

SITE ASSESSMENT REPORT
GUTTERSEN STATE DD08-11, 13 FACILITY
COGCC SPILL TRACKING # 482987
COGCC REMEDIATION # 23988

Prepared for:



2115 117th Avenue
Greeley, CO 80631

Prepared by:



6855 W. 119th Ave
Broomfield, CO 80020

February 7, 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, 13 Facility
Spill/Release Point ID: 482987
Remediation #: 23988
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, 13 Facility (Site) located in Weld County, Colorado. The text below describes decommissioning, assessment, and associated soil sampling conducted by Tasman, Inc. (Tasman), on behalf of Noble Energy, Inc. (Noble) between September 13, and October 3, 2022.

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 beneath the former produced water vessel (PWV) 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 40.233004° and longitude -104.458349° [North American Datum of 1983(NAD83)] and is approximately 4.7 miles southeast of the intersection of County Road 57 and County Road 40 (Figure 1).

Tasman was retained by Noble on September 13, 2022, to complete soil sampling and documentation during Site decommissioning activities at the facility. As reported in the initial Form 19, historical impacts were confirmed below the former PWV on September 26, 2022. The Form 19 was submitted to the Colorado Oil and Gas Conservation Commission (COGCC) on September 26, 2022. The COGCC subsequently issued Spill/Release Point ID Number 482987 for this event. The COGCC assigned Remediation Number 23988 for the project.

Site Decommissioning Activities

On September 13 and 14, 2022, Tasman completed decommissioning soil sampling and documentation for the Guttersen State DD08-11, 13 Facility. Soil samples were collected throughout the Site targeting the following different areas and pieces of production equipment:

Area of Site	Sampling	Sample description
Aboveground storage tank (AST)	AST01@0.5'	Surface soil sample below former tank location.
Horizontal separator	SEP01-FL@2', and SEP01-DL@2'	One sample beneath separator flowline riser and one sample beneath separator dump line riser.
Meter house	MH01@0.5'	Surface sample beneath aboveground run of meter piping.
Flare stack	Flare01@0.5'	Surface sample at former flare stack location.
Partially buried produced water vault (PWV)	SS01@2.5' through SS04@2.5', and FS01@7'	Four sidewall samples and one excavation floor sample.
Background area	BG01@2.5', and BG01@5'	Vegetated area east of the Site.

All soil samples collected were field screened for volatile organic compounds (VOC) using a photoionization detector (PID) and standard headspace sampling techniques. Eight soil samples, FS01@7', SS01@2.5', SS02@2.5', SS03@2.5', SS04@2.5', AST01@0.5', SEP01-FL@2', and SEP01-DL@2', were submitted to Summit Scientific (Summit) in Golden, Colorado for laboratory analysis, with the background samples submitted on hold. The samples were submitted for laboratory analysis of the COGCC Table 915-1 list of 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. The samples were also submitted for laboratory analysis of pH, electrical conductivity (EC), sodium absorption ratio (SAR) using USEPA saturated paste extraction method, and boron using the hot water-soluble soil extract method. Soil samples FS01@7', SS01@2.5', SS02@2.5', SS03@2.5', and SS04@2.5' were 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 in Table 1 and illustrated on Figure 2. Decommissioning soil laboratory analytical reports are included in Attachment A.

Site Assessment Activities

On October 3, 2022, Tasman completed site assessment activities to delineate potential subsurface soil impacts identified during Site decommissioning. Tasman advanced a total of five boreholes in the area of facility decommissioning sample FS01@7', BH01 through BH04 to 15 feet below ground surface (ft bgs), and BH05 13 ft bgs, using a hand auger and a Geoprobe via direct push. While advancing soil boring BH05 a hard clay layer was encountered at 13 ft bgs resulting in drill rig refusal. Also on October 3, 2022, Tasman used a hand auger to advance and collect ten background samples from five borehole locations east of the Site. 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 Area

BH01@2-3'	BH02@2-3'	BH03@2-3'	BH04@2-3'	BH05@2-3'
BH01@7-8'	BH02@7-8'	BH03@7-8'	BH04@7-8'	BH05@7-8'
BH01@14-15'	BH02@14-15'	BH03@14-15'	BH04@14-15'	BH05@12-13'

Background Area

BG01@2'	BG02@2'	BG03@2'	BG04@2'	BG05@2'
BG01@7'	BG02@7'	BG03@7'	BG04@7'	BG05@7'

All 15 site assessment soil boring 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, and TPH using USEPA Methods 8260B and 8015D. Additionally, the soil boring samples were also submitted for analysis of COGCC Table 915-1 metals in soil using USEPA Method 6020B as well as analysis of pH, EC, SAR using USEPA saturated paste extraction method, and boron using the hot water-soluble soil extract method. The 10 background samples, shown above, were submitted to Summit for laboratory analysis of COGCC Table 915-1 metals in soil using USEPA Method 6020B as well as analysis of pH using USEPA saturated paste extraction method. Site assessment and background soil sample 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 soil sample FS01@7', collected during initial facility decommissioning, indicate 1-methylnaphthalene (1-M) concentrations above COGCC Table 915-1 Protection of Groundwater Soil Screening Levels (GW SSL). Hydrocarbon compounds were not detected above laboratory reporting limits in any of the 15 soil samples collected during the site assessment. Laboratory analytical results indicate all soil samples collected during facility decommissioning and subsequent site assessment activities are compliant with COGCC Table 915-1 Soil Suitability for Reclamation (SSR) standards, except for pH in decommissioning sample SEP01-DL@2' and SAR in site assessment soil sample BH03@14-15'. Laboratory analytical results from decommissioning samples FS01@7', SS01@2.5', SS02@2.5', SS03@2.5', and SS04@2.5' indicate

elevated metals concentrations above applicable COGCC Table 915-1 GW SSL standards and consisted of a combination of arsenic, barium, and selenium. Laboratory analytical results from all 15 site assessment soil samples indicate elevated metals concentrations above applicable COGCC Table 915-1 GW SSL standards and consisted of a combination of arsenic, barium, cadmium, nickel, and selenium. Background soil sample results for arsenic and selenium are also in exceedance of COGCC Table 915-1 GW SSL standards.

While there is one exceedance of 1-M and several exceedances of arsenic, barium, cadmium, nickel, and selenium above COGCC Table 915-1 GW SSL standards, groundwater was not encountered in any of the five soil borings advanced during the site assessment, and a 3-5-ft thick stiff-clay confining layer was encountered at the site from 10-15-ft bgs to prevent communication with potential groundwater. Furthermore, a desktop review was conducted using Colorado's Division of Water Resources (DWR) Well Permit Research site to identify permitted wells within a 0.5-mile radius of the release point. One permitted well was identified within the search radius and was located approximately 1,880-ft north of the release point. The well permit records indicate a static water level of 173-ft bgs is present in the region. Given the stiff-clay confining layer encountered from 10-15-ft bgs., and the lack of a shallow groundwater table at the site, Noble requests to use COGCC Table 915-1 RSSL standards when evaluating soil sampling results at the site.

The use of COGCC Table 915-1 RSSL standards eliminates 1-M, barium, cadmium, nickel, and selenium as contaminants of concern at the site. While there are arsenic levels present in soil boring samples above COGCC Table 915-1 RSSL standards and above site-specific background standards, arsenic appears to be generally elevated at increasing concentrations with depth at the site. Average concentrations of arsenic at the 2-3-ft bgs, 7-8-ft bgs, and 14-15' bgs were 0.92 milligrams per kilogram (mg/kg), 3.86 mg/kg, and 4.53 mg/kg, respectively. Since this trend for arsenic concentrations is present at all borehole locations advanced during the site assessment, and since there is no evidence to suggest vertical or lateral migration of the hydrocarbon release identified in the decommissioning sample FS01@7', then elevated arsenic is representative of naturally occurring conditions at the site and is not related to the hydrocarbon release. As such, arsenic should not be considered a contaminant of concern at the site.

Conclusions

Soil hydrocarbon impacts identified during facility decommissioning in sample FS01@7' have been delineated vertically and laterally by the site assessment soil boring samples. Hydrocarbon compounds were not detected above laboratory reporting limits in the 15 soil samples collected during the site assessment. Given the stiff-clay confining layer encountered from 10-15-ft bgs., and the lack of a shallow groundwater table at the site, Noble requests to use COGCC Table 915-1 RSSL standards when evaluating soil sampling results at the site. Additionally, based on the lack of evidence to suggest that elevated arsenic above COGCC Table 915-1 RSSL standards is the result of a hydrocarbon release, Noble proposes to eliminate arsenic as a contaminant of concern.

If COGCC approves utilization of COGCC Table 915-1 RSSL standards and elimination of arsenic as a contaminant of concern, Noble will request a No Further Action (NFA) designation for the Site. Prior to requesting NFA, the pH exceedance above applicable COGCC Table 915-1 SSR standards in decommissioning sample SEP01-DL@2' be addressed through a Site-specific reclamation plan to ensure proper vegetation growth after reclamation is complete.

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)

Figure 3 – Site Assessment Soil Analytical Results Map (10/03/2022)

Attachment A – Laboratory Soil Analytical Data Reports

Attachment B – Boring Logs

TABLES

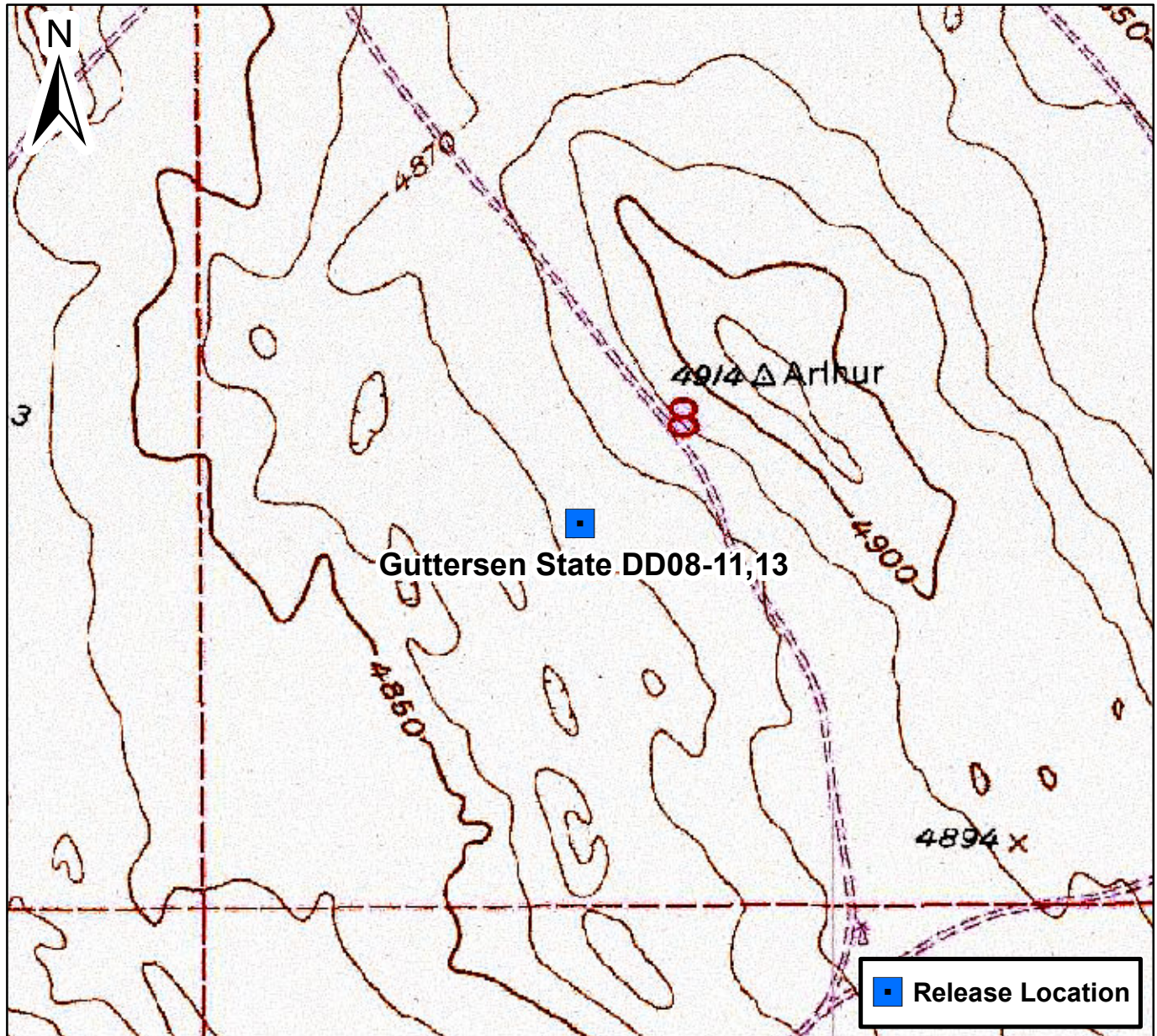
TABLE 1
SOIL ANALYTICAL DATA
NOBLE ENERGY, INC. - GUTTERSEN STATE DD08-11, 13 FACILITY

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)	Napthalene	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
FS01@7'	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	<0.00500	<0.00500	<0.00500	<0.00500	0.0102	0.00706
SS01@2.5'	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	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
SS02@2.5'	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	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
SS03@2.5'	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	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
SS04@2.5'	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	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
AST01@0.5'	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	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
SEP01-FL@2'	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	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
SEP01-DL@2'	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	0.00939	0.00586	0.00935	<0.00500	0.0155	<0.00500	0.0189	<0.00500	<0.00500	0.0182	<0.00500	<0.00500
BH01@2-3'	10/03/22	<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@7-8'	10/03/22	<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@14-15'	10/03/22	<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
BH02@2-3'	10/03/22	<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
BH02@7-8'	10/03/22	<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
BH02@14-15'	10/03/22	<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
BH03@2-3'	10/03/22	<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
BH03@7-8'	10/03/22	<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
BH03@14-15'	10/03/22	<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
BH04@2-3'	10/03/22	<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
BH04@7-8'	10/03/22	<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
BH04@14-15'	10/03/22	<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
BH05@2-3'	10/03/22	<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
BH05@7-8'	10/03/22	<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
BH05@12-13'	10/03/22	<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

Soil Sample ID	Date	pH	SAR	EC (mmhos/cm)	Boron (mg/L)
Residential SSL ²		6 - 8.3	<6	<4mmhos/cm	2
FS01@7'	09/13/22	8.11	0.567	0.302	0.0439
SS01@2.5'	09/13/22	7.15	0.167	0.217	0.0363
SS02@2.5'	09/13/22	6.50	0.0792	0.308	0.0510
SS03@2.5'	09/13/22	6.97	0.108	0.0752	0.0673
SS04@2.5'	09/13/22	6.40	0.115	0.0741	0.0525
AST01@0.5'	09/13/22	7.57	0.132	0.657	0.0208
SEP01-FL@2'	09/13/22	6.08	0.203	0.167	<0.0100
SEP01-DL@2'	09/13/22	5.78	0.452	1.20	0.0415
BH01@2-3'	10/03/22	7.08	0.140	0.617	<0.0100
BH01@7-8'	10/03/22	7.68	0.314	0.181	<0.0100
BH01@14-15'	10/03/22	7.31	3.37	2.540	0.183
BH02@2-3'	10/03/22	6.86	0.0644	0.142	<0.0100
BH02@7-8'	10/03/22	7.53	1.70	0.625	<0.0100
BH02@14-15'	10/03/22	7.87	3.22	0.448	<0.0100
BH03@2-3'	10/03/22	6.71	0.135	0.107	<0.0100
BH03@7-8'	10/03/22	7.68	1.63	0.299	<0.0100
BH03@14-15'	10/03/22	7.84	6.46	0.460	<0.0100
BH04@2-3'	10/03/22	7.26	1.31	0.194	<0.0100
BH04@7-8'	10/03/22	7.65	2.64	0.421	<0.0100
BH04@14-15'	10/03/22	7.30	3.12	3.410	<0.0100
BH05@2-3'	10/03/22	7.45	0.0912	0.121	<0.0100
BH05@7-8'	10/03/22	8.14	0.751	0.263	<0.0100
BH05@12-13'	10/03/22	7.75	3.45	0.128	<0.0100
BG01@2'	10/03/22	7.15	NA	NA	NA
BG01@7'	10/03/22	7.18	NA	NA	NA
BG02@2'	10/03/22	7.73	NA	NA	NA
BG02@7'	10/03/22	7.68	NA	NA	NA
BG03@2'	10/03/22	7.67	NA	NA	NA
BG03@7'	10/03/22	7.57	NA	NA	NA
BG04@2'	10/03/22	7.80	NA	NA	NA
BG04@7'	10/03/22	7.62	NA	NA	NA
BG05@2'	10/03/22	7.49	NA	NA	NA
BG05@7'	10/03/22	7.48	NA	NA	NA

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 SSL2		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
FS01@7'	09/13/22	4.01	89.2	<0.223	<0.30	6.18	5.16	7.78	0.686	<0.0223	23.4
SS01@2.5'	09/13/22	0.585	33.5	<0.212	<0.30	2.95	3.98	2.36	<0.276	<0.0212	10.9
SS02@2.5'	09/13/22	0.571	35.2	<0.213	<0.30	2.76	3.73	2.34	<0.277	<0.0213	10.1
SS03@2.5'	09/13/22	0.673	50.7	<0.221	<0.30	3.27	4.58	3.24	<0.287	<0.0221	13.3
SS04@2.5'	09/13/22	0.510	28.0	<0.213	<0.30	2.54	3.55	2.06	<0.277	<0.0213	8.70
BH01@2-3'	10/03/22	1.18	31.9	<0.209	<0.30	3.93	4.11	2.77	0.364	<0.0209	14.8
BH01@7-8'	10/03/22	4.59	50.7	<0.234	<0.30	11.0	10.3	9.36	1.04	0.0249	45.7
BH01@14-15'	10/03/22	4.52	13.4	0.534	<0.30	19.6	12.8	27.4	1.13	0.0458	126
BH02@2-3'	10/03/22	1.00	46.7	<0.225	<0.30	3.40	4.16	3.52	0.360	<0.0225	15.4
BH02@7-8'	10/03/22	1.60	43.7	<0.223	<0.30	4.78	4.33	4.14	0.466	<0.0223	16.6
BH02@14-15'	10/03/22	4.34	371	0.277	<0.30	10.7	8.65	9.87	0.782	<0.0231	41.3
BH03@2-3'	10/03/22	1.24	58.1	<0.216	<0.30	4.08	4.42	4.02	0.466	0.0261	18.2
BH03@7-8'	10/03/22	3.97	222	0.238	<0.30	12.8	13.8	16.0	0.900	0.0254	49.6
BH03@14-15'	10/03/22	4.26	11.2	0.512	<0.30	17.5	13.9	16.8	1.41	0.0352	95.3
BH04@2-3'	10/03/22	0.971	83.7	<0.220	<0.30	6.74	5.40	5.58	0.572	0.0303	27.7
BH04@7-8'	10/03/22	3.35	36.3	0.239	<0.30	10.8	10.3	8.86	0.943	0.0268	47.4
BH04@14-15'	10/03/22	0.838	16.5	0.483	<0.30	16.5	7.51	29.8	1.35	0.0417	97.8
BH05@2-3'	10/03/22	1.53	65.5	<0.226	<0.30	3.94	4.33	4.55	0.474	0.0288	22.1
BH05@7-8'	10/03/22	5.65	43.5	0.338	<0.30	11.7	9.29	10.3	0.886	0.0326	41.3
BH05@12-13'	10/03/22	8.71	22.9	<0.241	<0.30	23.0	12.0	15.8	1.30	0.0852	94.7
BG01@2'	10/03/22	1.68	40.1	<0.207	<0.30	3.69	4.45	3.52	0.436	<0.0207	15.8
BG01@7'	10/03/22	1.38	44.8	<0.207	<0.30	3.15	3.85	3.66	0.446	0.0243	15.9
BG02@2'	10/03/22	1.57	50.5	<0.207	<0.30	3.39	4.49	3.84	0.337	<0.0209	15.9
BG02@7'	10/03/22	1.96	47.5	<0.206	<0.30	3.47	3.65	3.84	0.372	<0.0206	13.8
BG03@2'	10/03/22	1.66	50.0	<0.207	<0.30	3.31	4.08	3.71	0.397	<0.0207	15.6
BG03@7'	10/03/22	1.30	54.3	<0.207	<0.30	3.10	3.90	3.60	0.380	0.0236	14.7
BG04@2'	10/03/22	2.14	53.4	<0.209	<0.30	4.34	4.75	5.14	0.493	0.0218	21.2
BG04@7'	10/03/22	1.90	60.4	<0.208	<0.30	3.30	4.28	3.99	0.501	0.0351	17.5
BG05@2'	10/03/22	1.77	48.2	<0.207	<0.30	2.63	3.67	3.24	0.331	0.0212	13.0
BG05@7'	10/03/22	1.33	51.7	<0.206	<0.30	2.98	3.88	3.41	0.395	0.0223	13.3

