil	09/13/22 11:50	09/13/22 17:32

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

S₂

2209260

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

Client: Noble / Tasman Project Manager: Jacob Whritenour Invoice: Cole Moore
Address: 6855 W. 119th Ave E-Mail: jwhritenour@tasman-geo.com
City/State/Zip: Broomfield/ CO/ 80020 Project Name: Gutterson State DD08-11, FL
Phone: 503-915-3046 Project Number: UWRWE-A2261-ABN
Sampler Name: Martin Medeiros

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix			Analysis Requested					Special Instructions	
					HCl	HNO3	None	Other	Water	Soil	Air-Canister #	Other	VOC-915	TPH-915	PAH-915	Boron-HWS		PH,FC,SAR
1	FLD1-A@3'	09/13/22	11:50	3			X			X			X	X	X	X	X	
2																		
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		

Relinquished by:  Martin Medeiros Date/Time: 09/13/22 14:30	Received by:  Tasman's Lock Box Date/Time: 9/13/22 1732	Turn Around Time (Check) Same Day <input type="checkbox"/> 72 hours <input type="checkbox"/> 24 hours <input type="checkbox"/> Standard <input checked="" type="checkbox"/> 48 hours <input type="checkbox"/>	Notes:
Relinquished by: Tasman's Lock Box Date/Time: 9/13/22 1732	Received by:  Date/Time: 9/13/22 1732	Sample Integrity: Temperature Upon Receipt: 10.1	
Relinquished by: _____ Date/Time: _____	Received by: _____ Date/Time: _____	Samples Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

S₂

Sample Receipt Checklist

S2 Work Order# 2209260

Client: Noble/Trasman Client Project ID: Guttarsen State DD08-11 FI

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

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

Temp (°C)

Thermometer #

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

Additional Comments (if any):

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

[Signature]
Custodian Printed Name

9.13.22 19:00
Date/Time



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

Project: Noble - Guttersen State DD08-11, FL
Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
09/26/22 15:52

FL01-A@3'
2209260-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/13/22 11:50**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	BFI0374	09/15/22	09/16/22	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: **09/13/22 11:50**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		84.4 %		50-150		"	"	"	"	
Surrogate: Toluene-d8		95.6 %		50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		105 %		50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **09/13/22 11:50**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	ND	50		mg/kg	1	BFI0377	09/15/22	09/16/22	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **09/13/22 11:50**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl		127 %		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 - Guttersen State DD08-11, FL
Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
09/26/22 15:52

FL01-A@3'
2209260-01 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **09/13/22 11:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BFI0395	09/16/22	09/16/22	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	0.00651	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	0.00557	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **09/13/22 11:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	60.4 %	40-150			"	"	"	"	
Surrogate: Fluoranthene-d10	76.9 %	40-150			"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **09/13/22 11:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.0751	0.0100	mg/L	1	BFI0452	09/19/22	09/20/22	EPA 6020B	

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

Date Sampled: **09/13/22 11:50**

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 - Gutterson State DD08-11, FL
Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
09/26/22 15:52

FL01-A@3'
2209260-01 (Soil)

Summit Scientific

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	53.1	0.0543	mg/L dry	1	BF10456	09/19/22	09/21/22	EPA 6020B	
Magnesium	12.2	0.0543	"	"	"	"	"	"	
Sodium	10.4	0.0543	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **09/13/22 11:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.335	0.00100	units	1	BF10556	09/21/22	09/21/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **09/13/22 11:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	92.1		%	1	BF10424	09/16/22	09/19/22	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **09/13/22 11:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.582	0.0100	mmhos/cm	1	BF10505	09/20/22	09/22/22	EPA 120.1	

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

Date Sampled: **09/13/22 11:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.56		pH Units	1	BF10506	09/20/22	09/21/22	EPA 9045D	

Summit Scientific

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

Project: Noble - Guttersen State DD08-11, FL

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
09/26/22 15:52

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch BFI0374 - EPA 5030 Soil MS

Blank (BFI0374-BLK1)

Prepared & Analyzed: 09/15/22

Benzene	ND	0.0020	mg/kg							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
1,2,4-Trimethylbenzene	ND	0.0050	"							
1,3,5-Trimethylbenzene	ND	0.0050	"							
Naphthalene	ND	0.0038	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
<i>Surrogate: 1,2-Dichloroethane-d4</i>	0.0269		"	0.0400		67.2	50-150			
<i>Surrogate: Toluene-d8</i>	0.0374		"	0.0400		93.6	50-150			
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0378		"	0.0400		94.4	50-150			

LCS (BFI0374-BS1)

Prepared & Analyzed: 09/15/22

Benzene	0.0580	0.0020	mg/kg	0.0750		77.4	70-130			
Toluene	0.0620	0.0050	"	0.0750		82.6	70-130			
Ethylbenzene	0.0584	0.0050	"	0.0750		77.8	70-130			
m,p-Xylene	0.117	0.010	"	0.150		77.9	70-130			
o-Xylene	0.0602	0.0050	"	0.0750		80.2	70-130			
1,2,4-Trimethylbenzene	0.0590	0.0050	"	0.0750		78.7	70-130			
1,3,5-Trimethylbenzene	0.0582	0.0050	"	0.0750		77.6	70-130			
Naphthalene	0.0570	0.0038	"	0.0750		76.0	70-130			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	0.0424		"	0.0400		106	50-150			
<i>Surrogate: Toluene-d8</i>	0.0393		"	0.0400		98.2	50-150			
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0374		"	0.0400		93.4	50-150			

Matrix Spike (BFI0374-MS1)

Source: 2209218-01

Prepared & Analyzed: 09/15/22

Benzene	0.114	0.0020	mg/kg	0.0750	0.0433	94.0	70-130			
Toluene	0.0581	0.0050	"	0.0750	ND	77.4	70-130			
Ethylbenzene	0.0778	0.0050	"	0.0750	0.0195	77.8	70-130			
m,p-Xylene	0.120	0.010	"	0.150	0.00462	76.7	70-130			
o-Xylene	0.0684	0.0050	"	0.0750	0.0143	72.1	70-130			
1,2,4-Trimethylbenzene	0.0564	0.0050	"	0.0750	ND	75.2	70-130			
1,3,5-Trimethylbenzene	0.0554	0.0050	"	0.0750	ND	73.9	70-130			
Naphthalene	0.0835	0.0038	"	0.0750	0.0106	97.2	70-130			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	0.0430		"	0.0400		108	50-150			
<i>Surrogate: Toluene-d8</i>	0.0386		"	0.0400		96.4	50-150			
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0378		"	0.0400		94.5	50-150			

Summit Scientific

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

Project: Noble - Guttersen State DD08-11, FL
Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
09/26/22 15:52

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch BFI0374 - EPA 5030 Soil MS

Matrix Spike Dup (BFI0374-MSD1)	Source: 2209218-01			Prepared & Analyzed: 09/15/22						
Benzene	0.119	0.0020	mg/kg	0.0750	0.0433	101	70-130	4.48	30	
Toluene	0.0599	0.0050	"	0.0750	ND	79.8	70-130	3.05	30	
Ethylbenzene	0.0738	0.0050	"	0.0750	0.0195	72.4	70-130	5.34	30	
m,p-Xylene	0.115	0.010	"	0.150	0.00462	73.9	70-130	3.65	30	
o-Xylene	0.0721	0.0050	"	0.0750	0.0143	77.0	70-130	5.25	30	
1,2,4-Trimethylbenzene	0.0562	0.0050	"	0.0750	ND	74.9	70-130	0.426	30	
1,3,5-Trimethylbenzene	0.0549	0.0050	"	0.0750	ND	73.2	70-130	0.924	30	
Naphthalene	0.0904	0.0038	"	0.0750	0.0106	106	70-130	7.93	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0439</i>		<i>"</i>	<i>0.0400</i>		<i>110</i>	<i>50-150</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0394</i>		<i>"</i>	<i>0.0400</i>		<i>98.5</i>	<i>50-150</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0399</i>		<i>"</i>	<i>0.0400</i>		<i>99.8</i>	<i>50-150</i>			

Summit Scientific

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

Project: Noble - Guttersen State DD08-11, FL
Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
09/26/22 15:52

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch BFI0377 - EPA 3550A

Blank (BFI0377-BLK1)

Prepared & Analyzed: 09/15/22

C10-C28 (DRO)	ND	50	mg/kg							
C28-C36 (ORO)	ND	50	"							

LCS (BFI0377-BS1)

Prepared & Analyzed: 09/15/22

C10-C28 (DRO)	536	50	mg/kg	500	107	70-130				
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Matrix Spike (BFI0377-MS1)

Source: 2209218-01

Prepared & Analyzed: 09/15/22

C10-C28 (DRO)	484	50	mg/kg	500	48.4	87.2	70-130			
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Matrix Spike Dup (BFI0377-MSD1)

Source: 2209218-01

Prepared & Analyzed: 09/15/22

C10-C28 (DRO)	439	50	mg/kg	500	48.4	78.2	70-130	9.73	20	
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Summit Scientific

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

Project: Noble - Guttersen State DD08-11, FL
Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
09/26/22 15:52

PAH by EPA Method 8270D SIM - Quality Control

Summit Scientific

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

Batch BFI0395 - EPA 5030 Soil MS

Blank (BFI0395-BLK1)

Prepared & Analyzed: 09/16/22

Acenaphthene	ND	0.00500	mg/kg							
Anthracene	ND	0.00500	"							
Benzo (a) anthracene	ND	0.00500	"							
Benzo (a) pyrene	ND	0.00500	"							
Benzo (b) fluoranthene	ND	0.00500	"							
Benzo (k) fluoranthene	ND	0.00500	"							
Chrysene	ND	0.00500	"							
Dibenz (a,h) anthracene	ND	0.00500	"							
Fluoranthene	ND	0.00500	"							
Fluorene	ND	0.00500	"							
Indeno (1,2,3-cd) pyrene	ND	0.00500	"							
Pyrene	ND	0.00500	"							
1-Methylnaphthalene	ND	0.00500	"							
2-Methylnaphthalene	ND	0.00500	"							
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0241</i>		"	<i>0.0333</i>		<i>72.2</i>	<i>40-150</i>			
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0321</i>		"	<i>0.0333</i>		<i>96.4</i>	<i>40-150</i>			

LCS (BFI0395-BS1)

Prepared & Analyzed: 09/16/22

Acenaphthene	0.0321	0.00500	mg/kg	0.0333		96.2	31-137			
Anthracene	0.0328	0.00500	"	0.0333		98.3	30-120			
Benzo (a) anthracene	0.0278	0.00500	"	0.0333		83.4	30-120			
Benzo (a) pyrene	0.0269	0.00500	"	0.0333		80.6	30-120			
Benzo (b) fluoranthene	0.0296	0.00500	"	0.0333		88.9	30-120			
Benzo (k) fluoranthene	0.0339	0.00500	"	0.0333		102	30-120			
Chrysene	0.0395	0.00500	"	0.0333		119	30-120			
Dibenz (a,h) anthracene	0.0246	0.00500	"	0.0333		73.9	30-120			
Fluoranthene	0.0315	0.00500	"	0.0333		94.6	30-120			
Fluorene	0.0313	0.00500	"	0.0333		93.8	30-120			
Indeno (1,2,3-cd) pyrene	0.0140	0.00500	"	0.0333		42.0	30-120			
Pyrene	0.0369	0.00500	"	0.0333		111	35-142			
1-Methylnaphthalene	0.0211	0.00500	"	0.0333		63.2	35-142			
2-Methylnaphthalene	0.0301	0.00500	"	0.0333		90.4	35-142			
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0294</i>		"	<i>0.0333</i>		<i>88.1</i>	<i>40-150</i>			
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0331</i>		"	<i>0.0333</i>		<i>99.2</i>	<i>40-150</i>			

Summit Scientific

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

Project: Noble - Guttersen State DD08-11, FL

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
09/26/22 15:52

PAH by EPA Method 8270D SIM - Quality Control

Summit Scientific

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

Batch BFI0395 - EPA 5030 Soil MS

Matrix Spike (BFI0395-MS1)	Source: 2209260-01			Prepared & Analyzed: 09/16/22						
Acenaphthene	0.0205	0.00500	mg/kg	0.0333	ND	61.4	31-137			
Anthracene	0.0235	0.00500	"	0.0333	ND	70.4	30-120			
Benzo (a) anthracene	0.0320	0.00500	"	0.0333	0.00436	83.0	30-120			
Benzo (a) pyrene	0.0223	0.00500	"	0.0333	ND	66.8	30-120			
Benzo (b) fluoranthene	0.0228	0.00500	"	0.0333	0.00335	58.2	30-120			
Benzo (k) fluoranthene	0.0206	0.00500	"	0.0333	ND	61.8	30-120			
Chrysene	0.0244	0.00500	"	0.0333	0.00229	66.3	30-120			
Dibenz (a,h) anthracene	0.0165	0.00500	"	0.0333	ND	49.4	30-120			
Fluoranthene	0.0304	0.00500	"	0.0333	0.00651	71.7	30-120			
Fluorene	0.0203	0.00500	"	0.0333	ND	61.0	30-120			
Indeno (1,2,3-cd) pyrene	0.0201	0.00500	"	0.0333	ND	60.4	30-120			
Pyrene	0.0330	0.00500	"	0.0333	0.00557	82.4	35-142			
1-Methylnaphthalene	0.0197	0.00500	"	0.0333	ND	59.2	15-130			
2-Methylnaphthalene	0.0275	0.00500	"	0.0333	ND	82.5	15-130			
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0199</i>		<i>"</i>	<i>0.0333</i>		<i>59.7</i>	<i>40-150</i>			
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0252</i>		<i>"</i>	<i>0.0333</i>		<i>75.6</i>	<i>40-150</i>			

Matrix Spike Dup (BFI0395-MSD1)	Source: 2209260-01			Prepared & Analyzed: 09/16/22						
Acenaphthene	0.0193	0.00500	mg/kg	0.0333	ND	58.0	31-137	5.63	30	
Anthracene	0.0250	0.00500	"	0.0333	ND	75.0	30-120	6.29	30	
Benzo (a) anthracene	0.0366	0.00500	"	0.0333	0.00436	96.7	30-120	13.3	30	
Benzo (a) pyrene	0.0223	0.00500	"	0.0333	ND	66.9	30-120	0.218	30	
Benzo (b) fluoranthene	0.0243	0.00500	"	0.0333	0.00335	62.9	30-120	6.57	30	
Benzo (k) fluoranthene	0.0188	0.00500	"	0.0333	ND	56.5	30-120	9.01	30	
Chrysene	0.0271	0.00500	"	0.0333	0.00229	74.5	30-120	10.6	30	
Dibenz (a,h) anthracene	0.0153	0.00500	"	0.0333	ND	45.8	30-120	7.65	30	
Fluoranthene	0.0357	0.00500	"	0.0333	0.00651	87.5	30-120	15.9	30	
Fluorene	0.0201	0.00500	"	0.0333	ND	60.2	30-120	1.36	30	
Indeno (1,2,3-cd) pyrene	0.0197	0.00500	"	0.0333	ND	59.1	30-120	2.08	30	
Pyrene	0.0333	0.00500	"	0.0333	0.00557	83.3	35-142	0.917	30	
1-Methylnaphthalene	0.0190	0.00500	"	0.0333	ND	57.1	15-130	3.59	50	
2-Methylnaphthalene	0.0218	0.00500	"	0.0333	ND	65.5	15-130	22.9	50	
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0178</i>		<i>"</i>	<i>0.0333</i>		<i>53.4</i>	<i>40-150</i>			
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0223</i>		<i>"</i>	<i>0.0333</i>		<i>66.9</i>	<i>40-150</i>			

Summit Scientific

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

Project: Noble - Guttersen State DD08-11, FL
Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
09/26/22 15:52

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

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

Batch BFI0452 - EPA 3050B

Blank (BFI0452-BLK1)

Prepared: 09/19/22 Analyzed: 09/20/22

Boron ND 0.0100 mg/L

LCS (BFI0452-BS1)

Prepared: 09/19/22 Analyzed: 09/20/22

Boron 4.21 0.0100 mg/L 5.00 84.3 80-120

Duplicate (BFI0452-DUP1)

Source: 2209218-01

Prepared: 09/19/22 Analyzed: 09/20/22

Boron 4.21 0.0100 mg/L 4.24 0.631 20

Matrix Spike (BFI0452-MS1)

Source: 2209218-01

Prepared: 09/19/22 Analyzed: 09/20/22

Boron 9.30 0.0100 mg/L 5.00 4.24 101 75-125

Matrix Spike Dup (BFI0452-MSD1)

Source: 2209218-01

Prepared: 09/19/22 Analyzed: 09/20/22

Boron 9.68 0.0100 mg/L 5.00 4.24 109 75-125 3.94 25

Summit Scientific

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

Project: Noble - Gutterson State DD08-11, FL

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
09/26/22 15:52

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

Summit Scientific

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

Batch BFI0456 - General Preparation

Blank (BFI0456-BLK1)

Prepared: 09/19/22 Analyzed: 09/21/22

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

LCS (BFI0456-BS1)

Prepared: 09/19/22 Analyzed: 09/21/22

Calcium	5.71	0.0500	mg/L wet	5.00	114	70-130				
Magnesium	5.50	0.0500	"	5.00	110	70-130				
Sodium	5.35	0.0500	"	5.00	107	70-130				

Summit Scientific

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

Project: Noble - Gutterson State DD08-11, FL
 Project Number: UWRWE-A2261-ABN
 Project Manager: Jacob Whritenour

Reported:
 09/26/22 15:52

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

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

Batch BFI0424 - General Preparation

Duplicate (BFI0424-DUP1)	Source: 2209241-01		Prepared: 09/16/22 Analyzed: 09/19/22		
% Solids	95.6	%	96.0	0.483	20

Summit Scientific

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

Project: Noble - Guttersen State DD08-11, FL

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
09/26/22 15:52

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

Summit Scientific

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

Batch BFI0505 - General Preparation

Blank (BFI0505-BLK1)

Prepared: 09/20/22 Analyzed: 09/22/22

Specific Conductance (EC) ND 0.0100 mmhos/cm

LCS (BFI0505-BS1)

Prepared: 09/20/22 Analyzed: 09/22/22

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

Duplicate (BFI0505-DUP1)

Source: 2209221-01

Prepared: 09/20/22 Analyzed: 09/22/22

Specific Conductance (EC) 0.274 0.0100 mmhos/cm 0.283 3.16 20

Summit Scientific

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

Project: Noble - Guttersen State DD08-11, FL

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
09/26/22 15:52

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

Summit Scientific

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

Batch BFI0506 - General Preparation

LCS (BFI0506-BS1)

Prepared: 09/20/22 Analyzed: 09/21/22

pH	9.09	pH Units	9.18	99.0	95-105
----	------	----------	------	------	--------

Duplicate (BFI0506-DUP1)

Source: 2209221-01

Prepared: 09/20/22 Analyzed: 09/21/22

pH	7.62	pH Units	7.63	0.131	20
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Summit Scientific

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

Project: Noble - Gutterson State DD08-11, FL

Project Number: UWRWE-A2261-ABN

Project Manager: Jacob Whritenour

Reported:
09/26/22 15:52

Notes and Definitions

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

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

October 31, 2022

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

RE: Noble - Gutttersen State DD08-11

Work Order #2209284

Enclosed are the results of analyses for samples received by Summit Scientific on 09/14/22 17:30. 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 - Guttersen State DD08-11
Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
10/31/22 12:03

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FL01-G@3'	2209284-01	Soil	09/14/22 10:55	09/14/22 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.

