

REMEDIAL EXCAVATION REPORT

LOLOFF 2, 3, B35-19 FACILITY

ECMC SPILL TRACKING # 481084

ECMC REMEDIATION # 20046



2115 117th Avenue
Greeley, CO 80631

Prepared by:



6855 W. 119th Ave
Broomfield, CO 80020

October 19, 2023

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

Subject: **Remedial Excavation Report**
 Loloff 2, 3, B35-19 Facility
 Spill/Release Point ID #: 481084
 Remediation Project #: 20046
 NWNW S35 T5N R64W
 Weld County, Colorado

Dear Mr. Peterson:

Below please find a copy of the above referenced Remedial Excavation Report (Report) for the Loloff 2, 3, B35-19 Tank Facility (Site) in Weld County, Colorado. The text below describes the remedial excavation and associated soil sampling conducted at the Site between October 29, 2021 (Decommissioning) and May 18, 2023 (Excavation) by Tasman, Inc. (Tasman), on behalf of Noble Energy, Inc. (Noble).

Introduction

The purpose of this document is to describe the remedial excavation, and associated sampling activities. The activities described below were performed in response to the discovery of suspected impacted material below the separator flowline during decommissioning on October 29, 2021, and confirmed on November 9, 2021.

Facility Background

The Site is located approximately 2.7 miles southwest of the town of Kersey in Weld County, Colorado, as shown on Figure 1. The Site is surrounded by pastureland, and the legal description is the northwest quarter of the northwest quarter of Section 35, Township 5 North, Range 64 West, 6th Principal Meridian. The Site is on terrain that slopes gradually to the south, at latitude 40.363328° and longitude -104.521721° [North American Datum of 1983(NAD83)]. The site is approximately 0.25 miles east of the intersection of Weld County Road 57 and Weld County Road 52. The Site location map is included as Figure 1.

Tasman was retained by Noble on October 29, 2021, to complete soil sampling and documentation during decommissioning and abandonment activities at the former Loloff 2, 3, B35-19 Facility. During decommissioning and abandonment activities at the Site historic impacts were discovered below the separator flowline and confirmed on November 9, 2021. A Form 19 was submitted to the Energy and Carbon Management Commission (ECMC) on November 10, 2021. The ECMC subsequently issued Spill/Release Point ID Number 481084 for this event and the Site was

decommissioned. The ECMC issued Remediation Number 20046 for this project. The Initial Site investigation was reported in the *Supplemental Form 27* (ECMC Document # 403084253) that was submitted to the ECMC on 06/20/2022. A Site Assessment Report was reported in the Supplemental Form 27 (ECMC Document # 403179459) that was submitted to the ECMC on 09/26/2022.

Field Activities- Background Soil Sampling

On October 4, 2022, Tasman used a hand auger to advance and collect ten background samples from five borehole locations north of the Site to assess background native soil conditions. During soil boring operations, soil samples were collected and field screened for volatile organic compounds (VOCs) using a photoionization detector (PID) and standard headspace sampling techniques. All background soil samples were submitted to Summit Scientific (Summit) in Golden, Colorado for laboratory analysis arsenic, barium and selenium using United States Environmental Protection Agency (USEPA) Method 6020B as well as analysis of pH using USEPA saturated paste extraction method. Soil analytical data from the background sampling are summarized in Table 1 and illustrated on Figure 2. The laboratory analytical reports are included as Attachment A.

Field Activities- Remedial Excavation

Remedial excavation activities were conducted on April 27, 2023 and May 18, 2023, to remove impacted soil in the area of decommissioning soil sample SEP01-FL@3'. The excavation was guided in the field using a PID and standard headspace sampling techniques. A total of four excavation sidewall soil samples (SS01@4' through SS04@4') were collected from the final perimeter of the excavation along with one excavation floor sample (FS01@5') on April 27, 2023, and an additional excavation sidewall soil sample (SS05@4') was collected when the eastern sidewall was expanded during additional excavation on May 18, 2023. All soil samples were submitted to Summit in Golden, Colorado for laboratory analysis of the ECMC Table 915-1 list of organic compounds in soil using USEPA Methods 8260B and 8270D, and total petroleum hydrocarbons (TPH) using USEPA Methods 8260B and 8015D. Additionally, the soil samples were submitted for analysis of ECMC Table 915-1 metals in soil using USEPA Method 6020B as well as analysis of pH, electrical conductivity (EC), and sodium adsorption ratio (SAR) using USEPA saturated paste extraction method, and boron using the hot water-soluble soil extract method. Groundwater was not encountered during the excavation. Soil analytical data from the initial facility decommissioning, site assessment activities and the remedial excavation are summarized in Table 1. The remedial excavation extents, sample locations, and analytical results are illustrated on Figure 2, and the laboratory analytical reports are included as Attachment A.

A total of approximately 35 cubic yards of impacted material were removed for off-Site disposal at the Buffalo Ridge Waste Management Landfill in Keenesburg, Colorado under signed Noble waste manifests. A total of approximately 35 cubic yards of imported clean fill was used to backfill the excavation. The final remedial excavation extent measured approximately 19 feet (ft) by 14-ft by 5-ft below ground surface (bgs).

Results

Laboratory analytical results for the initial remedial excavation soil samples collected on April 27, 2023 indicate all samples, besides sidewall soil sample SS02@4', were compliant with ECMC Table 915-1 Protection of Groundwater Screening Levels (GSSL) for organic compounds in soil. Laboratory analytical results for soil sample SS02@4' indicated an exceedance of ECMC Table 915-1 GSSL for benz(a)anthracene. On May 18, 2023, the excavation was expanded to the east to remove compounds in exceedance of ECMC Table 915-1 GSSLs identified at sample location SS02@4'. The analytical results for the new eastern sidewall sample, SS05@4', were below all applicable ECMC Table 915-1 standards for organic compounds in soil. Laboratory analytical results for all remedial excavation soil samples indicate arsenic is in exceedance of ECMC Table 915-1 Residential Soil Screening Levels (RSSL).