FIGURES

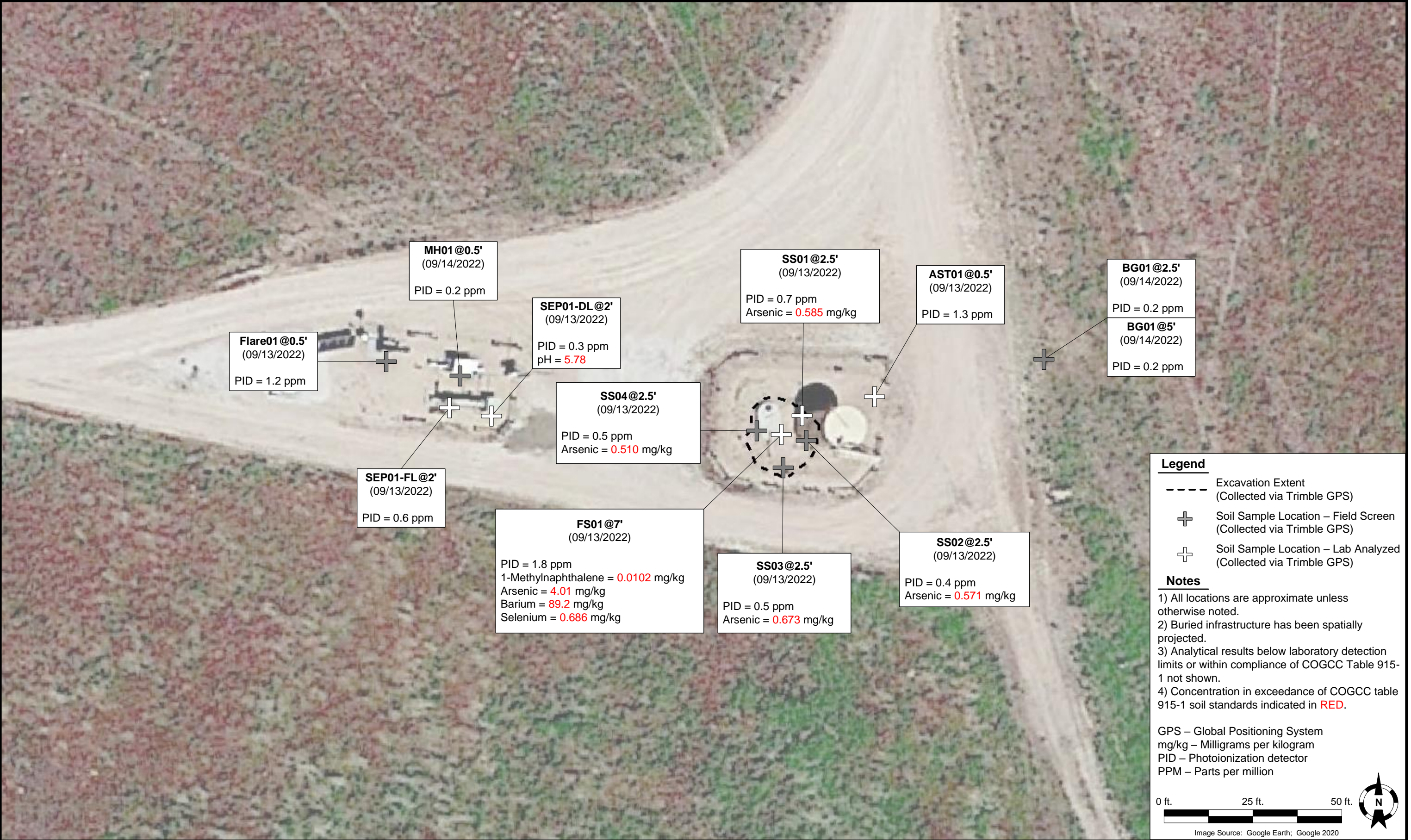


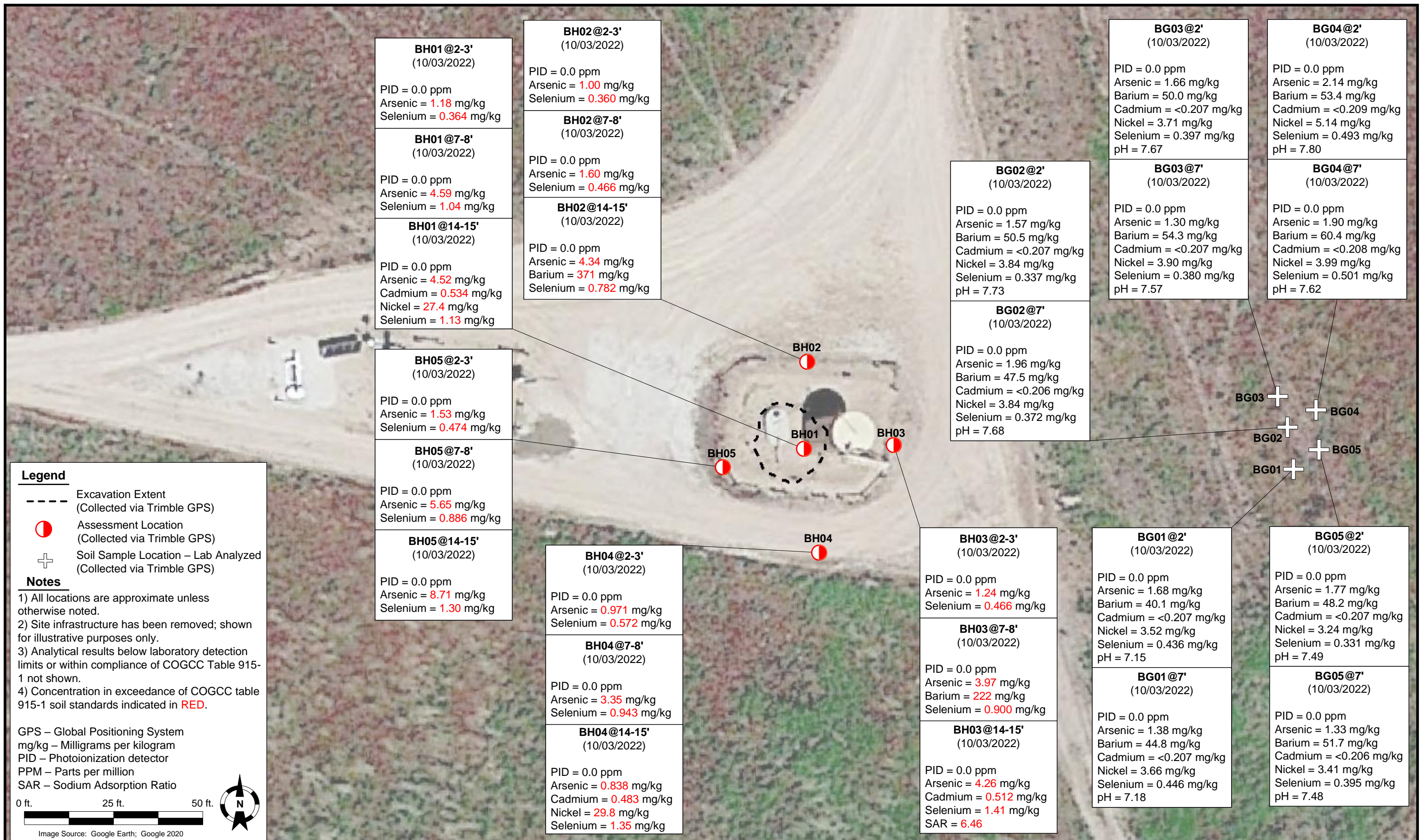
0 1,050 2,100 Feet

Figure 1

Site Location Map
Gutteresen State DD08-11,13 Facility
SWSE S8 T3N R63W
Weld County, Colorado







ATTACHMENT A
LABORATORY SOIL ANALYTICAL DATA REPORTS

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

October 12, 2022

Jacob Whritenour

Tasman Geosciences

6855 W. 119th Ave.

Broomfield, CO 80020

RE: Noble - Guttarsen State DD08-11, 13

Work Order #2209261

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 - Guttarsen State DD08-11, 13
Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
10/12/22 11:33

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FS01@7'	2209261-01	Soil	09/13/22 10:00	09/13/22 17:32
SS01@2.5'	2209261-02	Soil	09/13/22 10:05	09/13/22 17:32
SS02@2.5'	2209261-03	Soil	09/13/22 10:10	09/13/22 17:32
SS03@2.5'	2209261-04	Soil	09/13/22 10:15	09/13/22 17:32
SS04@2.5'	2209261-05	Soil	09/13/22 10:20	09/13/22 17:32
AST01@0.5'	2209261-06	Soil	09/13/22 10:25	09/13/22 17:32
SEP01-FL@2'	2209261-07	Soil	09/13/22 10:35	09/13/22 17:32
SEP01-DL@2'	2209261-08	Soil	09/13/22 10:40	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





2209261

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

Page 1 of 1

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
Phone: 503-915-3046 Project Name: Gutterson State DDO8-11.13
Sampler Name: Martin Medeiros Project Number: UWRWE-A2261-ABN

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested								Special Instructions
					HCl	HNO ₃	None	Other	Water	Soil	Air-Canister #	Other	VOC-915	TPH-915	PAH-915	pH, EC, SAR	Boron-HWS	Hold			
1	FS01@7'	09/13/22	10:00	3			X			X			X	X	X	X	X				
2	SS01@2.5'		10:05																		
3	SS02@2.5'		10:10																		
4	SS03@2.5'		10:15															X			
5	SS04@2.5'		10:20															X			
6	AST01@0.5'		10:25																		
7	SEP01-FL@2'		10:35																		
8	SEP01-DL@2'	↓	10:40	↓			↓			↓			↓	↓	↓	↓	↓				
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:  Tasman's Lock Box	Date/Time: 9/13/22 1732	Sample Integrity: Temperature Upon Receipt: 10.1 Samples Intact: <input checked="" type="radio"/> Yes <input type="radio"/> No	
Relinquished by:	Date/Time:	Received by:	Date/Time:		

S₂

Sample Receipt Checklist

S2 Work Order# 2209261Client: Noble GasmanClient Project ID: Guthrie State PD 08-11, 13Shipped Via: H.D./P.U./FedEx/UPS/USPS/Other ☐Airbill #:

<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	-------------------------------------	--------------------------	--------------------------	--------------------------

Matrix (Check all that apply)

Air

☐

Soil/Solid

☐

Water

☐

Other

☐

Temp (°C)

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

Date/Time

9.13.22 19:00



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

Project: Noble - Gutttersen State DD08-11, 13
Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
10/12/22 11:33

FS01@7'
2209261-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/13/22 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BF10338	09/14/22	09/15/22	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 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		118 %	50-150		"	"	"	"	
Surrogate: Toluene-d8		103 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		109 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **09/13/22 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BF10342	09/14/22	09/15/22	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **09/13/22 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		109 %	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, 13
Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
10/12/22 11:33

FS01@7'
2209261-01 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **09/13/22 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BF10395	09/16/22	09/17/22	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	0.0102	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	0.00706	0.00500	"	"	"	"	"	"	

Date Sampled: **09/13/22 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		54.0 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		64.1 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **09/13/22 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.0439	0.0100	mg/L	1	BF10480	09/20/22	09/21/22	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **09/13/22 10:00**

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 - Gutttersen State DD08-11, 13
Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
10/12/22 11:33

FS01@7'
2209261-01 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Arsenic	4.01	0.223	mg/kg dry	1	BF10760	09/29/22	10/04/22	EPA 6020B
Barium	89.2	0.447	"	"	"	"	"	"
Cadmium	ND	0.223	"	"	"	"	"	"
Copper	6.18	0.447	"	"	"	"	"	"
Lead	5.16	0.223	"	"	"	"	"	"
Nickel	7.78	0.447	"	"	"	"	"	"
Selenium	0.686	0.290	"	"	"	"	"	"
Silver	ND	0.0223	"	"	"	"	"	"
Zinc	23.4	0.447	"	"	"	"	"	"

Hexavalent Chromium by EPA Method 7196

Date Sampled: **09/13/22 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BF10695	09/27/22	09/27/22	EPA 7196A	

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

Date Sampled: **09/13/22 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	31.0	0.0559	mg/L dry	1	BF10469	09/19/22	09/22/22	EPA 6020B	
Magnesium	8.81	0.0559	"	"	"	"	"	"	
Sodium	13.9	0.0559	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **09/13/22 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.567	0.00100	units	1	BF10593	09/22/22	09/22/22	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 - Guttarsen State DD08-11, 13
Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
10/12/22 11:33

FS01@7'
2209261-01 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **09/13/22 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	89.5		%	1	BF10424	09/16/22	09/19/22	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **09/13/22 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.302	0.0100	mmhos/cm	1	BF10553	09/21/22	09/21/22	EPA 120.1	

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

Date Sampled: **09/13/22 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.11		pH Units	1	BF10554	09/21/22	09/22/22	EPA 9045D	

Summit Scientific

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

Project: Noble - Gutttersen State DD08-11, 13
Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
10/12/22 11:33

SS01@2.5'
2209261-02 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/13/22 10:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BF10338	09/14/22	09/15/22	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 10:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		108 %	50-150		"	"	"	"	
Surrogate: Toluene-d8		103 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		105 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **09/13/22 10:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BF10342	09/14/22	09/15/22	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **09/13/22 10:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		105 %	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 - Gutttersen State DD08-11, 13
Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
10/12/22 11:33

SS01@2.5'
2209261-02 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **09/13/22 10:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BF10395	09/16/22	09/17/22	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: **09/13/22 10:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		57.3 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		67.3 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **09/13/22 10:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.0363	0.0100	mg/L	1	BF10480	09/20/22	09/21/22	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **09/13/22 10:05**

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 - Gutttersen State DD08-11, 13
Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
10/12/22 11:33

SS01@2.5'
2209261-02 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Arsenic	0.585	0.212	mg/kg dry	1	BFJ0123	10/06/22	10/09/22	EPA 6020B
Barium	33.5	0.424	"	"	"	"	"	"
Cadmium	ND	0.212	"	"	"	"	"	"
Copper	2.95	0.424	"	"	"	"	"	"
Lead	3.98	0.212	"	"	"	"	"	"
Nickel	2.36	0.424	"	"	"	"	"	"
Selenium	ND	0.276	"	"	"	"	"	"
Silver	ND	0.0212	"	"	"	"	"	"
Zinc	10.9	0.424	"	"	"	"	"	"

Hexavalent Chromium by EPA Method 7196

Date Sampled: **09/13/22 10:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BFJ0136	10/06/22	10/06/22	EPA 7196A	

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

Date Sampled: **09/13/22 10:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	19.4	0.0530	mg/L dry	1	BFJ0469	09/19/22	09/22/22	EPA 6020B	
Magnesium	6.31	0.0530	"	"	"	"	"	"	
Sodium	3.32	0.0530	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **09/13/22 10:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.167	0.00100	units	1	BFJ0593	09/22/22	09/22/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

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Broomfield CO, 80020

Project: Noble - Guttarsen State DD08-11, 13
Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
10/12/22 11:33

SS01@2.5'
2209261-02 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **09/13/22 10:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	94.3		%	1	BF10424	09/16/22	09/19/22	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **09/13/22 10:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.217	0.0100	mmhos/cm	1	BF10553	09/21/22	09/21/22	EPA 120.1	

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

Date Sampled: **09/13/22 10:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.15		pH Units	1	BF10554	09/21/22	09/22/22	EPA 9045D	

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Project: Noble - Gutttersen State DD08-11, 13
Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
10/12/22 11:33

SS02@2.5'
2209261-03 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

I-04

Date Sampled: **09/13/22 10:10**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BFJ0105	10/05/22	10/05/22	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 10:10**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		99.4 %	50-150		"	"	"	"	
Surrogate: Toluene-d8		104 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		88.0 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

I-04

Date Sampled: **09/13/22 10:10**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BFJ0106	10/05/22	10/05/22	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **09/13/22 10:10**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		64.8 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

I-04

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Project: Noble - Gutterson State DD08-11, 13
Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
10/12/22 11:33

SS02@2.5'
2209261-03 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

I-04

Date Sampled: **09/13/22 10:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BFJ0153	10/07/22	10/07/22	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: **09/13/22 10:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		49.7 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		75.3 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **09/13/22 10:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.0510	0.0100	mg/L	1	BFJ0125	10/06/22	10/08/22	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **09/13/22 10:10**

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

Project: Noble - Gutttersen State DD08-11, 13
Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
10/12/22 11:33

SS02@2.5'
2209261-03 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Arsenic	0.571	0.213	mg/kg dry	1	BFJ0123	10/06/22	10/09/22	EPA 6020B
Barium	35.2	0.427	"	"	"	"	"	"
Cadmium	ND	0.213	"	"	"	"	"	"
Copper	2.76	0.427	"	"	"	"	"	"
Lead	3.73	0.213	"	"	"	"	"	"
Nickel	2.34	0.427	"	"	"	"	"	"
Selenium	ND	0.277	"	"	"	"	"	"
Silver	ND	0.0213	"	"	"	"	"	"
Zinc	10.1	0.427	"	"	"	"	"	"

Hexavalent Chromium by EPA Method 7196

Date Sampled: **09/13/22 10:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BFJ0136	10/06/22	10/06/22	EPA 7196A	

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

Date Sampled: **09/13/22 10:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	24.1	0.0533	mg/L dry	1	BFJ0132	10/06/22	10/10/22	EPA 6020B	
Magnesium	6.56	0.0533	"	"	"	"	"	"	
Sodium	1.70	0.0533	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **09/13/22 10:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.0792	0.00100	units	1	BFJ0296	10/12/22	10/12/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

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Project: Noble - Guttarsen State DD08-11, 13
Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
10/12/22 11:33

SS02@2.5'
2209261-03 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **09/13/22 10:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	93.8		%	1	BFJ0129	10/06/22	10/10/22	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **09/13/22 10:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.308	0.0100	mmhos/cm	1	BFJ0143	10/06/22	10/12/22	EPA 120.1	

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

Date Sampled: **09/13/22 10:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	6.50		pH Units	1	BFJ0142	10/06/22	10/12/22	EPA 9045D	I-04

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Project: Noble - Gutttersen State DD08-11, 13
Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
10/12/22 11:33

SS03@2.5'
2209261-04 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

I-04

Date Sampled: **09/13/22 10:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BFJ0105	10/05/22	10/05/22	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 10:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		105 %	50-150		"	"	"	"	
Surrogate: Toluene-d8		101 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		90.6 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

I-04

Date Sampled: **09/13/22 10:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BFJ0106	10/05/22	10/05/22	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **09/13/22 10:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		94.0 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

I-04

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Reported:
10/12/22 11:33

SS03@2.5'
2209261-04 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

I-04

Date Sampled: **09/13/22 10:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BFJ0153	10/07/22	10/07/22	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: **09/13/22 10:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		46.6 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		76.8 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **09/13/22 10:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.0673	0.0100	mg/L	1	BFJ0125	10/06/22	10/08/22	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **09/13/22 10:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Broomfield CO, 80020

Project: Noble - Gutttersen State DD08-11, 13
Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
10/12/22 11:33

SS03@2.5'
2209261-04 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Arsenic	0.673	0.221	mg/kg dry	1	BFJ0123	10/06/22	10/09/22	EPA 6020B
Barium	50.7	0.442	"	"	"	"	"	"
Cadmium	ND	0.221	"	"	"	"	"	"
Copper	3.27	0.442	"	"	"	"	"	"
Lead	4.58	0.221	"	"	"	"	"	"
Nickel	3.24	0.442	"	"	"	"	"	"
Selenium	ND	0.287	"	"	"	"	"	"
Silver	ND	0.0221	"	"	"	"	"	"
Zinc	13.3	0.442	"	"	"	"	"	"

Hexavalent Chromium by EPA Method 7196

Date Sampled: **09/13/22 10:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BFJ0136	10/06/22	10/06/22	EPA 7196A	

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

Date Sampled: **09/13/22 10:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	10.2	0.0552	mg/L dry	1	BFJ0132	10/06/22	10/10/22	EPA 6020B	
Magnesium	3.10	0.0552	"	"	"	"	"	"	
Sodium	1.54	0.0552	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **09/13/22 10:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.108	0.00100	units	1	BFJ0296	10/12/22	10/12/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Summit Scientific

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Reported:
10/12/22 11:33

SS03@2.5'
2209261-04 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **09/13/22 10:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	90.6		%	1	BFJ0129	10/06/22	10/10/22	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **09/13/22 10:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.0752	0.0100	mmhos/cm	1	BFJ0143	10/06/22	10/12/22	EPA 120.1	

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

Date Sampled: **09/13/22 10:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	6.97		pH Units	1	BFJ0142	10/06/22	10/12/22	EPA 9045D	I-04

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Project: Noble - Gutttersen State DD08-11, 13
Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
10/12/22 11:33

SS04@2.5'
2209261-05 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

I-04

Date Sampled: **09/13/22 10:20**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BFJ0105	10/05/22	10/05/22	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 10:20**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		110 %	50-150		"	"	"	"	
Surrogate: Toluene-d8		98.3 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		97.4 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

I-04

Date Sampled: **09/13/22 10:20**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BFJ0106	10/05/22	10/05/22	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **09/13/22 10:20**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		76.5 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

I-04

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

Project: Noble - Gutttersen State DD08-11, 13
Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
10/12/22 11:33

SS04@2.5'
2209261-05 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

I-04

Date Sampled: **09/13/22 10:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BFJ0153	10/07/22	10/07/22	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: **09/13/22 10:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		44.9 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		71.0 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **09/13/22 10:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.0525	0.0100	mg/L	1	BFJ0125	10/06/22	10/08/22	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **09/13/22 10:20**

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

Project: Noble - Gutttersen State DD08-11, 13
Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
10/12/22 11:33

SS04@2.5'
2209261-05 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Arsenic	0.510	0.213	mg/kg dry	1	BFJ0123	10/06/22	10/09/22	EPA 6020B
Barium	28.0	0.426	"	"	"	"	"	"
Cadmium	ND	0.213	"	"	"	"	"	"
Copper	2.54	0.426	"	"	"	"	"	"
Lead	3.55	0.213	"	"	"	"	"	"
Nickel	2.06	0.426	"	"	"	"	"	"
Selenium	ND	0.277	"	"	"	"	"	"
Silver	ND	0.0213	"	"	"	"	"	"
Zinc	8.70	0.426	"	"	"	"	"	"

Hexavalent Chromium by EPA Method 7196

Date Sampled: **09/13/22 10:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BFJ0136	10/06/22	10/06/22	EPA 7196A	

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

Date Sampled: **09/13/22 10:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	8.20	0.0533	mg/L dry	1	BFJ0132	10/06/22	10/10/22	EPA 6020B	
Magnesium	2.64	0.0533	"	"	"	"	"	"	
Sodium	1.48	0.0533	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **09/13/22 10:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.115	0.00100	units	1	BFJ0296	10/12/22	10/12/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

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6855 W. 119th Ave.
Broomfield CO, 80020

Project: Noble - Guttarsen State DD08-11, 13
Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
10/12/22 11:33

SS04@2.5'
2209261-05 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **09/13/22 10:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	93.9		%	1	BFJ0129	10/06/22	10/10/22	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **09/13/22 10:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.0741	0.0100	mmhos/cm	1	BFJ0143	10/06/22	10/12/22	EPA 120.1	

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

Date Sampled: **09/13/22 10:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	6.40		pH Units	1	BFJ0142	10/06/22	10/12/22	EPA 9045D	I-04

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Project: Noble - Gutttersen State DD08-11, 13
Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
10/12/22 11:33

AST01@0.5'
2209261-06 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/13/22 10:25**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BF10338	09/14/22	09/15/22	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 10:25**

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

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **09/13/22 10:25**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BF10342	09/14/22	09/16/22	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **09/13/22 10:25**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		94.6 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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Project: Noble - Gutttersen State DD08-11, 13
Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
10/12/22 11:33

AST01@0.5'
2209261-06 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **09/13/22 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BF10395	09/16/22	09/17/22	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: **09/13/22 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		63.3 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		65.3 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **09/13/22 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.0208	0.0100	mg/L	1	BF10480	09/20/22	09/21/22	EPA 6020B	