2209284

Summit Scientific

S₂

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

Client: Noble / Tasman Project Manager: Jacob Whritenour Invoice: Cole Moore
 Address: 6855 W. 119th Ave E-Mail: jwhritenour@tasman-geo.com
 City/State/Zip: Broomfield/ CO/ 80020 Project Name: Gutterson State DDO8-11
 Phone: 503-915-3046 Project Number: UWRWE-A2261-ABN
 Sampler Name: Martin Medeiros

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix			Analysis Requested					Special Instructions	
					HCl	HNO3	None	Other	Water	Soil	Air-Canister #	Other	VOC-915	TPH-915	PAH-915	pH, EC, SAR		Boron-HWS
1	FL01-G@ 3'	09/14/22	10:55	3			X			X			X	X	X	X	X	
2																		
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		

Relinquished by: <i>Martin Medeiros</i> Date/Time: 09/14/22 14:30	Received by: <i>Tasman's Lock Box</i> Date/Time:	Turn Around Time (Check) Same Day _____ 72 hours _____ 24 hours _____ Standard <input checked="" type="checkbox"/> 48 hours _____	Notes:
Relinquished by: <i>Tasman's Lock Box</i> Date/Time: 11/4/22 1730	Received by: <i>[Signature]</i> Date/Time: 11/4/22 1730	Sample Integrity: Temperature Upon Receipt: <u>8.4</u>	
Relinquished by:	Received by:	Samples Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

S₂

Sample Receipt Checklist

S2 Work Order# 2209284

Client: Nade / Trasman Client Project ID: Guthusen State DD08-11

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

-

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

Temp (°C) Thermometer #

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

Additional Comments (if any):

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

[Signature]
Custodian Printed Name

9-14-22 19:30
Date/Time



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

Project: Noble - Guttersen State DD08-11

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
10/31/22 12:03

FL01-G@3'
2209284-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/14/22 10:55**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	BFI0376	09/15/22	09/16/22	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: **09/14/22 10:55**

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

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **09/14/22 10:55**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	ND	50		mg/kg	1	BFI0379	09/15/22	09/16/22	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **09/14/22 10:55**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl		114 %		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 - Guttersen State DD08-11

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
10/31/22 12:03

FL01-G@3'
2209284-01 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **09/14/22 10:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	0.00863	0.00500	mg/kg	1	BFI0395	09/16/22	09/17/22	EPA 8270D SIM	
Anthracene	0.0225	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	0.123	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	0.0741	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	0.107	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	0.0334	0.00500	"	"	"	"	"	"	
Chrysene	0.107	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	0.142	0.0100	"	2	"	"	09/19/22	"	
Fluorene	0.00757	0.00500	"	1	"	"	09/17/22	"	
Indeno (1,2,3-cd) pyrene	0.0379	0.00500	"	"	"	"	"	"	
Pyrene	0.163	0.0100	"	2	"	"	09/19/22	"	
1-Methylnaphthalene	ND	0.00500	"	1	"	"	09/17/22	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **09/14/22 10:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		58.3 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		76.1 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **09/14/22 10:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.0615	0.0100	mg/L	1	BFI0452	09/19/22	09/20/22	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **09/14/22 10:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	1.49	0.212	mg/kg dry	1	BFI0760	09/29/22	10/04/22	EPA 6020B	

Summit Scientific

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

Project: Noble - Guttersen State DD08-11

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
10/31/22 12:03

FL01-G@3'
2209284-01 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Barium	42.7	0.425	mg/kg dry	1	BF10760	09/29/22	10/04/22	EPA 6020B	
Cadmium	ND	0.212	"	"	"	"	"	"	
Copper	3.33	0.425	"	"	"	"	"	"	
Lead	2.92	0.212	"	"	"	"	"	"	
Nickel	3.14	0.425	"	"	"	"	"	"	
Selenium	0.614	0.276	"	"	"	"	"	"	
Silver	ND	0.0212	"	"	"	"	"	"	
Zinc	14.6	0.425	"	"	"	"	"	"	

Hexavalent Chromium by EPA Method 7196

Date Sampled: **09/14/22 10:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BF10742	09/28/22	09/29/22	EPA 7196A	

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

Date Sampled: **09/14/22 10:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	24.7	0.0531	mg/L dry	1	BF10549	09/21/22	09/23/22	EPA 6020B	
Magnesium	6.49	0.0531	"	"	"	"	"	"	
Sodium	6.03	0.0531	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **09/14/22 10:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.279	0.00100	units	1	BF10631	09/23/22	09/23/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **09/14/22 10:55**

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 - Guttersen State DD08-11

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
10/31/22 12:03

FL01-G@3'
2209284-01 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

% Solids	94.2	%	1	BFI0449	09/19/22	09/20/22	Calculation
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Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **09/14/22 10:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.207	0.0100	mmhos/cm	1	BFI0594	09/21/22	09/23/22	EPA 120.1	

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

Date Sampled: **09/14/22 10:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.81		pH Units	1	BFI0595	09/21/22	09/23/22	EPA 9045D	

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Project: Noble - Guttersen State DD08-11

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
10/31/22 12:03

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch BFI0376 - EPA 5030 Soil MS

Blank (BFI0376-BLK1)

Prepared & Analyzed: 09/15/22

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	0.0424		"	0.0400		106	50-150				
Surrogate: Toluene-d8	0.0411		"	0.0400		103	50-150				
Surrogate: 4-Bromofluorobenzene	0.0416		"	0.0400		104	50-150				

LCS (BFI0376-BS1)

Prepared & Analyzed: 09/15/22

Benzene	0.170	0.0020	mg/kg	0.170		100	70-130				
Toluene	0.171	0.0050	"	0.170		100	70-130				
Ethylbenzene	0.150	0.0050	"	0.170		88.3	70-130				
m,p-Xylene	0.301	0.010	"	0.340		88.5	70-130				
o-Xylene	0.142	0.0050	"	0.170		83.7	70-130				
1,2,4-Trimethylbenzene	0.139	0.0050	"	0.170		81.6	70-130				
1,3,5-Trimethylbenzene	0.139	0.0050	"	0.170		81.9	70-130				
Naphthalene	0.132	0.0038	"	0.170		77.4	70-130				
Surrogate: 1,2-Dichloroethane-d4	0.0420		"	0.0400		105	50-150				
Surrogate: Toluene-d8	0.0429		"	0.0400		107	50-150				
Surrogate: 4-Bromofluorobenzene	0.0404		"	0.0400		101	50-150				

Matrix Spike (BFI0376-MS1)

Source: 2209254-01

Prepared & Analyzed: 09/15/22

Benzene	0.138	0.0020	mg/kg	0.170	ND	81.4	70-130				
Toluene	0.162	0.0050	"	0.170	ND	95.6	70-130				
Ethylbenzene	0.158	0.0050	"	0.170	ND	92.9	70-130				
m,p-Xylene	0.282	0.010	"	0.340	ND	82.9	70-130				
o-Xylene	0.153	0.0050	"	0.170	ND	90.0	70-130				
1,2,4-Trimethylbenzene	0.161	0.0050	"	0.170	ND	94.9	70-130				
1,3,5-Trimethylbenzene	0.160	0.0050	"	0.170	ND	94.1	70-130				
Naphthalene	0.170	0.0038	"	0.170	ND	99.8	70-130				
Surrogate: 1,2-Dichloroethane-d4	0.0412		"	0.0400		103	50-150				
Surrogate: Toluene-d8	0.0406		"	0.0400		101	50-150				
Surrogate: 4-Bromofluorobenzene	0.0403		"	0.0400		101	50-150				

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Project: Noble - Guttersen State DD08-11

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
10/31/22 12:03

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch BFI0376 - EPA 5030 Soil MS

Matrix Spike Dup (BFI0376-MSD1)	Source: 2209254-01			Prepared & Analyzed: 09/15/22						
Benzene	0.123	0.0020	mg/kg	0.170	ND	72.3	70-130	11.8	30	
Toluene	0.160	0.0050	"	0.170	ND	93.9	70-130	1.71	30	
Ethylbenzene	0.163	0.0050	"	0.170	ND	96.1	70-130	3.34	30	
m,p-Xylene	0.292	0.010	"	0.340	ND	86.0	70-130	3.73	30	
o-Xylene	0.159	0.0050	"	0.170	ND	93.3	70-130	3.64	30	
1,2,4-Trimethylbenzene	0.175	0.0050	"	0.170	ND	103	70-130	7.84	30	
1,3,5-Trimethylbenzene	0.176	0.0050	"	0.170	ND	104	70-130	9.48	30	
Naphthalene	0.167	0.0038	"	0.170	ND	98.3	70-130	1.59	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0456</i>		<i>"</i>	<i>0.0400</i>		<i>114</i>	<i>50-150</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0412</i>		<i>"</i>	<i>0.0400</i>		<i>103</i>	<i>50-150</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0393</i>		<i>"</i>	<i>0.0400</i>		<i>98.2</i>	<i>50-150</i>			

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Project: Noble - Guttersen State DD08-11

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
10/31/22 12:03

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch BFI0379 - EPA 3550A

Blank (BFI0379-BLK1)

Prepared: 09/15/22 Analyzed: 09/16/22

C10-C28 (DRO)	ND	50	mg/kg							
C28-C36 (ORO)	ND	50	"							

LCS (BFI0379-BS1)

Prepared: 09/15/22 Analyzed: 09/16/22

C10-C28 (DRO)	555	50	mg/kg	500	111	70-130				
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Matrix Spike (BFI0379-MS1)

Source: 2209277-01

Prepared: 09/15/22 Analyzed: 09/16/22

C10-C28 (DRO)	593	50	mg/kg	500	13.4	116	70-130			
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Matrix Spike Dup (BFI0379-MSD1)

Source: 2209277-01

Prepared: 09/15/22 Analyzed: 09/16/22

C10-C28 (DRO)	557	50	mg/kg	500	13.4	109	70-130	6.34	20	
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Project: Noble - Guttersen State DD08-11

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
10/31/22 12:03

PAH by EPA Method 8270D SIM - Quality Control

Summit Scientific

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

Batch BFI0395 - EPA 5030 Soil MS

Blank (BFI0395-BLK1)

Prepared & Analyzed: 09/16/22

Acenaphthene	ND	0.00500	mg/kg							
Anthracene	ND	0.00500	"							
Benzo (a) anthracene	ND	0.00500	"							
Benzo (a) pyrene	ND	0.00500	"							
Benzo (b) fluoranthene	ND	0.00500	"							
Benzo (k) fluoranthene	ND	0.00500	"							
Chrysene	ND	0.00500	"							
Dibenz (a,h) anthracene	ND	0.00500	"							
Fluoranthene	ND	0.00500	"							
Fluorene	ND	0.00500	"							
Indeno (1,2,3-cd) pyrene	ND	0.00500	"							
Pyrene	ND	0.00500	"							
1-Methylnaphthalene	ND	0.00500	"							
2-Methylnaphthalene	ND	0.00500	"							
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0241</i>		"	<i>0.0333</i>		<i>72.2</i>	<i>40-150</i>			
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0321</i>		"	<i>0.0333</i>		<i>96.4</i>	<i>40-150</i>			

LCS (BFI0395-BS1)

Prepared & Analyzed: 09/16/22

Acenaphthene	0.0321	0.00500	mg/kg	0.0333	96.2	31-137
Anthracene	0.0328	0.00500	"	0.0333	98.3	30-120
Benzo (a) anthracene	0.0278	0.00500	"	0.0333	83.4	30-120
Benzo (a) pyrene	0.0269	0.00500	"	0.0333	80.6	30-120
Benzo (b) fluoranthene	0.0296	0.00500	"	0.0333	88.9	30-120
Benzo (k) fluoranthene	0.0339	0.00500	"	0.0333	102	30-120
Chrysene	0.0395	0.00500	"	0.0333	119	30-120
Dibenz (a,h) anthracene	0.0246	0.00500	"	0.0333	73.9	30-120
Fluoranthene	0.0315	0.00500	"	0.0333	94.6	30-120
Fluorene	0.0313	0.00500	"	0.0333	93.8	30-120
Indeno (1,2,3-cd) pyrene	0.0140	0.00500	"	0.0333	42.0	30-120
Pyrene	0.0369	0.00500	"	0.0333	111	35-142
1-Methylnaphthalene	0.0211	0.00500	"	0.0333	63.2	35-142
2-Methylnaphthalene	0.0301	0.00500	"	0.0333	90.4	35-142
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0294</i>		"	<i>0.0333</i>	<i>88.1</i>	<i>40-150</i>
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0331</i>		"	<i>0.0333</i>	<i>99.2</i>	<i>40-150</i>

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Project: Noble - Guttersen State DD08-11

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
10/31/22 12:03

PAH by EPA Method 8270D SIM - Quality Control

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

Batch BFI0395 - EPA 5030 Soil MS

Matrix Spike (BFI0395-MS1)	Source: 2209260-01			Prepared & Analyzed: 09/16/22						
Acenaphthene	0.0205	0.00500	mg/kg	0.0333	ND	61.4	31-137			
Anthracene	0.0235	0.00500	"	0.0333	ND	70.4	30-120			
Benzo (a) anthracene	0.0320	0.00500	"	0.0333	0.00436	83.0	30-120			
Benzo (a) pyrene	0.0223	0.00500	"	0.0333	ND	66.8	30-120			
Benzo (b) fluoranthene	0.0228	0.00500	"	0.0333	0.00335	58.2	30-120			
Benzo (k) fluoranthene	0.0206	0.00500	"	0.0333	ND	61.8	30-120			
Chrysene	0.0244	0.00500	"	0.0333	0.00229	66.3	30-120			
Dibenz (a,h) anthracene	0.0165	0.00500	"	0.0333	ND	49.4	30-120			
Fluoranthene	0.0304	0.00500	"	0.0333	0.00651	71.7	30-120			
Fluorene	0.0203	0.00500	"	0.0333	ND	61.0	30-120			
Indeno (1,2,3-cd) pyrene	0.0201	0.00500	"	0.0333	ND	60.4	30-120			
Pyrene	0.0330	0.00500	"	0.0333	0.00557	82.4	35-142			
1-Methylnaphthalene	0.0197	0.00500	"	0.0333	ND	59.2	15-130			
2-Methylnaphthalene	0.0275	0.00500	"	0.0333	ND	82.5	15-130			
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0199</i>		<i>"</i>	<i>0.0333</i>		<i>59.7</i>	<i>40-150</i>			
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0252</i>		<i>"</i>	<i>0.0333</i>		<i>75.6</i>	<i>40-150</i>			

Matrix Spike Dup (BFI0395-MSD1)	Source: 2209260-01			Prepared & Analyzed: 09/16/22						
Acenaphthene	0.0193	0.00500	mg/kg	0.0333	ND	58.0	31-137	5.63	30	
Anthracene	0.0250	0.00500	"	0.0333	ND	75.0	30-120	6.29	30	
Benzo (a) anthracene	0.0366	0.00500	"	0.0333	0.00436	96.7	30-120	13.3	30	
Benzo (a) pyrene	0.0223	0.00500	"	0.0333	ND	66.9	30-120	0.218	30	
Benzo (b) fluoranthene	0.0243	0.00500	"	0.0333	0.00335	62.9	30-120	6.57	30	
Benzo (k) fluoranthene	0.0188	0.00500	"	0.0333	ND	56.5	30-120	9.01	30	
Chrysene	0.0271	0.00500	"	0.0333	0.00229	74.5	30-120	10.6	30	
Dibenz (a,h) anthracene	0.0153	0.00500	"	0.0333	ND	45.8	30-120	7.65	30	
Fluoranthene	0.0357	0.00500	"	0.0333	0.00651	87.5	30-120	15.9	30	
Fluorene	0.0201	0.00500	"	0.0333	ND	60.2	30-120	1.36	30	
Indeno (1,2,3-cd) pyrene	0.0197	0.00500	"	0.0333	ND	59.1	30-120	2.08	30	
Pyrene	0.0333	0.00500	"	0.0333	0.00557	83.3	35-142	0.917	30	
1-Methylnaphthalene	0.0190	0.00500	"	0.0333	ND	57.1	15-130	3.59	50	
2-Methylnaphthalene	0.0218	0.00500	"	0.0333	ND	65.5	15-130	22.9	50	
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0178</i>		<i>"</i>	<i>0.0333</i>		<i>53.4</i>	<i>40-150</i>			
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0223</i>		<i>"</i>	<i>0.0333</i>		<i>66.9</i>	<i>40-150</i>			

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6855 W. 119th Ave.
Broomfield CO, 80020

Project: Noble - Guttersen State DD08-11

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
10/31/22 12:03

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

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

Batch BFI0452 - EPA 3050B

Blank (BFI0452-BLK1)

Prepared: 09/19/22 Analyzed: 09/20/22

Boron ND 0.0100 mg/L

LCS (BFI0452-BS1)

Prepared: 09/19/22 Analyzed: 09/20/22

Boron 4.21 0.0100 mg/L 5.00 84.3 80-120

Duplicate (BFI0452-DUP1)

Source: 2209218-01

Prepared: 09/19/22 Analyzed: 09/20/22

Boron 4.21 0.0100 mg/L 4.24 0.631 20

Matrix Spike (BFI0452-MS1)

Source: 2209218-01

Prepared: 09/19/22 Analyzed: 09/20/22

Boron 9.30 0.0100 mg/L 5.00 4.24 101 75-125

Matrix Spike Dup (BFI0452-MSD1)

Source: 2209218-01

Prepared: 09/19/22 Analyzed: 09/20/22

Boron 9.68 0.0100 mg/L 5.00 4.24 109 75-125 3.94 25

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Project: Noble - Guttersen State DD08-11

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
10/31/22 12:03

Total Metals by EPA 6020B - Quality Control
Summit Scientific

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

Batch BFI0760 - EPA 3050B

Blank (BFI0760-BLK1)

Prepared: 09/29/22 Analyzed: 10/04/22

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

LCS (BFI0760-BS1)

Prepared: 09/29/22 Analyzed: 10/04/22

Arsenic	45.1	0.200	mg/kg wet	40.0		113	80-120
Barium	47.3	0.400	"	40.0		118	80-120
Cadmium	2.33	0.200	"	2.00		117	80-120
Copper	46.1	0.400	"	40.0		115	80-120
Lead	23.1	0.200	"	20.0		115	80-120
Nickel	45.1	0.400	"	40.0		113	80-120
Selenium	4.48	0.260	"	4.00		112	80-120
Silver	2.27	0.0200	"	2.00		113	80-120
Zinc	45.2	0.400	"	40.0		113	80-120

Duplicate (BFI0760-DUP1)

Source: 2209073-01

Prepared: 09/29/22 Analyzed: 10/04/22

Arsenic	8.15	0.272	mg/kg dry		7.92		2.86	20
Barium	205	0.544	"		198		3.20	20
Cadmium	0.441	0.272	"		0.432		2.05	20
Copper	27.7	0.544	"		27.1		2.15	20
Lead	17.3	0.272	"		17.2		0.349	20
Nickel	20.7	0.544	"		20.1		2.89	20
Selenium	2.84	0.354	"		2.74		3.73	20
Silver	0.110	0.0272	"		0.108		1.07	20
Zinc	106	0.544	"		103		2.68	20

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Broomfield CO, 80020

Project: Noble - Guttersen State DD08-11

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
10/31/22 12:03

Total Metals by EPA 6020B - Quality Control
Summit Scientific

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

Batch BFI0760 - EPA 3050B

Matrix Spike (BFI0760-MS1)

Source: 2209073-01

Prepared: 09/29/22 Analyzed: 10/04/22

Arsenic	69.0	0.272	mg/kg dry	54.4	7.92	112	75-125			
Barium	266	0.544	"	54.4	198	125	75-125			
Cadmium	3.51	0.272	"	2.72	0.432	113	75-125			
Copper	86.1	0.544	"	54.4	27.1	108	75-125			
Lead	44.0	0.272	"	27.2	17.2	98.3	75-125			
Nickel	78.9	0.544	"	54.4	20.1	108	75-125			
Selenium	7.78	0.354	"	5.44	2.74	92.7	75-125			
Silver	3.08	0.0272	"	2.72	0.108	109	75-125			
Zinc	166	0.544	"	54.4	103	115	75-125			

Matrix Spike Dup (BFI0760-MSD1)

Source: 2209073-01

Prepared: 09/29/22 Analyzed: 10/04/22

Arsenic	68.8	0.272	mg/kg dry	54.4	7.92	112	75-125	0.240	25	
Barium	269	0.544	"	54.4	198	130	75-125	1.16	25	QM-05
Cadmium	3.53	0.272	"	2.72	0.432	114	75-125	0.488	25	
Copper	87.6	0.544	"	54.4	27.1	111	75-125	1.73	25	
Lead	44.4	0.272	"	27.2	17.2	99.8	75-125	0.922	25	
Nickel	78.5	0.544	"	54.4	20.1	107	75-125	0.626	25	
Selenium	8.48	0.354	"	5.44	2.74	105	75-125	8.57	25	
Silver	3.10	0.0272	"	2.72	0.108	110	75-125	0.875	25	
Zinc	164	0.544	"	54.4	103	112	75-125	1.02	25	

Summit Scientific

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

Project: Noble - Gutterson State DD08-11

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
10/31/22 12:03

Hexavalent Chromium by EPA Method 7196 - Quality Control
Summit Scientific

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

Batch BFI0742 - 3060A Mod

Blank (BFI0742-BLK1)