A total of ten background samples were collected from five discrete locations by Tasman on October 4, 2022 from depths of 3-ft bgs and 8-ft bgs. The average background concentrations of arsenic, barium and selenium from 3-ft bgs with a 1.25 multiplier applied were calculated to be 1.66 mg/kg, 65.2 mg/kg, and 0.528 mg/kg, respectively. The average concentrations of arsenic, barium and selenium from the decommissioning, site assessment and remedial excavation soil samples collected from 3-4-ft bgs were calculated to be 1.62 mg/kg, 57.7 mg/kg, and 0.359 mg/kg, respectively. The average background concentrations for arsenic, barium and selenium were calculated to be higher than the average concentrations in the site decommissioning, site assessment and remedial excavation soil samples at the 3-4-ft bgs depth interval.

The average background concentrations of arsenic, barium and selenium from 8-ft bgs with a 1.25 multiplier applied were calculated to be 3.99 mg/kg, 104 mg/kg, and 0.715 mg/kg, respectively. The average concentrations of arsenic, barium and selenium from the decommissioning, site assessment, and remedial excavation soil samples collected from 5-10-ft bgs were calculated to be 2.82 mg/kg, 73.1 mg/kg, and 0.432 mg/kg, respectively. The average background concentrations for arsenic, barium and selenium were calculated to be higher than the average concentrations in the site decommissioning, site assessment and remedial excavation soil samples at the 5-10-ft bgs depth interval.

Laboratory analytical results for soil samples collected during the decommissioning, site assessment, background assessment, and excavation indicate an increase in metals concentrations with sample depth, as shown in Table 1 and illustrated on Figure 2. While background samples were not collected at depths correlating to the 12-15-ft site assessment soil boring samples, average background concentrations for metals collected from the 3-ft bgs and 8-ft bgs depth interval were calculated to be greater than the site assessment boring and excavation confirmatory samples collected from the similar depth intervals. Additionally, there is a significant increase in metals concentrations across the ECMC Table 915-1 list from the 3-4-ft bgs soil boring samples to the 12-15-ft bgs soil boring samples, which is also observed in the background sampling area between 3-ft bgs and 8-ft bgs. After reviewing the soil boring logs included as an attachment to the Site Assessment Report (refer to ECMC Document # 403179459), the lithology transitions from coarse grain deposits (poorly graded fine sands) at shallower intervals of 0-10-ft bgs to fine grain deposits (low-plasticity sandy clays) at deeper intervals

of 10-15-ft bgs. The elevated metals at the 12-15-ft bgs depth interval are naturally concentrating in the clay deposits, rather than being artificially increased by oil and gas activity. Additionally, there are no other indications of hydrocarbon or inorganic (EC/SAR/boron) alterations to the subsurface soil chemistry, further supporting that the metals concentrations increasing with depth are naturally occurring. As such, metals should not be considered contaminants of concern at the Site.

Conclusions

Based upon field and laboratory data collected during remedial excavation activities, impacted soil in the area of the release has been successfully removed. The average background concentrations for arsenic, barium and selenium collected from the 3-ft bgs and 8-ft bgs depth intervals were calculated to be greater than the site assessment boring and excavation confirmatory samples collected from similar depth intervals. As such, metals exceedances in the remedial excavation soil samples are attributed to elevated levels in the native soil and are not associated with a hydrocarbon release at the Site. Due to metals concentrations increasing with depth in the background soil samples as well as the release area, the trend of increasing fine grained deposits with depth, and the absence of any indication of hydrocarbon or inorganic alterations to the subsurface soil chemistry, the elevated metals at the 12-15-ft bgs depth interval are naturally concentrating in the clay deposits, rather than being artificially increased by oil and gas activity. A No Further Action (NFA) designation is being requested from the ECMC for the project.

Remarks

The discussion and conclusions contained in this report represent the professional opinions of Tasman Geosciences, 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 Geosciences, Inc.

A handwritten signature in blue ink, appearing to read 'Jake Whritenour', is positioned above the printed name.

Jake Whritenour, Program Manager

Attachments:

Table 1 – Soil Analytical Data

Figure 1 – Site Location Map

Figure 2 – Excavation Analytical Results Map (10/29/2021, 06/17/2022, 10/04/2022, 04/27/2023 & 05/18/2023)