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

Date Sampled: **09/13/22 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Broomfield CO, 80020

Project: Noble - Guttarsen State DD08-11, 13
Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
10/12/22 11:33

AST01@0.5'
2209261-06 (Soil)

Summit Scientific

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

Calcium	61.1	0.0521	mg/L dry	1	BF10469	09/19/22	09/22/22	EPA 6020B
Magnesium	15.7	0.0521	"	"	"	"	"	"
Sodium	4.48	0.0521	"	"	"	"	"	"

Calculated Analysis

Date Sampled: **09/13/22 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.132	0.00100	units	1	BF10593	09/22/22	09/22/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **09/13/22 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	96.0		%	1	BF10424	09/16/22	09/19/22	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **09/13/22 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.657	0.0100	mmhos/cm	1	BF10553	09/21/22	09/21/22	EPA 120.1	

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

Date Sampled: **09/13/22 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.57		pH Units	1	BF10554	09/21/22	09/22/22	EPA 9045D	

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6855 W. 119th Ave.
Broomfield CO, 80020

Project: Noble - Gutttersen State DD08-11, 13
Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
10/12/22 11:33

SEP01-FL@2'
2209261-07 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/13/22 10:35**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BF10338	09/14/22	09/15/22	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 10:35**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		88.6 %	50-150		"	"	"	"	
Surrogate: Toluene-d8		102 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		104 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **09/13/22 10:35**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BF10342	09/14/22	09/16/22	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **09/13/22 10:35**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		95.8 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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6855 W. 119th Ave.
Broomfield CO, 80020

Project: Noble - Gutttersen State DD08-11, 13
Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
10/12/22 11:33

SEP01-FL@2'
2209261-07 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **09/13/22 10:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BF10395	09/16/22	09/17/22	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: **09/13/22 10:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		52.8 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		62.0 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **09/13/22 10:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	0.0100	mg/L	1	BF10480	09/20/22	09/21/22	EPA 6020B	

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

Date Sampled: **09/13/22 10:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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6855 W. 119th Ave.
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Project: Noble - Guttarsen State DD08-11, 13
Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
10/12/22 11:33

SEP01-FL@2'
2209261-07 (Soil)

Summit Scientific

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

Calcium	11.9	0.0533	mg/L dry	1	BF10469	09/19/22	09/22/22	EPA 6020B
Magnesium	2.68	0.0533	"	"	"	"	"	"
Sodium	2.98	0.0533	"	"	"	"	"	"

Calculated Analysis

Date Sampled: **09/13/22 10:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.203	0.00100	units	1	BF10593	09/22/22	09/22/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **09/13/22 10:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	93.9		%	1	BF10424	09/16/22	09/19/22	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **09/13/22 10:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.167	0.0100	mmhos/cm	1	BF10553	09/21/22	09/21/22	EPA 120.1	

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

Date Sampled: **09/13/22 10:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	6.08		pH Units	1	BF10554	09/21/22	09/22/22	EPA 9045D	

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Project: Noble - Gutttersen State DD08-11, 13
Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
10/12/22 11:33

SEP01-DL@2'
2209261-08 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/13/22 10:40**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BF10338	09/14/22	09/15/22	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 10:40**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		109 %	50-150		"	"	"	"	
Surrogate: Toluene-d8		102 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		105 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **09/13/22 10:40**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BF10342	09/14/22	09/16/22	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **09/13/22 10:40**

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

PAH by EPA Method 8270D SIM

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

Project: Noble - Gutttersen State DD08-11, 13
Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
10/12/22 11:33

SEP01-DL@2'
2209261-08 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **09/13/22 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BF10395	09/16/22	09/17/22	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	0.00939	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	0.00586	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	0.00935	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	0.0155	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	0.0189	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	0.0182	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **09/13/22 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	63.5 %	40-150	"	"	"	"	"	"	
Surrogate: Fluoranthene-d10	63.6 %	40-150	"	"	"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **09/13/22 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.0415	0.0100	mg/L	1	BF10480	09/20/22	09/21/22	EPA 6020B	

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

Date Sampled: **09/13/22 10:40**

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

Project: Noble - Guttarsen State DD08-11, 13
Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
10/12/22 11:33

SEP01-DL@2'
2209261-08 (Soil)

Summit Scientific

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

Calcium	91.5	0.0598	mg/L dry	1	BF10469	09/19/22	09/22/22	EPA 6020B
Magnesium	22.4	0.0598	"	"	"	"	"	"
Sodium	18.6	0.0598	"	"	"	"	"	"

Calculated Analysis

Date Sampled: **09/13/22 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.452	0.00100	units	1	BF10593	09/22/22	09/22/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **09/13/22 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	83.6		%	1	BF10424	09/16/22	09/19/22	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **09/13/22 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	1.20	0.0100	mmhos/cm	1	BF10553	09/21/22	09/21/22	EPA 120.1	

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

Date Sampled: **09/13/22 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	5.78		pH Units	1	BF10554	09/21/22	09/22/22	EPA 9045D	

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Project: Noble - Guttarsen State DD08-11, 13

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

Reported:
10/12/22 11:33

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch BFI0338 - EPA 5030 Soil MS

Blank (BFI0338-BLK1)

Prepared & Analyzed: 09/14/22

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	0.0458		"	0.0400		114	50-150			
Surrogate: Toluene-d8	0.0408		"	0.0400		102	50-150			
Surrogate: 4-Bromofluorobenzene	0.0421		"	0.0400		105	50-150			

LCS (BFI0338-BS1)

Prepared & Analyzed: 09/14/22

Benzene	0.157	0.0020	mg/kg	0.125		126	70-130			
Toluene	0.150	0.0050	"	0.125		120	70-130			
Ethylbenzene	0.145	0.0050	"	0.125		116	70-130			
m,p-Xylene	0.281	0.010	"	0.250		113	70-130			
o-Xylene	0.126	0.0050	"	0.125		101	70-130			
1,2,4-Trimethylbenzene	0.137	0.0050	"	0.125		110	70-130			
1,3,5-Trimethylbenzene	0.138	0.0050	"	0.125		110	70-130			
Naphthalene	0.104	0.0038	"	0.125		83.4	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0473		"	0.0400		118	50-150			
Surrogate: Toluene-d8	0.0427		"	0.0400		107	50-150			
Surrogate: 4-Bromofluorobenzene	0.0410		"	0.0400		102	50-150			

Matrix Spike (BFI0338-MS1)

Source: 2209230-01

Prepared & Analyzed: 09/14/22

Benzene	0.161	0.0020	mg/kg	0.125	0.00321	126	70-130			
Toluene	0.157	0.0050	"	0.125	ND	125	70-130			
Ethylbenzene	0.152	0.0050	"	0.125	ND	122	70-130			
m,p-Xylene	0.300	0.010	"	0.250	ND	120	70-130			
o-Xylene	0.133	0.0050	"	0.125	ND	106	70-130			
1,2,4-Trimethylbenzene	0.148	0.0050	"	0.125	ND	118	70-130			
1,3,5-Trimethylbenzene	0.147	0.0050	"	0.125	ND	118	70-130			
Naphthalene	0.130	0.0038	"	0.125	0.00795	97.9	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0469		"	0.0400		117	50-150			
Surrogate: Toluene-d8	0.0415		"	0.0400		104	50-150			
Surrogate: 4-Bromofluorobenzene	0.0415		"	0.0400		104	50-150			

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

Project: Noble - Gutttersen State DD08-11, 13
Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
10/12/22 11:33

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

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

Batch BFI0338 - EPA 5030 Soil MS

Matrix Spike Dup (BFI0338-MSD1)		Source: 2209230-01			Prepared & Analyzed: 09/14/22					
Benzene	0.156	0.0020	mg/kg	0.125	0.00321	122	70-130	2.82	30	
Toluene	0.151	0.0050	"	0.125	ND	121	70-130	3.49	30	
Ethylbenzene	0.147	0.0050	"	0.125	ND	118	70-130	3.37	30	
m,p-Xylene	0.289	0.010	"	0.250	ND	116	70-130	3.47	30	
o-Xylene	0.126	0.0050	"	0.125	ND	101	70-130	5.09	30	
1,2,4-Trimethylbenzene	0.140	0.0050	"	0.125	ND	112	70-130	5.06	30	
1,3,5-Trimethylbenzene	0.141	0.0050	"	0.125	ND	113	70-130	4.29	30	
Naphthalene	0.125	0.0038	"	0.125	0.00795	93.8	70-130	4.01	30	
Surrogate: 1,2-Dichloroethane-d4		0.0460	"	0.0400		115	50-150			
Surrogate: Toluene-d8		0.0424	"	0.0400		106	50-150			
Surrogate: 4-Bromofluorobenzene		0.0404	"	0.0400		101	50-150			

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Project: Noble - Guttersen State DD08-11, 13
Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
10/12/22 11:33

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch BFI0342 - EPA 3550A

Blank (BFI0342-BLK1)

Prepared: 09/14/22 Analyzed: 09/15/22

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

LCS (BFI0342-BS1)

Prepared: 09/14/22 Analyzed: 09/15/22

C10-C28 (DRO)	534	50	mg/kg	500	107	70-130
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Matrix Spike (BFI0342-MS1)

Source: 2209230-01

Prepared: 09/14/22 Analyzed: 09/15/22

C10-C28 (DRO)	412	50	mg/kg	500	10.8	80.2	70-130
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Matrix Spike Dup (BFI0342-MSD1)

Source: 2209230-01

Prepared: 09/14/22 Analyzed: 09/15/22

C10-C28 (DRO)	392	50	mg/kg	500	10.8	76.2	70-130	4.97	20
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Batch BFJ0106 - EPA 3550A

Blank (BFJ0106-BLK1)

Prepared & Analyzed: 10/05/22

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

LCS (BFJ0106-BS1)

Prepared & Analyzed: 10/05/22

C10-C28 (DRO)	379	50	mg/kg	500	75.7	70-130
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Matrix Spike (BFJ0106-MS1)

Source: 2210032-02

Prepared & Analyzed: 10/05/22

C10-C28 (DRO)	443	50	mg/kg	500	17.4	85.2	70-130
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Matrix Spike Dup (BFJ0106-MSD1)

Source: 2210032-02

Prepared & Analyzed: 10/05/22

C10-C28 (DRO)	437	50	mg/kg	500	17.4	83.9	70-130	1.50	20
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Tasman Geosciences
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Broomfield CO, 80020

Project: Noble - Guttarsen State DD08-11, 13
Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
10/12/22 11:33

PAH by EPA Method 8270D SIM - Quality Control

Summit Scientific

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

Batch 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	"							
Surrogate: 2-Methylnaphthalene-d10	0.0241		"	0.0333		72.2	40-150			
Surrogate: Fluoranthene-d10	0.0321		"	0.0333		96.4	40-150			

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			
Surrogate: 2-Methylnaphthalene-d10	0.0294		"	0.0333		88.1	40-150			
Surrogate: Fluoranthene-d10	0.0331		"	0.0333		99.2	40-150			

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Project: Noble - Guttarsen State DD08-11, 13
Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
10/12/22 11:33

PAH by EPA Method 8270D SIM - Quality Control

Summit Scientific

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

Batch 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				
Surrogate: 2-Methylnaphthalene-d10	0.0199		"	0.0333		59.7	40-150				
Surrogate: Fluoranthene-d10	0.0252		"	0.0333		75.6	40-150				

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		
Surrogate: 2-Methylnaphthalene-d10	0.0178		"	0.0333		53.4	40-150				
Surrogate: Fluoranthene-d10	0.0223		"	0.0333		66.9	40-150				

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

Project: Noble - Guttarsen State DD08-11, 13
Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
10/12/22 11:33

PAH by EPA Method 8270D SIM - Quality Control

Summit Scientific

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

Batch BFJ0153 - EPA 5030 Soil MS

Blank (BFJ0153-BLK1)

Prepared & Analyzed: 10/07/22

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	0.0165		"	0.0333		49.5		40-150			
Surrogate: Fluoranthene-d10	0.0367		"	0.0333		110		40-150			

LCS (BFJ0153-BS1)

Prepared & Analyzed: 10/07/22

Acenaphthene	0.0319	0.00500	mg/kg	0.0333		95.8		31-137			
Anthracene	0.0315	0.00500	"	0.0333		94.5		30-120			
Benzo (a) anthracene	0.0265	0.00500	"	0.0333		79.5		30-120			
Benzo (a) pyrene	0.0253	0.00500	"	0.0333		75.8		30-120			
Benzo (b) fluoranthene	0.0332	0.00500	"	0.0333		99.6		30-120			
Benzo (k) fluoranthene	0.0356	0.00500	"	0.0333		107		30-120			
Chrysene	0.0342	0.00500	"	0.0333		103		30-120			
Dibenz (a,h) anthracene	0.0196	0.00500	"	0.0333		58.8		30-120			
Fluoranthene	0.0320	0.00500	"	0.0333		95.9		30-120			
Fluorene	0.0331	0.00500	"	0.0333		99.4		30-120			
Indeno (1,2,3-cd) pyrene	0.0295	0.00500	"	0.0333		88.5		30-120			
Pyrene	0.0371	0.00500	"	0.0333		111		35-142			
1-Methylnaphthalene	0.0293	0.00500	"	0.0333		88.0		35-142			
2-Methylnaphthalene	0.0218	0.00500	"	0.0333		65.4		35-142			
Surrogate: 2-Methylnaphthalene-d10	0.0323		"	0.0333		96.9		40-150			
Surrogate: Fluoranthene-d10	0.0296		"	0.0333		88.8		40-150			

Summit Scientific

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

Project: Noble - Guttarsen State DD08-11, 13
Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
10/12/22 11:33

PAH by EPA Method 8270D SIM - Quality Control

Summit Scientific

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

Batch BFJ0153 - EPA 5030 Soil MS

Matrix Spike (BFJ0153-MS1)

Source: 2210056-01

Prepared & Analyzed: 10/07/22

Acenaphthene	0.0235	0.00500	mg/kg	0.0333	ND	70.4	31-137				
Anthracene	0.0216	0.00500	"	0.0333	ND	64.9	30-120				
Benzo (a) anthracene	0.0229	0.00500	"	0.0333	ND	68.6	30-120				
Benzo (a) pyrene	0.0177	0.00500	"	0.0333	ND	53.2	30-120				
Benzo (b) fluoranthene	0.0215	0.00500	"	0.0333	ND	64.4	30-120				
Benzo (k) fluoranthene	0.0212	0.00500	"	0.0333	ND	63.5	30-120				
Chrysene	0.0235	0.00500	"	0.0333	ND	70.6	30-120				
Dibenz (a,h) anthracene	0.0127	0.00500	"	0.0333	ND	38.0	30-120				
Fluoranthene	0.0230	0.00500	"	0.0333	ND	69.0	30-120				
Fluorene	0.0231	0.00500	"	0.0333	ND	69.4	30-120				
Indeno (1,2,3-cd) pyrene	0.0184	0.00500	"	0.0333	ND	55.2	30-120				
Pyrene	0.0251	0.00500	"	0.0333	ND	75.3	35-142				
1-Methylnaphthalene	0.0194	0.00500	"	0.0333	ND	58.2	15-130				
2-Methylnaphthalene	0.0169	0.00500	"	0.0333	ND	50.8	15-130				
Surrogate: 2-Methylnaphthalene-d10	0.0221		"	0.0333		66.2	40-150				
Surrogate: Fluoranthene-d10	0.0230		"	0.0333		69.0	40-150				

Matrix Spike Dup (BFJ0153-MSD1)

Source: 2210056-01

Prepared & Analyzed: 10/07/22

Acenaphthene	0.0231	0.00500	mg/kg	0.0333	ND	69.2	31-137	1.78	30
Anthracene	0.0213	0.00500	"	0.0333	ND	64.0	30-120	1.41	30
Benzo (a) anthracene	0.0224	0.00500	"	0.0333	ND	67.2	30-120	2.06	30
Benzo (a) pyrene	0.0174	0.00500	"	0.0333	ND	52.3	30-120	1.61	30
Benzo (b) fluoranthene	0.0204	0.00500	"	0.0333	ND	61.1	30-120	5.12	30
Benzo (k) fluoranthene	0.0201	0.00500	"	0.0333	ND	60.4	30-120	4.99	30
Chrysene	0.0231	0.00500	"	0.0333	ND	69.3	30-120	1.83	30
Dibenz (a,h) anthracene	0.0128	0.00500	"	0.0333	ND	38.5	30-120	1.35	30
Fluoranthene	0.0222	0.00500	"	0.0333	ND	66.7	30-120	3.37	30
Fluorene	0.0223	0.00500	"	0.0333	ND	66.8	30-120	3.82	30
Indeno (1,2,3-cd) pyrene	0.0186	0.00500	"	0.0333	ND	55.8	30-120	0.928	30
Pyrene	0.0237	0.00500	"	0.0333	ND	71.2	35-142	5.50	30
1-Methylnaphthalene	0.0203	0.00500	"	0.0333	ND	60.8	15-130	4.30	50
2-Methylnaphthalene	0.0164	0.00500	"	0.0333	ND	49.1	15-130	3.37	50
Surrogate: 2-Methylnaphthalene-d10	0.0220		"	0.0333		66.0	40-150		
Surrogate: Fluoranthene-d10	0.0231		"	0.0333		69.2	40-150		

Summit Scientific

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

Project: Noble - Gutterson State DD08-11, 13
Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
10/12/22 11:33

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

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

Batch BF10480 - EPA 3050B

Blank (BF10480-BLK1)

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

Boron ND 0.0100 mg/L

LCS (BF10480-BS1)

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

Boron 5.59 0.0100 mg/L 5.00 112 80-120

Duplicate (BF10480-DUP1)

Source: 2208358-17

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

Boron 0.138 0.0100 mg/L 0.137 0.936 20

Matrix Spike (BF10480-MS1)

Source: 2208358-17

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

Boron 6.02 0.0100 mg/L 5.00 0.137 118 75-125

Matrix Spike Dup (BF10480-MSD1)

Source: 2208358-17

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

Boron 5.31 0.0100 mg/L 5.00 0.137 103 75-125 12.6 25

Batch BFJ0125 - EPA 3050B

Blank (BFJ0125-BLK1)

Prepared: 10/06/22 Analyzed: 10/08/22

Boron ND 0.0100 mg/L

LCS (BFJ0125-BS1)

Prepared: 10/06/22 Analyzed: 10/08/22

Boron 4.61 0.0100 mg/L 5.00 92.3 80-120

Duplicate (BFJ0125-DUP1)

Source: 2209261-03

Prepared: 10/06/22 Analyzed: 10/08/22

Boron 0.0438 0.0100 mg/L 0.0510 15.3 20

Matrix Spike (BFJ0125-MS1)

Source: 2209261-03

Prepared: 10/06/22 Analyzed: 10/08/22

Boron 4.57 0.0100 mg/L 5.00 0.0510 90.5 75-125

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

Project: Noble - Gutterson State DD08-11, 13
Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
10/12/22 11:33

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

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

Batch BFJ0125 - EPA 3050B

Matrix Spike Dup (BFJ0125-MSD1)

Source: 2209261-03

Prepared: 10/06/22 Analyzed: 10/08/22

Boron	4.18	0.0100	mg/L	5.00	0.0510	82.5	75-125	9.08	25	
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6855 W. 119th Ave.
Broomfield CO, 80020

Project: Noble - Guttarsen State DD08-11, 13
Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
10/12/22 11:33

Total Metals by EPA 6020B - Quality Control
Summit Scientific

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

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

Project: Noble - Gutterson State DD08-11, 13
Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
10/12/22 11:33

Total Metals by EPA 6020B - Quality Control
Summit Scientific

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

Batch 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	QM-05
Barium	269	0.544	"	54.4	198	130	75-125	1.16	25	
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	

Batch BFJ0123 - EPA 3050B

Blank (BFJ0123-BLK1)

Prepared: 10/06/22 Analyzed: 10/09/22

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	"

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

Project: Noble - Guttarsen State DD08-11, 13
Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
10/12/22 11:33

Total Metals by EPA 6020B - Quality Control
Summit Scientific

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

Batch BFJ0123 - EPA 3050B

LCS (BFJ0123-BS1)

Prepared: 10/06/22 Analyzed: 10/09/22

Arsenic	40.4	0.200	mg/kg wet	40.0		101	80-120			
Barium	42.1	0.400	"	40.0		105	80-120			
Cadmium	2.05	0.200	"	2.00		103	80-120			
Copper	41.6	0.400	"	40.0		104	80-120			
Lead	20.8	0.200	"	20.0		104	80-120			
Nickel	40.4	0.400	"	40.0		101	80-120			
Selenium	4.06	0.260	"	4.00		101	80-120			
Silver	2.07	0.0200	"	2.00		103	80-120			
Zinc	40.3	0.400	"	40.0		101	80-120			

Duplicate (BFJ0123-DUP1)

Source: 2209261-02

Prepared: 10/06/22 Analyzed: 10/09/22

Arsenic	0.596	0.212	mg/kg dry		0.585			1.87	20	
Barium	33.8	0.424	"		33.5			0.840	20	
Cadmium	0.114	0.212	"		0.118			3.30	20	
Copper	2.96	0.424	"		2.95			0.545	20	
Lead	4.00	0.212	"		3.98			0.531	20	
Nickel	2.38	0.424	"		2.36			0.555	20	
Selenium	ND	0.276	"		ND				20	
Silver	0.0182	0.0212	"		0.0170			7.23	20	
Zinc	11.1	0.424	"		10.9			1.99	20	

Matrix Spike (BFJ0123-MS1)

Source: 2209261-02

Prepared: 10/06/22 Analyzed: 10/09/22

Arsenic	35.1	0.212	mg/kg dry	42.4	0.585	81.5	75-125			
Barium	77.1	0.424	"	42.4	33.5	103	75-125			
Cadmium	2.25	0.212	"	2.12	0.118	101	75-125			
Copper	38.9	0.424	"	42.4	2.95	84.8	75-125			
Lead	25.7	0.212	"	21.2	3.98	102	75-125			
Nickel	37.4	0.424	"	42.4	2.36	82.6	75-125			
Selenium	4.26	0.276	"	4.24	ND	100	75-125			
Silver	2.09	0.0212	"	2.12	0.0170	97.7	75-125			
Zinc	46.7	0.424	"	42.4	10.9	84.4	75-125			

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

Project: Noble - Gutterson State DD08-11, 13
Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
10/12/22 11:33