Prepared: 09/28/22 Analyzed: 09/29/22

Chromium, Hexavalent ND 0.30 mg/kg wet

LCS (BFI0742-BS1)

Prepared: 09/28/22 Analyzed: 09/29/22

Chromium, Hexavalent 22.6 0.30 mg/kg wet 25.0 90.2 80-120

Duplicate (BFI0742-DUP1)

Source: 2209334-01

Prepared: 09/28/22 Analyzed: 09/29/22

Chromium, Hexavalent ND 0.30 mg/kg dry ND 20

Matrix Spike (BFI0742-MS1)

Source: 2209334-01

Prepared: 09/28/22 Analyzed: 09/29/22

Chromium, Hexavalent 27.5 0.30 mg/kg dry 29.2 ND 94.0 75-125

Matrix Spike Dup (BFI0742-MSD1)

Source: 2209334-01

Prepared: 09/28/22 Analyzed: 09/29/22

Chromium, Hexavalent 25.7 0.30 mg/kg dry 29.2 ND 88.0 75-125 6.59 20

Summit Scientific

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

Project: Noble - Gutterson State DD08-11

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
10/31/22 12:03

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

Summit Scientific

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

Batch BFI0549 - General Preparation

Blank (BFI0549-BLK1)

Prepared: 09/21/22 Analyzed: 09/23/22

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

LCS (BFI0549-BS1)

Prepared: 09/21/22 Analyzed: 09/23/22

Calcium	5.71	0.0500	mg/L wet	5.00	114	70-130
Magnesium	5.62	0.0500	"	5.00	112	70-130
Sodium	5.35	0.0500	"	5.00	107	70-130

Summit Scientific

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

Project: Noble - Guttersen State DD08-11

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
10/31/22 12:03

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

Summit Scientific

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

Batch BFI0449 - General Preparation

Duplicate (BFI0449-DUP1)

Source: 2209269-01

Prepared: 09/19/22 Analyzed: 09/20/22

% Solids	93.6	%		94.3		0.662	20
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Summit Scientific

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

Project: Noble - Guttersen State DD08-11

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
10/31/22 12:03

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

Summit Scientific

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

Batch BFI0594 - General Preparation

Blank (BFI0594-BLK1)

Prepared: 09/21/22 Analyzed: 09/23/22

Specific Conductance (EC) ND 0.0100 mmhos/cm

LCS (BFI0594-BS1)

Prepared: 09/21/22 Analyzed: 09/23/22

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

Duplicate (BFI0594-DUP1)

Source: 2209281-01

Prepared: 09/21/22 Analyzed: 09/23/22

Specific Conductance (EC) 0.402 0.0100 mmhos/cm 0.399 0.924 20

Summit Scientific

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

Project: Noble - Gutterson State DD08-11

Project Number: UWRWE-A2261-ABN
 Project Manager: Jacob Whritenour

Reported:
 10/31/22 12:03

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

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

Batch BFI0595 - General Preparation

LCS (BFI0595-BS1)

Prepared: 09/21/22 Analyzed: 09/23/22

pH	9.00	pH Units	9.18	98.0	95-105
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Duplicate (BFI0595-DUP1)

Source: 2209281-01

Prepared: 09/21/22 Analyzed: 09/23/22

pH	8.33	pH Units	8.13	2.43	20
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Summit Scientific

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

Project: Noble - Guttersen State DD08-11

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
10/31/22 12:03

Notes and Definitions

- QM-05 The spike recovery was outside acceptance limits for the MS and/or MSD due to matrix interference. The associated LCS and/or LCSD were within acceptance limits, therefore the data are considered valid.
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

September 30, 2022

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

RE: Noble - Gutttersen State DD08-11

Work Order #2209361

Enclosed are the results of analyses for samples received by Summit Scientific on 09/19/22 17:38. 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 - Gutterson State DD08-11

Project Number: UWRWE-A2261-ABN

Project Manager: Jacob Whritenour

Reported:
09/30/22 09:27

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FL01-L@3'	2209361-01	Soil	09/19/22 10:20	09/19/22 17:38

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

2209361

S₂

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

Client: Noble / Tasman Project Manager: Jacob Whritenour
Address: 6855 W. 119th Ave E-Mail: jwhritenour@tasman-geo.com
City/State/Zip: Broomfield/ CO/ 80020 Project Name: Gutterson State DDO8-11
Phone: 503-915-3046 Project Number: UWRWE-A2261-ARN
Sampler Name: Martin Medeiros

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix			Analysis Requested					Special Instructions	
					HCl	HNO3	None	Other	Water	Soil	Air-Canister #	Other	VOC-915	TPH-915	PAH-915	PH, EC, SAR		Boron-HWS
1	FL01-L@3'	09/19/22	10:20	3			X			X			X	X	X	X	X	
2																		
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		

Relinquished by: <i>Martin Medeiros</i> Martin Medeiros	Date/Time: 09/19/22 15:30	Received by: Tasman's Lock Box	Date/Time: 9	Turn Around Time (Check) Same Day _____ 72 hours _____ 24 hours _____ Standard <input checked="" type="checkbox"/> 48 hours _____	Notes:
Relinquished by: Tasman's Lock Box	Date/Time: 9/19/22 1738	Received by: <i>[Signature]</i>	Date/Time: 9/19/22 1738	Sample Integrity: Temperature Upon Receipt: <u>11.3</u>	
Relinquished by:	Date/Time:	Received by:	Date/Time:	Samples Intact: <input checked="" type="radio"/> Yes <input type="radio"/> No	

S₂

Sample Receipt Checklist

S2 Work Order# 2709361

Client: Noble Tasmann Client Project ID: Gutherson State DD08-11

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

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

Temp (°C) Thermometer #

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

Additional Comments (if any):

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

[Signature]
Custodian Printed Name

9.19.22
Date/Time

19:45



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

Project: Noble - Gutterson State DD08-11

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
09/30/22 09:27

FL01-L@3'
2209361-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/19/22 10:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BFI0494	09/20/22	09/22/22	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: **09/19/22 10:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		102 %	50-150		"	"	"	"	
Surrogate: Toluene-d8		94.5 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.1 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **09/19/22 10:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BFI0497	09/20/22	09/23/22	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **09/19/22 10:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		120 %	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 - Guttersen State DD08-11

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
09/30/22 09:27

FL01-L@3'
2209361-01 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **09/19/22 10:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BF10477	09/20/22	09/21/22	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: **09/19/22 10:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		50.1 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		64.4 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **09/19/22 10:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.0665	0.0100	mg/L	1	BF10688	09/26/22	09/29/22	EPA 6020B	

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

Date Sampled: **09/19/22 10:20**

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 - Gutterson State DD08-11

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
09/30/22 09:27

FL01-L@3'
2209361-01 (Soil)

Summit Scientific

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	27.7	0.0519	mg/L dry	1	BF10632	09/23/22	09/27/22	EPA 6020B	
Magnesium	6.32	0.0519	"	"	"	"	"	"	
Sodium	2.78	0.0519	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **09/19/22 10:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.124	0.00100	units	1	BF10750	09/28/22	09/28/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **09/19/22 10:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	96.4		%	1	BF10622	09/23/22	09/26/22	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **09/19/22 10:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.140	0.0100	mmhos/cm	1	BF10776	09/27/22	09/29/22	EPA 120.1	

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

Date Sampled: **09/19/22 10:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.71		pH Units	1	BF10777	09/27/22	09/29/22	EPA 9045D	

Summit Scientific

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

Project: Noble - Guttersen State DD08-11

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
09/30/22 09:27

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch BFI0494 - EPA 5030 Soil MS

Blank (BFI0494-BLK1)

Prepared: 09/20/22 Analyzed: 09/22/22

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	0.0431		"	0.0400		108	50-150			
Surrogate: Toluene-d8	0.0373		"	0.0400		93.2	50-150			
Surrogate: 4-Bromofluorobenzene	0.0373		"	0.0400		93.2	50-150			

LCS (BFI0494-BS1)

Prepared: 09/20/22 Analyzed: 09/22/22

Benzene	0.0604	0.0020	mg/kg	0.0750		80.5	70-130			
Toluene	0.0629	0.0050	"	0.0750		83.8	70-130			
Ethylbenzene	0.0631	0.0050	"	0.0750		84.1	70-130			
m,p-Xylene	0.126	0.010	"	0.150		83.9	70-130			
o-Xylene	0.0640	0.0050	"	0.0750		85.3	70-130			
1,2,4-Trimethylbenzene	0.0594	0.0050	"	0.0750		79.2	70-130			
1,3,5-Trimethylbenzene	0.0604	0.0050	"	0.0750		80.6	70-130			
Naphthalene	0.0580	0.0038	"	0.0750		77.3	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0315		"	0.0400		78.8	50-150			
Surrogate: Toluene-d8	0.0390		"	0.0400		97.5	50-150			
Surrogate: 4-Bromofluorobenzene	0.0361		"	0.0400		90.3	50-150			

Matrix Spike (BFI0494-MS1)

Source: 2209333-21

Prepared: 09/20/22 Analyzed: 09/22/22

Benzene	0.0557	0.0020	mg/kg	0.0750	ND	74.3	70-130			
Toluene	0.0593	0.0050	"	0.0750	ND	79.1	70-130			
Ethylbenzene	0.0567	0.0050	"	0.0750	ND	75.6	70-130			
m,p-Xylene	0.113	0.010	"	0.150	ND	75.4	70-130			
o-Xylene	0.0594	0.0050	"	0.0750	ND	79.2	70-130			
1,2,4-Trimethylbenzene	0.0564	0.0050	"	0.0750	ND	75.2	70-130			
1,3,5-Trimethylbenzene	0.0563	0.0050	"	0.0750	ND	75.1	70-130			
Naphthalene	0.0559	0.0038	"	0.0750	ND	74.5	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0339		"	0.0400		84.8	50-150			
Surrogate: Toluene-d8	0.0397		"	0.0400		99.3	50-150			
Surrogate: 4-Bromofluorobenzene	0.0355		"	0.0400		88.8	50-150			

Summit Scientific

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

Project: Noble - Guttersen State DD08-11

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
09/30/22 09:27

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch BFI0494 - EPA 5030 Soil MS

Matrix Spike Dup (BFI0494-MSD1)	Source: 2209333-21			Prepared: 09/20/22 Analyzed: 09/22/22						
Benzene	0.0640	0.0020	mg/kg	0.0750	ND	85.4	70-130	13.9	30	
Toluene	0.0656	0.0050	"	0.0750	ND	87.5	70-130	10.1	30	
Ethylbenzene	0.0651	0.0050	"	0.0750	ND	86.8	70-130	13.9	30	
m,p-Xylene	0.129	0.010	"	0.150	ND	86.0	70-130	13.1	30	
o-Xylene	0.0657	0.0050	"	0.0750	ND	87.6	70-130	10.0	30	
1,2,4-Trimethylbenzene	0.0608	0.0050	"	0.0750	ND	81.0	70-130	7.48	30	
1,3,5-Trimethylbenzene	0.0613	0.0050	"	0.0750	ND	81.8	70-130	8.52	30	
Naphthalene	0.0550	0.0038	"	0.0750	ND	73.4	70-130	1.57	30	
Surrogate: 1,2-Dichloroethane-d4	0.0346		"	0.0400		86.6	50-150			
Surrogate: Toluene-d8	0.0390		"	0.0400		97.5	50-150			
Surrogate: 4-Bromofluorobenzene	0.0360		"	0.0400		90.0	50-150			

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 - Guttersen State DD08-11

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
09/30/22 09:27

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch BFI0497 - EPA 3550A

Blank (BFI0497-BLK1)

Prepared: 09/20/22 Analyzed: 09/23/22

C10-C28 (DRO)	ND	50	mg/kg							
C28-C36 (ORO)	ND	50	"							

LCS (BFI0497-BS1)

Prepared: 09/20/22 Analyzed: 09/23/22

C10-C28 (DRO)	549	50	mg/kg	500	110	70-130				
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Matrix Spike (BFI0497-MS1)

Source: 2209339-01

Prepared: 09/20/22 Analyzed: 09/23/22

C10-C28 (DRO)	474	50	mg/kg	500	49.5	85.0	70-130			
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Matrix Spike Dup (BFI0497-MSD1)

Source: 2209339-01

Prepared: 09/20/22 Analyzed: 09/23/22

C10-C28 (DRO)	455	50	mg/kg	500	49.5	81.0	70-130	4.24	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 - Guttersen State DD08-11
Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
09/30/22 09:27

PAH by EPA Method 8270D SIM - Quality Control
Summit Scientific

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

Batch BFI0477 - EPA 5030 Soil MS

Blank (BFI0477-BLK1)

Prepared & Analyzed: 09/20/22

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		61.7	40-150			
Surrogate: Fluoranthene-d10	0.0291		"	0.0333		87.4	40-150			

LCS (BFI0477-BS1)

Prepared & Analyzed: 09/20/22

Acenaphthene	0.0312	0.00500	mg/kg	0.0333		93.6	31-137			
Anthracene	0.0310	0.00500	"	0.0333		92.9	30-120			
Benzo (a) anthracene	0.0299	0.00500	"	0.0333		89.6	30-120			
Benzo (a) pyrene	0.0299	0.00500	"	0.0333		89.7	30-120			
Benzo (b) fluoranthene	0.0303	0.00500	"	0.0333		90.9	30-120			
Benzo (k) fluoranthene	0.0341	0.00500	"	0.0333		102	30-120			
Chrysene	0.0279	0.00500	"	0.0333		83.8	30-120			
Dibenz (a,h) anthracene	0.0220	0.00500	"	0.0333		66.1	30-120			
Fluoranthene	0.0321	0.00500	"	0.0333		96.3	30-120			
Fluorene	0.0315	0.00500	"	0.0333		94.6	30-120			
Indeno (1,2,3-cd) pyrene	0.0238	0.00500	"	0.0333		71.5	30-120			
Pyrene	0.0341	0.00500	"	0.0333		102	35-142			
1-Methylnaphthalene	0.0259	0.00500	"	0.0333		77.8	35-142			
2-Methylnaphthalene	0.0312	0.00500	"	0.0333		93.6	35-142			
Surrogate: 2-Methylnaphthalene-d10	0.0237		"	0.0333		71.0	40-150			
Surrogate: Fluoranthene-d10	0.0304		"	0.0333		91.3	40-150			

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 - Guttersen State DD08-11

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
09/30/22 09:27

PAH by EPA Method 8270D SIM - Quality Control

Summit Scientific

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

Batch BFI0477 - EPA 5030 Soil MS

Matrix Spike (BFI0477-MS1)	Source: 2209321-01			Prepared & Analyzed: 09/20/22						
Acenaphthene	0.0185	0.00500	mg/kg	0.0333	ND	55.5	31-137			
Anthracene	0.0207	0.00500	"	0.0333	ND	62.0	30-120			
Benzo (a) anthracene	0.0213	0.00500	"	0.0333	ND	64.0	30-120			
Benzo (a) pyrene	0.0187	0.00500	"	0.0333	ND	56.0	30-120			
Benzo (b) fluoranthene	0.0184	0.00500	"	0.0333	ND	55.3	30-120			
Benzo (k) fluoranthene	0.0202	0.00500	"	0.0333	ND	60.5	30-120			
Chrysene	0.0186	0.00500	"	0.0333	ND	55.8	30-120			
Dibenz (a,h) anthracene	0.0157	0.00500	"	0.0333	ND	47.2	30-120			
Fluoranthene	0.0217	0.00500	"	0.0333	ND	65.2	30-120			
Fluorene	0.0189	0.00500	"	0.0333	ND	56.8	30-120			
Indeno (1,2,3-cd) pyrene	0.0164	0.00500	"	0.0333	ND	49.2	30-120			
Pyrene	0.0232	0.00500	"	0.0333	ND	69.6	35-142			
1-Methylnaphthalene	0.0147	0.00500	"	0.0333	ND	44.0	15-130			
2-Methylnaphthalene	0.0169	0.00500	"	0.0333	ND	50.6	15-130			
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0140</i>		<i>"</i>	<i>0.0333</i>		<i>42.0</i>	<i>40-150</i>			
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0208</i>		<i>"</i>	<i>0.0333</i>		<i>62.3</i>	<i>40-150</i>			

Matrix Spike Dup (BFI0477-MSD1)	Source: 2209321-01			Prepared & Analyzed: 09/20/22						
Acenaphthene	0.0194	0.00500	mg/kg	0.0333	ND	58.3	31-137	4.91	30	
Anthracene	0.0220	0.00500	"	0.0333	ND	66.0	30-120	6.27	30	
Benzo (a) anthracene	0.0236	0.00500	"	0.0333	ND	70.8	30-120	10.1	30	
Benzo (a) pyrene	0.0208	0.00500	"	0.0333	ND	62.4	30-120	10.8	30	
Benzo (b) fluoranthene	0.0208	0.00500	"	0.0333	ND	62.3	30-120	11.8	30	
Benzo (k) fluoranthene	0.0221	0.00500	"	0.0333	ND	66.4	30-120	9.34	30	
Chrysene	0.0207	0.00500	"	0.0333	ND	62.1	30-120	10.7	30	
Dibenz (a,h) anthracene	0.0170	0.00500	"	0.0333	ND	51.1	30-120	8.02	30	
Fluoranthene	0.0234	0.00500	"	0.0333	ND	70.3	30-120	7.56	30	
Fluorene	0.0201	0.00500	"	0.0333	ND	60.4	30-120	6.09	30	
Indeno (1,2,3-cd) pyrene	0.0184	0.00500	"	0.0333	ND	55.1	30-120	11.4	30	
Pyrene	0.0251	0.00500	"	0.0333	ND	75.3	35-142	7.83	30	
1-Methylnaphthalene	0.0145	0.00500	"	0.0333	ND	43.6	15-130	1.02	50	
2-Methylnaphthalene	0.0182	0.00500	"	0.0333	ND	54.5	15-130	7.32	50	
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0140</i>		<i>"</i>	<i>0.0333</i>		<i>42.0</i>	<i>40-150</i>			
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0227</i>		<i>"</i>	<i>0.0333</i>		<i>68.1</i>	<i>40-150</i>			

Summit Scientific

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

Project: Noble - Guttersen State DD08-11

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
09/30/22 09:27

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

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

Batch BFI0688 - EPA 3050B

Blank (BFI0688-BLK1)

Prepared: 09/26/22 Analyzed: 09/29/22

Boron ND 0.0100 mg/L

LCS (BFI0688-BS1)

Prepared: 09/26/22 Analyzed: 09/29/22

Boron 5.13 0.0100 mg/L 5.00 103 80-120

Duplicate (BFI0688-DUP1)

Source: 2209141-15

Prepared: 09/26/22 Analyzed: 09/29/22

Boron 0.0993 0.0100 mg/L 0.109 9.14 20

Matrix Spike (BFI0688-MS1)

Source: 2209141-15

Prepared: 09/26/22 Analyzed: 09/29/22

Boron 5.05 0.0100 mg/L 5.00 0.109 98.8 75-125

Matrix Spike Dup (BFI0688-MSD1)

Source: 2209141-15

Prepared: 09/26/22 Analyzed: 09/29/22

Boron 5.09 0.0100 mg/L 5.00 0.109 99.6 75-125 0.802 25

Summit Scientific

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

Project: Noble - Gutterson State DD08-11

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
09/30/22 09:27

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

Summit Scientific

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

Batch BFI0632 - General Preparation

Blank (BFI0632-BLK1)

Prepared: 09/23/22 Analyzed: 09/27/22

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

LCS (BFI0632-BS1)

Prepared: 09/23/22 Analyzed: 09/27/22

Calcium	6.15	0.0500	mg/L wet	5.00	123	70-130
Magnesium	6.38	0.0500	"	5.00	128	70-130
Sodium	6.28	0.0500	"	5.00	126	70-130

Summit Scientific

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

Project: Noble - Gutterson State DD08-11

Project Number: UWRWE-A2261-ABN
 Project Manager: Jacob Whritenour

Reported:
 09/30/22 09:27

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

Summit Scientific

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

Batch BFI0622 - General Preparation

Duplicate (BFI0622-DUP1)	Source: 2209330-01		Prepared: 09/23/22 Analyzed: 09/26/22			
% Solids	94.1	%		94.0	0.0630	20

Summit Scientific

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

Project: Noble - Guttersen State DD08-11

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
09/30/22 09:27

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

Summit Scientific

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

Batch BFI0776 - General Preparation

Blank (BFI0776-BLK1)