Attachment A – Laboratory Analytical Data Reports

TABLES

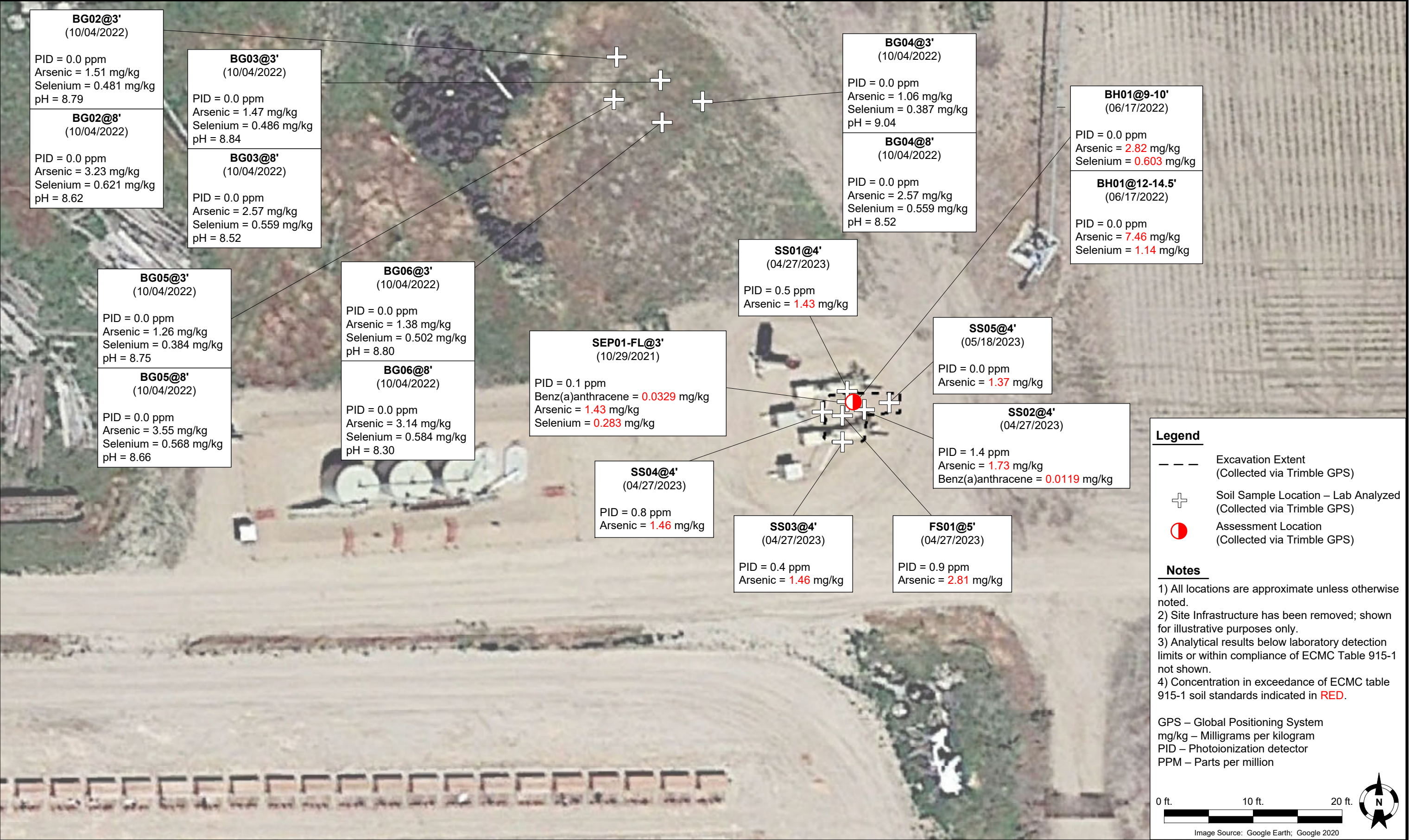
TABLE 1
SOIL ANALYTICAL DATA
NOBLE ENERGY, INC. - LOLOFF 2, 3, 835-19 FACILITY

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)	Naphthalene (mg/kg)	TPH-GRO (mg/kg)	TPH-DRO (mg/kg)	TPH-ORO (mg/kg)	Acenaphthene (mg/kg)	Anthracene (mg/kg)	Benz(a) (mg/kg)	Benzo(a) (mg/kg)	Benzo(b) (mg/kg)	Benzo(k) (mg/kg)	Chrysene (mg/kg)	A,H (mg/kg)	Fluoranthene (mg/kg)	Fluorene (mg/kg)	1,2,3-CD (mg/kg)	Pyrene (mg/kg)	1-M (mg/kg)	2-M (mg/kg)
Residential SSL ²		1.2	490	5.8	58	30	27	2	500			360	1,800	1.1	0.11	1.1	11	110	0.11	240	240	1.1	180	18	24
Protection of Groundwater SSL ^{2,3}		0.0026	0.69	0.78	9.9	0.0081	0.0087	0.0038	500			0.55	6	0.011	0.24	0.3	2.9	9	0.096	8.9	0.54	0.98	1.3	0.006	0.019
SS02@2.5'	10/29/21	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00067	<0.200	<25.0	<100	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	0.000346	0.000547
SS04@2.5'	10/29/21	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00067	<0.200	25.6	<100	<0.00067	<0.00067	<0.00067	0.000207	0.00307	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	0.00031	<0.00067	<0.00067	<0.00067
FS01@5'	10/29/21	<0.00200	<0.00200	<0.00200	<0.00200	0.00256	<0.00200	<0.00067	<0.200	<25.0	<100	<0.00067	0.00129	0.00425	0.00453	0.0123	0.00549	0.0115	0.00147	0.0124	0.000364	0.00426	0.0109	0.000832	0.00141
FS02@5'	10/29/21	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00067	<0.200	<25.0	<100	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067
AST01@0.5'	10/29/21	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00067	<0.200	<25.0	<100	<0.00067	<0.00067	<0.00067	<0.00067	0.000424	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	0.000618
SEP01-FL@3'	10/29/21	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00067	<0.200	<25.0	<100	0.00718	0.0183	0.0329	0.0205	0.0253	0.00737	0.0278	0.00221	0.0874	0.00951	0.00955	0.0669	<0.00067	0.00064
SEP01-DL@3'	10/29/21	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00067	<0.200	<25.0	<100	<0.00067	<0.00067	<0.00067	<0.00067	0.000389	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	0.000622
BH01@9-10'	06/17/22	<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@12-14.5'	06/17/22	<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@3-4'	06/17/22	<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@13-14'	06/17/22	<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@3-4'	06/17/22	<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@12-13.5'	06/17/22	<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@3-4'	06/17/22	<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@13-14'	06/17/22	<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@3-4'	06/17/22	<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@13-15'	06/17/22	<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
SS01@4'	04/27/23	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	<50	<50	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
SS02@4'	04/27/23	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	<50	<50	<0.00500	<0.00500	0.0119	<0.00500	0.00905	<0.00500	0.00677	<0.00500	0.0147	<0.00500	<0.00500	0.0201	<0.00500	<0.00500
SS03@4'	04/27/23	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	<50	<50	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
SS04@4'	04/27/23	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	<50	<50	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
FS01@5'	04/27/23	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	<50	<50	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
SS05@4'	05/18/23	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	<50	<50	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500