Total Metals by EPA 6020B - Quality Control
Summit Scientific

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

Batch BFJ0123 - EPA 3050B

Matrix Spike Dup (BFJ0123-MSD1)		Source: 2209261-02			Prepared: 10/06/22 Analyzed: 10/09/22					
Arsenic	35.2	0.212	mg/kg dry	42.4	0.585	81.7	75-125	0.281	25	
Barium	78.2	0.424	"	42.4	33.5	105	75-125	1.39	25	
Cadmium	2.30	0.212	"	2.12	0.118	103	75-125	2.12	25	
Copper	39.8	0.424	"	42.4	2.95	87.0	75-125	2.33	25	
Lead	26.1	0.212	"	21.2	3.98	104	75-125	1.50	25	
Nickel	38.1	0.424	"	42.4	2.36	84.2	75-125	1.81	25	
Selenium	4.33	0.276	"	4.24	ND	102	75-125	1.74	25	
Silver	2.11	0.0212	"	2.12	0.0170	98.8	75-125	1.19	25	
Zinc	47.4	0.424	"	42.4	10.9	86.2	75-125	1.59	25	

Summit Scientific

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

Project: Noble - Gutttersen State DD08-11, 13
Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
10/12/22 11:33

Hexavalent Chromium by EPA Method 7196 - Quality Control
Summit Scientific

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

Batch BFI0695 - 3060A Mod

Blank (BFI0695-BLK1)					Prepared & Analyzed: 09/27/22					
Chromium, Hexavalent	ND	0.30	mg/kg wet							
LCS (BFI0695-BS1)					Prepared & Analyzed: 09/27/22					
Chromium, Hexavalent	25.6	0.30	mg/kg wet	25.0		102	80-120			
Duplicate (BFI0695-DUP1)					Source: 2209261-01 Prepared & Analyzed: 09/27/22					
Chromium, Hexavalent	ND	0.30	mg/kg dry		ND				20	
Matrix Spike (BFI0695-MS1)					Source: 2209261-01 Prepared & Analyzed: 09/27/22					
Chromium, Hexavalent	31.5	0.30	mg/kg dry	27.9	ND	113	75-125			
Matrix Spike Dup (BFI0695-MSD1)					Source: 2209261-01 Prepared & Analyzed: 09/27/22					
Chromium, Hexavalent	29.7	0.30	mg/kg dry	27.9	ND	106	75-125	5.84	20	

Batch BFJ0136 - 3060A Mod

Blank (BFJ0136-BLK1)					Prepared & Analyzed: 10/06/22					
Chromium, Hexavalent	ND	0.30	mg/kg wet							
LCS (BFJ0136-BS1)					Prepared & Analyzed: 10/06/22					
Chromium, Hexavalent	26.6	0.30	mg/kg wet	25.0		107	80-120			
Duplicate (BFJ0136-DUP1)					Source: 2209261-02 Prepared & Analyzed: 10/06/22					
Chromium, Hexavalent	ND	0.30	mg/kg dry		ND				20	
Matrix Spike (BFJ0136-MS1)					Source: 2209261-02 Prepared & Analyzed: 10/06/22					
Chromium, Hexavalent	31.0	0.30	mg/kg dry	26.5	ND	117	75-125			

Summit Scientific

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

Project: Noble - Gutterson State DD08-11, 13
Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
10/12/22 11:33

Hexavalent Chromium by EPA Method 7196 - Quality Control
Summit Scientific

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

Batch BFJ0136 - 3060A Mod

Matrix Spike Dup (BFJ0136-MSD1)

Source: 2209261-02

Prepared & Analyzed: 10/06/22

Chromium, Hexavalent	31.0	0.30	mg/kg dry	26.5	ND	117	75-125	0.171	20
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Tasman Geosciences
6855 W. 119th Ave.
Broomfield CO, 80020

Project: Noble - Gutterson State DD08-11, 13
Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
10/12/22 11:33

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

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

Batch BFI0469 - General Preparation

Blank (BFI0469-BLK1)

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

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

LCS (BFI0469-BS1)

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

Calcium	6.10	0.0500	mg/L wet	5.00	122	70-130
Magnesium	5.91	0.0500	"	5.00	118	70-130
Sodium	5.67	0.0500	"	5.00	113	70-130

Batch BFJ0132 - General Preparation

Blank (BFJ0132-BLK1)

Prepared: 10/06/22 Analyzed: 10/10/22

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

LCS (BFJ0132-BS1)

Prepared: 10/06/22 Analyzed: 10/10/22

Calcium	5.68	0.0500	mg/L wet	5.00	114	70-130
Magnesium	5.39	0.0500	"	5.00	108	70-130
Sodium	5.43	0.0500	"	5.00	109	70-130

Summit Scientific

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

Project: Noble - Gutterson State DD08-11, 13

Project Number: UWRWE-A2261-ABN

Project Manager: Jacob Whritenour

Reported:
10/12/22 11:33

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

Summit Scientific

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

Batch 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	

Batch BFJ0129 - General Preparation

Duplicate (BFJ0129-DUP1)		Source: 2209261-03			Prepared: 10/06/22 Analyzed: 10/10/22					
% Solids	93.8		%		93.8			0.00748	20	

Summit Scientific

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



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

Project: Noble - Guttarsen State DD08-11, 13
Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
10/12/22 11:33

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

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

Batch BFI0553 - General Preparation

Blank (BFI0553-BLK1)

Prepared & Analyzed: 09/21/22

Specific Conductance (EC) ND 0.0100 mmhos/cm

LCS (BFI0553-BS1)

Prepared & Analyzed: 09/21/22

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

Duplicate (BFI0553-DUP1)

Source: 2209241-01

Prepared & Analyzed: 09/21/22

Specific Conductance (EC) 0.559 0.0100 mmhos/cm 0.559 0.00 20

Batch BFJ0143 - General Preparation

Blank (BFJ0143-BLK1)

Prepared: 10/06/22 Analyzed: 10/12/22

Specific Conductance (EC) ND 0.0100 mmhos/cm

LCS (BFJ0143-BS1)

Prepared: 10/06/22 Analyzed: 10/12/22

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

Duplicate (BFJ0143-DUP1)

Source: 2209261-03

Prepared: 10/06/22 Analyzed: 10/12/22

Specific Conductance (EC) 0.312 0.0100 mmhos/cm 0.308 1.42 20

Summit Scientific

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

Project: Noble - Gutterson State DD08-11, 13
Project Number: UWRWE-A2261-ABN
Project Manager: Jacob Whritenour

Reported:
10/12/22 11:33

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

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

Batch BFI0554 - General Preparation

LCS (BFI0554-BS1) Prepared: 09/21/22 Analyzed: 09/22/22

pH	9.03	pH Units	9.18	98.4	95-105
----	------	----------	------	------	--------

Duplicate (BFI0554-DUP1) Source: 2209241-01 Prepared: 09/21/22 Analyzed: 09/22/22

pH	8.40	pH Units	8.46	0.712	20
----	------	----------	------	-------	----

Batch BFJ0142 - General Preparation

LCS (BFJ0142-BS1) Prepared: 10/06/22 Analyzed: 10/12/22

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

Duplicate (BFJ0142-DUP1) Source: 2209261-03 Prepared: 10/06/22 Analyzed: 10/12/22

pH	6.54	pH Units	6.50	0.613	20
----	------	----------	------	-------	----

Summit Scientific

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

Project: Noble - Gutttersen State DD08-11, 13

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

Reported:
10/12/22 11:33

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.
I-04	Sample was analyzed out of recommended holding time per clients request.
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 13, 2022

Jacob Whritenour

Tasman Geosciences

6855 W. 119th Ave.

Broomfield, CO 80020

RE: Noble - Guttarsen State DD08-11, 13

Work Order #2210016

Enclosed are the results of analyses for samples received by Summit Scientific on 10/03/22 16:00. 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 - Gutttersen State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BG01@2'	2210016-01	Soil	10/03/22 12:20	10/03/22 16:00
BG01@7'	2210016-02	Soil	10/03/22 12:25	10/03/22 16:00
BG02@2'	2210016-03	Soil	10/03/22 12:30	10/03/22 16:00
BG02@7'	2210016-04	Soil	10/03/22 12:35	10/03/22 16:00
BG03@2'	2210016-05	Soil	10/03/22 12:40	10/03/22 16:00
BG03@7'	2210016-06	Soil	10/03/22 12:45	10/03/22 16:00
BG04@2'	2210016-07	Soil	10/03/22 12:50	10/03/22 16:00
BG04@7'	2210016-08	Soil	10/03/22 12:55	10/03/22 16:00
BG05@2'	2210016-09	Soil	10/03/22 13:00	10/03/22 16:00
BG05@7'	2210016-10	Soil	10/03/22 13:05	10/03/22 16:00
BH01@2-3'	2210016-11	Soil	10/03/22 09:00	10/03/22 16:00
BH01@7-8'	2210016-12	Soil	10/03/22 09:20	10/03/22 16:00
BH01@14-15'	2210016-13	Soil	10/03/22 09:30	10/03/22 16:00
BH02@2-3'	2210016-14	Soil	10/03/22 09:50	10/03/22 16:00
BH02@7-8'	2210016-15	Soil	10/03/22 10:00	10/03/22 16:00
BH02@14-15'	2210016-16	Soil	10/03/22 10:10	10/03/22 16:00
BH03@2-3'	2210016-17	Soil	10/03/22 11:30	10/03/22 16:00
BH03@7-8'	2210016-18	Soil	10/03/22 11:40	10/03/22 16:00
BH03@14-15'	2210016-19	Soil	10/03/22 11:50	10/03/22 16:00
BH04@2-3'	2210016-20	Soil	10/03/22 10:50	10/03/22 16:00
BH04@7-8'	2210016-21	Soil	10/03/22 11:00	10/03/22 16:00
BH04@14-15'	2210016-22	Soil	10/03/22 11:10	10/03/22 16:00
BH05@2-3'	2210016-23	Soil	10/03/22 10:15	10/03/22 16:00
BH05@7-8'	2210016-24	Soil	10/03/22 10:25	10/03/22 16:00
BH05@12-13'	2210016-25	Soil	10/03/22 10:35	10/03/22 16:00

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 - Guttarsen State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

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.

A handwritten signature in black ink, appearing to read 'Maya Austin'.

Summit Scientific 2210016.1

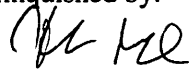
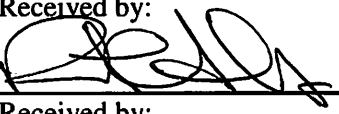
S₂

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

Page 1 of 3

Client: Noble / Tasman Project Manager: Jake Whritenour Invoice: Erica Zuniga
Address: 6855 W. 119th Ave E-Mail: jwhritenour@tasman-geo.com
City/State/Zip: Broomfield, CO 80020
Phone: 303-827-1511 Project Name: Gutteren State DDOB - 11, 13
Sampler Name: Hunter Merlo Project Number:

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested								Special Instructions
					HCl	HNO ₃	None	Other	Water	Soil	Air-Canister #	Other	VOC - 915	TPH - 915	PAH - 915	pH, EC, SAR	Boron - HWS	HOLD	Notes - 915	pH	
1	B601E2'	10/3/22	1220	1			X			X									X	X	
2	B601E7'		1225																		
3	B602E2'		1230																		
4	B602E7'		1235																		
5	B603E2'		1240																		
6	B603E7'		1245																		
7	B604E2'		1250																		
8	B604E7'		1255																		
9	B605E2'		1300																		
10	B605E7'		1305																		

Relinquished by: 	Date/Time: 10/3/22 1415	Received by: <u>Tasman's Lock Box</u> <u>Summit</u>	Date/Time: 10/3/22 1415	Turn Around Time (Check) Same Day <input type="checkbox"/> 72 hours 24 hours <input type="checkbox"/> Standard <input checked="" type="checkbox"/>	Notes:
Relinquished by: <u>Tasman's Lock Box</u>	Date/Time: 10/3/22 1600	Received by: 	Date/Time: 10/3/22 1600	Sample Integrity: Temperature Upon Receipt: 8.1	
Relinquished by:	Date/Time:	Received by:	Date/Time:	Samples Intact: <input checked="" type="radio"/> Yes <input type="radio"/> No	

Summit Scientific

S₂

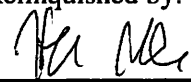
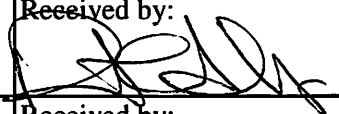
2210016.2

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

Page 2 of 3

Client: Noble / Tasman Project Manager: Jake Whritenour Invoice: Erica Zuniga
Address: 6855 W. 119th Ave E-Mail: jwhritenour@tasman-geo.com
City/State/Zip: Broomfield, CO 80020
Phone: 303-827-8111 Project Name: Gutterman State DDO#-11,13
Sampler Name: Hunter Merlo Project Number:

					Preservative				Matrix				Analysis Requested								Special Instructions
ID	Sample Description	Date Sampled	Time Sampled	# of containers	HCl	HNO3	None	Other	Water	Soil	Air-Canister #	Other	VOC - 915	TPH - 915	PAH - 915	pH, EC, SAR	Boron - HWS	HOLD	Metals - 915	pH, EC, SAR by saturated paste	
1	BH01@2-3'	10/3/22	0900	2			X			X			X	X	X	X	X		X		
2	BH01@7-8'		0920																		
3	BH01@14-15'		0930																		
4	BH02@2-3'		0950																		
5	BH02@7-8'		1000																		
6	BH02@14-15'		1010																		
7	BH03@2-3'		1130																		
8	BH03@7-8'		1140																		
9	BH03@14-15'		1150																		
10	BH04@2-3'		1050																		

Relinquished by: 	Date/Time: 1415 10/3/22	Received by: Tasman's Lock Box Summit	Date/Time: 1415 10/3/22	Turn Around Time (Check) Same Day — 72 hours 24 hours — Standard <input checked="" type="checkbox"/> 48 hours —	Notes:
Relinquished by: Tasman's Lock Box Summit	Date/Time: 10322 1000	Received by: 	Date/Time: 10322 1000	Sample Integrity: Temperature Upon Receipt: 8.1	
Relinquished by:	Date/Time:	Received by:	Date/Time:	Samples Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

Summit Scientific

S₂

2210016.3

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

Page 3 of 3

Client: Noble / Tasman

Project Manager: Jake Whritenour Invoice: Erica Zuniga

Address: 6855 W. 119th Ave

E-Mail: jwhritenour@tasman-geo.com

City/State/Zip: Broomfield, CO 80020

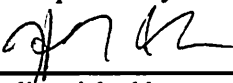

Phone: 303-827-1511

Project Name: Guttersen State DOOB-11,13

Sampler Name: Hunter Merlo

Project Number:

					Preservative				Matrix				Analysis Requested								Special Instructions
ID	Sample Description	Date Sampled	Time Sampled	# of containers	HCl	HNO3	None	Other _____	Water	Soil	Air-Canister #	Other _____	VOC - 915	TPH - 915	PAH - 915	pH, EC, SAR	Boron - HWS	HOLD	Metals - 915		pH, EC, SAR by saturated paste
1	BH0407-8'	10/3/22	1100	2			X			X			X	X	X	X	X		X		
2	BH0414-15'	↓	1110	↓			↓			↓			↓	↓	↓	↓	↓		↓		
3	BH0502-3'	↓	1015	↓			↓			↓			↓	↓	↓	↓	↓		↓		
4	BH0507-8'	↓	1025	↓			↓			↓			↓	↓	↓	↓	↓		↓		
5	BH0512-13'	↓	1035	↓			↓			↓			↓	↓	↓	↓	↓		↓		
6																					
7																					
8																					
9																					
10																					

Relinquished by: 	Date/Time: 1415 10/3/22	Received by: Tasman's Lock Box Summit	Date/Time: 1415 10/3/22	Turn Around Time (Check) Same Day — 72 hours 24 hours — Standard <input checked="" type="checkbox"/> 48 hours —	Notes:
Relinquished by: Tasman's Lock Box Summit	Date/Time: 10322 1000	Received by: 	Date/Time: 10322 1000	Sample Integrity: Temperature Upon Receipt: 8.1	
Relinquished by:	Date/Time:	Received by:	Date/Time:	Samples Intact: <input checked="" type="radio"/> Yes No	

S₂

313

Sample Receipt Checklist

S2 Work Order# 2210016Client: Noble Frisman Client Project ID: Guthersen State DM8-11,13

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

	-			
--	---	--	--	--

Matrix (Check all that apply) Air ☐ Soil ☒ Solid ☐ Water ☐ Other ☐Temp (°C) 8.1Thermometer # 1

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

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

Custodian Printed Name

10.3.22
Date/Time

19:45



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

Project: Noble - Gutttersen State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

BG01@2'
2210016-01 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Date Sampled: **10/03/22 12:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	1.68	0.207	mg/kg dry	1	BFJ0206	10/10/22	10/10/22	EPA 6020B	
Barium	40.1	0.413	"	"	"	"	"	"	
Cadmium	ND	0.207	"	"	"	"	"	"	
Copper	3.69	0.413	"	"	"	"	"	"	
Lead	4.45	0.207	"	"	"	"	"	"	
Nickel	3.52	0.413	"	"	"	"	"	"	
Selenium	0.436	0.269	"	"	"	"	"	"	
Silver	ND	0.0207	"	"	"	"	"	"	
Zinc	15.8	0.413	"	"	"	"	"	"	

Hexavalent Chromium by EPA Method 7196

Date Sampled: **10/03/22 12:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BFJ0310	10/12/22	10/13/22	EPA 7196A	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **10/03/22 12:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	96.8		%	1	BFJ0161	10/07/22	10/10/22	Calculation	

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

Date Sampled: **10/03/22 12:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.15		pH Units	1	BFJ0158	10/07/22	10/09/22	EPA 9045D	

Summit Scientific

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

Project: Noble - Gutttersen State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

BG01@7'
2210016-02 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Date Sampled: **10/03/22 12:25**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	1.38	0.207	mg/kg dry	1	BFJ0206	10/10/22	10/10/22	EPA 6020B	
Barium	44.8	0.413	"	"	"	"	"	"	
Cadmium	ND	0.207	"	"	"	"	"	"	
Copper	3.15	0.413	"	"	"	"	"	"	
Lead	3.85	0.207	"	"	"	"	"	"	
Nickel	3.66	0.413	"	"	"	"	"	"	
Selenium	0.446	0.269	"	"	"	"	"	"	
Silver	0.0243	0.0207	"	"	"	"	"	"	
Zinc	15.9	0.413	"	"	"	"	"	"	

Hexavalent Chromium by EPA Method 7196

Date Sampled: **10/03/22 12:25**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BFJ0310	10/12/22	10/13/22	EPA 7196A	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **10/03/22 12:25**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	96.7		%	1	BFJ0161	10/07/22	10/10/22	Calculation	

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

Date Sampled: **10/03/22 12:25**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
pH	7.18		pH Units	1	BFJ0158	10/07/22	10/09/22	EPA 9045D	

Summit Scientific

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



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

Project: Noble - Gutttersen State DD08-11, 13

Project Number: [none]

Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

BG02@2'
2210016-03 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Date Sampled: **10/03/22 12:30**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	1.57	0.207	mg/kg dry	1	BFJ0206	10/10/22	10/10/22	EPA 6020B	
Barium	50.5	0.414	"	"	"	"	"	"	
Cadmium	ND	0.207	"	"	"	"	"	"	
Copper	3.39	0.414	"	"	"	"	"	"	
Lead	4.49	0.207	"	"	"	"	"	"	
Nickel	3.84	0.414	"	"	"	"	"	"	
Selenium	0.337	0.269	"	"	"	"	"	"	
Silver	0.0209	0.0207	"	"	"	"	"	"	
Zinc	15.9	0.414	"	"	"	"	"	"	

Hexavalent Chromium by EPA Method 7196

Date Sampled: **10/03/22 12:30**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BFJ0310	10/12/22	10/13/22	EPA 7196A	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **10/03/22 12:30**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	96.5		%	1	BFJ0161	10/07/22	10/10/22	Calculation	

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

Date Sampled: **10/03/22 12:30**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
pH	7.73		pH Units	1	BFJ0158	10/07/22	10/09/22	EPA 9045D	

Summit Scientific

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



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

Project: Noble - Gutttersen State DD08-11, 13

Project Number: [none]

Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

BG02@7'
2210016-04 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Date Sampled: **10/03/22 12:35**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	1.96	0.206	mg/kg dry	1	BFJ0206	10/10/22	10/10/22	EPA 6020B	
Barium	47.5	0.413	"	"	"	"	"	"	
Cadmium	ND	0.206	"	"	"	"	"	"	
Copper	3.47	0.413	"	"	"	"	"	"	
Lead	3.65	0.206	"	"	"	"	"	"	
Nickel	3.84	0.413	"	"	"	"	"	"	
Selenium	0.372	0.268	"	"	"	"	"	"	
Silver	ND	0.0206	"	"	"	"	"	"	
Zinc	13.8	0.413	"	"	"	"	"	"	

Hexavalent Chromium by EPA Method 7196

Date Sampled: **10/03/22 12:35**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BFJ0310	10/12/22	10/13/22	EPA 7196A	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **10/03/22 12:35**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	96.9		%	1	BFJ0161	10/07/22	10/10/22	Calculation	

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

Date Sampled: **10/03/22 12:35**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
pH	7.68		pH Units	1	BFJ0158	10/07/22	10/09/22	EPA 9045D	

Summit Scientific

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

Project: Noble - Gutttersen State DD08-11, 13

Project Number: [none]

Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

BG03@2'
2210016-05 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Date Sampled: **10/03/22 12:40**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	1.66	0.207	mg/kg dry	1	BFJ0206	10/10/22	10/10/22	EPA 6020B	
Barium	50.0	0.415	"	"	"	"	"	"	
Cadmium	ND	0.207	"	"	"	"	"	"	
Copper	3.31	0.415	"	"	"	"	"	"	
Lead	4.08	0.207	"	"	"	"	"	"	
Nickel	3.71	0.415	"	"	"	"	"	"	
Selenium	0.397	0.270	"	"	"	"	"	"	
Silver	ND	0.0207	"	"	"	"	"	"	
Zinc	15.6	0.415	"	"	"	"	"	"	

Hexavalent Chromium by EPA Method 7196

Date Sampled: **10/03/22 12:40**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BFJ0310	10/12/22	10/13/22	EPA 7196A	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **10/03/22 12:40**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	96.4		%	1	BFJ0161	10/07/22	10/10/22	Calculation	

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

Date Sampled: **10/03/22 12:40**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
pH	7.67		pH Units	1	BFJ0158	10/07/22	10/09/22	EPA 9045D	