Prepared: 09/27/22 Analyzed: 09/29/22

Specific Conductance (EC) ND 0.0100 mmhos/cm

LCS (BFI0776-BS1)

Prepared: 09/27/22 Analyzed: 09/29/22

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

Duplicate (BFI0776-DUP1)

Source: 2209358-01

Prepared: 09/27/22 Analyzed: 09/29/22

Specific Conductance (EC) 0.0695 0.0100 mmhos/cm 0.0675 2.88 20

Summit Scientific

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

Project: Noble - Gutterson State DD08-11

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
09/30/22 09:27

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

Summit Scientific

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

Batch BFI0777 - General Preparation

LCS (BFI0777-BS1)

Prepared: 09/27/22 Analyzed: 09/29/22

pH	9.18	pH Units	9.18	100	95-105
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Duplicate (BFI0777-DUP1)

Source: 2209358-01

Prepared: 09/27/22 Analyzed: 09/29/22

pH	7.15	pH Units	7.13	0.280	20
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Summit Scientific

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

Project: Noble - Gutterson State DD08-11

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
09/30/22 09:27

Notes and Definitions

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

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

October 03, 2022

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

RE: Noble - Gutttersen State DD08-11

Work Order #2209410

Enclosed are the results of analyses for samples received by Summit Scientific on 09/20/22 17:33. 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 - Guttarsen State DD08-11

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/03/22 12:30

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FL01-1@3'	2209410-01	Soil	09/20/22 10:25	09/20/22 17:33
FL01-B@3'	2209410-02	Soil	09/20/22 11:30	09/20/22 17:33

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

S₂

2209410

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

Page | of |

Client: Noble / Tasman Project Manager: Jacob Whritenour
 Address: 6855 W. 119th Ave E-Mail: jwhritenour@tasman-geo.com
 City/State/Zip: Broomfield/ CO/ 80020
 Phone: 503-915-3046 Project Name: Gutteresen State DDO8-11
 Sampler Name: Martin Medeiros Project Number: UWRWE-A 2261-ABN

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested						Special Instructions	
					HCl	HNO3	None	Other	Water	Soil	Air-Canister #	Other	VOC-915	TPH-915	PAH-915	PH, EC, SAR	Bottom-HWS			
1	FL01-1@3'	09/20/22	10:25	3			X			X				X	X	X	X	X		
2	FL01-B@3'	09/20/22	11:30	3			X			X				X	X	X	X	X		
3																				
4																				
5																				
6																				
7																				
8																				
9																				
10																				

Relinquished by: <i>Martin Medeiros</i> Martin Medeiros	Date/Time: 09/20/22 14:30	Received by: Tasman's Lock Box	Date/Time:	Turn Around Time (Check) Same Day ___ 72 hours ___ 24 hours ___ Standard <input checked="" type="checkbox"/>	Notes:
Relinquished by: Tasman's Lock Box	Date/Time: 9/20/22 1733	Received by: <i>[Signature]</i>	Date/Time: 9/20/22 1733	Sample Integrity: Temperature Upon Receipt: <u>8.3</u>	
Relinquished by:	Date/Time:	Received by:	Date/Time:	Samples Intact: <input checked="" type="checkbox"/> Yes ___ No	

S₂

Sample Receipt Checklist

S2 Work Order# 2209410

Client: Nobel/Tasman Client Project ID: Guthrie State DD08-11

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

Matrix (Check all that apply) Air Soil Water Other

Temp (°C) Thermometer #

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

Additional Comments (if any):

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


Custodian Printed Name

9.20.22
Date/Time

19:40



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

Project: Noble - Gutterson State DD08-11

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/03/22 12:30

FL01-1@3'
2209410-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/20/22 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BF10537	09/21/22	09/22/22	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: **09/20/22 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		112 %	50-150		"	"	"	"	
Surrogate: Toluene-d8		97.8 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		95.4 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **09/20/22 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BF10538	09/21/22	09/22/22	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **09/20/22 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		73.7 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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6855 W. 119th Ave.
Broomfield CO, 80020

Project: Noble - Guttersen State DD08-11

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/03/22 12:30

FL01-1@3'
2209410-01 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **09/20/22 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BF10609	09/23/22	09/23/22	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: **09/20/22 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		95.9 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		44.6 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **09/20/22 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.0475	0.0100	mg/L	1	BF10688	09/26/22	09/29/22	EPA 6020B	

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

Date Sampled: **09/20/22 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Project: Noble - Gutterson State DD08-11

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/03/22 12:30

FL01-1@3'
2209410-01 (Soil)

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	5.71	0.0516	mg/L dry	1	BF10728	09/28/22	10/01/22	EPA 6020B	
Magnesium	1.88	0.0516	"	"	"	"	"	"	
Sodium	1.56	0.0516	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **09/20/22 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.145	0.00100	units	1	BFJ0003	10/02/22	10/02/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **09/20/22 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	96.9		%	1	BF10684	09/26/22	09/28/22	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **09/20/22 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.0550	0.0100	mmhos/cm	1	BF10747	09/28/22	09/30/22	EPA 120.1	

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

Date Sampled: **09/20/22 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	6.84		pH Units	1	BF10746	09/28/22	09/30/22	EPA 9045D	

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Project: Noble - Guttersen State DD08-11

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/03/22 12:30

FL01-B@3'
2209410-02 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/20/22 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BFI0537	09/21/22	09/22/22	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: **09/20/22 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		86.2 %	50-150		"	"	"	"	
Surrogate: Toluene-d8		102 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		89.8 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **09/20/22 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BFI0538	09/21/22	09/22/22	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **09/20/22 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		68.1 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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Project: Noble - Guttersen State DD08-11

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/03/22 12:30

FL01-B@3'
2209410-02 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **09/20/22 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BF10609	09/23/22	09/23/22	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: **09/20/22 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		107 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		50.0 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **09/20/22 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.0361	0.0100	mg/L	1	BF10688	09/26/22	09/29/22	EPA 6020B	

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

Date Sampled: **09/20/22 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Project: Noble - Guttersen State DD08-11

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/03/22 12:30

FL01-B@3'
2209410-02 (Soil)

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	20.7	0.0577	mg/L dry	1	BF10728	09/28/22	10/01/22	EPA 6020B	
Magnesium	6.88	0.0577	"	"	"	"	"	"	
Sodium	4.41	0.0577	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **09/20/22 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.215	0.00100	units	1	BFJ0003	10/02/22	10/02/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **09/20/22 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	86.6		%	1	BF10684	09/26/22	09/28/22	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **09/20/22 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.257	0.0100	mmhos/cm	1	BF10747	09/28/22	09/30/22	EPA 120.1	

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

Date Sampled: **09/20/22 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	6.15		pH Units	1	BF10746	09/28/22	09/30/22	EPA 9045D	

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Project: Noble - Guttersen State DD08-11

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/03/22 12:30

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch BFI0537 - EPA 5030 Soil MS

Blank (BFI0537-BLK1)

Prepared & Analyzed: 09/21/22

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	0.0407		"	0.0400		102	50-150				
Surrogate: Toluene-d8	0.0369		"	0.0400		92.2	50-150				
Surrogate: 4-Bromofluorobenzene	0.0369		"	0.0400		92.2	50-150				

LCS (BFI0537-BS1)

Prepared & Analyzed: 09/21/22

Benzene	0.0601	0.0020	mg/kg	0.0750		80.1	70-130				
Toluene	0.0616	0.0050	"	0.0750		82.1	70-130				
Ethylbenzene	0.0612	0.0050	"	0.0750		81.6	70-130				
m,p-Xylene	0.122	0.010	"	0.150		81.3	70-130				
o-Xylene	0.0630	0.0050	"	0.0750		84.0	70-130				
1,2,4-Trimethylbenzene	0.0596	0.0050	"	0.0750		79.5	70-130				
1,3,5-Trimethylbenzene	0.0597	0.0050	"	0.0750		79.6	70-130				
Naphthalene	0.0570	0.0038	"	0.0750		76.0	70-130				
Surrogate: 1,2-Dichloroethane-d4	0.0310		"	0.0400		77.4	50-150				
Surrogate: Toluene-d8	0.0395		"	0.0400		98.8	50-150				
Surrogate: 4-Bromofluorobenzene	0.0354		"	0.0400		88.5	50-150				

Matrix Spike (BFI0537-MS1)

Source: 2209227-06

Prepared & Analyzed: 09/21/22

Benzene	0.0562	0.0020	mg/kg	0.0750	ND	74.9	70-130				
Toluene	0.0595	0.0050	"	0.0750	ND	79.3	70-130				
Ethylbenzene	0.0595	0.0050	"	0.0750	ND	79.3	70-130				
m,p-Xylene	0.119	0.010	"	0.150	ND	79.3	70-130				
o-Xylene	0.0619	0.0050	"	0.0750	ND	82.5	70-130				
1,2,4-Trimethylbenzene	0.0587	0.0050	"	0.0750	ND	78.3	70-130				
1,3,5-Trimethylbenzene	0.0584	0.0050	"	0.0750	ND	77.8	70-130				
Naphthalene	0.0608	0.0038	"	0.0750	ND	81.0	70-130				
Surrogate: 1,2-Dichloroethane-d4	0.0291		"	0.0400		72.7	50-150				
Surrogate: Toluene-d8	0.0391		"	0.0400		97.7	50-150				
Surrogate: 4-Bromofluorobenzene	0.0357		"	0.0400		89.3	50-150				

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Project: Noble - Guttersen State DD08-11

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/03/22 12:30

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch BFI0537 - EPA 5030 Soil MS

Matrix Spike Dup (BFI0537-MSD1)	Source: 2209227-06			Prepared & Analyzed: 09/21/22						
Benzene	0.0552	0.0020	mg/kg	0.0750	ND	73.6	70-130	1.78	30	
Toluene	0.0594	0.0050	"	0.0750	ND	79.2	70-130	0.0505	30	
Ethylbenzene	0.0541	0.0050	"	0.0750	ND	72.1	70-130	9.51	30	
m,p-Xylene	0.107	0.010	"	0.150	ND	71.6	70-130	10.2	30	
o-Xylene	0.0572	0.0050	"	0.0750	ND	76.2	70-130	7.96	30	
1,2,4-Trimethylbenzene	0.0536	0.0050	"	0.0750	ND	71.5	70-130	9.03	30	
1,3,5-Trimethylbenzene	0.0538	0.0050	"	0.0750	ND	71.8	70-130	8.07	30	
Naphthalene	0.0568	0.0038	"	0.0750	ND	75.8	70-130	6.68	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0392</i>		<i>"</i>	<i>0.0400</i>		<i>98.1</i>	<i>50-150</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0402</i>		<i>"</i>	<i>0.0400</i>		<i>100</i>	<i>50-150</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0362</i>		<i>"</i>	<i>0.0400</i>		<i>90.4</i>	<i>50-150</i>			

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Broomfield CO, 80020

Project: Noble - Guttersen State DD08-11

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/03/22 12:30

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch BFI0538 - EPA 3550A

Blank (BFI0538-BLK1)

Prepared & Analyzed: 09/21/22

C10-C28 (DRO)	ND	50	mg/kg							
C28-C36 (ORO)	ND	50	"							

LCS (BFI0538-BS1)

Prepared & Analyzed: 09/21/22

C10-C28 (DRO)	555	50	mg/kg	500	111	70-130				
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Matrix Spike (BFI0538-MS1)

Source: 2209227-06

Prepared & Analyzed: 09/21/22

C10-C28 (DRO)	627	50	mg/kg	500	120	101	70-130			
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Matrix Spike Dup (BFI0538-MSD1)

Source: 2209227-06

Prepared & Analyzed: 09/21/22

C10-C28 (DRO)	679	50	mg/kg	500	120	112	70-130	7.96	20	
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Project: Noble - Guttersen State DD08-11

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/03/22 12:30

PAH by EPA Method 8270D SIM - Quality Control

Summit Scientific

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

Batch BFI0609 - EPA 5030 Soil MS

Blank (BFI0609-BLK1)

Prepared & Analyzed: 09/23/22

Acenaphthene	ND	0.00500	mg/kg							
Anthracene	ND	0.00500	"							
Benzo (a) anthracene	ND	0.00500	"							
Benzo (a) pyrene	ND	0.00500	"							
Benzo (b) fluoranthene	ND	0.00500	"							
Benzo (k) fluoranthene	ND	0.00500	"							
Chrysene	ND	0.00500	"							
Dibenz (a,h) anthracene	ND	0.00500	"							
Fluoranthene	ND	0.00500	"							
Fluorene	ND	0.00500	"							
Indeno (1,2,3-cd) pyrene	ND	0.00500	"							
Pyrene	ND	0.00500	"							
1-Methylnaphthalene	ND	0.00500	"							
2-Methylnaphthalene	ND	0.00500	"							
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0358</i>		"	<i>0.0333</i>		<i>107</i>		<i>40-150</i>		
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0189</i>		"	<i>0.0333</i>		<i>56.7</i>		<i>40-150</i>		

LCS (BFI0609-BS1)

Prepared & Analyzed: 09/23/22

Acenaphthene	0.0185	0.00500	mg/kg	0.0333		55.4		31-137		
Anthracene	0.0192	0.00500	"	0.0333		57.7		30-120		
Benzo (a) anthracene	0.0186	0.00500	"	0.0333		55.8		30-120		
Benzo (a) pyrene	0.0183	0.00500	"	0.0333		54.9		30-120		
Benzo (b) fluoranthene	0.0169	0.00500	"	0.0333		50.8		30-120		
Benzo (k) fluoranthene	0.0174	0.00500	"	0.0333		52.1		30-120		
Chrysene	0.0152	0.00500	"	0.0333		45.7		30-120		
Dibenz (a,h) anthracene	0.0148	0.00500	"	0.0333		44.4		30-120		
Fluoranthene	0.0196	0.00500	"	0.0333		58.7		30-120		
Fluorene	0.0187	0.00500	"	0.0333		56.2		30-120		
Indeno (1,2,3-cd) pyrene	0.0169	0.00500	"	0.0333		50.7		30-120		
Pyrene	0.0183	0.00500	"	0.0333		55.0		35-142		
1-Methylnaphthalene	0.0249	0.00500	"	0.0333		74.8		35-142		
2-Methylnaphthalene	0.0271	0.00500	"	0.0333		81.2		35-142		
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0336</i>		"	<i>0.0333</i>		<i>101</i>		<i>40-150</i>		
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0195</i>		"	<i>0.0333</i>		<i>58.4</i>		<i>40-150</i>		

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 - Guttersen State DD08-11

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/03/22 12:30

PAH by EPA Method 8270D SIM - Quality Control

Summit Scientific

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

Batch BFI0609 - EPA 5030 Soil MS

Matrix Spike (BFI0609-MS1)		Source: 2209385-03			Prepared & Analyzed: 09/23/22						
Acenaphthene	0.0149	0.00500	mg/kg	0.0333	ND	44.8	31-137				
Anthracene	0.0156	0.00500	"	0.0333	ND	46.9	30-120				
Benzo (a) anthracene	0.0154	0.00500	"	0.0333	ND	46.3	30-120				
Benzo (a) pyrene	0.0145	0.00500	"	0.0333	ND	43.6	30-120				
Benzo (b) fluoranthene	0.0136	0.00500	"	0.0333	ND	40.9	30-120				
Benzo (k) fluoranthene	0.0140	0.00500	"	0.0333	ND	42.0	30-120				
Chrysene	0.0140	0.00500	"	0.0333	ND	42.0	30-120				
Dibenz (a,h) anthracene	0.0162	0.00500	"	0.0333	ND	48.6	30-120				
Fluoranthene	0.0163	0.00500	"	0.0333	ND	49.0	30-120				
Fluorene	0.0171	0.00500	"	0.0333	0.00329	41.5	30-120				
Indeno (1,2,3-cd) pyrene	0.0137	0.00500	"	0.0333	ND	41.0	30-120				
Pyrene	0.0138	0.00500	"	0.0333	ND	41.5	35-142				
1-Methylnaphthalene	0.0189	0.00500	"	0.0333	ND	56.6	15-130				
2-Methylnaphthalene	0.0231	0.00500	"	0.0333	ND	69.2	15-130				
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0315</i>		<i>"</i>	<i>0.0333</i>		<i>94.4</i>	<i>40-150</i>				
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0169</i>		<i>"</i>	<i>0.0333</i>		<i>50.6</i>	<i>40-150</i>				

Matrix Spike Dup (BFI0609-MSD1)		Source: 2209385-03			Prepared & Analyzed: 09/23/22						
Acenaphthene	0.0163	0.00500	mg/kg	0.0333	ND	48.9	31-137	8.81	30		
Anthracene	0.0139	0.00500	"	0.0333	ND	41.8	30-120	11.4	30		
Benzo (a) anthracene	0.0144	0.00500	"	0.0333	ND	43.3	30-120	6.73	30		
Benzo (a) pyrene	0.0137	0.00500	"	0.0333	ND	41.1	30-120	5.96	30		
Benzo (b) fluoranthene	0.0156	0.00500	"	0.0333	ND	46.9	30-120	13.6	30		
Benzo (k) fluoranthene	0.0146	0.00500	"	0.0333	ND	43.9	30-120	4.47	30		
Chrysene	0.0134	0.00500	"	0.0333	ND	40.1	30-120	4.59	30		
Dibenz (a,h) anthracene	0.0156	0.00500	"	0.0333	ND	46.7	30-120	3.86	30		
Fluoranthene	0.0141	0.00500	"	0.0333	ND	42.3	30-120	14.7	30		
Fluorene	0.0143	0.00500	"	0.0333	0.00329	32.9	30-120	18.2	30		
Indeno (1,2,3-cd) pyrene	0.0149	0.00500	"	0.0333	ND	44.6	30-120	8.33	30		
Pyrene	0.0157	0.00500	"	0.0333	ND	47.1	35-142	12.6	30		
1-Methylnaphthalene	0.0182	0.00500	"	0.0333	ND	54.5	15-130	3.81	50		
2-Methylnaphthalene	0.0175	0.00500	"	0.0333	ND	52.4	15-130	27.7	50		
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0285</i>		<i>"</i>	<i>0.0333</i>		<i>85.5</i>	<i>40-150</i>				
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0150</i>		<i>"</i>	<i>0.0333</i>		<i>45.1</i>	<i>40-150</i>				

Summit Scientific

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

Project: Noble - Gutterson State DD08-11

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/03/22 12:30

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

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

Batch BFI0688 - EPA 3050B

Blank (BFI0688-BLK1)

Prepared: 09/26/22 Analyzed: 09/29/22

Boron ND 0.0100 mg/L

LCS (BFI0688-BS1)

Prepared: 09/26/22 Analyzed: 09/29/22

Boron 5.13 0.0100 mg/L 5.00 103 80-120

Duplicate (BFI0688-DUP1)

Source: 2209141-15

Prepared: 09/26/22 Analyzed: 09/29/22

Boron 0.0993 0.0100 mg/L 0.109 9.14 20

Matrix Spike (BFI0688-MS1)

Source: 2209141-15

Prepared: 09/26/22 Analyzed: 09/29/22

Boron 5.05 0.0100 mg/L 5.00 0.109 98.8 75-125

Matrix Spike Dup (BFI0688-MSD1)

Source: 2209141-15

Prepared: 09/26/22 Analyzed: 09/29/22

Boron 5.09 0.0100 mg/L 5.00 0.109 99.6 75-125 0.802 25

Summit Scientific

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

Project: Noble - Gutterson State DD08-11

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/03/22 12:30

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

Summit Scientific

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

Batch BFI0728 - General Preparation

Blank (BFI0728-BLK1)

Prepared: 09/28/22 Analyzed: 10/01/22

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

LCS (BFI0728-BS1)

Prepared: 09/28/22 Analyzed: 10/01/22

Calcium	5.83	0.0500	mg/L wet	5.00	117	70-130				
Magnesium	5.57	0.0500	"	5.00	111	70-130				
Sodium	5.36	0.0500	"	5.00	107	70-130				

Summit Scientific

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

Project: Noble - Gutterson State DD08-11

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/03/22 12:30

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

Summit Scientific

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

Batch BFI0684 - General Preparation

Duplicate (BFI0684-DUP1)

Source: 2209141-15

Prepared: 09/26/22 Analyzed: 09/28/22

% Solids	89.9	%		90.0		0.161	20
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Summit Scientific

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

Project: Noble - Gutterson State DD08-11

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/03/22 12:30

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

Summit Scientific

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

Batch BFI0747 - General Preparation

Blank (BFI0747-BLK1)

Prepared: 09/28/22 Analyzed: 09/30/22

Specific Conductance (EC) ND 0.0100 mmhos/cm

LCS (BFI0747-BS1)

Prepared: 09/28/22 Analyzed: 09/30/22

Specific Conductance (EC) 0.152 0.0100 mmhos/cm 0.150 102 95-105

Duplicate (BFI0747-DUP1)

Source: 2209350-01

Prepared: 09/28/22 Analyzed: 09/30/22

Specific Conductance (EC) 25.1 0.0100 mmhos/cm 24.7 1.64 20

Summit Scientific

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

Project: Noble - Guttersen State DD08-11

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/03/22 12:30

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

Summit Scientific

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

Batch BFI0746 - General Preparation

LCS (BFI0746-BS1)

Prepared: 09/28/22 Analyzed: 09/30/22

pH	9.11	pH Units	9.18	99.2	95-105
----	------	----------	------	------	--------

Duplicate (BFI0746-DUP1)

Source: 2209350-01

Prepared: 09/28/22 Analyzed: 09/30/22

pH	7.10	pH Units	7.14	0.562	20
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Summit Scientific

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

Project: Noble - Guttarsen State DD08-11

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/03/22 12:30

Notes and Definitions

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

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80401

303.277.9310

April 03, 2023

Jacob Whritenour

Tasman Geosciences

6855 W. 119th Ave.

Broomfeld, CO 80020

RE: Noble - Gutterson State DD08-11

Work Order # 2303584

Enclosed are the results of analyses for samples received by Summit Scientific on 03/22/23 17:40. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Scott Sheely For Paul Shrewsbury

President



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

Project: Noble - Guttersen State DD08-11

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
04/03/23 14:12

ANALYTICAL REPORT FOR SAMPLES

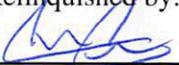
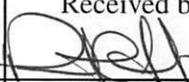
Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH01@3'	2303584-01	Soil	03/22/23 10:20	03/22/23 17:40
BH01@6'	2303584-02	Soil	03/22/23 10:25	03/22/23 17:40
BH02@3'	2303584-03	Soil	03/22/23 10:10	03/22/23 17:40
BH02@6'	2303584-04	Soil	03/22/23 10:15	03/22/23 17:40
BH03@3'	2303584-05	Soil	03/22/23 09:50	03/22/23 17:40
BH03@6'	2303584-06	Soil	03/22/23 09:55	03/22/23 17:40
BH04@3'	2303584-07	Soil	03/22/23 10:30	03/22/23 17:40
BH04@6'	2303584-08	Soil	03/22/23 10:35	03/22/23 17:40
BH05@3'	2303584-09	Soil	03/22/23 10:00	03/22/23 17:40
BH05@6'	2303584-10	Soil	03/22/23 10:05	03/22/23 17:40

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.