Soil Sample ID	Date	pH	SAR	EC (mmhos/cm)	Boron (mg/L)
Residential SSL ²		6 - 8.3	<6	<4mmhos/cm	2
SS02@2.5'	10/29/21	8.14	0.618	0.524	0.199
SS04@2.5'	10/29/21	7.91	0.334	0.659	<0.198
FS01@5'	10/29/21	8.39	1.05	0.471	<0.199
FS02@5'	10/29/21	8.52	3.43	0.559	0.318
AST01@0.5'	10/29/21	7.63	0.676	0.433	<0.198
SEP01-FL@3'	10/29/21	7.94	0.253	0.368	<0.200
SEP01-DL@3'	10/29/21	7.97	0.404	0.398	<0.199
BG01@3'	02/28/22	7.78	NA	NA	NA
BG01@5'	02/28/22	7.67	NA	NA	NA
BH01@9-10'	06/17/22	8.04	0.563	0.773	0.0645
BH01@12-14.5'	06/17/22	8.05	1.05	0.962	0.211
BH02@3-4'	06/17/22	8.45	0.0755	0.152	0.0487
BH02@13-14'	06/17/22	7.95	1.66	1.19	0.226
BH03@3-4'	06/17/22	8.18	0.152	0.362	0.0641
BH03@12-13.5'	06/17/22	7.98	1.28	0.886	0.152
BH04@3-4'	06/17/22	8.25	0.0998	0.170	0.0722
BH04@13-14'	06/17/22	8.16	1.66	0.850	0.203
BH05@3-4'	06/17/22	8.51	0.448	0.286	0.326
BH05@13-15'	06/17/22	8.17	1.39	0.586	0.186
BG02@3'	10/04/22	8.79	NA	NA	NA
BG02@8'	10/04/22	8.62	NA	NA	NA
BG03@3'	10/04/22	8.84	NA	NA	NA
BG03@8'	10/04/22	8.52	NA	NA	NA
BG04@3'	10/04/22	9.04	NA	NA	NA
BG04@8'	10/04/22	8.52	NA	NA	NA
BG05@3'	10/04/22	8.75	NA	NA	NA
BG05@8'	10/04/22	8.66	NA	NA	NA
BG06@3'	10/04/22	8.80	NA	NA	NA
BG06@8'	10/04/22	8.30	NA	NA	NA
SS01@4'	04/27/23	7.88	0.196	0.190	0.120
SS02@4'	04/27/23	7.75	0.343	0.252	0.0485
SS03@4'	04/27/23	6.71	0.0782	0.135	0.0554
SS04@4'	04/27/23	7.66	0.0727	0.186	0.113
FS01@5'	04/27/23	7.85	0.0643	0.199	0.0234
SS05@4'	05/18/23	7.36	0.129	0.253	0.227

Soil Sample ID	Date	Arsenic (mg/kg)	Barium (mg/kg)	Cadmium (mg/kg)	Chromium (VI) (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Nickel (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)	Zinc (mg/kg)
Residential SSL ²		0.68	15,000	71	0.3	3,100	400	1,500	390	390	23,000
Protection of Groundwater		0.29	82	0.38	0.00067	46	14	26	0.26	0.8	370
SEP01-FL@3'	10/29/21	1.43	56	0.0531	<1.03	4.4	5.89	5.21	0.283	0.0257	23
BG01@3'	02/28/22	1.30	53.9	<0.25	<0.505	4.35	4.25	4.81	0.298	<0.25	17.9
BH01@9-10'	06/17/22	2.82	73.6	<0.230	<0.30	5.65	5.97	7.61	0.603	<0.0230	28.8
BH01@12-14.5'	06/17/22	7.46	26.3	<0.238	<0.30	<13.8	11.6	14.7	1.14	0.0285	65.1
BH02@3-4'	06/17/22	1.51	47.0	<0.210	<0.30	4.11	3.75	4.46	0.513	0.0210	17.3
BH02@13-14'	06/17/22	5.58	28.2	<0.236	<0.30	11.4	10.0	13.4	0.922	<0.0236	58.6
BH03@3-4'	06/17/22	2.80	81.9	<0.220	<0.30	6.42	5.99	8.02	0.640	0.0337	28.1
BH03@12-13.5'	06/17/22	5.37	29.4	<0.234	<0.30	13.7	12.6	14.3	1.08	0.0274	67.1
BH04@3-4'	06/17/22	1.52	55.3	<0.213	<0.30	4.13	4.49	4.90	0.482	<0.0213	19.1
BH04@13-14'	06/17/22	7.01	83.1	<0.238	<0.30	12.3	12.4	13.1	1.04	0.0260	63.6
BH05@3-4'	06/17/22	1.08	58.0	<0.219	<0.30	4.50	4.40	4.58	0.474	0.0228	18.1
BH05@13-15'	06/17/22	6.20	24.4	<0.237	<0.30	13.4	12.1	14.7	1.03	0.0251	64.8
BG02@3'	10/04/22	1.51	55.8	NA	NA	NA	NA	NA	0.481	NA	NA
BG02@8'	10/04/22	3.23	58.6	NA	NA	NA	NA	NA	0.612	NA	NA
BG03@3'	10/04/22	1.47	48.3	NA	NA	NA	NA	NA	0.486	NA	NA
BG03@8'	10/04/22	3.48	163	NA	NA	NA	NA	NA	0.535	NA	NA
BG04@3'	10/04/22	1.06	46.1	NA	NA	NA	NA	NA	0.387	NA	NA
BG04@8'	10/04/22	2.57	46.2	NA	NA	NA	NA	NA	0.559	NA	NA
BG05@3'	10/04/22	1.26	52.8	NA	NA	NA	NA	NA	0.384	NA	NA
BG05@8'	10/04/22	3.55	86.8	NA	NA	NA	NA	NA	0.568	NA	NA
BG06@3'	10/04/22	1.38	56.2	NA	NA	NA	NA	NA	0.502	NA	NA
BG06@8'	10/04/22	3.14	60.4	NA	NA	NA	NA	NA	0.584	NA	NA
SS01@4'	04/27/23	1.43	48.8	<0.213	<0.30	2.90	4.24	3.16	<0.260	<0.0213	11.5
SS02@4'	04/27/23	1.73	54.2	<0.222	<0.30	3.47	<0.222	3.82	<0.260	<0.0222	13.8
SS03@4'	04/27/23	1.46	34.0	<0.211	<0.30	2.47	3.49	2.81	<0.260	<0.0211	9.47
SS04@4'	04/27/23	1.46	51.5	<0.216	<0.30	3.12	4.74	3.45	<0.260	0.0242	12.4
FS01@5'	04/27/23	2.81	72.5	<0.224	<0.30	4.31	6.50	5.26	<0.260	<0.0224	18.5
SS05@4'	05/18/23	1.37	75.2	<0.242	<0.30	3.52	8.32	2.93	<0.260	0.0372	13.0