Summit Scientific

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

Project: Noble - Gutttersen State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

BG03@7'
2210016-06 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Date Sampled: **10/03/22 12:45**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	1.30	0.207	mg/kg dry	1	BFJ0206	10/10/22	10/10/22	EPA 6020B	
Barium	54.3	0.414	"	"	"	"	"	"	
Cadmium	ND	0.207	"	"	"	"	"	"	
Copper	3.10	0.414	"	"	"	"	"	"	
Lead	3.90	0.207	"	"	"	"	"	"	
Nickel	3.60	0.414	"	"	"	"	"	"	
Selenium	0.380	0.269	"	"	"	"	"	"	
Silver	0.0236	0.0207	"	"	"	"	"	"	
Zinc	14.7	0.414	"	"	"	"	"	"	

Hexavalent Chromium by EPA Method 7196

Date Sampled: **10/03/22 12:45**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BFJ0310	10/12/22	10/13/22	EPA 7196A	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **10/03/22 12:45**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	96.6		%	1	BFJ0161	10/07/22	10/10/22	Calculation	

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

Date Sampled: **10/03/22 12:45**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
pH	7.57		pH Units	1	BFJ0158	10/07/22	10/09/22	EPA 9045D	

Summit Scientific

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

Project: Noble - Gutttersen State DD08-11, 13

Project Number: [none]

Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

BG04@2'
2210016-07 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Date Sampled: **10/03/22 12:50**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	2.14	0.209	mg/kg dry	1	BFJ0206	10/10/22	10/11/22	EPA 6020B	
Barium	53.4	0.418	"	"	"	"	"	"	
Cadmium	ND	0.209	"	"	"	"	"	"	
Copper	4.34	0.418	"	"	"	"	"	"	
Lead	4.75	0.209	"	"	"	"	"	"	
Nickel	5.14	0.418	"	"	"	"	"	"	
Selenium	0.493	0.272	"	"	"	"	"	"	
Silver	0.0218	0.0209	"	"	"	"	"	"	
Zinc	21.2	0.418	"	"	"	"	"	"	

Hexavalent Chromium by EPA Method 7196

Date Sampled: **10/03/22 12:50**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BFJ0310	10/12/22	10/13/22	EPA 7196A	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **10/03/22 12:50**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	95.7		%	1	BFJ0161	10/07/22	10/10/22	Calculation	

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

Date Sampled: **10/03/22 12:50**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
pH	7.80		pH Units	1	BFJ0158	10/07/22	10/09/22	EPA 9045D	

Summit Scientific

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

Project: Noble - Gutttersen State DD08-11, 13

Project Number: [none]

Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

BG04@7'
2210016-08 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Date Sampled: **10/03/22 12:55**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	1.90	0.208	mg/kg dry	1	BFJ0206	10/10/22	10/10/22	EPA 6020B	
Barium	60.4	0.416	"	"	"	"	"	"	
Cadmium	ND	0.208	"	"	"	"	"	"	
Copper	3.30	0.416	"	"	"	"	"	"	
Lead	4.28	0.208	"	"	"	"	"	"	
Nickel	3.99	0.416	"	"	"	"	"	"	
Selenium	0.501	0.270	"	"	"	"	"	"	
Silver	0.0351	0.0208	"	"	"	"	"	"	
Zinc	17.5	0.416	"	"	"	"	"	"	

Hexavalent Chromium by EPA Method 7196

Date Sampled: **10/03/22 12:55**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BFJ0310	10/12/22	10/13/22	EPA 7196A	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **10/03/22 12:55**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	96.2		%	1	BFJ0161	10/07/22	10/10/22	Calculation	

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

Date Sampled: **10/03/22 12:55**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
pH	7.62		pH Units	1	BFJ0158	10/07/22	10/09/22	EPA 9045D	

Summit Scientific

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

Project: Noble - Gutttersen State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

BG05@2'
2210016-09 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Date Sampled: **10/03/22 13:00**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	1.77	0.207	mg/kg dry	1	BFJ0206	10/10/22	10/10/22	EPA 6020B	
Barium	48.2	0.413	"	"	"	"	"	"	
Cadmium	ND	0.207	"	"	"	"	"	"	
Copper	2.63	0.413	"	"	"	"	"	"	
Lead	3.67	0.207	"	"	"	"	"	"	
Nickel	3.24	0.413	"	"	"	"	"	"	
Selenium	0.331	0.269	"	"	"	"	"	"	
Silver	0.0212	0.0207	"	"	"	"	"	"	
Zinc	13.0	0.413	"	"	"	"	"	"	

Hexavalent Chromium by EPA Method 7196

Date Sampled: **10/03/22 13:00**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BFJ0310	10/12/22	10/13/22	EPA 7196A	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **10/03/22 13:00**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	96.8		%	1	BFJ0161	10/07/22	10/10/22	Calculation	

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

Date Sampled: **10/03/22 13:00**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
pH	7.49		pH Units	1	BFJ0158	10/07/22	10/09/22	EPA 9045D	

Summit Scientific

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

Project: Noble - Gutttersen State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

BG05@7'
2210016-10 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Date Sampled: **10/03/22 13:05**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	1.33	0.206	mg/kg dry	1	BFJ0206	10/10/22	10/10/22	EPA 6020B	
Barium	51.7	0.412	"	"	"	"	"	"	
Cadmium	ND	0.206	"	"	"	"	"	"	
Copper	2.98	0.412	"	"	"	"	"	"	
Lead	3.88	0.206	"	"	"	"	"	"	
Nickel	3.41	0.412	"	"	"	"	"	"	
Selenium	0.395	0.268	"	"	"	"	"	"	
Silver	0.0223	0.0206	"	"	"	"	"	"	
Zinc	13.3	0.412	"	"	"	"	"	"	

Hexavalent Chromium by EPA Method 7196

Date Sampled: **10/03/22 13:05**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BFJ0310	10/12/22	10/13/22	EPA 7196A	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **10/03/22 13:05**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	97.1		%	1	BFJ0161	10/07/22	10/10/22	Calculation	

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

Date Sampled: **10/03/22 13:05**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
pH	7.48		pH Units	1	BFJ0158	10/07/22	10/09/22	EPA 9045D	

Summit Scientific

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

Project: Noble - Gutttersen State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

BH01@2-3'
2210016-11 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/03/22 09:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BFJ0063	10/04/22	10/04/22	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: **10/03/22 09:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		113 %	50-150		"	"	"	"	
Surrogate: Toluene-d8		97.1 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		94.1 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/03/22 09:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BFJ0067	10/04/22	10/05/22	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **10/03/22 09:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		94.6 %	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 - Gutttersen State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

BH01@2-3'
2210016-11 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **10/03/22 09:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BFJ0050	10/04/22	10/04/22	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: **10/03/22 09:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		78.4 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		61.7 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **10/03/22 09:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	0.0100	mg/L	1	BFJ0127	10/06/22	10/09/22	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **10/03/22 09:00**

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

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



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

Project: Noble - Gutttersen State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

BH01@2-3'
2210016-11 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Arsenic	1.18	0.209	mg/kg dry	1	BFJ0206	10/10/22	10/10/22	EPA 6020B
Barium	31.9	0.419	"	"	"	"	"	"
Cadmium	ND	0.209	"	"	"	"	"	"
Copper	3.93	0.419	"	"	"	"	"	"
Lead	4.11	0.209	"	"	"	"	"	"
Nickel	2.77	0.419	"	"	"	"	"	"
Selenium	0.364	0.272	"	"	"	"	"	"
Silver	ND	0.0209	"	"	"	"	"	"
Zinc	14.8	0.419	"	"	"	"	"	"

Hexavalent Chromium by EPA Method 7196

Date Sampled: **10/03/22 09:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BFJ0310	10/12/22	10/13/22	EPA 7196A	

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

Date Sampled: **10/03/22 09:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	84.6	0.0523	mg/L dry	1	BFJ0175	10/07/22	10/10/22	EPA 6020B	
Magnesium	16.8	0.0523	"	"	"	"	"	"	
Sodium	5.38	0.0523	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **10/03/22 09:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.140	0.00100	units	1	BFJ0259	10/11/22	10/11/22	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 - Gutttersen State DD08-11, 13

Project Number: [none]

Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

BH01@2-3'
2210016-11 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **10/03/22 09:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	95.5		%	1	BFJ0161	10/07/22	10/10/22	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **10/03/22 09:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.617	0.0100	mmhos/cm	1	BFJ0185	10/07/22	10/12/22	EPA 120.1	

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

Date Sampled: **10/03/22 09:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.08		pH Units	1	BFJ0184	10/07/22	10/13/22	EPA 9045D	

Summit Scientific

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

Project: Noble - Gutttersen State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

BH01@7-8'
2210016-12 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/03/22 09:20**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BFJ0063	10/04/22	10/04/22	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: **10/03/22 09:20**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		109 %	50-150		"	"	"	"	
Surrogate: Toluene-d8		99.8 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		89.6 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/03/22 09:20**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BFJ0067	10/04/22	10/05/22	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **10/03/22 09:20**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		94.5 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

Summit Scientific

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

Project: Noble - Gutttersen State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

BH01@7-8'
2210016-12 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **10/03/22 09:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BFJ0050	10/04/22	10/04/22	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: **10/03/22 09:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		80.5 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		63.5 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **10/03/22 09:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	0.0100	mg/L	1	BFJ0127	10/06/22	10/09/22	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **10/03/22 09:20**

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 - Gutttersen State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

BH01@7-8'
2210016-12 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Arsenic	4.59	0.234	mg/kg dry	1	BFJ0206	10/10/22	10/10/22	EPA 6020B
Barium	50.7	0.469	"	"	"	"	"	"
Cadmium	ND	0.234	"	"	"	"	"	"
Copper	11.0	0.469	"	"	"	"	"	"
Lead	10.3	0.234	"	"	"	"	"	"
Nickel	9.36	0.469	"	"	"	"	"	"
Selenium	1.04	0.305	"	"	"	"	"	"
Silver	0.0249	0.0234	"	"	"	"	"	"
Zinc	45.7	0.469	"	"	"	"	"	"

Hexavalent Chromium by EPA Method 7196

Date Sampled: **10/03/22 09:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BFJ0310	10/12/22	10/13/22	EPA 7196A	

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

Date Sampled: **10/03/22 09:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	18.6	0.0586	mg/L dry	1	BFJ0175	10/07/22	10/10/22	EPA 6020B	
Magnesium	8.37	0.0586	"	"	"	"	"	"	
Sodium	6.49	0.0586	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **10/03/22 09:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.314	0.00100	units	1	BFJ0259	10/11/22	10/11/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **10/03/22 09:20**

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 - Gutttersen State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

BH01@7-8'
2210016-12 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

% Solids	85.3	%	1	BFJ0161	10/07/22	10/10/22	Calculation
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Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **10/03/22 09:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.181	0.0100	mmhos/cm	1	BFJ0185	10/07/22	10/12/22	EPA 120.1	

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

Date Sampled: **10/03/22 09:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.68		pH Units	1	BFJ0184	10/07/22	10/13/22	EPA 9045D	

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Project: Noble - Gutttersen State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

BH01@14-15'
2210016-13 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/03/22 09:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BFJ0063	10/04/22	10/04/22	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: **10/03/22 09:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		129 %	50-150		"	"	"	"	
Surrogate: Toluene-d8		98.8 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		103 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/03/22 09:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BFJ0067	10/04/22	10/05/22	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **10/03/22 09:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		95.4 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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

Project: Noble - Gutttersen State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

BH01@14-15'
2210016-13 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **10/03/22 09:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BFJ0050	10/04/22	10/04/22	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: **10/03/22 09:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		67.1 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		49.3 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **10/03/22 09:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.183	0.0100	mg/L	1	BFJ0127	10/06/22	10/09/22	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **10/03/22 09:30**

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

Project: Noble - Gutttersen State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

BH01@14-15'
2210016-13 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Arsenic	4.52	0.237	mg/kg dry	1	BFJ0206	10/10/22	10/10/22	EPA 6020B
Barium	13.4	0.474	"	"	"	"	"	"
Cadmium	0.534	0.237	"	"	"	"	"	"
Copper	19.6	0.474	"	"	"	"	"	"
Lead	12.8	0.237	"	"	"	"	"	"
Nickel	27.4	0.474	"	"	"	"	"	"
Selenium	1.13	0.308	"	"	"	"	"	"
Silver	0.0458	0.0237	"	"	"	"	"	"
Zinc	126	0.474	"	"	"	"	"	"

Hexavalent Chromium by EPA Method 7196

Date Sampled: **10/03/22 09:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BFJ0310	10/12/22	10/13/22	EPA 7196A	

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

Date Sampled: **10/03/22 09:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	257	0.0593	mg/L dry	1	BFJ0175	10/07/22	10/10/22	EPA 6020B	
Magnesium	142	0.0593	"	"	"	"	"	"	
Sodium	271	0.0593	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **10/03/22 09:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	3.37	0.00100	units	1	BFJ0259	10/11/22	10/11/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **10/03/22 09:30**

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

Project: Noble - Gutttersen State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

BH01@14-15'
2210016-13 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

% Solids	84.3	%	1	BFJ0161	10/07/22	10/10/22	Calculation
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Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **10/03/22 09:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	2.54	0.0100	mmhos/cm	1	BFJ0185	10/07/22	10/12/22	EPA 120.1	

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

Date Sampled: **10/03/22 09:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.31		pH Units	1	BFJ0184	10/07/22	10/13/22	EPA 9045D	

Summit Scientific

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

Project: Noble - Gutttersen State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

BH02@2-3'
2210016-14 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/03/22 09:50**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BFJ0063	10/04/22	10/04/22	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: **10/03/22 09:50**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		111 %	50-150		"	"	"	"	
Surrogate: Toluene-d8		98.2 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		96.2 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/03/22 09:50**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BFJ0067	10/04/22	10/05/22	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **10/03/22 09:50**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		92.4 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

Summit Scientific

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Project: Noble - Gutttersen State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

BH02@2-3'
2210016-14 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **10/03/22 09:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BFJ0050	10/04/22	10/04/22	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: **10/03/22 09:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		74.5 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		64.5 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **10/03/22 09:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	0.0100	mg/L	1	BFJ0127	10/06/22	10/09/22	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **10/03/22 09:50**

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 - Gutttersen State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

BH02@2-3'
2210016-14 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Arsenic	1.00	0.225	mg/kg dry	1	BFJ0206	10/10/22	10/10/22	EPA 6020B
Barium	46.7	0.449	"	"	"	"	"	"
Cadmium	ND	0.225	"	"	"	"	"	"
Copper	3.40	0.449	"	"	"	"	"	"
Lead	4.16	0.225	"	"	"	"	"	"
Nickel	3.52	0.449	"	"	"	"	"	"
Selenium	0.360	0.292	"	"	"	"	"	"
Silver	ND	0.0225	"	"	"	"	"	"
Zinc	15.4	0.449	"	"	"	"	"	"

Hexavalent Chromium by EPA Method 7196

Date Sampled: **10/03/22 09:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BFJ0310	10/12/22	10/13/22	EPA 7196A	

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

Date Sampled: **10/03/22 09:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	12.6	0.0562	mg/L dry	1	BFJ0175	10/07/22	10/10/22	EPA 6020B	
Magnesium	4.83	0.0562	"	"	"	"	"	"	
Sodium	1.06	0.0562	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **10/03/22 09:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.0644	0.00100	units	1	BFJ0259	10/11/22	10/11/22	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 - Gutttersen State DD08-11, 13

Project Number: [none]

Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

BH02@2-3'
2210016-14 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **10/03/22 09:50**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
% Solids	89.0			%	1	BFJ0161	10/07/22	10/10/22	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **10/03/22 09:50**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Specific Conductance (EC)	0.142	0.0100		mmhos/cm	1	BFJ0185	10/07/22	10/12/22	EPA 120.1	

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

Date Sampled: **10/03/22 09:50**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
pH	6.86			pH Units	1	BFJ0184	10/07/22	10/13/22	EPA 9045D	

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Broomfield CO, 80020

Project: Noble - Gutttersen State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

BH02@7-8'
2210016-15 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/03/22 10:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BFJ0063	10/04/22	10/04/22	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: **10/03/22 10:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		132 %	50-150		"	"	"	"	
Surrogate: Toluene-d8		99.2 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		108 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/03/22 10:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BFJ0067	10/04/22	10/05/22	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **10/03/22 10:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		86.9 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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Project: Noble - Gutttersen State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

BH02@7-8'
2210016-15 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **10/03/22 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BFJ0050	10/04/22	10/04/22	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: **10/03/22 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		51.3 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		49.7 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **10/03/22 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	0.0100	mg/L	1	BFJ0127	10/06/22	10/09/22	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **10/03/22 10:00**

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

Project: Noble - Gutttersen State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

BH02@7-8'
2210016-15 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Arsenic	1.60	0.223	mg/kg dry	1	BFJ0206	10/10/22	10/10/22	EPA 6020B
Barium	43.7	0.447	"	"	"	"	"	"
Cadmium	ND	0.223	"	"	"	"	"	"
Copper	4.78	0.447	"	"	"	"	"	"
Lead	4.33	0.223	"	"	"	"	"	"
Nickel	4.14	0.447	"	"	"	"	"	"
Selenium	0.466	0.290	"	"	"	"	"	"
Silver	ND	0.0223	"	"	"	"	"	"
Zinc	16.6	0.447	"	"	"	"	"	"

Hexavalent Chromium by EPA Method 7196

Date Sampled: **10/03/22 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BFJ0310	10/12/22	10/13/22	EPA 7196A	

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

Date Sampled: **10/03/22 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	51.2	0.0558	mg/L dry	1	BFJ0175	10/07/22	10/10/22	EPA 6020B	
Magnesium	19.3	0.0558	"	"	"	"	"	"	
Sodium	56.3	0.0558	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **10/03/22 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	1.70	0.00100	units	1	BFJ0259	10/11/22	10/11/22	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 - Gutttersen State DD08-11, 13

Project Number: [none]

Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

BH02@7-8'
2210016-15 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **10/03/22 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	89.6		%	1	BFJ0161	10/07/22	10/10/22	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **10/03/22 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.625	0.0100	mmhos/cm	1	BFJ0185	10/07/22	10/12/22	EPA 120.1	

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

Date Sampled: **10/03/22 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.53		pH Units	1	BFJ0184	10/07/22	10/13/22	EPA 9045D	

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Project: Noble - Gutttersen State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

BH02@14-15'
2210016-16 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

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

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BFJ0063	10/04/22	10/04/22	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: **10/03/22 10:10**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		122 %	50-150		"	"	"	"	
Surrogate: Toluene-d8		96.6 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.4 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

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

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BFJ0067	10/04/22	10/05/22	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

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

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		90.9 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

Summit Scientific

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Project: Noble - Gutttersen State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

BH02@14-15'
2210016-16 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BFJ0050	10/04/22	10/04/22	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: **10/03/22 10:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		81.1 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		67.6 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	0.0100	mg/L	1	BFJ0127	10/06/22	10/09/22	EPA 6020B	

Total Metals by EPA 6020B

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

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

Project: Noble - Gutttersen State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

BH02@14-15'
2210016-16 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Arsenic	4.34	0.231	mg/kg dry	1	BFJ0206	10/10/22	10/10/22	EPA 6020B
Barium	371	0.463	"	"	"	"	"	"
Cadmium	0.277	0.231	"	"	"	"	"	"
Copper	10.7	0.463	"	"	"	"	"	"
Lead	8.65	0.231	"	"	"	"	"	"
Nickel	9.87	0.463	"	"	"	"	"	"
Selenium	0.782	0.301	"	"	"	"	"	"
Silver	ND	0.0231	"	"	"	"	"	"
Zinc	41.3	0.463	"	"	"	"	"	"

Hexavalent Chromium by EPA Method 7196

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BFJ0310	10/12/22	10/13/22	EPA 7196A	

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

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	23.1	0.0579	mg/L dry	1	BFJ0175	10/07/22	10/10/22	EPA 6020B	
Magnesium	10.6	0.0579	"	"	"	"	"	"	
Sodium	74.6	0.0579	"	"	"	"	"	"	

Calculated Analysis

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	3.22	0.00100	units	1	BFJ0259	10/11/22	10/11/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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6855 W. 119th Ave.
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Project: Noble - Gutttersen State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

BH02@14-15'
2210016-16 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

% Solids	86.4	%	1	BFJ0161	10/07/22	10/10/22	Calculation
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Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.448	0.0100	mmhos/cm	1	BFJ0185	10/07/22	10/12/22	EPA 120.1	

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

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.87		pH Units	1	BFJ0184	10/07/22	10/13/22	EPA 9045D	

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6855 W. 119th Ave.
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Project: Noble - Gutttersen State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

BH03@2-3'
2210016-17 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/03/22 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BFJ0063	10/04/22	10/04/22	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: **10/03/22 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		136 %	50-150		"	"	"	"	
Surrogate: Toluene-d8		101 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		103 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/03/22 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BFJ0067	10/04/22	10/05/22	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **10/03/22 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		93.9 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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6855 W. 119th Ave.
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Project: Noble - Gutterson State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

BH03@2-3'
2210016-17 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **10/03/22 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BFJ0050	10/04/22	10/04/22	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: **10/03/22 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		67.7 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		54.2 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **10/03/22 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	0.0100	mg/L	1	BFJ0127	10/06/22	10/09/22	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **10/03/22 11:30**

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

Project: Noble - Gutttersen State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

BH03@2-3'
2210016-17 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Arsenic	1.24	0.216	mg/kg dry	1	BFJ0206	10/10/22	10/10/22	EPA 6020B
Barium	58.1	0.433	"	"	"	"	"	"
Cadmium	ND	0.216	"	"	"	"	"	"
Copper	4.08	0.433	"	"	"	"	"	"
Lead	4.42	0.216	"	"	"	"	"	"
Nickel	4.02	0.433	"	"	"	"	"	"
Selenium	0.466	0.281	"	"	"	"	"	"
Silver	0.0261	0.0216	"	"	"	"	"	"
Zinc	18.2	0.433	"	"	"	"	"	"

Hexavalent Chromium by EPA Method 7196

Date Sampled: **10/03/22 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BFJ0310	10/12/22	10/13/22	EPA 7196A	

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

Date Sampled: **10/03/22 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	8.66	0.0541	mg/L dry	1	BFJ0175	10/07/22	10/10/22	EPA 6020B	
Magnesium	4.72	0.0541	"	"	"	"	"	"	
Sodium	1.99	0.0541	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **10/03/22 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.135	0.00100	units	1	BFJ0259	10/11/22	10/11/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **10/03/22 11:30**