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: Gutterson State 0008-11
City/State/Zip: Broomfield, CO 80020		AFE#:
Phone: 970-691-7338	Project Name: Gutterson State 0008-11	PO/Billing Codes:
Sampler Name: Chris Chapman	Project Number:	Contact: Dan Peterson

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix		Air-Canister #	Other	Analysis Requested						Special Instructions	
					HCl	HNO3	None	Other	Water	Soil			VOC - 915	TPH - 915	PAH - 915	pH, EC, SAR	Boron - HWS	Metals - 915		HOLD
1	BH01 @ 3'	3-22-23	1020	2			X			X			X	X	X	X	X	X		pH, EC, SAR by saturated paste
2	BH01 @ 6'		1025																	
3	BH02 @ 3'		1010																	
4	BH02 @ 6'		1015																	
5	BH03 @ 3'		0950																	
6	BH03 @ 6'		0955																	
7	BH04 @ 3'		1030																	
8	BH04 @ 6'		1035																	
9	BH05 @ 3'		1000																	
10	BH05 @ 6'		1005																	
11																				
12																				
13																				
14																				
15																				

Relinquished by: 	Date/Time: 3-22-23 / 1530	Received by: Tasman Lock Box	Date/Time: 3-22-23 / 1530	TAT Business Days	Field DO	Notes:
				Same Day	Field EC	
Relinquished by: Tasman Lock Box	Date/Time: 3-22-23 / 1740	Received by: 	Date/Time: 3-22-23 / 1740	1 Day	Field ORP	
				2 Days	Field pH	
Relinquished by:	Date/Time:	Received by:	Date/Time:	3 Days	Field Temp.	
				Standard	Field Turb.	
Temperature Upon Receipt: 9.8	Corrected Temperature: 8	IR gun #: 1	HNO3 lot #:			

S₂

Sample Receipt Checklist

S2 Work Order# 2303584

Client: Noble/Asman Client Project ID: Guthrie State DDOB-11

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

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

Temp (°C) Thermometer #

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

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

AS

3/22/23

Custodian Printed Name

Date/Time



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

Project: Noble - Gutterson State DD08-11

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
04/03/23 14:12

BH01@3'
2303584-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/22/23 10:20**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Benzene	ND	0.0020		mg/kg	1	BGC0777	03/23/23	03/26/23	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: **03/22/23 10:20**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: 1,2-Dichloroethane-d4		103 %		50-150		"	"	"	"	
Surrogate: Toluene-d8		106 %		50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		110 %		50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **03/22/23 10:20**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
C10-C28 (DRO)	81	50		mg/kg	1	BGC0779	03/23/23	03/25/23	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **03/22/23 10:20**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: o-Terphenyl		88.9 %		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 - Gutterson State DD08-11

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
04/03/23 14:12

BH01@3'
2303584-01 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **03/22/23 10:20**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Acenaphthene	ND	0.00500		mg/kg	1	BGC1039	03/31/23	03/31/23	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: **03/22/23 10:20**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: 2-Methylnaphthalene-d10		80.1 %		40-150		"	"	"	"	"
Surrogate: Fluoranthene-d10		53.2 %		40-150		"	"	"	"	"

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **03/22/23 10:20**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Boron	0.0821	0.0100		mg/L	1	BGC0948	03/28/23	03/30/23	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **03/22/23 10:20**

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

Summit Scientific

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

Project: Noble - Guttarsen State DD08-11

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
04/03/23 14:12

BH01@3'
2303584-01 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Analyte	Result	Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	1.42	0.219	0.184	mg/kg dry	1	BGC0929	03/27/23	03/31/23	EPA 6020B	
Barium	46.4	0.437	0.345	"	"	"	"	"	"	
Cadmium	0.0647	0.219	0.00787	"	"	"	"	"	"	
Copper	2.13	0.437	0.0228	"	"	"	"	"	"	
Lead	ND	0.219	0.0601	"	"	"	"	"	"	
Nickel	2.44	0.437	0.0667	"	"	"	"	"	"	
Selenium	ND	0.260	0.175	"	"	"	"	"	"	
Silver	0.0175	0.0219	0.00292	"	"	"	"	"	"	
Zinc	9.16	0.437	0.291	"	"	"	"	"	"	

Hexavalent Chromium by EPA Method 7196

Date Sampled: **03/22/23 10:20**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30		mg/kg dry	1	BGC0902	03/27/23	03/27/23	EPA 7196A	

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

Date Sampled: **03/22/23 10:20**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	318	0.0546		mg/L dry	1	BGC0962	03/28/23	03/31/23	EPA 6020B	
Magnesium	60.1	0.0546		"	"	"	"	"	"	
Sodium	5.70	0.0546		"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **03/22/23 10:20**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.0769	0.00100		units	1	BGC1065	03/31/23	03/31/23	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

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

Project: Noble - Gutterson State DD08-11

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
04/03/23 14:12

BH01@3'
2303584-01 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **03/22/23 10:20**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
% Solids	91.5			%	1	BGC0932	03/27/23	03/28/23	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **03/22/23 10:20**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Specific Conductance (EC)	0.250	0.0100		mmhos/cm	1	BGC0984	03/29/23	03/29/23	EPA 120.1	

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

Date Sampled: **03/22/23 10:20**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
pH	7.22			pH Units	1	BGC0986	03/29/23	03/29/23	EPA 9045D	

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Project: Noble - Guttersen State DD08-11

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
04/03/23 14:12

BH01@6'
2303584-02 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/22/23 10:25**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Benzene	ND	0.0020		mg/kg	1	BGC0777	03/23/23	03/26/23	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: **03/22/23 10:25**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: 1,2-Dichloroethane-d4		108 %		50-150		"	"	"	"	
Surrogate: Toluene-d8		107 %		50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		112 %		50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **03/22/23 10:25**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
C10-C28 (DRO)	ND	50		mg/kg	1	BGC0779	03/23/23	03/25/23	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **03/22/23 10:25**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: o-Terphenyl		81.4 %		30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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Project: Noble - Guttersen State DD08-11

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
04/03/23 14:12

BH01@6'
2303584-02 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **03/22/23 10:25**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Acenaphthene	ND	0.00500		mg/kg	1	BGC1039	03/31/23	03/31/23	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: **03/22/23 10:25**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: 2-Methylnaphthalene-d10		83.3 %		40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		59.3 %		40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **03/22/23 10:25**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Boron	0.0669	0.0100		mg/L	1	BGC0948	03/28/23	03/30/23	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **03/22/23 10:25**

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

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Project: Noble - Guttersen State DD08-11

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
04/03/23 14:12

BH01@6'
2303584-02 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Analyte	Result	Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	2.22	0.223	0.188	mg/kg dry	1	BGC0929	03/27/23	03/31/23	EPA 6020B	
Barium	88.2	0.447	0.353	"	"	"	"	"	"	
Cadmium	0.0804	0.223	0.00804	"	"	"	"	"	"	
Copper	2.94	0.447	0.0233	"	"	"	"	"	"	
Lead	4.39	0.223	0.0614	"	"	"	"	"	"	
Nickel	3.65	0.447	0.0681	"	"	"	"	"	"	
Selenium	ND	0.260	0.175	"	"	"	"	"	"	
Silver	0.0121	0.0223	0.00298	"	"	"	"	"	"	
Zinc	11.7	0.447	0.297	"	"	"	"	"	"	

Hexavalent Chromium by EPA Method 7196

Date Sampled: **03/22/23 10:25**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30		mg/kg dry	1	BGC0902	03/27/23	03/27/23	EPA 7196A	

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

Date Sampled: **03/22/23 10:25**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	315	0.0558		mg/L dry	1	BGC0962	03/28/23	03/31/23	EPA 6020B	
Magnesium	69.2	0.0558		"	"	"	"	"	"	
Sodium	4.33	0.0558		"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **03/22/23 10:25**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.0576	0.00100		units	1	BGC1065	03/31/23	03/31/23	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

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Project: Noble - Gutterson State DD08-11

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
04/03/23 14:12

BH01@6'
2303584-02 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **03/22/23 10:25**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
% Solids	89.6			%	1	BGC0932	03/27/23	03/28/23	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **03/22/23 10:25**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Specific Conductance (EC)	0.132	0.0100		mmhos/cm	1	BGC0984	03/29/23	03/29/23	EPA 120.1	

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

Date Sampled: **03/22/23 10:25**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
pH	6.97			pH Units	1	BGC0986	03/29/23	03/29/23	EPA 9045D	

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Project: Noble - Guttersen State DD08-11

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
04/03/23 14:12

BH02@3'
2303584-03 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/22/23 10:10**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Benzene	ND	0.0020		mg/kg	1	BGC0777	03/23/23	03/26/23	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: **03/22/23 10:10**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: 1,2-Dichloroethane-d4		101 %		50-150		"	"	"	"	
Surrogate: Toluene-d8		107 %		50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		111 %		50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **03/22/23 10:10**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
C10-C28 (DRO)	ND	50		mg/kg	1	BGC0779	03/23/23	03/25/23	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **03/22/23 10:10**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: o-Terphenyl		81.8 %		30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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Project: Noble - Guttersen State DD08-11

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
04/03/23 14:12

BH02@3'
2303584-03 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **03/22/23 10:10**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Acenaphthene	ND	0.00500		mg/kg	1	BGC1039	03/31/23	03/31/23	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: **03/22/23 10:10**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: 2-Methylnaphthalene-d10		81.2 %		40-150		"	"	"	"	"
Surrogate: Fluoranthene-d10		53.9 %		40-150		"	"	"	"	"

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **03/22/23 10:10**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Boron	0.103	0.0100		mg/L	1	BGC0948	03/28/23	03/30/23	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **03/22/23 10:10**

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

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Project: Noble - Guttersen State DD08-11

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
04/03/23 14:12

BH02@3'
2303584-03 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Analyte	Result	Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	1.78	0.220	0.186	mg/kg dry	1	BGC0929	03/27/23	03/31/23	EPA 6020B	
Barium	60.8	0.441	0.348	"	"	"	"	"	"	
Cadmium	0.0833	0.220	0.00793	"	"	"	"	"	"	
Copper	2.37	0.441	0.0230	"	"	"	"	"	"	
Lead	4.21	0.220	0.0605	"	"	"	"	"	"	
Nickel	3.05	0.441	0.0672	"	"	"	"	"	"	
Selenium	ND	0.260	0.175	"	"	"	"	"	"	
Silver	0.0207	0.0220	0.00294	"	"	"	"	"	"	
Zinc	12.4	0.441	0.293	"	"	"	"	"	"	

Hexavalent Chromium by EPA Method 7196

Date Sampled: **03/22/23 10:10**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30		mg/kg dry	1	BGC0902	03/27/23	03/27/23	EPA 7196A	

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

Date Sampled: **03/22/23 10:10**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	417	0.0551		mg/L dry	1	BGC0962	03/28/23	03/31/23	EPA 6020B	
Magnesium	93.4	0.0551		"	"	"	"	"	"	
Sodium	8.25	0.0551		"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **03/22/23 10:10**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.0950	0.00100		units	1	BGC1065	03/31/23	03/31/23	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

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Project: Noble - Gutterson State DD08-11

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
04/03/23 14:12

BH02@3'
2303584-03 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **03/22/23 10:10**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
% Solids	90.8			%	1	BGC0932	03/27/23	03/28/23	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **03/22/23 10:10**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Specific Conductance (EC)	0.145	0.0100		mmhos/cm	1	BGC0984	03/29/23	03/29/23	EPA 120.1	

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

Date Sampled: **03/22/23 10:10**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
pH	6.35			pH Units	1	BGC0986	03/29/23	03/29/23	EPA 9045D	

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Project: Noble - Guttersen State DD08-11

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
04/03/23 14:12

BH02@6'
2303584-04 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/22/23 10:15**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Benzene	ND	0.0020		mg/kg	1	BGC0777	03/23/23	03/26/23	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: **03/22/23 10:15**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: 1,2-Dichloroethane-d4		109 %		50-150		"	"	"	"	
Surrogate: Toluene-d8		107 %		50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		111 %		50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **03/22/23 10:15**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
C10-C28 (DRO)	ND	50		mg/kg	1	BGC0779	03/23/23	03/25/23	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **03/22/23 10:15**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: o-Terphenyl		70.4 %		30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

Summit Scientific

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

Project: Noble - Guttersen State DD08-11

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
04/03/23 14:12

BH02@6'
2303584-04 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **03/22/23 10:15**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500		mg/kg	1	BGC1039	03/31/23	03/31/23	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: **03/22/23 10:15**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		80.4 %		40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		55.5 %		40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **03/22/23 10:15**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.0615	0.0100		mg/L	1	BGC0948	03/28/23	03/30/23	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **03/22/23 10:15**

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

Project: Noble - Gutterson State DD08-11

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
04/03/23 14:12

BH02@6'
2303584-04 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	3.72	0.228	0.192	mg/kg dry	1	BGC0929	03/27/23	03/31/23	EPA 6020B	
Barium	182	0.455	0.360	"	"	"	"	"	"	
Cadmium	0.282	0.228	0.00819	"	"	"	"	"	"	
Copper	4.05	0.455	0.0238	"	"	"	"	"	"	
Lead	ND	0.228	0.0625	"	"	"	"	"	"	
Nickel	5.21	0.455	0.0694	"	"	"	"	"	"	
Selenium	ND	0.260	0.175	"	"	"	"	"	"	
Silver	0.0205	0.0228	0.00304	"	"	"	"	"	"	
Zinc	15.3	0.455	0.303	"	"	"	"	"	"	

Hexavalent Chromium by EPA Method 7196

Date Sampled: **03/22/23 10:15**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30		mg/kg dry	1	BGC0902	03/27/23	03/27/23	EPA 7196A	

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

Date Sampled: **03/22/23 10:15**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	50.4	0.0569		mg/L dry	1	BGC0962	03/28/23	03/31/23	EPA 6020B	
Magnesium	7.30	0.0569		"	"	"	"	"	"	
Sodium	4.35	0.0569		"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **03/22/23 10:15**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.152	0.00100		units	1	BGC1065	03/31/23	03/31/23	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Summit Scientific

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Project: Noble - Guttersen State DD08-11

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
04/03/23 14:12

BH02@6'
2303584-04 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **03/22/23 10:15**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
% Solids	87.9			%	1	BGC0932	03/27/23	03/28/23	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **03/22/23 10:15**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Specific Conductance (EC)	0.318	0.0100		mmhos/cm	1	BGC0984	03/29/23	03/29/23	EPA 120.1	

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

Date Sampled: **03/22/23 10:15**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
pH	7.91			pH Units	1	BGC0986	03/29/23	03/29/23	EPA 9045D	

Summit Scientific

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

Project: Noble - Guttersen State DD08-11

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
04/03/23 14:12

BH03@3'
2303584-05 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/22/23 09:50**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Benzene	ND	0.0020		mg/kg	1	BGC0777	03/23/23	03/26/23	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: **03/22/23 09:50**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: 1,2-Dichloroethane-d4		105 %		50-150		"	"	"	"	
Surrogate: Toluene-d8		107 %		50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		111 %		50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **03/22/23 09:50**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
C10-C28 (DRO)	ND	50		mg/kg	1	BGC0779	03/23/23	03/25/23	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **03/22/23 09:50**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: o-Terphenyl		68.3 %		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 - Guttersen State DD08-11

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
04/03/23 14:12

BH03@3'
2303584-05 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **03/22/23 09:50**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Acenaphthene	ND	0.00500		mg/kg	1	BGC1039	03/31/23	03/31/23	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: **03/22/23 09:50**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: 2-Methylnaphthalene-d10		81.1 %		40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		54.8 %		40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **03/22/23 09:50**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Boron	0.116	0.0100		mg/L	1	BGC0948	03/28/23	03/30/23	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **03/22/23 09:50**

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

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

Project: Noble - Gutterson State DD08-11

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
04/03/23 14:12

BH03@3'
2303584-05 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Analyte	Result	Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	1.56	0.213	0.180	mg/kg dry	1	BGC0929	03/27/23	03/31/23	EPA 6020B	
Barium	62.7	0.427	0.337	"	"	"	"	"	"	
Cadmium	0.0756	0.213	0.00768	"	"	"	"	"	"	
Copper	2.19	0.427	0.0223	"	"	"	"	"	"	
Lead	3.94	0.213	0.0587	"	"	"	"	"	"	
Nickel	2.78	0.427	0.0651	"	"	"	"	"	"	
Selenium	ND	0.260	0.175	"	"	"	"	"	"	
Silver	0.0226	0.0213	0.00285	"	"	"	"	"	"	
Zinc	11.5	0.427	0.284	"	"	"	"	"	"	

Hexavalent Chromium by EPA Method 7196

Date Sampled: **03/22/23 09:50**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30		mg/kg dry	1	BGC0902	03/27/23	03/27/23	EPA 7196A	

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

Date Sampled: **03/22/23 09:50**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	225	0.0534		mg/L dry	1	BGC0962	03/28/23	03/31/23	EPA 6020B	
Magnesium	51.8	0.0534		"	"	"	"	"	"	
Sodium	2.61	0.0534		"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **03/22/23 09:50**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.0409	0.00100		units	1	BGC1065	03/31/23	03/31/23	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Summit Scientific

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

Project: Noble - Guttersen State DD08-11

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
04/03/23 14:12

BH03@3'
2303584-05 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **03/22/23 09:50**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
% Solids	93.7			%	1	BGC0932	03/27/23	03/28/23	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **03/22/23 09:50**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Specific Conductance (EC)	0.226	0.0100		mmhos/cm	1	BGC0984	03/29/23	03/29/23	EPA 120.1	

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

Date Sampled: **03/22/23 09:50**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
pH	6.36			pH Units	1	BGC0986	03/29/23	03/29/23	EPA 9045D	