FIGURES



ATTACHMENT A

LABORATORY ANALYTICAL DATA REPORT

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 - Loloff 2,3,B35-19

Work Order #2210046

Enclosed are the results of analyses for samples received by Summit Scientific on 10/04/22 17:18. 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 - Loloff 2,3,B35-19

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/12/22 10:10

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BG02@3'	2210046-01	Soil	10/04/22 10:30	10/04/22 17:18
BG02@8'	2210046-02	Soil	10/04/22 10:35	10/04/22 17:18
BG03@3'	2210046-03	Soil	10/04/22 10:40	10/04/22 17:18
BG03@8'	2210046-04	Soil	10/04/22 10:45	10/04/22 17:18
BG04@3'	2210046-05	Soil	10/04/22 10:50	10/04/22 17:18
BG04@8'	2210046-06	Soil	10/04/22 10:55	10/04/22 17:18
BG05@3'	2210046-07	Soil	10/04/22 11:00	10/04/22 17:18
BG05@8'	2210046-08	Soil	10/04/22 11:05	10/04/22 17:18
BG06@3'	2210046-09	Soil	10/04/22 11:10	10/04/22 17:18
BG06@8'	2210046-10	Soil	10/04/22 11:15	10/04/22 17:18

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

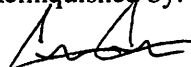
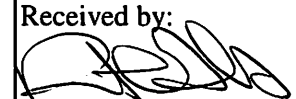
2210046

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

Page 1 of 1

Client:	Noble / Tasman	Project Manager:	Jake Whritenour	Invoice:
Address:	6855 W. 119th Ave	E-Mail:	jwhritenour@tasman-geo.com	
City/State/Zip:	Broomfield, CO 80020			
Phone:	970-691-7338	Project Name:	Loloff 2, 3, B35-19	
Sampler Name:	Chris Chapman	Project Number:		

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested								Special Instructions
					HCl	HNO3	None	Other	Water	Soil	Air-Canister #	Other	VOC - 915	TPH - 915	PAH - 915	pH, EC	Boron - HWS	HOLD	Arsenic	Selenium	
1	B602 @ 3'	10-4-22	1030	1			X			X						X			X	X	pH, EC, SAR by saturated paste
2	B602 @ 8'		1035																		
3	B603 @ 3'		1040																		
4	B603 @ 8'		1045																		
5	B604 @ 3'		1050																		
6	B604 @ 8'		1055																		
7	B605 @ 3'		1100																		
8	B605 @ 8'		1105																		
9	B606 @ 3'		1110																		
10	B606 @ 8'		1115																		

Relinquished by: 	Date/Time: 10-4-22/ 1345	Received by: Tasman's Lock Box	Date/Time: 10-4-22/ 1345	Turn Around Time (Check) Same Day — 72 hours — 24 hours — Standard — 48 hours <u>X</u> Sample Integrity: Temperature Upon Receipt: <u>8.2</u> Samples Intact: <u>Yes</u> No	Notes:
Relinquished by: Tasman's Lock Box	Date/Time: 10422 1718	Received by: 	Date/Time: 10422 1718		
Relinquished by:	Date/Time:	Received by:	Date/Time:		

S₂

Sample Receipt Checklist

S2 Work Order#

2210046

Client: Noble, Trisman Client Project ID: Loloff 2,3,B35-19Shipped Via: H.D./P.U./FedEx/UPS/USPS/Other ☐ Airbill #: ☐
☐ ☐ ☐ ☐ ☐
Matrix (Check all that apply) Air ☐ Soil/Solid ☒ Water ☐ Other ☐

Temp (°C)

8.2

Thermometer #

1

	Yes	No	N/A	Comments (if any)
If samples require cooling, is the temperature < 6°C? ⁽¹⁾ NOTE: If samples are delivered the same day of sampling, this requirement is met if there is evidence that cooling has begun.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	on ICE
If custody seals are present, are they intact? ⁽¹⁾	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are samples due within 48 hours present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	48 hrs
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

10.4.22

21:30



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

Project: Noble - Loloff 2,3,B35-19

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/12/22 10:10

BG02@3'
2210046-01 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Date Sampled: **10/04/22 10:30**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	1.51	0.200	mg/kg dry	1	BFJ0190	10/08/22	10/09/22	EPA 6020B	
Selenium	0.481	0.260	"	"	"	"	"	"	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **10/04/22 10:30**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	97.8		%	1	BFJ0200	10/10/22	10/12/22	Calculation	

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

Date Sampled: **10/04/22 10:30**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
pH	8.79		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 - Loloff 2,3,B35-19

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/12/22 10:10

BG02@8'
2210046-02 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Date Sampled: **10/04/22 10:35**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	3.23	0.200	mg/kg dry	1	BFJ0190	10/08/22	10/09/22	EPA 6020B	
Selenium	0.612	0.260	"	"	"	"	"	"	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **10/04/22 10:35**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	93.6		%	1	BFJ0200	10/10/22	10/12/22	Calculation	

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

Date Sampled: **10/04/22 10:35**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
pH	8.62		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 - Loloff 2,3,B35-19

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/12/22 10:10

BG03@3'
2210046-03 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Date Sampled: **10/04/22 10:40**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	1.47	0.200	mg/kg dry	1	BFJ0190	10/08/22	10/10/22	EPA 6020B	
Selenium	0.486	0.260	"	"	"	"	"	"	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **10/04/22 10:40**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	97.7		%	1	BFJ0200	10/10/22	10/12/22	Calculation	

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

Date Sampled: **10/04/22 10:40**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
pH	8.84		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 - Loloff 2,3,B35-19