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

Project: Noble - Gutttersen State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

BH03@2-3'
2210016-17 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

% Solids	92.4	%	1	BFJ0161	10/07/22	10/10/22	Calculation
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Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **10/03/22 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.107	0.0100	mmhos/cm	1	BFJ0185	10/07/22	10/12/22	EPA 120.1	

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

Date Sampled: **10/03/22 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	6.71		pH Units	1	BFJ0184	10/07/22	10/13/22	EPA 9045D	

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Project: Noble - Gutttersen State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

BH03@7-8'
2210016-18 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/03/22 11:40**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BFJ0063	10/04/22	10/04/22	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: **10/03/22 11:40**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		117 %	50-150		"	"	"	"	
Surrogate: Toluene-d8		99.4 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		97.5 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/03/22 11:40**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BFJ0067	10/04/22	10/05/22	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **10/03/22 11:40**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		94.1 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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Project: Noble - Gutttersen State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

BH03@7-8'
2210016-18 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **10/03/22 11:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BFJ0050	10/04/22	10/05/22	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: **10/03/22 11:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		61.8 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		43.1 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **10/03/22 11:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	0.0100	mg/L	1	BFJ0127	10/06/22	10/09/22	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **10/03/22 11:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Project: Noble - Gutttersen State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

BH03@7-8'
2210016-18 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Arsenic	3.97	0.236	mg/kg dry	1	BFJ0206	10/10/22	10/10/22	EPA 6020B
Barium	222	0.473	"	"	"	"	"	"
Cadmium	0.238	0.236	"	"	"	"	"	"
Copper	12.8	0.473	"	"	"	"	"	"
Lead	13.8	0.236	"	"	"	"	"	"
Nickel	16.0	0.473	"	"	"	"	"	"
Selenium	0.900	0.307	"	"	"	"	"	"
Silver	0.0254	0.0236	"	"	"	"	"	"
Zinc	49.6	0.473	"	"	"	"	"	"

Hexavalent Chromium by EPA Method 7196

Date Sampled: **10/03/22 11:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BFJ0310	10/12/22	10/13/22	EPA 7196A	

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

Date Sampled: **10/03/22 11:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	24.2	0.0591	mg/L dry	1	BFJ0175	10/07/22	10/10/22	EPA 6020B	
Magnesium	9.36	0.0591	"	"	"	"	"	"	
Sodium	37.3	0.0591	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **10/03/22 11:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	1.63	0.00100	units	1	BFJ0259	10/11/22	10/11/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **10/03/22 11:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Project: Noble - Gutttersen State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

BH03@7-8'
2210016-18 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

% Solids	84.6	%	1	BFJ0161	10/07/22	10/10/22	Calculation
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Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **10/03/22 11:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.299	0.0100	mmhos/cm	1	BFJ0185	10/07/22	10/12/22	EPA 120.1	

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

Date Sampled: **10/03/22 11:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.68		pH Units	1	BFJ0184	10/07/22	10/13/22	EPA 9045D	

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Project: Noble - Gutttersen State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

BH03@14-15'
2210016-19 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/03/22 11:50**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BFJ0063	10/04/22	10/04/22	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: **10/03/22 11:50**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		118 %	50-150		"	"	"	"	
Surrogate: Toluene-d8		98.6 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.0 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/03/22 11:50**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BFJ0067	10/04/22	10/05/22	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **10/03/22 11:50**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		83.2 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

Summit Scientific

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Project: Noble - Gutttersen State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

BH03@14-15'
2210016-19 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **10/03/22 11:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BFJ0050	10/04/22	10/05/22	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: **10/03/22 11:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		67.9 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		52.5 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **10/03/22 11:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	0.0100	mg/L	1	BFJ0127	10/06/22	10/09/22	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **10/03/22 11:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Project: Noble - Gutttersen State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

BH03@14-15'
2210016-19 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Arsenic	4.26	0.238	mg/kg dry	1	BFJ0206	10/10/22	10/10/22	EPA 6020B
Barium	11.2	0.477	"	"	"	"	"	"
Cadmium	0.512	0.238	"	"	"	"	"	"
Copper	17.5	0.477	"	"	"	"	"	"
Lead	13.9	0.238	"	"	"	"	"	"
Nickel	16.8	0.477	"	"	"	"	"	"
Selenium	1.41	0.310	"	"	"	"	"	"
Silver	0.0352	0.0238	"	"	"	"	"	"
Zinc	95.3	0.477	"	"	"	"	"	"

Hexavalent Chromium by EPA Method 7196

Date Sampled: **10/03/22 11:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BFJ0310	10/12/22	10/13/22	EPA 7196A	

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

Date Sampled: **10/03/22 11:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	10.2	0.0596	mg/L dry	1	BFJ0175	10/07/22	10/10/22	EPA 6020B	
Magnesium	6.66	0.0596	"	"	"	"	"	"	
Sodium	108	0.0596	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **10/03/22 11:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	6.46	0.00100	units	1	BFJ0259	10/11/22	10/11/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **10/03/22 11:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Project: Noble - Gutterson State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

BH03@14-15'
2210016-19 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

% Solids	83.9	%	1	BFJ0161	10/07/22	10/10/22	Calculation
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Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **10/03/22 11:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.460	0.0100	mmhos/cm	1	BFJ0185	10/07/22	10/12/22	EPA 120.1	

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

Date Sampled: **10/03/22 11:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.84		pH Units	1	BFJ0184	10/07/22	10/13/22	EPA 9045D	

Summit Scientific

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Broomfield CO, 80020

Project: Noble - Gutttersen State DD08-11, 13

Project Number: [none]

Project Manager: Jacob Whritenour

Reported:

10/13/22 13:28

BH04@2-3'
2210016-20 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/03/22 10:50**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BFJ0063	10/04/22	10/04/22	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: **10/03/22 10:50**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		126 %	50-150		"	"	"	"	
Surrogate: Toluene-d8		98.6 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		103 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/03/22 10:50**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BFJ0067	10/04/22	10/05/22	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **10/03/22 10:50**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		68.9 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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Project: Noble - Gutttersen State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

BH04@2-3'
2210016-20 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **10/03/22 10:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BFJ0050	10/04/22	10/05/22	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: **10/03/22 10:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		72.2 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		64.4 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **10/03/22 10:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	0.0100	mg/L	1	BFJ0127	10/06/22	10/09/22	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **10/03/22 10:50**

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 - Gutttersen State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

BH04@2-3'
2210016-20 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Arsenic	0.971	0.220	mg/kg dry	1	BFJ0206	10/10/22	10/10/22	EPA 6020B
Barium	83.7	0.439	"	"	"	"	"	"
Cadmium	ND	0.220	"	"	"	"	"	"
Copper	6.74	0.439	"	"	"	"	"	"
Lead	5.40	0.220	"	"	"	"	"	"
Nickel	5.58	0.439	"	"	"	"	"	"
Selenium	0.572	0.285	"	"	"	"	"	"
Silver	0.0303	0.0220	"	"	"	"	"	"
Zinc	27.7	0.439	"	"	"	"	"	"

Hexavalent Chromium by EPA Method 7196

Date Sampled: **10/03/22 10:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BFJ0310	10/12/22	10/13/22	EPA 7196A	

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

Date Sampled: **10/03/22 10:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	12.2	0.0549	mg/L dry	1	BFJ0175	10/07/22	10/10/22	EPA 6020B	
Magnesium	4.86	0.0549	"	"	"	"	"	"	
Sodium	21.4	0.0549	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **10/03/22 10:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	1.31	0.00100	units	1	BFJ0259	10/11/22	10/11/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **10/03/22 10:50**

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 - Gutttersen State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

BH04@2-3'
2210016-20 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

% Solids	91.1	%	1	BFJ0161	10/07/22	10/10/22	Calculation
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Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **10/03/22 10:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.194	0.0100	mmhos/cm	1	BFJ0185	10/07/22	10/12/22	EPA 120.1	

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

Date Sampled: **10/03/22 10:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.26		pH Units	1	BFJ0184	10/07/22	10/13/22	EPA 9045D	

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Broomfield CO, 80020

Project: Noble - Gutttersen State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

BH04@7-8'
2210016-21 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/03/22 11:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BFJ0063	10/04/22	10/04/22	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: **10/03/22 11:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		129 %	50-150		"	"	"	"	
Surrogate: Toluene-d8		101 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		101 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/03/22 11:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BFJ0067	10/04/22	10/05/22	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **10/03/22 11:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		57.1 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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Project: Noble - Gutttersen State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

BH04@7-8'
2210016-21 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **10/03/22 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BFJ0050	10/04/22	10/05/22	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: **10/03/22 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		44.9 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		44.0 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **10/03/22 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	0.0100	mg/L	1	BFJ0127	10/06/22	10/09/22	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **10/03/22 11:00**

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

Project: Noble - Gutttersen State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

BH04@7-8'
2210016-21 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Arsenic	3.35	0.233	mg/kg dry	1	BFJ0164	10/07/22	10/09/22	EPA 6020B
Barium	36.3	0.466	"	"	"	"	"	"
Cadmium	0.239	0.233	"	"	"	"	"	"
Copper	10.8	0.466	"	"	"	"	"	"
Lead	10.3	0.233	"	"	"	"	"	"
Nickel	8.86	0.466	"	"	"	"	"	"
Selenium	0.943	0.303	"	"	"	"	"	"
Silver	0.0268	0.0233	"	"	"	"	"	"
Zinc	47.4	0.466	"	"	"	"	"	"

Hexavalent Chromium by EPA Method 7196

Date Sampled: **10/03/22 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BFJ0309	10/12/22	10/13/22	EPA 7196A	

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

Date Sampled: **10/03/22 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	20.9	0.0582	mg/L dry	1	BFJ0175	10/07/22	10/10/22	EPA 6020B	
Magnesium	11.2	0.0582	"	"	"	"	"	"	
Sodium	60.2	0.0582	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **10/03/22 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	2.64	0.00100	units	1	BFJ0259	10/11/22	10/11/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **10/03/22 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Tasman Geosciences
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Project: Noble - Gutttersen State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

BH04@7-8'
2210016-21 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

% Solids	85.9	%	1	BFJ0161	10/07/22	10/10/22	Calculation
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Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **10/03/22 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.421	0.0100	mmhos/cm	1	BFJ0185	10/07/22	10/12/22	EPA 120.1	

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

Date Sampled: **10/03/22 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.65		pH Units	1	BFJ0184	10/07/22	10/13/22	EPA 9045D	

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Broomfield CO, 80020

Project: Noble - Gutttersen State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

BH04@14-15'
2210016-22 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/03/22 11:10**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BFJ0063	10/04/22	10/05/22	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: **10/03/22 11:10**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		126 %	50-150		"	"	"	"	
Surrogate: Toluene-d8		98.1 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		100 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/03/22 11:10**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BFJ0067	10/04/22	10/05/22	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **10/03/22 11:10**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		54.5 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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Project: Noble - Gutttersen State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

BH04@14-15'
2210016-22 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **10/03/22 11:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BFJ0050	10/04/22	10/05/22	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: **10/03/22 11:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		60.6 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		48.1 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **10/03/22 11:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	0.0100	mg/L	1	BFJ0127	10/06/22	10/09/22	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **10/03/22 11:10**

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

Project: Noble - Gutttersen State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

BH04@14-15'
2210016-22 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Arsenic	0.838	0.238	mg/kg dry	1	BFJ0164	10/07/22	10/09/22	EPA 6020B
Barium	16.5	0.475	"	"	"	"	"	"
Cadmium	0.483	0.238	"	"	"	"	"	"
Copper	16.5	0.475	"	"	"	"	"	"
Lead	7.51	0.238	"	"	"	"	"	"
Nickel	29.8	0.475	"	"	"	"	"	"
Selenium	1.35	0.309	"	"	"	"	"	"
Silver	0.0417	0.0238	"	"	"	"	"	"
Zinc	97.8	0.475	"	"	"	"	"	"

Hexavalent Chromium by EPA Method 7196

Date Sampled: **10/03/22 11:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BFJ0309	10/12/22	10/13/22	EPA 7196A	

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

Date Sampled: **10/03/22 11:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	403	0.0594	mg/L dry	1	BFJ0175	10/07/22	10/10/22	EPA 6020B	
Magnesium	232	0.0594	"	"	"	"	"	"	
Sodium	318	0.0594	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **10/03/22 11:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	3.12	0.00100	units	1	BFJ0259	10/11/22	10/11/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **10/03/22 11:10**

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

Project: Noble - Gutttersen State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

BH04@14-15'
2210016-22 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

% Solids	84.1	%	1	BFJ0161	10/07/22	10/10/22	Calculation
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Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **10/03/22 11:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	3.41	0.0100	mmhos/cm	1	BFJ0185	10/07/22	10/12/22	EPA 120.1	

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

Date Sampled: **10/03/22 11:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.30		pH Units	1	BFJ0184	10/07/22	10/13/22	EPA 9045D	

Summit Scientific

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

Project: Noble - Gutttersen State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

BH05@2-3'
2210016-23 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

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

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BFJ0063	10/04/22	10/05/22	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: **10/03/22 10:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		116 %	50-150		"	"	"	"	
Surrogate: Toluene-d8		97.9 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		96.2 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

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

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BFJ0067	10/04/22	10/05/22	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

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

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		85.4 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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

Project: Noble - Gutttersen State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

BH05@2-3'
2210016-23 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BFJ0050	10/04/22	10/05/22	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: **10/03/22 10:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		55.8 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		47.8 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	0.0100	mg/L	1	BFJ0127	10/06/22	10/09/22	EPA 6020B	

Total Metals by EPA 6020B

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

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

Project: Noble - Gutttersen State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

BH05@2-3'
2210016-23 (Soil)

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Total Metals by EPA 6020B

Arsenic	1.53	0.226	mg/kg dry	1	BFJ0164	10/07/22	10/09/22	EPA 6020B
Barium	65.5	0.452	"	"	"	"	"	"
Cadmium	ND	0.226	"	"	"	"	"	"
Copper	3.94	0.452	"	"	"	"	"	"
Lead	4.33	0.226	"	"	"	"	"	"
Nickel	4.55	0.452	"	"	"	"	"	"
Selenium	0.474	0.294	"	"	"	"	"	"
Silver	0.0288	0.0226	"	"	"	"	"	"
Zinc	22.1	0.452	"	"	"	"	"	"

Hexavalent Chromium by EPA Method 7196

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BFJ0309	10/12/22	10/13/22	EPA 7196A	

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

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	11.3	0.0565	mg/L dry	1	BFJ0175	10/07/22	10/10/22	EPA 6020B	
Magnesium	4.76	0.0565	"	"	"	"	"	"	
Sodium	1.44	0.0565	"	"	"	"	"	"	

Calculated Analysis

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.0912	0.00100	units	1	BFJ0259	10/11/22	10/11/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

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

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

Project: Noble - Gutttersen State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

BH05@2-3'
2210016-23 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

% Solids	88.4	%	1	BFJ0161	10/07/22	10/10/22	Calculation
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Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.121	0.0100	mmhos/cm	1	BFJ0185	10/07/22	10/12/22	EPA 120.1	

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

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.45		pH Units	1	BFJ0184	10/07/22	10/13/22	EPA 9045D	

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Project: Noble - Gutttersen State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

BH05@7-8'
2210016-24 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

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

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BFJ0063	10/04/22	10/05/22	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: **10/03/22 10:25**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		130 %	50-150		"	"	"	"	
Surrogate: Toluene-d8		97.0 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		99.4 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

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

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BFJ0067	10/04/22	10/05/22	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

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

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		70.0 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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

Project: Noble - Gutttersen State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

BH05@7-8'
2210016-24 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BFJ0050	10/04/22	10/05/22	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: **10/03/22 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		48.3 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		46.7 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	0.0100	mg/L	1	BFJ0127	10/06/22	10/09/22	EPA 6020B	

Total Metals by EPA 6020B

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

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

Project: Noble - Gutttersen State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

BH05@7-8'
2210016-24 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Arsenic	5.65	0.233	mg/kg dry	1	BFJ0164	10/07/22	10/09/22	EPA 6020B
Barium	43.5	0.465	"	"	"	"	"	"
Cadmium	0.338	0.233	"	"	"	"	"	"
Copper	11.7	0.465	"	"	"	"	"	"
Lead	9.29	0.233	"	"	"	"	"	"
Nickel	10.3	0.465	"	"	"	"	"	"
Selenium	0.886	0.303	"	"	"	"	"	"
Silver	0.0326	0.0233	"	"	"	"	"	"
Zinc	41.3	0.465	"	"	"	"	"	"

Hexavalent Chromium by EPA Method 7196

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BFJ0309	10/12/22	10/13/22	EPA 7196A	

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

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	23.8	0.0582	mg/L dry	1	BFJ0175	10/07/22	10/10/22	EPA 6020B	
Magnesium	11.4	0.0582	"	"	"	"	"	"	
Sodium	17.8	0.0582	"	"	"	"	"	"	

Calculated Analysis

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.751	0.00100	units	1	BFJ0259	10/11/22	10/11/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

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

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 - Gutttersen State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

BH05@7-8'
2210016-24 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

% Solids	85.9	%	1	BFJ0161	10/07/22	10/10/22	Calculation
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Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.263	0.0100	mmhos/cm	1	BFJ0185	10/07/22	10/12/22	EPA 120.1	

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

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.14		pH Units	1	BFJ0184	10/07/22	10/13/22	EPA 9045D	

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Project: Noble - Gutttersen State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

BH05@12-13'
2210016-25 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

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

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BFJ0063	10/04/22	10/05/22	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: **10/03/22 10:35**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		129 %	50-150		"	"	"	"	
Surrogate: Toluene-d8		97.6 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		95.8 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

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

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BFJ0067	10/04/22	10/05/22	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

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

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		67.5 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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6855 W. 119th Ave.
Broomfield CO, 80020

Project: Noble - Gutterson State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

BH05@12-13'
2210016-25 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BFJ0050	10/04/22	10/05/22	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: **10/03/22 10:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		71.1 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		52.9 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	0.0100	mg/L	1	BFJ0127	10/06/22	10/09/22	EPA 6020B	

Total Metals by EPA 6020B

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

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

Project: Noble - Gutttersen State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

BH05@12-13'
2210016-25 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Arsenic	8.71	0.241	mg/kg dry	1	BFJ0164	10/07/22	10/09/22	EPA 6020B
Barium	22.9	0.482	"	"	"	"	"	"
Cadmium	ND	0.241	"	"	"	"	"	"
Copper	23.0	0.482	"	"	"	"	"	"
Lead	12.0	0.241	"	"	"	"	"	"
Nickel	15.8	0.482	"	"	"	"	"	"
Selenium	1.30	0.313	"	"	"	"	"	"
Silver	0.0852	0.0241	"	"	"	"	"	"
Zinc	94.7	0.482	"	"	"	"	"	"

Hexavalent Chromium by EPA Method 7196

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BFJ0309	10/12/22	10/13/22	EPA 7196A	

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

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	35.1	0.0602	mg/L dry	1	BFJ0175	10/07/22	10/10/22	EPA 6020B	
Magnesium	19.8	0.0602	"	"	"	"	"	"	
Sodium	103	0.0602	"	"	"	"	"	"	

Calculated Analysis

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	3.45	0.00100	units	1	BFJ0259	10/11/22	10/11/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

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

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 - Gutttersen State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

BH05@12-13'
2210016-25 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

% Solids	83.1	%	1	BFJ0161	10/07/22	10/10/22	Calculation
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Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.128	0.0100	mmhos/cm	1	BFJ0185	10/07/22	10/12/22	EPA 120.1	

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

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.75		pH Units	1	BFJ0184	10/07/22	10/13/22	EPA 9045D	

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

Project: Noble - Gutttersen State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch BFJ0063 - EPA 5030 Soil MS

Blank (BFJ0063-BLK1)

Prepared & Analyzed: 10/04/22

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	0.0490		"	0.0400		122	50-150			
Surrogate: Toluene-d8	0.0394		"	0.0400		98.6	50-150			
Surrogate: 4-Bromofluorobenzene	0.0390		"	0.0400		97.6	50-150			

LCS (BFJ0063-BS1)

Prepared & Analyzed: 10/04/22

Benzene	0.0759	0.0020	mg/kg	0.0750		101	70-130			
Toluene	0.0826	0.0050	"	0.0750		110	70-130			
Ethylbenzene	0.0861	0.0050	"	0.0750		115	70-130			
m,p-Xylene	0.175	0.010	"	0.150		116	70-130			
o-Xylene	0.0806	0.0050	"	0.0750		107	70-130			
1,2,4-Trimethylbenzene	0.0837	0.0050	"	0.0750		112	70-130			
1,3,5-Trimethylbenzene	0.0856	0.0050	"	0.0750		114	70-130			
Naphthalene	0.0688	0.0038	"	0.0750		91.8	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0433		"	0.0400		108	50-150			
Surrogate: Toluene-d8	0.0422		"	0.0400		106	50-150			
Surrogate: 4-Bromofluorobenzene	0.0365		"	0.0400		91.2	50-150			

Matrix Spike (BFJ0063-MS1)

Source: 2209612-01

Prepared & Analyzed: 10/04/22

Benzene	0.0713	0.0020	mg/kg	0.0750	ND	95.1	70-130			
Toluene	0.0776	0.0050	"	0.0750	ND	104	70-130			
Ethylbenzene	0.0860	0.0050	"	0.0750	ND	115	70-130			
m,p-Xylene	0.175	0.010	"	0.150	ND	117	70-130			
o-Xylene	0.0804	0.0050	"	0.0750	ND	107	70-130			
1,2,4-Trimethylbenzene	0.0848	0.0050	"	0.0750	ND	113	70-130			
1,3,5-Trimethylbenzene	0.0864	0.0050	"	0.0750	ND	115	70-130			
Naphthalene	0.0766	0.0038	"	0.0750	ND	102	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0399		"	0.0400		99.7	50-150			
Surrogate: Toluene-d8	0.0408		"	0.0400		102	50-150			
Surrogate: 4-Bromofluorobenzene	0.0357		"	0.0400		89.3	50-150			

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Project: Noble - Gutttersen State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

Volatile Organic Compounds by EPA Method 8260B - Quality Control
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Analyte	Reporting			Spike	Source		%REC		RPD	
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