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

Project: Noble - Gutterson State DD08-11

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
04/03/23 14:12

BH03@6'
2303584-06 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/22/23 09:55**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Benzene	ND	0.0020		mg/kg	1	BGC0777	03/23/23	03/26/23	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: **03/22/23 09:55**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: 1,2-Dichloroethane-d4		102 %		50-150		"	"	"	"	
Surrogate: Toluene-d8		108 %		50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		110 %		50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **03/22/23 09:55**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
C10-C28 (DRO)	ND	50		mg/kg	1	BGC0779	03/23/23	03/25/23	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **03/22/23 09:55**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: o-Terphenyl		62.4 %		30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

Summit Scientific

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Project: Noble - Gutterson State DD08-11

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
04/03/23 14:12

BH03@6'
2303584-06 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **03/22/23 09:55**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Acenaphthene	ND	0.00500		mg/kg	1	BGC1039	03/31/23	03/31/23	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: **03/22/23 09:55**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: 2-Methylnaphthalene-d10		69.5 %		40-150		"	"	"	"	"
Surrogate: Fluoranthene-d10		47.5 %		40-150		"	"	"	"	"

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **03/22/23 09:55**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Boron	0.0900	0.0100		mg/L	1	BGC0948	03/28/23	03/30/23	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **03/22/23 09:55**

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

Summit Scientific

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6855 W. 119th Ave.
Broomfield CO, 80020

Project: Noble - Guttersen State DD08-11

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
04/03/23 14:12

BH03@6'
2303584-06 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Analyte	Result	0.214	0.180	mg/kg dry	1	BGC0929	03/27/23	03/31/23	EPA 6020B
Arsenic	2.24	0.214	0.180	mg/kg dry	1	BGC0929	03/27/23	03/31/23	EPA 6020B
Barium	71.1	0.428	0.338	"	"	"	"	"	"
Cadmium	0.0775	0.214	0.00771	"	"	"	"	"	"
Copper	2.49	0.428	0.0224	"	"	"	"	"	"
Lead	4.02	0.214	0.0588	"	"	"	"	"	"
Nickel	2.91	0.428	0.0653	"	"	"	"	"	"
Selenium	ND	0.260	0.175	"	"	"	"	"	"
Silver	0.0176	0.0214	0.00286	"	"	"	"	"	"
Zinc	10.9	0.428	0.285	"	"	"	"	"	"

Hexavalent Chromium by EPA Method 7196

Date Sampled: 03/22/23 09:55

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30		mg/kg dry	1	BGC0902	03/27/23	03/27/23	EPA 7196A	

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

Date Sampled: 03/22/23 09:55

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	270	0.0535		mg/L dry	1	BGC0962	03/28/23	03/31/23	EPA 6020B	
Magnesium	68.0	0.0535		"	"	"	"	"	"	
Sodium	2.93	0.0535		"	"	"	"	"	"	

Calculated Analysis

Date Sampled: 03/22/23 09:55

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.0413	0.00100		units	1	BGC1065	03/31/23	03/31/23	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Summit Scientific

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

Project: Noble - Guttersen State DD08-11

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
04/03/23 14:12

BH03@6'
2303584-06 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **03/22/23 09:55**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
% Solids	93.4			%	1	BGC0932	03/27/23	03/28/23	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **03/22/23 09:55**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Specific Conductance (EC)	0.121	0.0100		mmhos/cm	1	BGC0984	03/29/23	03/29/23	EPA 120.1	

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

Date Sampled: **03/22/23 09:55**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
pH	6.43			pH Units	1	BGC0986	03/29/23	03/29/23	EPA 9045D	

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Broomfield CO, 80020

Project: Noble - Guttersen State DD08-11

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
04/03/23 14:12

BH04@3'
2303584-07 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/22/23 10:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Benzene	ND	0.0020		mg/kg	1	BGC0777	03/23/23	03/27/23	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: **03/22/23 10:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: 1,2-Dichloroethane-d4		97.0 %		50-150		"	"	"	"	
Surrogate: Toluene-d8		106 %		50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		108 %		50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **03/22/23 10:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
C10-C28 (DRO)	ND	50		mg/kg	1	BGC0779	03/23/23	03/25/23	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **03/22/23 10:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: o-Terphenyl		49.0 %		30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
04/03/23 14:12

BH04@3'
2303584-07 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **03/22/23 10:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Acenaphthene	ND	0.00500		mg/kg	1	BGC1039	03/31/23	03/31/23	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: **03/22/23 10:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: 2-Methylnaphthalene-d10		62.2 %		40-150		"	"	"	"	"
Surrogate: Fluoranthene-d10		44.0 %		40-150		"	"	"	"	"

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **03/22/23 10:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Boron	0.0475	0.0100		mg/L	1	BGC0948	03/28/23	03/31/23	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **03/22/23 10:30**

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

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Project: Noble - Guttarsen State DD08-11

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
04/03/23 14:12

BH04@3'
2303584-07 (Soil)

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Total Metals by EPA 6020B

Analyte	Result	0.219	0.185	mg/kg dry	1	BGC0929	03/27/23	03/31/23	EPA 6020B
Arsenic	1.50	0.219	0.185	mg/kg dry	1	BGC0929	03/27/23	03/31/23	EPA 6020B
Barium	35.6	0.439	0.347	"	"	"	"	"	"
Cadmium	0.0921	0.219	0.00790	"	"	"	"	"	"
Copper	2.27	0.439	0.0229	"	"	"	"	"	"
Lead	ND	0.219	0.0603	"	"	"	"	"	"
Nickel	2.53	0.439	0.0669	"	"	"	"	"	"
Selenium	ND	0.260	0.175	"	"	"	"	"	"
Silver	0.0105	0.0219	0.00293	"	"	"	"	"	"
Zinc	9.19	0.439	0.292	"	"	"	"	"	"

Hexavalent Chromium by EPA Method 7196

Date Sampled: 03/22/23 10:30

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30		mg/kg dry	1	BGC0902	03/27/23	03/27/23	EPA 7196A	

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

Date Sampled: 03/22/23 10:30

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	219	0.0548		mg/L dry	1	BGC0962	03/28/23	03/31/23	EPA 6020B	
Magnesium	43.6	0.0548		"	"	"	"	"	"	
Sodium	2.63	0.0548		"	"	"	"	"	"	

Calculated Analysis

Date Sampled: 03/22/23 10:30

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.0425	0.00100		units	1	BGC1065	03/31/23	03/31/23	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

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Reported:
04/03/23 14:12

BH04@3'
2303584-07 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **03/22/23 10:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
% Solids	91.2			%	1	BGC0932	03/27/23	03/28/23	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **03/22/23 10:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Specific Conductance (EC)	0.143	0.0100		mmhos/cm	1	BGC0984	03/29/23	03/29/23	EPA 120.1	

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

Date Sampled: **03/22/23 10:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
pH	6.62			pH Units	1	BGC0986	03/29/23	03/29/23	EPA 9045D	

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Project: Noble - Guttersen State DD08-11

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
04/03/23 14:12

BH04@6'
2303584-08 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/22/23 10:35**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Benzene	ND	0.0020		mg/kg	1	BGC0777	03/23/23	03/27/23	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: **03/22/23 10:35**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: 1,2-Dichloroethane-d4		105 %		50-150		"	"	"	"	
Surrogate: Toluene-d8		107 %		50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		113 %		50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **03/22/23 10:35**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
C10-C28 (DRO)	ND	50		mg/kg	1	BGC0779	03/23/23	03/25/23	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **03/22/23 10:35**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: o-Terphenyl		63.4 %		30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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04/03/23 14:12

BH04@6'
2303584-08 (Soil)

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PAH by EPA Method 8270D SIM

Date Sampled: **03/22/23 10:35**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Acenaphthene	ND	0.00500		mg/kg	1	BGC1039	03/31/23	03/31/23	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: **03/22/23 10:35**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: 2-Methylnaphthalene-d10		73.2 %		40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		50.0 %		40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **03/22/23 10:35**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Boron	0.0443	0.0100		mg/L	1	BGC0948	03/28/23	03/31/23	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **03/22/23 10:35**

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

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Project Number: UWRWE-A2261-ABN
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Reported:
04/03/23 14:12

BH04@6'
2303584-08 (Soil)

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Total Metals by EPA 6020B

Analyte	Result	Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	5.85	0.223	0.188	mg/kg dry	1	BGC0929	03/27/23	03/31/23	EPA 6020B	
Barium	110	0.446	0.352	"	"	"	"	"	"	
Cadmium	0.226	0.223	0.00803	"	"	"	"	"	"	
Copper	5.25	0.446	0.0233	"	"	"	"	"	"	
Lead	7.88	0.223	0.0613	"	"	"	"	"	"	
Nickel	8.76	0.446	0.0680	"	"	"	"	"	"	
Selenium	ND	0.260	0.175	"	"	"	"	"	"	
Silver	0.0232	0.0223	0.00298	"	"	"	"	"	"	
Zinc	16.5	0.446	0.297	"	"	"	"	"	"	

Hexavalent Chromium by EPA Method 7196

Date Sampled: 03/22/23 10:35

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30		mg/kg dry	1	BGC0902	03/27/23	03/27/23	EPA 7196A	

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

Date Sampled: 03/22/23 10:35

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	289	0.0558		mg/L dry	1	BGC0962	03/28/23	03/31/23	EPA 6020B	
Magnesium	79.4	0.0558		"	"	"	"	"	"	
Sodium	3.65	0.0558		"	"	"	"	"	"	

Calculated Analysis

Date Sampled: 03/22/23 10:35

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.0491	0.00100		units	1	BGC1065	03/31/23	03/31/23	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

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Reported:
04/03/23 14:12

BH04@6'
2303584-08 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **03/22/23 10:35**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
% Solids	89.7			%	1	BGC0932	03/27/23	03/28/23	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **03/22/23 10:35**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Specific Conductance (EC)	0.0801	0.0100		mmhos/cm	1	BGC0984	03/29/23	03/29/23	EPA 120.1	

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

Date Sampled: **03/22/23 10:35**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
pH	6.90			pH Units	1	BGC0986	03/29/23	03/29/23	EPA 9045D	

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Reported:
04/03/23 14:12

BH05@3'
2303584-09 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/22/23 10:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Benzene	ND	0.0020		mg/kg	1	BGC0777	03/23/23	03/27/23	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: **03/22/23 10:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: 1,2-Dichloroethane-d4		104 %		50-150		"	"	"	"	
Surrogate: Toluene-d8		107 %		50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		112 %		50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **03/22/23 10:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
C10-C28 (DRO)	ND	50		mg/kg	1	BGC0779	03/23/23	03/25/23	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **03/22/23 10:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: o-Terphenyl		72.7 %		30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
04/03/23 14:12

BH05@3'
2303584-09 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **03/22/23 10:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Acenaphthene	ND	0.00500		mg/kg	1	BGC1039	03/31/23	03/31/23	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: **03/22/23 10:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: 2-Methylnaphthalene-d10		68.5 %		40-150		"	"	"	"	"
Surrogate: Fluoranthene-d10		47.5 %		40-150		"	"	"	"	"

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **03/22/23 10:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Boron	0.137	0.0100		mg/L	1	BGC0948	03/28/23	03/31/23	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **03/22/23 10:00**

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

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

Project: Noble - Guttersen State DD08-11

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
04/03/23 14:12

BH05@3'
2303584-09 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Analyte	Result	Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	1.69	0.215	0.181	mg/kg dry	1	BGC0929	03/27/23	03/31/23	EPA 6020B	
Barium	39.8	0.430	0.339	"	"	"	"	"	"	
Cadmium	0.0786	0.215	0.00773	"	"	"	"	"	"	
Copper	2.39	0.430	0.0224	"	"	"	"	"	"	
Lead	3.70	0.215	0.0590	"	"	"	"	"	"	
Nickel	2.75	0.430	0.0655	"	"	"	"	"	"	
Selenium	ND	0.260	0.175	"	"	"	"	"	"	
Silver	0.0172	0.0215	0.00287	"	"	"	"	"	"	
Zinc	10.6	0.430	0.286	"	"	"	"	"	"	

Hexavalent Chromium by EPA Method 7196

Date Sampled: **03/22/23 10:00**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30		mg/kg dry	1	BGC0902	03/27/23	03/27/23	EPA 7196A	

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

Date Sampled: **03/22/23 10:00**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	368	0.0537		mg/L dry	1	BGC0962	03/28/23	03/31/23	EPA 6020B	
Magnesium	89.1	0.0537		"	"	"	"	"	"	
Sodium	6.71	0.0537		"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **03/22/23 10:00**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.0814	0.00100		units	1	BGC1065	03/31/23	03/31/23	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

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Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
04/03/23 14:12

BH05@3'
2303584-09 (Soil)

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Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **03/22/23 10:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
% Solids	93.1			%	1	BGC0932	03/27/23	03/28/23	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **03/22/23 10:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Specific Conductance (EC)	0.218	0.0100		mmhos/cm	1	BGC0984	03/29/23	03/29/23	EPA 120.1	

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

Date Sampled: **03/22/23 10:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
pH	6.93			pH Units	1	BGC0986	03/29/23	03/29/23	EPA 9045D	

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Project: Noble - Guttersen State DD08-11

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
04/03/23 14:12

BH05@6'
2303584-10 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/22/23 10:05**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Benzene	ND	0.0020		mg/kg	1	BGC0777	03/23/23	03/27/23	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: **03/22/23 10:05**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: 1,2-Dichloroethane-d4		106 %		50-150		"	"	"	"	
Surrogate: Toluene-d8		106 %		50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		112 %		50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **03/22/23 10:05**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
C10-C28 (DRO)	ND	50		mg/kg	1	BGC0779	03/23/23	03/25/23	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **03/22/23 10:05**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: o-Terphenyl		92.2 %		30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
04/03/23 14:12

BH05@6'
2303584-10 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **03/22/23 10:05**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Acenaphthene	ND	0.00500		mg/kg	1	BGC1039	03/31/23	04/01/23	EPA 8270D SIM	
Anthracene	ND	0.00500		"	"	"	"	"	"	"
Benzo (a) anthracene	ND	0.00500		"	"	"	"	"	"	"
Benzo (a) pyrene	ND	0.00500		"	"	"	"	"	"	"
Benzo (b) fluoranthene	ND	0.00500		"	"	"	"	"	"	"
Benzo (k) fluoranthene	ND	0.00500		"	"	"	"	"	"	"
Chrysene	ND	0.00500		"	"	"	"	"	"	"
Dibenz (a,h) anthracene	ND	0.00500		"	"	"	"	"	"	"
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: **03/22/23 10:05**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: 2-Methylnaphthalene-d10		63.8 %		40-150		"	"	"	"	"
Surrogate: Fluoranthene-d10		44.4 %		40-150		"	"	"	"	"

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **03/22/23 10:05**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Boron	0.0639	0.0100		mg/L	1	BGC0948	03/28/23	03/31/23	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **03/22/23 10:05**

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

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Project: Noble - Guttersen State DD08-11

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
04/03/23 14:12

BH05@6'
2303584-10 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Analyte	Result	Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	1.77	0.212	0.179	mg/kg dry	1	BGC0929	03/27/23	03/31/23	EPA 6020B	
Barium	49.7	0.424	0.335	"	"	"	"	"	"	
Cadmium	0.0641	0.212	0.00764	"	"	"	"	"	"	
Copper	2.46	0.424	0.0222	"	"	"	"	"	"	
Lead	3.49	0.212	0.0583	"	"	"	"	"	"	
Nickel	2.94	0.424	0.0647	"	"	"	"	"	"	
Selenium	ND	0.260	0.175	"	"	"	"	"	"	
Silver	0.0140	0.0212	0.00283	"	"	"	"	"	"	
Zinc	9.38	0.424	0.282	"	"	"	"	"	"	

Hexavalent Chromium by EPA Method 7196

Date Sampled: **03/22/23 10:05**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30		mg/kg dry	1	BGC0902	03/27/23	03/27/23	EPA 7196A	

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

Date Sampled: **03/22/23 10:05**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	330	0.0531		mg/L dry	1	BGC0962	03/28/23	03/31/23	EPA 6020B	
Magnesium	93.7	0.0531		"	"	"	"	"	"	
Sodium	4.46	0.0531		"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **03/22/23 10:05**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.0558	0.00100		units	1	BGC1065	03/31/23	03/31/23	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

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Project: Noble - Gutterson State DD08-11

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
04/03/23 14:12

BH05@6'
2303584-10 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **03/22/23 10:05**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
% Solids	94.2			%	1	BGC0932	03/27/23	03/28/23	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **03/22/23 10:05**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Specific Conductance (EC)	0.190	0.0100		mmhos/cm	1	BGC0984	03/29/23	03/29/23	EPA 120.1	

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

Date Sampled: **03/22/23 10:05**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
pH	6.30			pH Units	1	BGC0986	03/29/23	03/29/23	EPA 9045D	

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Project: Noble - Guttersen State DD08-11

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
04/03/23 14:12

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch BGC0777 - EPA 5030 Soil MS

Blank (BGC0777-BLK1)

Prepared: 03/23/23 Analyzed: 03/26/23

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	0.0421		"	0.0400		105	50-150			
Surrogate: Toluene-d8	0.0426		"	0.0400		107	50-150			
Surrogate: 4-Bromofluorobenzene	0.0436		"	0.0400		109	50-150			

LCS (BGC0777-BS1)

Prepared: 03/23/23 Analyzed: 03/26/23

Benzene	0.153	0.0020	mg/kg	0.125		122	70-130			
Toluene	0.158	0.0050	"	0.125		127	70-130			
Ethylbenzene	0.140	0.0050	"	0.125		112	70-130			
m,p-Xylene	0.276	0.010	"	0.250		111	70-130			
o-Xylene	0.125	0.0050	"	0.125		100	70-130			
1,2,4-Trimethylbenzene	0.133	0.0050	"	0.125		106	70-130			
1,3,5-Trimethylbenzene	0.137	0.0050	"	0.125		110	70-130			
Naphthalene	0.108	0.0038	"	0.125		86.3	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0416		"	0.0400		104	50-150			
Surrogate: Toluene-d8	0.0430		"	0.0400		107	50-150			
Surrogate: 4-Bromofluorobenzene	0.0418		"	0.0400		105	50-150			

Matrix Spike (BGC0777-MS1)

Source: 2303540-01

Prepared: 03/23/23 Analyzed: 03/26/23

Benzene	0.156	0.0020	mg/kg	0.125	ND	125	70-130			
Toluene	0.155	0.0050	"	0.125	ND	124	70-130			
Ethylbenzene	0.141	0.0050	"	0.125	ND	113	70-130			
m,p-Xylene	0.282	0.010	"	0.250	ND	113	70-130			
o-Xylene	0.128	0.0050	"	0.125	ND	103	70-130			
1,2,4-Trimethylbenzene	0.136	0.0050	"	0.125	ND	109	70-130			
1,3,5-Trimethylbenzene	0.140	0.0050	"	0.125	ND	112	70-130			
Naphthalene	0.120	0.0038	"	0.125	ND	96.3	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0406		"	0.0400		102	50-150			
Surrogate: Toluene-d8	0.0428		"	0.0400		107	50-150			
Surrogate: 4-Bromofluorobenzene	0.0414		"	0.0400		104	50-150			

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Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
04/03/23 14:12

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

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

Batch BGC0777 - EPA 5030 Soil MS

Matrix Spike Dup (BGC0777-MSD1)	Source: 2303540-01			Prepared: 03/23/23 Analyzed: 03/26/23						
Benzene	0.156	0.0020	mg/kg	0.125	ND	125	70-130	0.231	30	
Toluene	0.161	0.0050	"	0.125	ND	129	70-130	4.16	30	
Ethylbenzene	0.141	0.0050	"	0.125	ND	113	70-130	0.0850	30	
m,p-Xylene	0.281	0.010	"	0.250	ND	112	70-130	0.427	30	
o-Xylene	0.127	0.0050	"	0.125	ND	102	70-130	1.06	30	
1,2,4-Trimethylbenzene	0.134	0.0050	"	0.125	ND	107	70-130	0.956	30	
1,3,5-Trimethylbenzene	0.138	0.0050	"	0.125	ND	110	70-130	1.72	30	
Naphthalene	0.117	0.0038	"	0.125	ND	93.9	70-130	2.50	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0422</i>		<i>"</i>	<i>0.0400</i>		<i>105</i>	<i>50-150</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0433</i>		<i>"</i>	<i>0.0400</i>		<i>108</i>	<i>50-150</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0418</i>		<i>"</i>	<i>0.0400</i>		<i>104</i>	<i>50-150</i>			