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/12/22 10:10

BG03@8'
2210046-04 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Date Sampled: **10/04/22 10:45**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	3.48	0.200	mg/kg dry	1	BFJ0190	10/08/22	10/10/22	EPA 6020B	
Selenium	0.535	0.260	"	"	"	"	"	"	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **10/04/22 10:45**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	91.7		%	1	BFJ0200	10/10/22	10/12/22	Calculation	

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

Date Sampled: **10/04/22 10:45**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
pH	8.52		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 - Loloff 2,3,B35-19

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/12/22 10:10

BG04@3'
2210046-05 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Date Sampled: **10/04/22 10:50**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	1.06	0.200	mg/kg dry	1	BFJ0190	10/08/22	10/10/22	EPA 6020B	
Selenium	0.387	0.260	"	"	"	"	"	"	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **10/04/22 10:50**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	98.3		%	1	BFJ0200	10/10/22	10/12/22	Calculation	

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

Date Sampled: **10/04/22 10:50**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
pH	9.04		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 - Loloff 2,3,B35-19

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/12/22 10:10

BG04@8'
2210046-06 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Date Sampled: **10/04/22 10:55**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	2.57	0.200	mg/kg dry	1	BFJ0190	10/08/22	10/10/22	EPA 6020B	
Selenium	0.559	0.260	"	"	"	"	"	"	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **10/04/22 10:55**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	93.0		%	1	BFJ0200	10/10/22	10/12/22	Calculation	

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

Date Sampled: **10/04/22 10:55**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
pH	8.52		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 - Loloff 2,3,B35-19

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/12/22 10:10

BG05@3'
2210046-07 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Date Sampled: **10/04/22 11:00**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	1.26	0.200	mg/kg dry	1	BFJ0190	10/08/22	10/10/22	EPA 6020B	
Selenium	0.384	0.260	"	"	"	"	"	"	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **10/04/22 11:00**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	98.0		%	1	BFJ0200	10/10/22	10/12/22	Calculation	

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

Date Sampled: **10/04/22 11:00**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
pH	8.75		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 - Loloff 2,3,B35-19

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/12/22 10:10

BG05@8'
2210046-08 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Date Sampled: **10/04/22 11:05**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	3.55	0.200	mg/kg dry	1	BFJ0190	10/08/22	10/10/22	EPA 6020B	
Selenium	0.568	0.260	"	"	"	"	"	"	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **10/04/22 11:05**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	95.7		%	1	BFJ0200	10/10/22	10/12/22	Calculation	

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

Date Sampled: **10/04/22 11:05**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
pH	8.66		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 - Loloff 2,3,B35-19

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/12/22 10:10

BG06@3'
2210046-09 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Date Sampled: **10/04/22 11:10**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	1.38	0.200	mg/kg dry	1	BFJ0190	10/08/22	10/10/22	EPA 6020B	
Selenium	0.502	0.260	"	"	"	"	"	"	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **10/04/22 11:10**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	97.7		%	1	BFJ0200	10/10/22	10/12/22	Calculation	

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

Date Sampled: **10/04/22 11:10**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
pH	8.80		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 - Loloff 2,3,B35-19

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/12/22 10:10

BG06@8'
2210046-10 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Date Sampled: **10/04/22 11:15**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	3.14	0.200	mg/kg dry	1	BFJ0190	10/08/22	10/10/22	EPA 6020B	
Selenium	0.584	0.260	"	"	"	"	"	"	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **10/04/22 11:15**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	92.4		%	1	BFJ0200	10/10/22	10/12/22	Calculation	

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

Date Sampled: **10/04/22 11:15**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
pH	8.30		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 - Loloff 2,3,B35-19

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/12/22 10:10

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 BFJ0190 - EPA 3050B

Blank (BFJ0190-BLK1)

Prepared: 10/08/22 Analyzed: 10/09/22

Arsenic	ND	0.200	mg/kg wet
Selenium	ND	0.260	"

LCS (BFJ0190-BS1)

Prepared: 10/08/22 Analyzed: 10/09/22

Arsenic	41.3	0.200	mg/kg wet	40.0	103	80-120
Selenium	4.07	0.260	"	4.00	102	80-120

Duplicate (BFJ0190-DUP1)

Source: 2210046-01

Prepared: 10/08/22 Analyzed: 10/09/22

Arsenic	1.57	0.200	mg/kg dry	1.51	3.62	20
Selenium	0.443	0.260	"	0.481	8.18	20

Matrix Spike (BFJ0190-MS1)

Source: 2210046-01

Prepared: 10/08/22 Analyzed: 10/09/22

Arsenic	41.2	0.200	mg/kg dry	40.9	1.51	97.2	75-125
Selenium	4.23	0.260	"	4.09	0.481	91.6	75-125

Matrix Spike Dup (BFJ0190-MSD1)

Source: 2210046-01

Prepared: 10/08/22 Analyzed: 10/09/22

Arsenic	41.9	0.200	mg/kg dry	40.9	1.51	98.7	75-125	1.50	25
Selenium	4.22	0.260	"	4.09	0.481	91.4	75-125	0.211	25

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

Project: Noble - Loloff 2,3,B35-19

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/12/22 10:10

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 BFJ0200 - General Preparation

Duplicate (BFJ0200-DUP1)

Source: 2210045-03

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

% Solids	81.9	%	84.9	3.67	20
----------	------	---	------	------	----

Summit Scientific

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

Project: Noble - Loloff 2,3,B35-19

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/12/22 10:10

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

Summit Scientific

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

Batch 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
----	------	----------	------	-------	----

Summit Scientific

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

Project: Noble - Loloff 2,3,B35-19

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/12/22 10:10

Notes and Definitions

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

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80401

303.277.9310

May 04, 2023

Jacob Whritenour

Tasman Geosciences

6855 W. 119th Ave.

Broomfield, CO 80020

RE: Noble - Lolofifi 2,3,B35-19

Work Order # 2304605

Enclosed are the results of analyses for samples received by Summit Scientific on 04/27/23 17:42. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "Scott Sheely". The signature is written in a cursive, flowing style.