Batch BFJ0063 - EPA 5030 Soil MS

Matrix Spike Dup (BFJ0063-MSD1)		Source: 2209612-01			Prepared & Analyzed: 10/04/22					
Benzene	0.0630	0.0020	mg/kg	0.0750	ND	84.0	70-130	12.4	30	
Toluene	0.0736	0.0050	"	0.0750	ND	98.1	70-130	5.36	30	
Ethylbenzene	0.0906	0.0050	"	0.0750	ND	121	70-130	5.27	30	
m,p-Xylene	0.183	0.010	"	0.150	ND	122	70-130	4.14	30	
o-Xylene	0.0820	0.0050	"	0.0750	ND	109	70-130	1.96	30	
1,2,4-Trimethylbenzene	0.0845	0.0050	"	0.0750	ND	113	70-130	0.354	30	
1,3,5-Trimethylbenzene	0.0883	0.0050	"	0.0750	ND	118	70-130	2.16	30	
Naphthalene	0.0742	0.0038	"	0.0750	ND	98.9	70-130	3.18	30	
<hr/>										
Surrogate: 1,2-Dichloroethane-d4	0.0374		"	0.0400		93.4	50-150			
Surrogate: Toluene-d8	0.0394		"	0.0400		98.6	50-150			
Surrogate: 4-Bromofluorobenzene	0.0358		"	0.0400		89.4	50-150			

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Project: Noble - Gutttersen State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch BFJ0067 - EPA 3550A

Blank (BFJ0067-BLK1)

Prepared: 10/04/22 Analyzed: 10/05/22

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

LCS (BFJ0067-BS1)

Prepared: 10/04/22 Analyzed: 10/05/22

C10-C28 (DRO)	642	50	mg/kg	500	128	70-130
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Matrix Spike (BFJ0067-MS1)

Source: 2209612-01

Prepared: 10/04/22 Analyzed: 10/05/22

C10-C28 (DRO)	697	50	mg/kg	500	48.0	130	70-130
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Matrix Spike Dup (BFJ0067-MSD1)

Source: 2209612-01

Prepared: 10/04/22 Analyzed: 10/05/22

C10-C28 (DRO)	664	50	mg/kg	500	48.0	123	70-130	4.87	20
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6855 W. 119th Ave.
Broomfield CO, 80020

Project: Noble - Gutttersen State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

PAH by EPA Method 8270D SIM - Quality Control

Summit Scientific

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

Batch BFJ0050 - EPA 5030 Soil MS

Blank (BFJ0050-BLK1)

Prepared & Analyzed: 10/04/22

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	0.0241		"	0.0333		72.3	40-150			
Surrogate: Fluoranthene-d10	0.0339		"	0.0333		102	40-150			

LCS (BFJ0050-BS1)

Prepared & Analyzed: 10/04/22

Acenaphthene	0.0327	0.00500	mg/kg	0.0333		98.0	31-137			
Anthracene	0.0396	0.00500	"	0.0333		119	30-120			
Benzo (a) anthracene	0.0366	0.00500	"	0.0333		110	30-120			
Benzo (a) pyrene	0.0358	0.00500	"	0.0333		107	30-120			
Benzo (b) fluoranthene	0.0395	0.00500	"	0.0333		119	30-120			
Benzo (k) fluoranthene	0.0375	0.00500	"	0.0333		112	30-120			
Chrysene	0.0341	0.00500	"	0.0333		102	30-120			
Dibenz (a,h) anthracene	0.0330	0.00500	"	0.0333		98.9	30-120			
Fluoranthene	0.0389	0.00500	"	0.0333		117	30-120			
Fluorene	0.0340	0.00500	"	0.0333		102	30-120			
Indeno (1,2,3-cd) pyrene	0.0374	0.00500	"	0.0333		112	30-120			
Pyrene	0.0349	0.00500	"	0.0333		105	35-142			
1-Methylnaphthalene	0.0263	0.00500	"	0.0333		78.9	35-142			
2-Methylnaphthalene	0.0349	0.00500	"	0.0333		105	35-142			
Surrogate: 2-Methylnaphthalene-d10	0.0376		"	0.0333		113	40-150			
Surrogate: Fluoranthene-d10	0.0265		"	0.0333		79.6	40-150			

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6855 W. 119th Ave.
Broomfield CO, 80020

Project: Noble - Gutttersen State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

PAH by EPA Method 8270D SIM - Quality Control

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

Batch BFJ0050 - EPA 5030 Soil MS

Matrix Spike (BFJ0050-MS1)

Source: 2210016-11

Prepared & Analyzed: 10/04/22

Acenaphthene	0.0180	0.00500	mg/kg	0.0333	ND	53.9	31-137			
Anthracene	0.0188	0.00500	"	0.0333	ND	56.3	30-120			
Benzo (a) anthracene	0.0183	0.00500	"	0.0333	ND	54.9	30-120			
Benzo (a) pyrene	0.0209	0.00500	"	0.0333	ND	62.6	30-120			
Benzo (b) fluoranthene	0.0204	0.00500	"	0.0333	ND	61.3	30-120			
Benzo (k) fluoranthene	0.0210	0.00500	"	0.0333	ND	62.9	30-120			
Chrysene	0.0205	0.00500	"	0.0333	0.00304	52.4	30-120			
Dibenz (a,h) anthracene	0.0179	0.00500	"	0.0333	ND	53.6	30-120			
Fluoranthene	0.0201	0.00500	"	0.0333	ND	60.3	30-120			
Fluorene	0.0171	0.00500	"	0.0333	ND	51.4	30-120			
Indeno (1,2,3-cd) pyrene	0.0210	0.00500	"	0.0333	ND	62.9	30-120			
Pyrene	0.0192	0.00500	"	0.0333	ND	57.5	35-142			
1-Methylnaphthalene	0.0143	0.00500	"	0.0333	ND	43.0	15-130			
2-Methylnaphthalene	0.0169	0.00500	"	0.0333	ND	50.8	15-130			
Surrogate: 2-Methylnaphthalene-d10	0.0179		"	0.0333		53.7	40-150			
Surrogate: Fluoranthene-d10	0.0170		"	0.0333		51.1	40-150			

Matrix Spike Dup (BFJ0050-MSD1)

Source: 2210016-11

Prepared & Analyzed: 10/04/22

Acenaphthene	0.0184	0.00500	mg/kg	0.0333	ND	55.2	31-137	2.55	30	
Anthracene	0.0218	0.00500	"	0.0333	ND	65.4	30-120	15.0	30	
Benzo (a) anthracene	0.0205	0.00500	"	0.0333	ND	61.5	30-120	11.3	30	
Benzo (a) pyrene	0.0234	0.00500	"	0.0333	ND	70.1	30-120	11.4	30	
Benzo (b) fluoranthene	0.0239	0.00500	"	0.0333	ND	71.7	30-120	15.7	30	
Benzo (k) fluoranthene	0.0245	0.00500	"	0.0333	ND	73.6	30-120	15.7	30	
Chrysene	0.0232	0.00500	"	0.0333	0.00304	60.4	30-120	12.3	30	
Dibenz (a,h) anthracene	0.0169	0.00500	"	0.0333	ND	50.6	30-120	5.82	30	
Fluoranthene	0.0214	0.00500	"	0.0333	ND	64.3	30-120	6.42	30	
Fluorene	0.0176	0.00500	"	0.0333	ND	52.8	30-120	2.77	30	
Indeno (1,2,3-cd) pyrene	0.0196	0.00500	"	0.0333	ND	58.8	30-120	6.78	30	
Pyrene	0.0222	0.00500	"	0.0333	ND	66.7	35-142	14.8	30	
1-Methylnaphthalene	0.0179	0.00500	"	0.0333	ND	53.6	15-130	21.9	50	
2-Methylnaphthalene	0.0198	0.00500	"	0.0333	ND	59.3	15-130	15.5	50	
Surrogate: 2-Methylnaphthalene-d10	0.0220		"	0.0333		65.9	40-150			
Surrogate: Fluoranthene-d10	0.0184		"	0.0333		55.1	40-150			

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

Project: Noble - Guttarsen State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

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

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

Batch BFJ0127 - EPA 3050B

Blank (BFJ0127-BLK1)

Prepared: 10/06/22 Analyzed: 10/09/22

Boron ND 0.0100 mg/L

LCS (BFJ0127-BS1)

Prepared: 10/06/22 Analyzed: 10/09/22

Boron 5.38 0.0100 mg/L 5.00 108 80-120

Duplicate (BFJ0127-DUP1)

Source: 2210016-11

Prepared: 10/06/22 Analyzed: 10/09/22

Boron ND 0.0100 mg/L ND 20

Matrix Spike (BFJ0127-MS1)

Source: 2210016-11

Prepared: 10/06/22 Analyzed: 10/09/22

Boron 5.35 0.0100 mg/L 5.00 ND 107 75-125

Matrix Spike Dup (BFJ0127-MSD1)

Source: 2210016-11

Prepared: 10/06/22 Analyzed: 10/09/22

Boron 5.73 0.0100 mg/L 5.00 ND 115 75-125 6.93 25

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6855 W. 119th Ave.
Broomfield CO, 80020

Project: Noble - Gutterson State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

Total Metals by EPA 6020B - Quality Control

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

Batch BFJ0164 - EPA 3050B

Blank (BFJ0164-BLK1)

Prepared: 10/07/22 Analyzed: 10/09/22

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 (BFJ0164-BS1)

Prepared: 10/07/22 Analyzed: 10/09/22

Arsenic	42.1	0.200	mg/kg wet	40.0	105	80-120
Barium	39.1	0.400	"	40.0	97.8	80-120
Cadmium	1.94	0.200	"	2.00	96.8	80-120
Copper	41.9	0.400	"	40.0	105	80-120
Lead	18.8	0.200	"	20.0	93.8	80-120
Nickel	41.1	0.400	"	40.0	103	80-120
Selenium	4.08	0.260	"	4.00	102	80-120
Silver	1.90	0.0200	"	2.00	95.2	80-120
Zinc	42.4	0.400	"	40.0	106	80-120

Duplicate (BFJ0164-DUP1)

Source: 2210016-21

Prepared: 10/07/22 Analyzed: 10/09/22

Arsenic	3.18	0.233	mg/kg dry	3.35	5.26	20
Barium	34.3	0.466	"	36.3	5.84	20
Cadmium	0.219	0.233	"	0.239	9.03	20
Copper	10.5	0.466	"	10.8	3.11	20
Lead	9.81	0.233	"	10.3	5.19	20
Nickel	8.43	0.466	"	8.86	4.96	20
Selenium	1.06	0.303	"	0.943	11.7	20
Silver	0.0255	0.0233	"	0.0268	4.79	20
Zinc	45.8	0.466	"	47.4	3.49	20

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6855 W. 119th Ave.
Broomfield CO, 80020

Project: Noble - Gutttersen State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

Total Metals by EPA 6020B - Quality Control
Summit Scientific

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

Batch BFJ0164 - EPA 3050B

Matrix Spike (BFJ0164-MS1)

Source: 2210016-21

Prepared: 10/07/22 Analyzed: 10/09/22

Arsenic	46.0	0.233	mg/kg dry	46.6	3.35	91.5	75-125
Barium	94.1	0.466	"	46.6	36.3	124	75-125
Cadmium	2.39	0.233	"	2.33	0.239	92.3	75-125
Copper	53.3	0.466	"	46.6	10.8	91.1	75-125
Lead	28.6	0.233	"	23.3	10.3	78.4	75-125
Nickel	52.5	0.466	"	46.6	8.86	93.8	75-125
Selenium	4.63	0.303	"	4.66	0.943	79.1	75-125
Silver	2.16	0.0233	"	2.33	0.0268	91.4	75-125
Zinc	89.4	0.466	"	46.6	47.4	90.1	75-125

Matrix Spike Dup (BFJ0164-MSD1)

Source: 2210016-21

Prepared: 10/07/22 Analyzed: 10/09/22

Arsenic	46.6	0.233	mg/kg dry	46.6	3.35	92.8	75-125	1.33	25	QM-07
Barium	99.3	0.466	"	46.6	36.3	135	75-125	5.40	25	
Cadmium	2.56	0.233	"	2.33	0.239	99.6	75-125	6.84	25	
Copper	54.2	0.466	"	46.6	10.8	93.1	75-125	1.79	25	
Lead	30.5	0.233	"	23.3	10.3	86.5	75-125	6.36	25	
Nickel	53.3	0.466	"	46.6	8.86	95.3	75-125	1.35	25	
Selenium	4.86	0.303	"	4.66	0.943	84.0	75-125	4.79	25	
Silver	2.32	0.0233	"	2.33	0.0268	98.6	75-125	7.47	25	
Zinc	90.4	0.466	"	46.6	47.4	92.3	75-125	1.13	25	

Batch BFJ0206 - EPA 3050B

Blank (BFJ0206-BLK1)

Prepared & Analyzed: 10/10/22

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	"

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

Project: Noble - Gutttersen State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

Total Metals by EPA 6020B - Quality Control
Summit Scientific

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

Batch BFJ0206 - EPA 3050B

LCS (BFJ0206-BS1)

Prepared & Analyzed: 10/10/22

Arsenic	41.8	0.200	mg/kg wet	40.0		104	80-120
Barium	38.9	0.400	"	40.0		97.3	80-120
Cadmium	2.19	0.200	"	2.00		110	80-120
Copper	40.3	0.400	"	40.0		101	80-120
Lead	21.3	0.200	"	20.0		107	80-120
Nickel	38.9	0.400	"	40.0		97.2	80-120
Selenium	4.22	0.260	"	4.00		106	80-120
Silver	2.08	0.0200	"	2.00		104	80-120
Zinc	43.0	0.400	"	40.0		107	80-120

Duplicate (BFJ0206-DUP1)

Source: 2210016-01

Prepared & Analyzed: 10/10/22

Arsenic	1.74	0.207	mg/kg dry		1.68		3.73	20
Barium	39.1	0.413	"		40.1		2.31	20
Cadmium	0.0649	0.207	"		0.0668		2.98	20
Copper	3.67	0.413	"		3.69		0.336	20
Lead	4.27	0.207	"		4.45		4.12	20
Nickel	3.49	0.413	"		3.52		0.827	20
Selenium	0.502	0.269	"		0.436		14.1	20
Silver	0.0114	0.0207	"		0.0131		13.9	20
Zinc	15.7	0.413	"		15.8		0.605	20

Matrix Spike (BFJ0206-MS1)

Source: 2210016-01

Prepared & Analyzed: 10/10/22

Arsenic	42.9	0.207	mg/kg dry	41.3	1.68	99.8	75-125
Barium	75.6	0.413	"	41.3	40.1	86.1	75-125
Cadmium	2.25	0.207	"	2.07	0.0668	106	75-125
Copper	43.3	0.413	"	41.3	3.69	96.0	75-125
Lead	24.4	0.207	"	20.7	4.45	96.7	75-125
Nickel	42.4	0.413	"	41.3	3.52	94.1	75-125
Selenium	4.22	0.269	"	4.13	0.436	91.5	75-125
Silver	2.06	0.0207	"	2.07	0.0131	99.0	75-125
Zinc	57.6	0.413	"	41.3	15.8	101	75-125

Summit Scientific

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

Project: Noble - Gutterson State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

Total Metals by EPA 6020B - Quality Control
Summit Scientific

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

Batch BFJ0206 - EPA 3050B

Matrix Spike Dup (BFJ0206-MSD1)

Source: 2210016-01

Prepared & Analyzed: 10/10/22

Arsenic	44.3	0.207	mg/kg dry	41.3	1.68	103	75-125	3.21	25
Barium	79.7	0.413	"	41.3	40.1	95.9	75-125	5.22	25
Cadmium	2.45	0.207	"	2.07	0.0668	115	75-125	8.44	25
Copper	44.8	0.413	"	41.3	3.69	99.6	75-125	3.38	25
Lead	25.7	0.207	"	20.7	4.45	103	75-125	5.13	25
Nickel	43.6	0.413	"	41.3	3.52	96.9	75-125	2.71	25
Selenium	4.79	0.269	"	4.13	0.436	106	75-125	12.8	25
Silver	2.21	0.0207	"	2.07	0.0131	106	75-125	7.09	25
Zinc	59.2	0.413	"	41.3	15.8	105	75-125	2.67	25

Summit Scientific

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

Project: Noble - Gutterson State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

Hexavalent Chromium by EPA Method 7196 - Quality Control
Summit Scientific

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

Batch BFJ0309 - 3060A Mod

Blank (BFJ0309-BLK1)

Prepared: 10/12/22 Analyzed: 10/13/22

Chromium, Hexavalent ND 0.30 mg/kg wet

LCS (BFJ0309-BS1)

Prepared: 10/12/22 Analyzed: 10/13/22

Chromium, Hexavalent 27.7 0.30 mg/kg wet 25.0 111 80-120

Duplicate (BFJ0309-DUP1)

Source: 2210015-01

Prepared: 10/12/22 Analyzed: 10/13/22

Chromium, Hexavalent ND 0.30 mg/kg dry ND 20

Matrix Spike (BFJ0309-MS1)

Source: 2210015-01

Prepared: 10/12/22 Analyzed: 10/13/22

Chromium, Hexavalent 32.5 0.30 mg/kg dry 29.7 ND 109 75-125

Matrix Spike Dup (BFJ0309-MSD1)

Source: 2210015-01

Prepared: 10/12/22 Analyzed: 10/13/22

Chromium, Hexavalent 31.7 0.30 mg/kg dry 29.7 ND 107 75-125 2.59 20

Batch BFJ0310 - 3060A Mod

Blank (BFJ0310-BLK1)

Prepared: 10/12/22 Analyzed: 10/13/22

Chromium, Hexavalent ND 0.30 mg/kg wet

LCS (BFJ0310-BS1)

Prepared: 10/12/22 Analyzed: 10/13/22

Chromium, Hexavalent 22.9 0.30 mg/kg wet 25.0 91.6 80-120

Duplicate (BFJ0310-DUP1)

Source: 2210016-01

Prepared: 10/12/22 Analyzed: 10/13/22

Chromium, Hexavalent ND 0.30 mg/kg dry ND 20

Matrix Spike (BFJ0310-MS1)

Source: 2210016-01

Prepared: 10/12/22 Analyzed: 10/13/22

Chromium, Hexavalent 25.3 0.30 mg/kg dry 25.8 ND 97.8 75-125

Summit Scientific

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

Project: Noble - Gutterson State DD08-11, 13

Project Number: [none]

Project Manager: Jacob Whritenour

Reported:

10/13/22 13:28

Hexavalent Chromium by EPA Method 7196 - Quality Control

Summit Scientific

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

Batch BFJ0310 - 3060A Mod

Matrix Spike Dup (BFJ0310-MSD1)

Source: 2210016-01

Prepared: 10/12/22 Analyzed: 10/13/22

Chromium, Hexavalent	21.9	0.30	mg/kg dry	25.8	ND	85.0	75-125	14.0	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, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

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

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

Batch BFJ0175 - General Preparation

Blank (BFJ0175-BLK1)

Prepared: 10/07/22 Analyzed: 10/10/22

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

LCS (BFJ0175-BS1)

Prepared: 10/07/22 Analyzed: 10/10/22

Calcium	5.90	0.0500	mg/L wet	5.00	118	70-130
Magnesium	5.78	0.0500	"	5.00	116	70-130
Sodium	5.61	0.0500	"	5.00	112	70-130

Summit Scientific

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

Project: Noble - Gutterson State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

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

Summit Scientific

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

Batch BFJ0161 - General Preparation

Duplicate (BFJ0161-DUP1)		Source: 2210016-01		Prepared: 10/07/22 Analyzed: 10/10/22	
% Solids	97.0		%	96.8	0.217 20

Summit Scientific

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

Project: Noble - Gutterson State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

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

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

Batch BFJ0185 - General Preparation

Blank (BFJ0185-BLK1)

Prepared: 10/07/22 Analyzed: 10/12/22

Specific Conductance (EC) ND 0.0100 mmhos/cm

LCS (BFJ0185-BS1)

Prepared: 10/07/22 Analyzed: 10/12/22

Specific Conductance (EC) 0.145 0.0100 mmhos/cm 0.150 96.5 95-105

Duplicate (BFJ0185-DUP1)

Source: 2210016-11

Prepared: 10/07/22 Analyzed: 10/12/22

Specific Conductance (EC) 0.617 0.0100 mmhos/cm 0.617 0.0486 20

Summit Scientific

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



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

Project: Noble - Gutterson State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

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

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

Batch BFJ0158 - General Preparation

LCS (BFJ0158-BS1)					Prepared: 10/07/22 Analyzed: 10/09/22					
pH	9.04		pH Units	9.18		98.5	95-105			
Duplicate (BFJ0158-DUP1)					Source: 2210016-01 Prepared: 10/07/22 Analyzed: 10/09/22					
pH	7.19		pH Units		7.15			0.558	20	

Batch BFJ0184 - General Preparation

LCS (BFJ0184-BS1)					Prepared: 10/07/22 Analyzed: 10/13/22					
pH	9.05		pH Units	9.18		98.6	95-105			
Duplicate (BFJ0184-DUP1)					Source: 2210016-11 Prepared: 10/07/22 Analyzed: 10/13/22					
pH	7.14		pH Units		7.08			0.844	20	

Summit Scientific

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

Project: Noble - Guttarsen State DD08-11, 13

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/13/22 13:28

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

LOGGED BY: Hunter Merlo

PROJECT MANAGER: Jake Whritenour

DRILLING CONTRACTOR: Site Services

DRILLING EQUIPMENT: Geoprobe/Hand Auger

DRILL BIT SIZE (INCHES): 3"