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Project: Noble - Guttersen State DD08-11

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
04/03/23 14:12

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch BGC0779 - EPA 3550A

Blank (BGC0779-BLK1)

Prepared: 03/23/23 Analyzed: 03/25/23

C10-C28 (DRO)	ND	50	mg/kg								
C28-C36 (ORO)	ND	50	"								
Surrogate: <i>o</i> -Terphenyl	11.8		"	12.5		94.6	30-150				

LCS (BGC0779-BS1)

Prepared: 03/23/23 Analyzed: 03/25/23

C10-C28 (DRO)	535	50	mg/kg	500		107	70-130				
Surrogate: <i>o</i> -Terphenyl	10.7		"	12.5		85.5	30-150				

Matrix Spike (BGC0779-MS1)

Source: 2303540-01

Prepared: 03/23/23 Analyzed: 03/25/23

C10-C28 (DRO)	580	50	mg/kg	500	27.8	110	70-130				
Surrogate: <i>o</i> -Terphenyl	8.90		"	12.5		71.2	30-150				

Matrix Spike Dup (BGC0779-MSD1)

Source: 2303540-01

Prepared: 03/23/23 Analyzed: 03/25/23

C10-C28 (DRO)	510	50	mg/kg	500	27.8	96.4	70-130	12.9	20		
Surrogate: <i>o</i> -Terphenyl	9.56		"	12.5		76.5	30-150				

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Project: Noble - Guttersen State DD08-11

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
04/03/23 14:12

PAH by EPA Method 8270D SIM - Quality Control
Summit Scientific

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

Batch BGC1039 - EPA 5030 Soil MS

Blank (BGC1039-BLK1)

Prepared & Analyzed: 03/31/23

Acenaphthene	ND	0.00500	mg/kg							
Anthracene	ND	0.00500	"							
Benzo (a) anthracene	ND	0.00500	"							
Benzo (a) pyrene	ND	0.00500	"							
Benzo (b) fluoranthene	ND	0.00500	"							
Benzo (k) fluoranthene	ND	0.00500	"							
Chrysene	ND	0.00500	"							
Dibenz (a,h) anthracene	ND	0.00500	"							
Fluoranthene	ND	0.00500	"							
Fluorene	ND	0.00500	"							
Indeno (1,2,3-cd) pyrene	ND	0.00500	"							
Pyrene	ND	0.00500	"							
1-Methylnaphthalene	ND	0.00500	"							
2-Methylnaphthalene	ND	0.00500	"							
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0372</i>		<i>"</i>	<i>0.0333</i>		<i>112</i>		<i>40-150</i>		
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0269</i>		<i>"</i>	<i>0.0333</i>		<i>80.6</i>		<i>40-150</i>		

LCS (BGC1039-BS1)

Prepared & Analyzed: 03/31/23

Acenaphthene	0.0370	0.00500	mg/kg	0.0333	111	31-137
Anthracene	0.0267	0.00500	"	0.0333	80.2	30-120
Benzo (a) anthracene	0.0283	0.00500	"	0.0333	85.0	30-120
Benzo (a) pyrene	0.0301	0.00500	"	0.0333	90.3	30-120
Benzo (b) fluoranthene	0.0386	0.00500	"	0.0333	116	30-120
Benzo (k) fluoranthene	0.0369	0.00500	"	0.0333	111	30-120
Chrysene	0.0222	0.00500	"	0.0333	66.6	30-120
Dibenz (a,h) anthracene	0.0160	0.00500	"	0.0333	48.0	30-120
Fluoranthene	0.0263	0.00500	"	0.0333	78.8	30-120
Fluorene	0.0364	0.00500	"	0.0333	109	30-120
Indeno (1,2,3-cd) pyrene	0.0144	0.00500	"	0.0333	43.1	30-120
Pyrene	0.0327	0.00500	"	0.0333	98.2	35-142
1-Methylnaphthalene	0.0312	0.00500	"	0.0333	93.5	35-142
2-Methylnaphthalene	0.0302	0.00500	"	0.0333	90.7	35-142
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0351</i>		<i>"</i>	<i>0.0333</i>	<i>105</i>	<i>40-150</i>
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0309</i>		<i>"</i>	<i>0.0333</i>	<i>92.6</i>	<i>40-150</i>

Summit Scientific

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

Project: Noble - Guttersen State DD08-11

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
04/03/23 14:12

PAH by EPA Method 8270D SIM - Quality Control

Summit Scientific

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

Batch BGC1039 - EPA 5030 Soil MS

Matrix Spike (BGC1039-MS1)

Source: 2303584-01

Prepared & Analyzed: 03/31/23

Acenaphthene	0.0258	0.00500	mg/kg	0.0333	ND	77.3	31-137			
Anthracene	0.0185	0.00500	"	0.0333	ND	55.4	30-120			
Benzo (a) anthracene	0.0216	0.00500	"	0.0333	ND	64.7	30-120			
Benzo (a) pyrene	0.0219	0.00500	"	0.0333	ND	65.7	30-120			
Benzo (b) fluoranthene	0.0299	0.00500	"	0.0333	ND	89.7	30-120			
Benzo (k) fluoranthene	0.0312	0.00500	"	0.0333	ND	93.6	30-120			
Chrysene	0.0177	0.00500	"	0.0333	ND	53.1	30-120			
Dibenz (a,h) anthracene	0.0213	0.00500	"	0.0333	ND	63.8	30-120			
Fluoranthene	0.0274	0.00500	"	0.0333	ND	82.2	30-120			
Fluorene	0.0272	0.00500	"	0.0333	ND	81.6	30-120			
Indeno (1,2,3-cd) pyrene	0.0172	0.00500	"	0.0333	ND	51.7	30-120			
Pyrene	0.0284	0.00500	"	0.0333	ND	85.2	35-142			
1-Methylnaphthalene	0.0199	0.00500	"	0.0333	ND	59.6	15-130			
2-Methylnaphthalene	0.0198	0.00500	"	0.0333	ND	59.3	15-130			
Surrogate: 2-Methylnaphthalene-d10	0.0235		"	0.0333		70.6	40-150			
Surrogate: Fluoranthene-d10	0.0209		"	0.0333		62.7	40-150			

Matrix Spike Dup (BGC1039-MSD1)

Source: 2303584-01

Prepared & Analyzed: 03/31/23

Acenaphthene	0.0289	0.00500	mg/kg	0.0333	ND	86.8	31-137	11.6	30	
Anthracene	0.0218	0.00500	"	0.0333	ND	65.3	30-120	16.4	30	
Benzo (a) anthracene	0.0231	0.00500	"	0.0333	ND	69.2	30-120	6.77	30	
Benzo (a) pyrene	0.0234	0.00500	"	0.0333	ND	70.1	30-120	6.51	30	
Benzo (b) fluoranthene	0.0316	0.00500	"	0.0333	ND	94.7	30-120	5.42	30	
Benzo (k) fluoranthene	0.0347	0.00500	"	0.0333	ND	104	30-120	10.7	30	
Chrysene	0.0182	0.00500	"	0.0333	ND	54.6	30-120	2.77	30	
Dibenz (a,h) anthracene	0.0202	0.00500	"	0.0333	ND	60.7	30-120	5.05	30	
Fluoranthene	0.0240	0.00500	"	0.0333	ND	72.0	30-120	13.3	30	
Fluorene	0.0289	0.00500	"	0.0333	ND	86.6	30-120	5.95	30	
Indeno (1,2,3-cd) pyrene	0.0187	0.00500	"	0.0333	ND	56.0	30-120	7.84	30	
Pyrene	0.0271	0.00500	"	0.0333	ND	81.4	35-142	4.57	30	
1-Methylnaphthalene	0.0240	0.00500	"	0.0333	ND	72.0	15-130	18.8	50	
2-Methylnaphthalene	0.0225	0.00500	"	0.0333	ND	67.5	15-130	12.9	50	
Surrogate: 2-Methylnaphthalene-d10	0.0277		"	0.0333		83.1	40-150			
Surrogate: Fluoranthene-d10	0.0262		"	0.0333		78.7	40-150			

Summit Scientific

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

Project: Noble - Guttersen State DD08-11

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
04/03/23 14:12

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

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

Batch BGC0948 - EPA 3050B

Blank (BGC0948-BLK1)

Prepared: 03/28/23 Analyzed: 03/30/23

Boron ND 0.0100 mg/L

LCS (BGC0948-BS1)

Prepared: 03/28/23 Analyzed: 03/30/23

Boron 5.49 0.0100 mg/L 5.00 110 80-120

Duplicate (BGC0948-DUP1)

Source: 2303570-01

Prepared: 03/28/23 Analyzed: 03/30/23

Boron 0.118 0.0100 mg/L 0.119 1.35 20

Matrix Spike (BGC0948-MS1)

Source: 2303570-01

Prepared: 03/28/23 Analyzed: 03/30/23

Boron 5.41 0.0100 mg/L 5.00 0.119 106 75-125

Matrix Spike Dup (BGC0948-MSD1)

Source: 2303570-01

Prepared: 03/28/23 Analyzed: 03/30/23

Boron 5.48 0.0100 mg/L 5.00 0.119 107 75-125 1.26 25

Summit Scientific

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

Project: Noble - Guttersen State DD08-11

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
04/03/23 14:12

Total Metals by EPA 6020B - Quality Control
Summit Scientific

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

Batch BGC0929 - EPA 3050B

Blank (BGC0929-BLK1)

Prepared: 03/27/23 Analyzed: 03/31/23

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

LCS (BGC0929-BS1)

Prepared: 03/27/23 Analyzed: 03/31/23

Arsenic	41.0	0.200	mg/kg wet	40.0		103	80-120
Barium	40.0	0.400	"	40.0		100	80-120
Cadmium	1.94	0.200	"	2.00		97.1	80-120
Copper	39.0	0.400	"	40.0		97.4	80-120
Lead	19.3	0.200	"	20.0		96.4	80-120
Nickel	37.3	0.400	"	40.0		93.3	80-120
Selenium	4.10	0.260	"	4.00		103	80-120
Silver	1.95	0.0200	"	2.00		97.5	80-120
Zinc	37.1	0.400	"	40.0		92.7	80-120

Duplicate (BGC0929-DUP1)

Source: 2303556-01

Prepared: 03/27/23 Analyzed: 03/31/23

Arsenic	1.62	0.209	mg/kg dry	1.61		0.569	20
Barium	66.1	0.419	"	65.1		1.41	20
Cadmium	0.0854	0.209	"	0.0812		5.03	20
Copper	3.70	0.419	"	3.65		1.24	20
Lead	4.29	0.209	"	4.23		1.33	20
Nickel	4.37	0.419	"	4.31		1.52	20
Selenium	ND	0.260	"	ND			20
Silver	0.0239	0.0209	"	0.0239		0.00	20
Zinc	13.4	0.419	"	13.3		0.710	20

Summit Scientific

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

Project: Noble - Guttersen State DD08-11

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
04/03/23 14:12

Total Metals by EPA 6020B - Quality Control
Summit Scientific

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

Batch BGC0929 - EPA 3050B

Matrix Spike (BGC0929-MS1)

Source: 2303556-01

Prepared: 03/27/23 Analyzed: 03/31/23

Arsenic	45.1	0.209	mg/kg dry	41.9	1.61	104	75-125				
Barium	115	0.419	"	41.9	65.1	120	75-125				
Cadmium	2.19	0.209	"	2.09	0.0812	101	75-125				
Copper	32.7	0.419	"	41.9	3.65	69.3	75-125				QM-07
Lead	25.5	0.209	"	20.9	4.23	101	75-125				
Nickel	32.6	0.419	"	41.9	4.31	67.5	75-125				QM-07
Selenium	4.75	0.260	"	4.19	ND	114	75-125				
Silver	2.04	0.0209	"	2.09	0.0239	96.3	75-125				
Zinc	43.4	0.419	"	41.9	13.3	72.0	75-125				QM-07

Matrix Spike Dup (BGC0929-MSD1)

Source: 2303556-01

Prepared: 03/27/23 Analyzed: 03/31/23

Arsenic	44.6	0.209	mg/kg dry	41.9	1.61	103	75-125	1.06	25		
Barium	114	0.419	"	41.9	65.1	116	75-125	1.20	25		
Cadmium	2.20	0.209	"	2.09	0.0812	101	75-125	0.476	25		
Copper	32.8	0.419	"	41.9	3.65	69.6	75-125	0.462	25		QM-07
Lead	ND	0.209	"	20.9	4.23	NR	75-125	200	25		QM-07
Nickel	32.6	0.419	"	41.9	4.31	67.6	75-125	0.215	25		QM-07
Selenium	4.89	0.260	"	4.19	ND	117	75-125	2.90	25		
Silver	2.04	0.0209	"	2.09	0.0239	96.4	75-125	0.103	25		
Zinc	43.8	0.419	"	41.9	13.3	73.0	75-125	0.924	25		QM-07

Summit Scientific

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

Project: Noble - Gutterson State DD08-11

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
04/03/23 14:12

Hexavalent Chromium by EPA Method 7196 - Quality Control
Summit Scientific

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

Batch BGC0902 - 3060A Mod

Blank (BGC0902-BLK1)

Prepared & Analyzed: 03/27/23

Chromium, Hexavalent ND 0.30 mg/kg wet

LCS (BGC0902-BS1)

Prepared & Analyzed: 03/27/23

Chromium, Hexavalent 24.8 0.30 mg/kg wet 25.0 99.2 80-120

Duplicate (BGC0902-DUP1)

Source: 2303327-01

Prepared & Analyzed: 03/27/23

Chromium, Hexavalent ND 0.30 mg/kg dry ND 20

Matrix Spike (BGC0902-MS1)

Source: 2303327-01

Prepared & Analyzed: 03/27/23

Chromium, Hexavalent 26.1 0.30 mg/kg dry 27.1 ND 96.4 75-125

Matrix Spike Dup (BGC0902-MSD1)

Source: 2303327-01

Prepared & Analyzed: 03/27/23

Chromium, Hexavalent 26.4 0.30 mg/kg dry 27.1 ND 97.4 75-125 1.03 20

Summit Scientific

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

Project: Noble - Gutterson State DD08-11

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
04/03/23 14:12

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

Summit Scientific

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

Batch BGC0962 - General Preparation

Blank (BGC0962-BLK1)

Prepared: 03/28/23 Analyzed: 03/31/23

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

LCS (BGC0962-BS1)

Prepared: 03/28/23 Analyzed: 03/31/23

Calcium	4.70	0.0500	mg/L wet	5.00	93.9	70-130
Magnesium	5.12	0.0500	"	5.00	102	70-130
Sodium	5.33	0.0500	"	5.00	107	70-130

Summit Scientific

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

Project: Noble - Gutterson State DD08-11

Project Number: UWRWE-A2261-ABN
 Project Manager: Jacob Whritenour

Reported:
 04/03/23 14:12

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

Summit Scientific

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

Batch BGC0932 - General Preparation

Duplicate (BGC0932-DUP1)		Source: 2303584-01		Prepared: 03/27/23 Analyzed: 03/28/23	
% Solids	91.5		%	91.5	0.0132 20

Summit Scientific

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

Project: Noble - Guttersen State DD08-11

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
04/03/23 14:12

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

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

Batch BGC0984 - General Preparation

Blank (BGC0984-BLK1)

Prepared & Analyzed: 03/29/23

Specific Conductance (EC) ND 0.0100 mmhos/cm

LCS (BGC0984-BS1)

Prepared & Analyzed: 03/29/23

Specific Conductance (EC) 0.152 0.0100 mmhos/cm 0.150 101 95-105

Duplicate (BGC0984-DUP1)

Source: 2303579-01

Prepared & Analyzed: 03/29/23

Specific Conductance (EC) 1.51 0.0100 mmhos/cm 1.51 0.265 20

Summit Scientific

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

Project: Noble - Gutterson State DD08-11

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
04/03/23 14:12

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

Summit Scientific

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

Batch BGC0986 - General Preparation

LCS (BGC0986-BS1)

Prepared & Analyzed: 03/29/23

pH	9.10	pH Units	9.18	99.1	95-105
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Duplicate (BGC0986-DUP1)

Source: 2303579-01

Prepared & Analyzed: 03/29/23

pH	7.92	pH Units	7.87	0.633	20
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Summit Scientific

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

Project: Noble - Guttersen State DD08-11

Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
04/03/23 14:12

Notes and Definitions

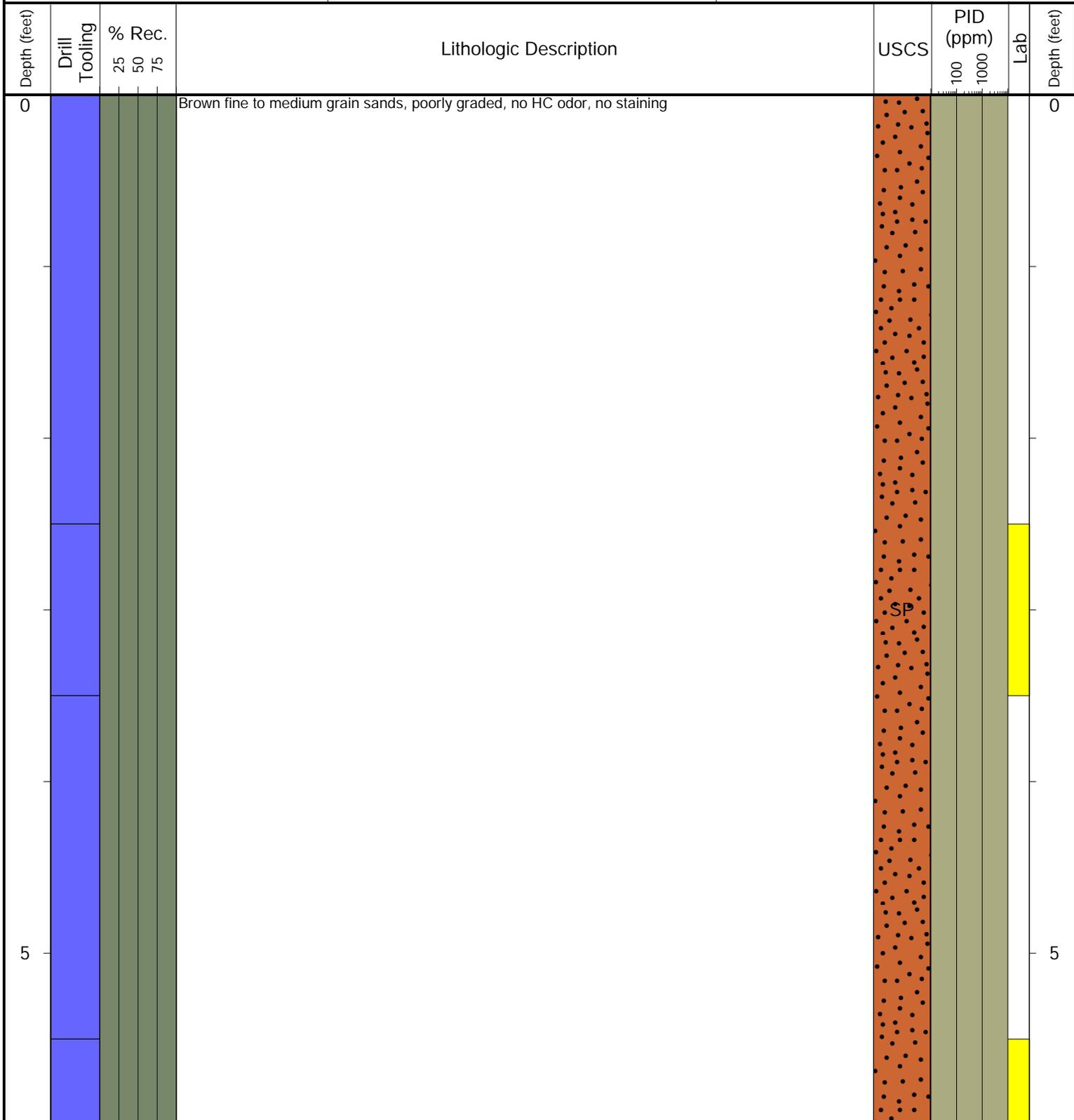
- QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS/LCSD recovery.
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference

ATTACHMENT B
BORING LOGS



6855 W. 119th Ave.
Broomfield, CO 80020

CLIENT: Noble	Guttersen State DD08-11 Flowline
LOGGED BY: Chris Chapman	
PROJECT MANAGER: Jake Whritenour	BORING ID: BH01
DRILLING CONTRACTOR: Tasman	
DRILLING EQUIPMENT: Hand Auger	LOCATION: Weld County, CO
DRILL BIT SIZE (INCHES): 3.25"	LATITUDE (NAD 83): 40.232996
DATE STARTED - COMPLETED: 3/22/23 - 3/22/23	LONGITUDE (NAD 83): -104.458335
TOTAL WELL DEPTH (FT. BGS): 6	GROUND ELEVATION (FT. AMSL): NM
DEPTH WATER ENCOUNTERED (FT. BGS): NM	ABANDONMENT METHOD: Bentonite



Drilling / Sample Method:

- Macro-Core
- Hand Auger
- Expendable Well Tip
- HydroPunch Groundwater Sampler

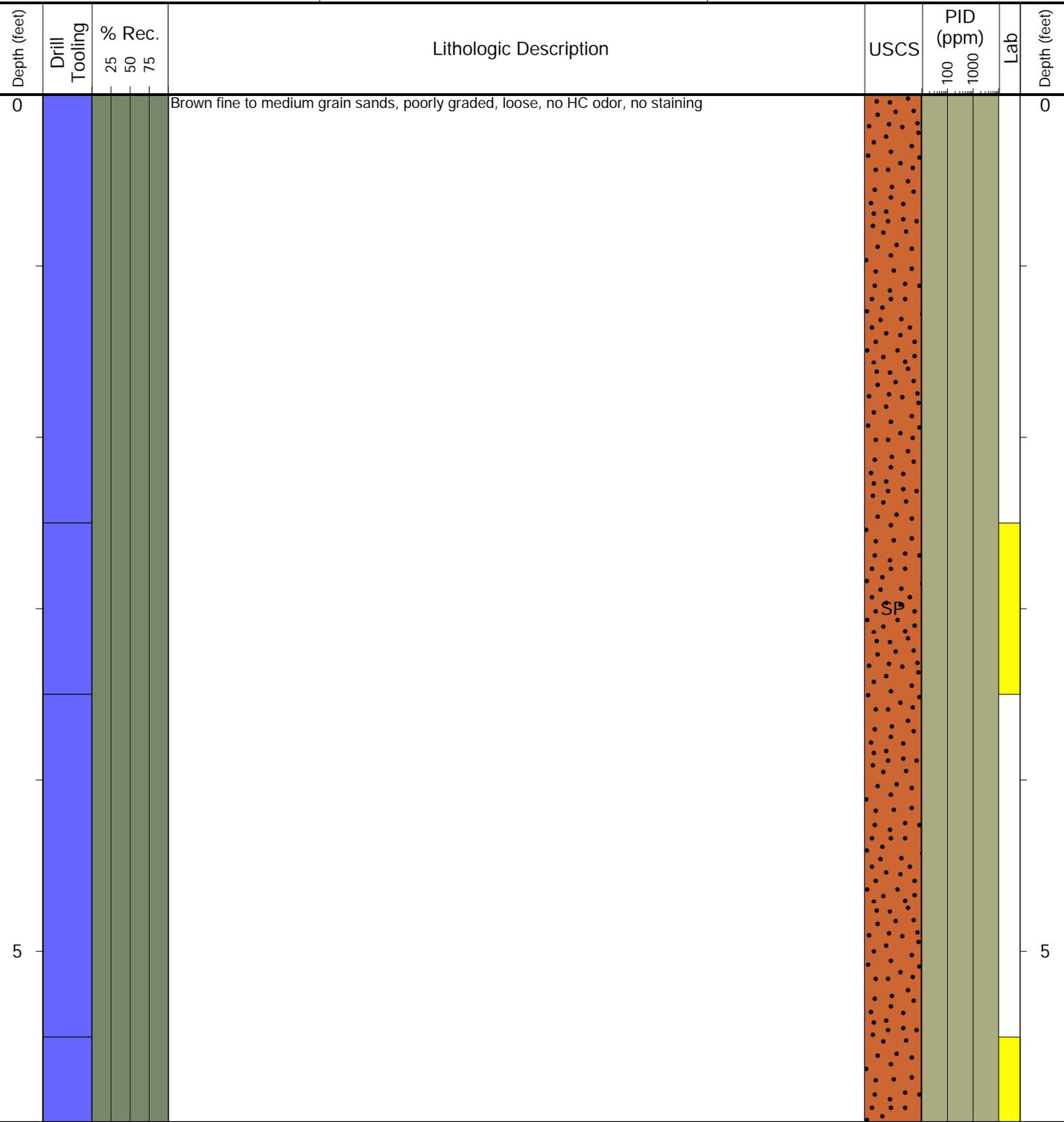
Laboratory Sample Types:

- Geotechnical Lab
- Analytical Chemistry Lab
- Geotechnical & Analytical Chemistry Lab



6855 W. 119th Ave.
Broomfield, CO 80020

CLIENT: Noble	Guttersen State DD08-11 Flowline
LOGGED BY: Chris Chapman	
PROJECT MANAGER: Jake Whritenour	BORING ID: BH02
DRILLING CONTRACTOR: Tasman	
DRILLING EQUIPMENT: Hand Auger	LOCATION: Weld County, CO
DRILL BIT SIZE (INCHES): 3.25"	LATITUDE (NAD 83): 40.233064
DATE STARTED - COMPLETED: 3/22/23 - 3/22/23	LONGITUDE (NAD 83): -104.45833
TOTAL WELL DEPTH (FT. BGS): 6	GROUND ELEVATION (FT. AMSL): NM
DEPTH WATER ENCOUNTERED (FT. BGS): NM	ABANDONMENT METHOD: Bentonite



Drilling / Sample Method:

- Macro-Core
- Hand Auger
- HydroPunch Groundwater Sampler
- Expendable Well Tip

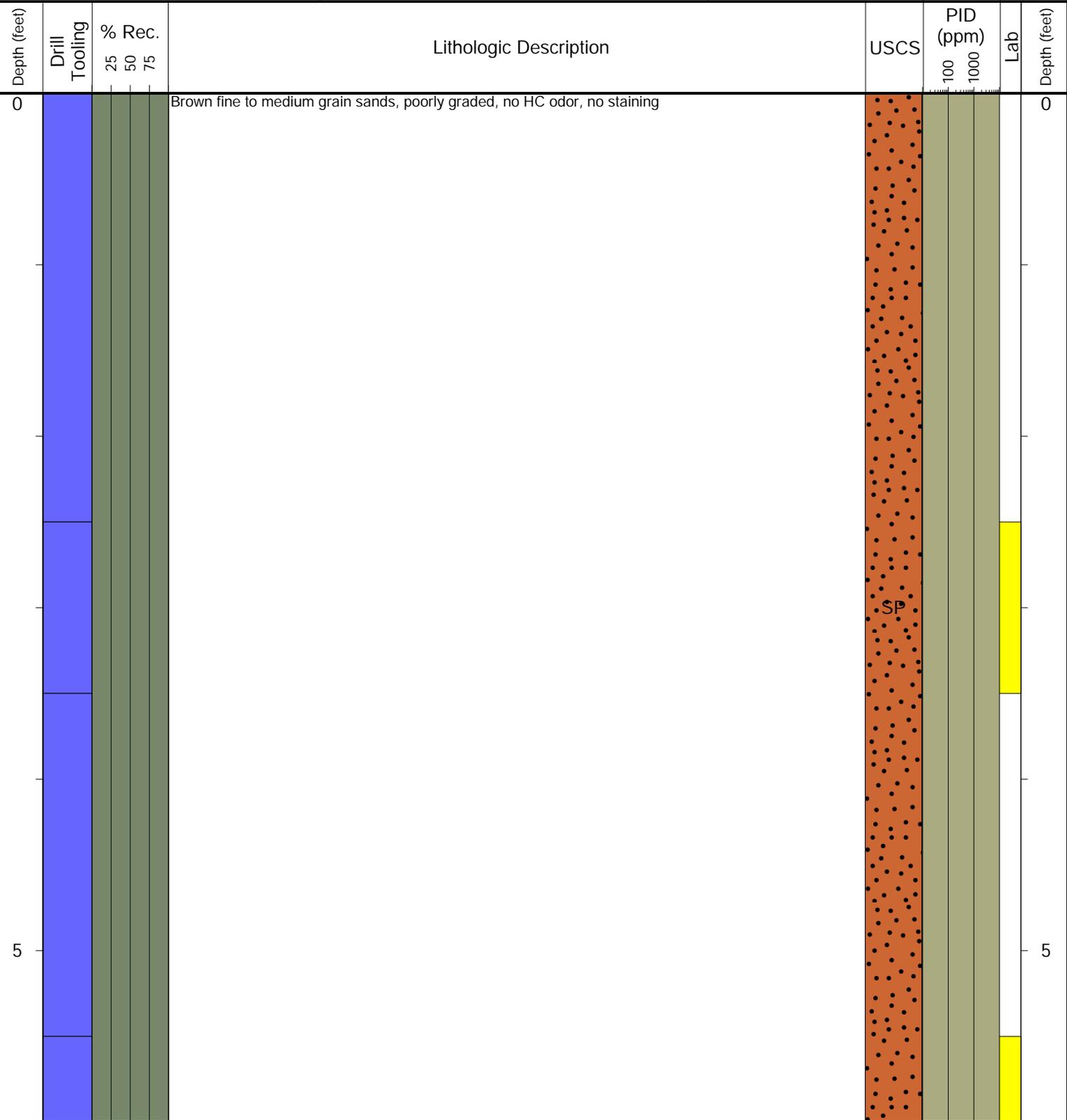
Laboratory Sample Types:

- Geotechnical Lab
- Analytical Chemistry Lab
- Geotechnical & Analytical Chemistry Lab



6855 W. 119th Ave.
Broomfield, CO 80020

CLIENT: Noble	Guttersen State DD08-11 Flowline
LOGGED BY: Chris Chapman	
PROJECT MANAGER: Jake Whritenour	BORING ID: BH03
DRILLING CONTRACTOR: Tasman	
DRILLING EQUIPMENT: Hand Auger	LOCATION: Weld County, CO
DRILL BIT SIZE (INCHES): 3.25"	LATITUDE (NAD 83): 40.232999
DATE STARTED - COMPLETED: 3/22/23 - 3/22/23	LONGITUDE (NAD 83): -104.458244
TOTAL WELL DEPTH (FT. BGS): 6	GROUND ELEVATION (FT. AMSL): NM
DEPTH WATER ENCOUNTERED (FT. BGS): NM	ABANDONMENT METHOD: Bentonite



Drilling / Sample Method:

- Macro-Core
- Hand Auger
- HydroPunch Groundwater Sampler
- Expendable Well Tip

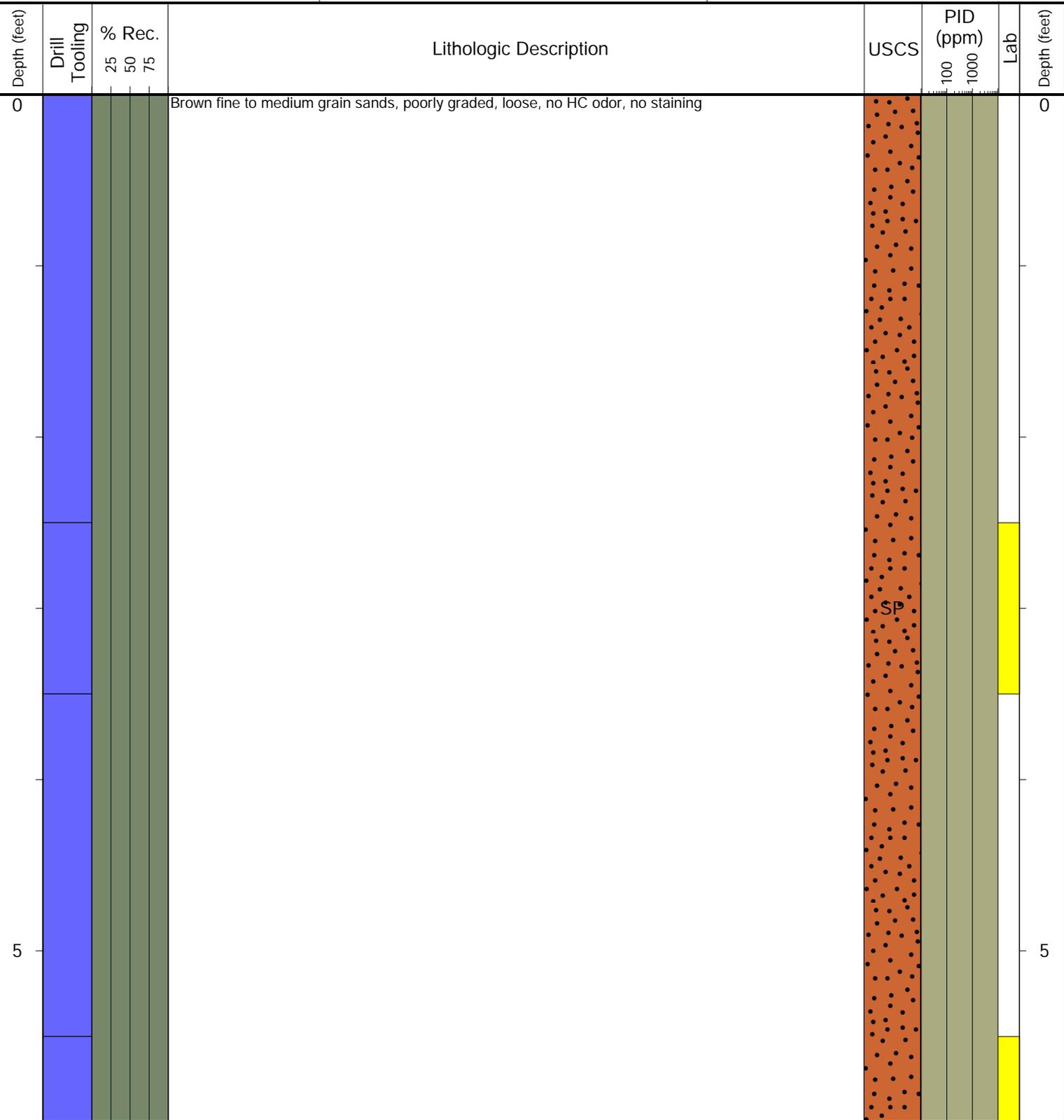
Laboratory Sample Types:

- Geotechnical Lab
- Analytical Chemistry Lab
- Geotechnical & Analytical Chemistry Lab



6855 W. 119th Ave.
Broomfield, CO 80020

CLIENT: Noble	Guttersen State DD08-11 Flowline
LOGGED BY: Chris Chapman	
PROJECT MANAGER: Jake Whritenour	BORING ID: BH04
DRILLING CONTRACTOR: Tasman	
DRILLING EQUIPMENT: Hand Auger	LOCATION: Weld County, CO
DRILL BIT SIZE (INCHES): 3.25"	LATITUDE (NAD 83): 40.232918
DATE STARTED - COMPLETED: 3/22/23 - 3/22/23	LONGITUDE (NAD 83): -104.458319
TOTAL WELL DEPTH (FT. BGS): 6	GROUND ELEVATION (FT. AMSL): NM
DEPTH WATER ENCOUNTERED (FT. BGS): NM	ABANDONMENT METHOD: Bentonite



Drilling / Sample Method:

- Macro-Core
- Hand Auger
- HydroPunch Groundwater Sampler
- Expendable Well Tip

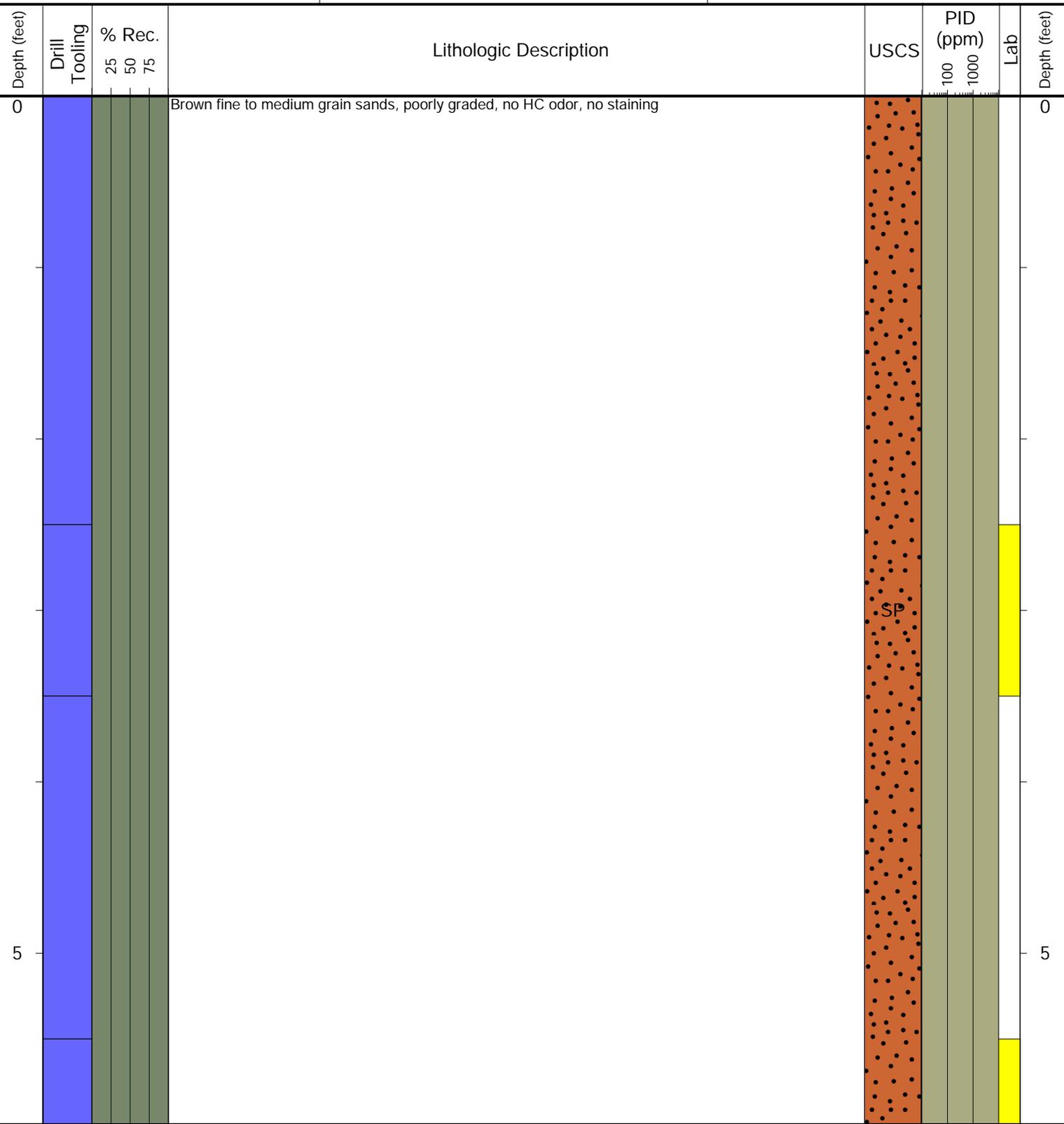
Laboratory Sample Types:

- Geotechnical Lab
- Analytical Chemistry Lab
- Geotechnical & Analytical Chemistry Lab



6855 W. 119th Ave.
Broomfield, CO 80020

CLIENT: Noble	Guttersen State DD08-11 Flowline
LOGGED BY: Chris Chapman	
PROJECT MANAGER: Jake Whritenour	BORING ID: BH05
DRILLING CONTRACTOR: Tasman	
DRILLING EQUIPMENT: Hand Auger	LOCATION: Weld County, CO
DRILL BIT SIZE (INCHES): 3.25"	LATITUDE (NAD 83): 40.232983
DATE STARTED - COMPLETED: 3/22/23 - 3/22/23	LONGITUDE (NAD 83): -104.458416
TOTAL WELL DEPTH (FT. BGS): 6	GROUND ELEVATION (FT. AMSL): NM
DEPTH WATER ENCOUNTERED (FT. BGS): NM	ABANDONMENT METHOD: Bentonite



Drilling / Sample Method:

- Macro-Core
- Hand Auger
- HydroPunch Groundwater Sampler
- Expendable Well Tip

Laboratory Sample Types:

- Geotechnical Lab
- Analytical Chemistry Lab
- Geotechnical & Analytical Chemistry Lab