Scott Sheely For Paul Shrewsbury

President



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

Project: Noble - Loloff 2,3,B35-19

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
05/04/23 11:43

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS01@4'	2304605-01	Soil	04/27/23 10:40	04/27/23 17:42
SS02@4'	2304605-02	Soil	04/27/23 10:42	04/27/23 17:42
SS03@4'	2304605-03	Soil	04/27/23 10:44	04/27/23 17:42
SS04@4'	2304605-04	Soil	04/27/23 10:48	04/27/23 17:42
FS01@5'	2304605-05	Soil	04/27/23 10:50	04/27/23 17:42

Summit Scientific

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

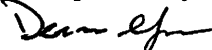
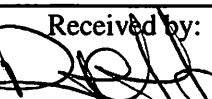

SUMMIT SCIENTIFIC

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

Lab ID	Page 1 of 1
2304605	

Client: Noble/Tasman		Send Data To: Project Manager: Jake Whritenour		Send Invoice To: Company: Chevron	
Address: 6855 W. 119th Ave.		E-Mail: Jwhritenour@tasman-geo.com		Project Name/Location: Loloff 2,3, B35-19 FAC	
City/State/Zip: Broomfield/CO/ 80020				AFE#:	
Phone: 602-881-5716		Project Name: Loloff 2,3, B35-19 FAC		PO/Billing Codes:	
Sampler Name: Dennis Gray		Project Number:		Contact: Jacob Rullu	

				Preservative				Matrix				Analysis Requested								Special Instructions
ID	Sample Description	Date Sampled	Time Sampled	# of containers	HCl	HNO3	None	Other	Water	Soil	Air-Canister #	Other	Metals - 915	VOC - 915	TPH - 915	PAH - 915	SAR, EC, pH	Boron - HWS	HOLD	
1	SS01@4'	4-27-23	1040	2			X			X			X	X	X	X	X	X		SAR, EC, pH by saturated paste
2	SS02@4'	I	1042	I			I			I			I	I	I	I	I	I		
3	SS03@4'	I	1044	I			I			I			I	I	I	I	I	I		
4	SS04@4'	I	1048	I			I			I			I	I	I	I	I	I		
5	FS01@5'	I	1050	I			I			I			I	I	I	I	I	I		
6																				
7																				
8																				
9																				
10																				
11																				
12																				
13																				
14																				
15																				

Relinquished by: 	Date/Time: 4-27-23 1515	Received by: Tasman Lock Box	Date/Time: 4-27-23 1515	TAT Business Days	Field DO	Notes:	
				Same Day	X		Field EC
Relinquished by: Tasman Lock Box	Date/Time: 4-27-23 1742	Received by: 	Date/Time: 4-27-23 1742	1 Day			Field ORP
				2 Days			Field pH
Relinquished by:	Date/Time:	Received by:	Date/Time:	3 Days			Field Temp.
				Standard		Field Turb.	
Temperature Upon Receipt: 9.8		Corrected Temperature: 		IR gun #: 1	HNO3 lot #:		

S₂

Sample Receipt Checklist

S2 Work Order# 2304605Client: Abdelrasman Client Project ID: Loloff 2,3, B35-19 FACShipped Via: H.D./P.U./FedEx/UPS/USPS/Other ☐ Airbill #: ☐

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

Matrix (Check all that apply) Air ☐ Soil/Solid ☒ Water ☐ Other ☐Temp (°C) 9.8 Thermometer # 1

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

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

 Custodian Printed Name

4.27.23
 Date/Time



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

Project: Noble - Loloff 2,3,B35-19

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
05/04/23 11:43

SS01@4'
2304605-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/27/23 10:40**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Benzene	ND	0.0020		mg/kg	1	BGD0948	04/27/23	04/27/23	EPA 8260B	
Toluene	ND	0.0050		"	"	"	"	"	"	
Ethylbenzene	ND	0.0050		"	"	"	"	"	"	
Xylenes (total)	ND	0.010		"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050		"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050		"	"	"	"	"	"	
Naphthalene	ND	0.0038		"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50		"	"	"	"	"	"	

Date Sampled: **04/27/23 10:40**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: 1,2-Dichloroethane-d4		108 %		50-150		"	"	"	"	
Surrogate: Toluene-d8		97.9 %		50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		103 %		50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **04/27/23 10:40**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
C10-C28 (DRO)	ND	50		mg/kg	1	BGD0949	04/27/23	04/27/23	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **04/27/23 10:40**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: o-Terphenyl		130 %		30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

Summit Scientific

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

Project: Noble - Loloff 2,3,B35-19

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
05/04/23 11:43

SS01@4'
2304605-01 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **04/27/23 10:40**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Acenaphthene	ND	0.00500		mg/kg	1	BGD0950	04/28/23	05/01/23	EPA 8270D SIM	
Anthracene	ND	0.00500		"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500		"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500		"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500		"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500		"	"	"	"	"	"	
Chrysene	ND	0.00500		"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500		"	"	"	"	"	"	
Fluoranthene	ND	0.00500		"	"	"	"	"	"	
Fluorene	ND	0.00500		"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500		"	"	"	"	"	"	
Pyrene	ND	0.00500		"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500		"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500		"	"	"	"	"	"	

Date Sampled: **04/27/23 10:40**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: 2-Methylnaphthalene-d10		43.9 %		40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		42.9 %		40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **04/27/23 10:40**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Boron	0.120	0.0100		mg/L	1	BGD0988	04/29/23	04/30/23	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **04/27/23 10:40**

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

Summit Scientific

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

Project: Noble - Loloff 2,3,B35-19

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
05/04/23 11:43

SS01@4'
2304605-01 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Arsenic	1.43	0.213	mg/kg dry	1	BGD0940	04/27/23	04/29/23	EPA 6020B
Barium	48.8	0.425	"	"	"	"	"	"
Cadmium	ND	0.213	"	"	"	"	"	"
Copper	2.90	0.425	"	"	"	"	"	"
Lead	4.24	0.213	"	"	"	"	"	"
Nickel	3.16	0.425	"	"	"	"	"	"
Selenium	ND	0.260	0.175	"	"	"	"	"
Silver	ND	0.0213	"	"	"	"	"	"
Zinc	11.5	0.425	"	"	"	"	"	"