DATE STARTED - COMPLETED: 10/3/22 - 10/3/22

TOTAL WELL DEPTH (FT. BGS): 15

DEPTH WATER ENCOUNTERED (FT. BGS): NM

Guttersen State DD08-11, 13 Facility

BORING ID: BH01

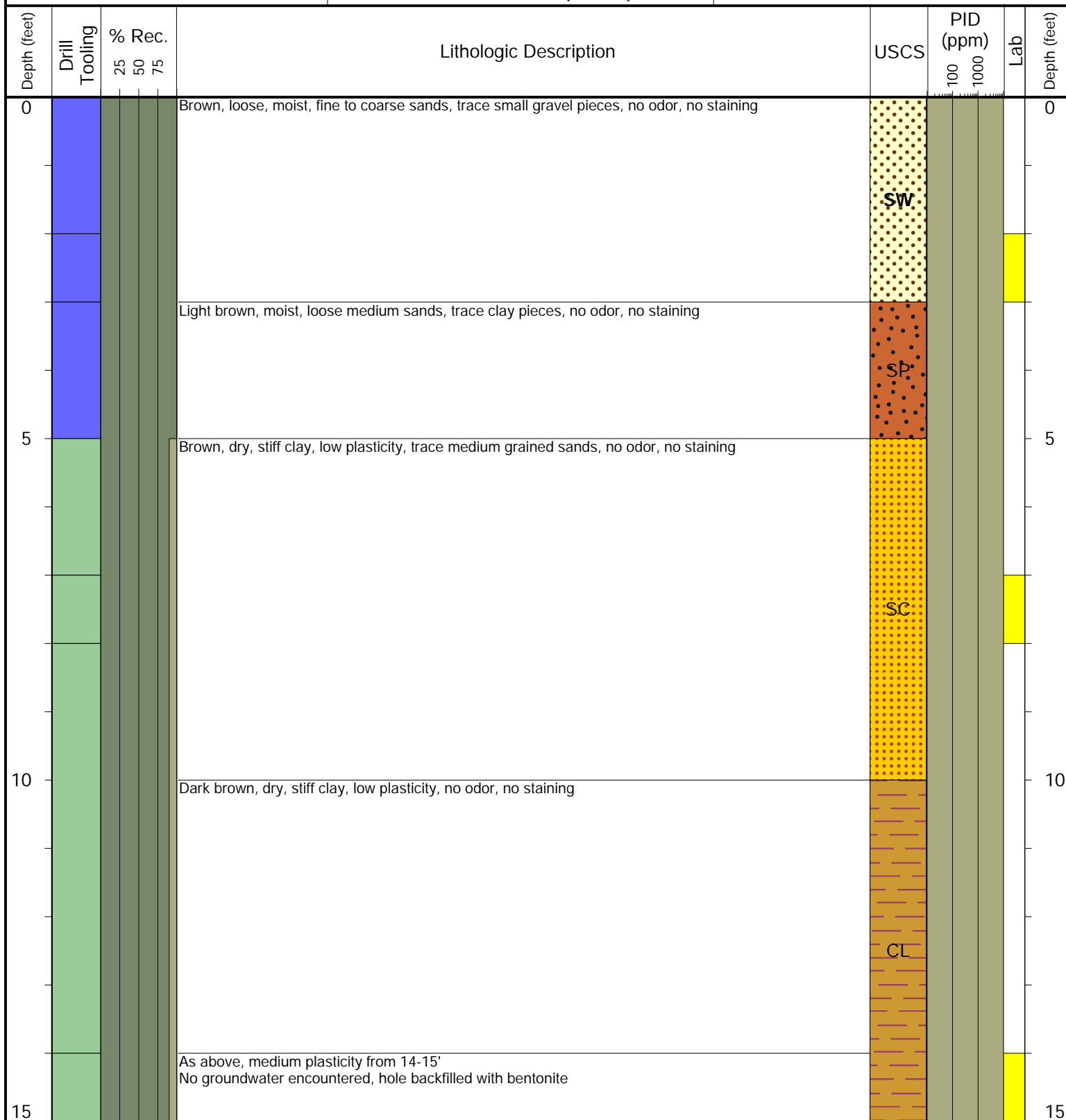
LOCATION: Weld County, CO

LATITUDE (WGS 84): 40.2329964013

LONGITUDE (WGS 84): -104.458334845

GROUND ELEVATION (FT. AMSL): NM

ABANDONMENT METHOD: Bentonite



Drilling / Sample Method:

Macro-Core

Expendable Well Tip

Hand Auger

HydroPunch Groundwater Sampler

Laboratory Sample Types:

Geotechnical Lab

Analytical Chemistry Lab



Geotechnical & Analytical Chemistry Lab



6855 W. 119th Ave.
Broomfield, CO 80020

CLIENT: Noble

LOGGED BY: Hunter Merlo

PROJECT MANAGER: Jake Whritenour

DRILLING CONTRACTOR: Site Services

DRILLING EQUIPMENT: Geoprobe/Hand Auger

DRILL BIT SIZE (INCHES): 3"

DATE STARTED - COMPLETED: 10/3/22 - 10/3/22

TOTAL WELL DEPTH (FT. BGS): 15

DEPTH WATER ENCOUNTERED (FT. BGS): NM

Guttersen State DD08-11, 13 Facility

BORING ID: BH02

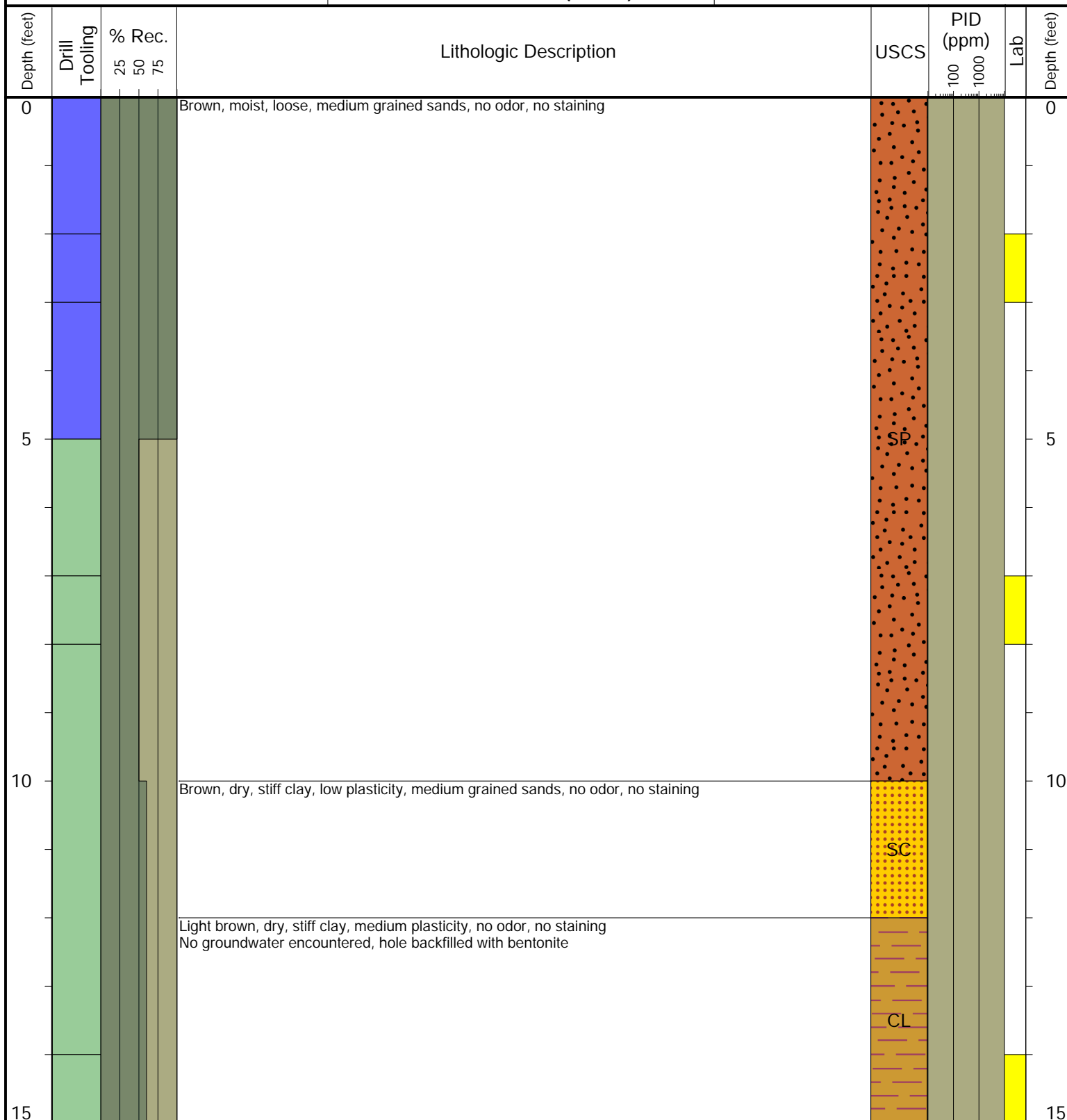
LOCATION: Weld County, CO

LATITUDE (WGS 84): 40.2330642601

LONGITUDE (WGS 84): -104.458330345

GROUND ELEVATION (FT. AMSL): NM

ABANDONMENT METHOD: Bentonite





6855 W. 119th Ave.
Broomfield, CO 80020

CLIENT: Noble

LOGGED BY: Hunter Merlo

PROJECT MANAGER: Jake Whritenour

DRILLING CONTRACTOR: Site Services

DRILLING EQUIPMENT: Geoprobe/Hand Auger

DRILL BIT SIZE (INCHES): 3"

DATE STARTED - COMPLETED: 10/3/22 - 10/3/22

TOTAL WELL DEPTH (FT. BGS): 15

DEPTH WATER ENCOUNTERED (FT. BGS): NM

Guttersen State DD08-11, 13 Facility

BORING ID: BH03

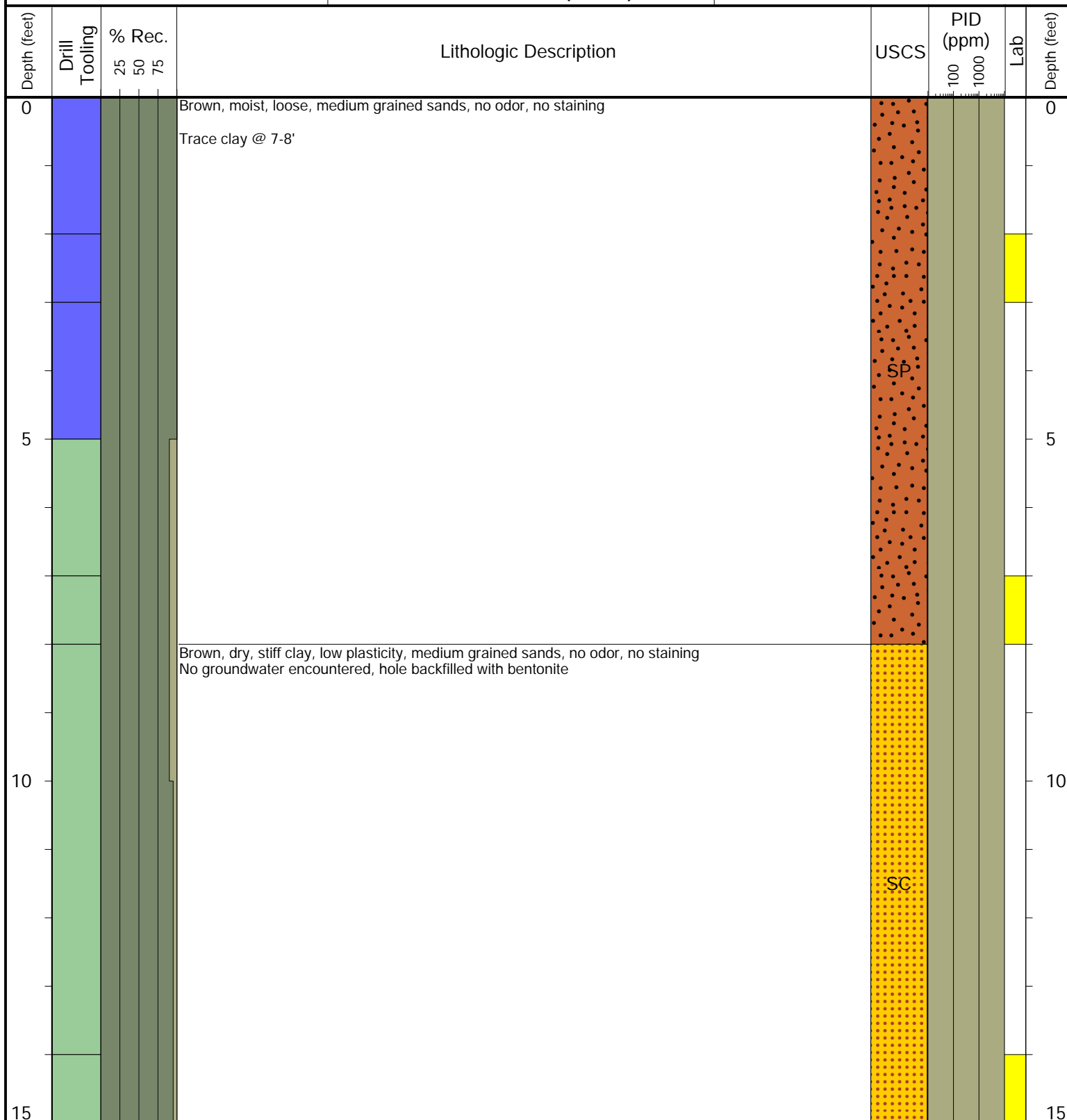
LOCATION: Weld County, CO

LATITUDE (WGS 84): 40.2329994486

LONGITUDE (WGS 84): -104.458244069

GROUND ELEVATION (FT. AMSL): 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



TASMAN

6855 W. 119th Ave.
Broomfield, CO 80020

CLIENT: Noble

LOGGED BY: Hunter Merlo

PROJECT MANAGER: Jake Whritenour

DRILLING CONTRACTOR: Site Services

DRILLING EQUIPMENT: Geoprobe/Hand Auger

DRILL BIT SIZE (INCHES): 3"

DATE STARTED - COMPLETED: 10/3/22 - 10/3/22

TOTAL WELL DEPTH (FT. BGS): 15

DEPTH WATER ENCOUNTERED (FT. BGS): NM

Guttersen State DD08-11, 13 Facility

BORING ID: BH04

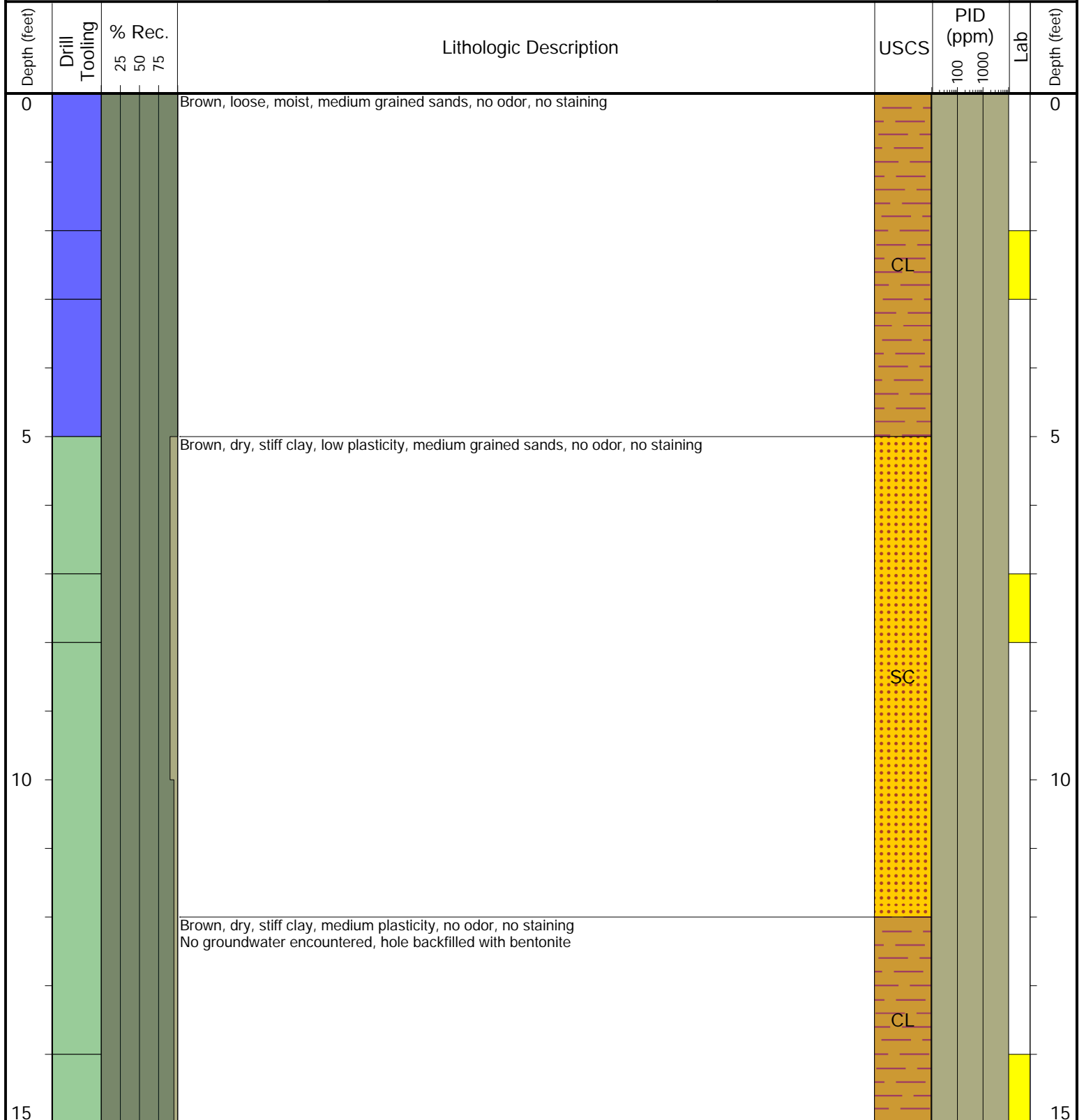
LOCATION: Weld County, CO

LATITUDE (WGS 84): 40.2329175197

LONGITUDE (WGS 84): -104.458319172

GROUND ELEVATION (FT. AMSL): NM

ABANDONMENT METHOD: Bentonite



Drilling / Sample Method:

Macro-Core

Expendable Well Tip

Hand Auger

HydroPunch Groundwater Sampler

Laboratory Sample Types:

Geotechnical Lab

Analytical Chemistry Lab



Geotechnical & Analytical Chemistry Lab



6855 W. 119th Ave.
Broomfield, CO 80020

CLIENT: Noble

LOGGED BY: Hunter Merlo

PROJECT MANAGER: Jake Whritenour

DRILLING CONTRACTOR: Site Services

DRILLING EQUIPMENT: Geoprobe/Hand Auger

DRILL BIT SIZE (INCHES): 3"

DATE STARTED - COMPLETED: 10/3/22 - 10/3/22

TOTAL WELL DEPTH (FT. BGS): 13

DEPTH WATER ENCOUNTERED (FT. BGS): NM

Guttersen State DD08-11, 13 Facility

BORING ID: BH05

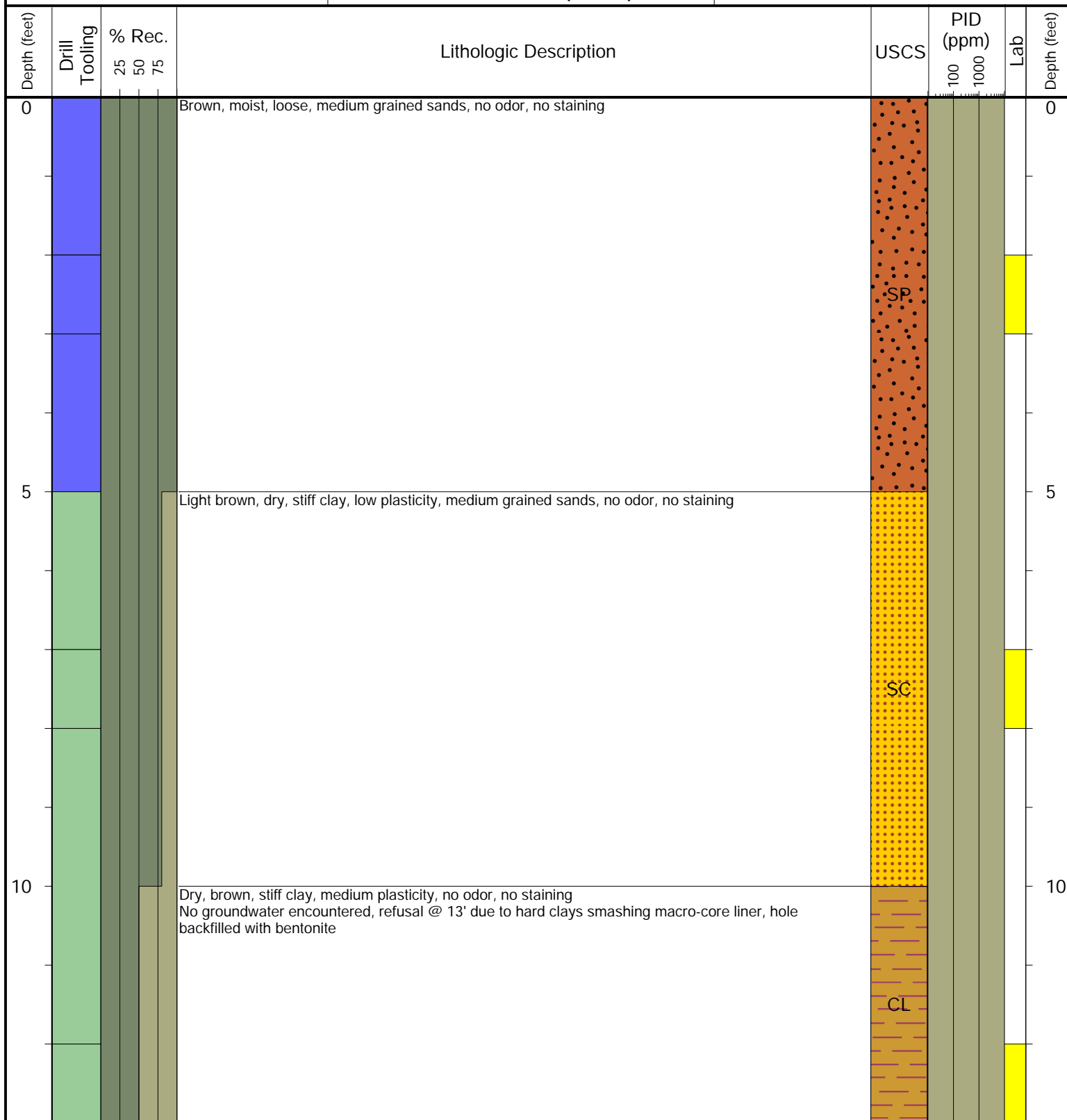
LOCATION: Weld County, CO

LATITUDE (WGS 84): 40.2329831376

LONGITUDE (WGS 84): -104.458415702

GROUND ELEVATION (FT. AMSL): NM

ABANDONMENT METHOD: Bentonite



Drilling / Sample Method:

Macro-Core

Expendable Well Tip

Hand Auger

HydroPunch Groundwater Sampler

Laboratory Sample Types:

Geotechnical Lab

Analytical Chemistry Lab

Geotechnical & Analytical Chemistry Lab