Hexavalent Chromium by EPA Method 7196

Date Sampled: **04/27/23 10:40**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30		mg/kg dry	1	BGD0969	04/28/23	04/28/23	EPA 7196A	

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

Date Sampled: **04/27/23 10:40**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	36.7	0.0532		mg/L dry	1	BGD0944	04/27/23	05/02/23	EPA 6020B	
Magnesium	5.29	0.0532		"	"	"	"	"	"	
Sodium	4.80	0.0532		"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **04/27/23 10:40**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.196	0.00100		units	1	BGE0062	05/02/23	05/02/23	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Summit Scientific

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

Project: Noble - Loloff 2,3,B35-19

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
05/04/23 11:43

SS01@4'
2304605-01 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **04/27/23 10:40**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
% Solids	94.1			%	1	BGD1018	04/30/23	05/01/23	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **04/27/23 10:40**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Specific Conductance (EC)	0.190	0.0100		mmhos/cm	1	BGD1005	04/30/23	04/30/23	EPA 120.1	

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

Date Sampled: **04/27/23 10:40**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
pH	7.88			pH Units	1	BGD1006	04/30/23	04/30/23	EPA 9045D	

Summit Scientific

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

Project: Noble - Loloff 2,3,B35-19

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
05/04/23 11:43

SS02@4'
2304605-02 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/27/23 10:42**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Benzene	ND	0.0020		mg/kg	1	BGD0948	04/27/23	04/27/23	EPA 8260B	
Toluene	ND	0.0050		"	"	"	"	"	"	
Ethylbenzene	ND	0.0050		"	"	"	"	"	"	
Xylenes (total)	ND	0.010		"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050		"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050		"	"	"	"	"	"	
Naphthalene	ND	0.0038		"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50		"	"	"	"	"	"	

Date Sampled: **04/27/23 10:42**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: 1,2-Dichloroethane-d4		113 %		50-150		"	"	"	"	
Surrogate: Toluene-d8		100 %		50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		104 %		50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **04/27/23 10:42**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
C10-C28 (DRO)	ND	50		mg/kg	1	BGD0949	04/27/23	04/27/23	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **04/27/23 10:42**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: o-Terphenyl		139 %		30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

Summit Scientific

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



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

Project: Noble - Loloff 2,3,B35-19

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
05/04/23 11:43

SS02@4'
2304605-02 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **04/27/23 10:42**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500		mg/kg	1	BGD0950	04/28/23	05/01/23	EPA 8270D SIM	
Anthracene	ND	0.00500		"	"	"	"	"	"	
Benzo (a) anthracene	0.0119	0.00500		"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500		"	"	"	"	"	"	
Benzo (b) fluoranthene	0.00905	0.00500		"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500		"	"	"	"	"	"	
Chrysene	0.00677	0.00500		"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500		"	"	"	"	"	"	
Fluoranthene	0.0147	0.00500		"	"	"	"	"	"	
Fluorene	ND	0.00500		"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500		"	"	"	"	"	"	
Pyrene	0.0201	0.00500		"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500		"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500		"	"	"	"	"	"	

Date Sampled: **04/27/23 10:42**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		73.7 %		40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		66.0 %		40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **04/27/23 10:42**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.0485	0.0100		mg/L	1	BGD0988	04/29/23	04/30/23	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **04/27/23 10:42**

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

Project: Noble - Loloff 2,3,B35-19

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
05/04/23 11:43

SS02@4'
2304605-02 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Analyte	Result	Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	1.73	0.222		mg/kg dry	1	BGD0940	04/27/23	04/29/23	EPA 6020B	
Barium	54.2	0.443		"	"	"	"	"	"	
Cadmium	ND	0.222		"	"	"	"	"	"	
Copper	3.47	0.443		"	"	"	"	"	"	
Lead	ND	0.222		"	"	"	"	"	"	
Nickel	3.82	0.443		"	"	"	"	"	"	
Selenium	ND	0.260	0.175	"	"	"	"	"	"	
Silver	ND	0.0222		"	"	"	"	"	"	
Zinc	13.8	0.443		"	"	"	"	"	"	

Hexavalent Chromium by EPA Method 7196

Date Sampled: **04/27/23 10:42**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30		mg/kg dry	1	BGD0969	04/28/23	04/28/23	EPA 7196A	

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

Date Sampled: **04/27/23 10:42**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	28.6	0.0554		mg/L dry	1	BGD0944	04/27/23	05/02/23	EPA 6020B	
Magnesium	7.37	0.0554		"	"	"	"	"	"	
Sodium	7.96	0.0554		"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **04/27/23 10:42**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.343	0.00100		units	1	BGE0062	05/02/23	05/02/23	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

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

Project: Noble - Loloff 2,3,B35-19

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
05/04/23 11:43

SS02@4'
2304605-02 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **04/27/23 10:42**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
% Solids	90.2			%	1	BGD1018	04/30/23	05/01/23	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **04/27/23 10:42**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Specific Conductance (EC)	0.252	0.0100		mmhos/cm	1	BGD1005	04/30/23	04/30/23	EPA 120.1	

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

Date Sampled: **04/27/23 10:42**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
pH	7.75			pH Units	1	BGD1006	04/30/23	04/30/23	EPA 9045D	

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

Project: Noble - Loloff 2,3,B35-19

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
05/04/23 11:43

SS03@4'
2304605-03 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/27/23 10:44**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Benzene	ND	0.0020		mg/kg	1	BGD0948	04/27/23	04/27/23	EPA 8260B	
Toluene	ND	0.0050		"	"	"	"	"	"	
Ethylbenzene	ND	0.0050		"	"	"	"	"	"	
Xylenes (total)	ND	0.010		"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050		"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050		"	"	"	"	"	"	
Naphthalene	ND	0.0038		"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50		"	"	"	"	"	"	

Date Sampled: **04/27/23 10:44**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: 1,2-Dichloroethane-d4		117 %		50-150		"	"	"	"	
Surrogate: Toluene-d8		100 %		50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		101 %		50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **04/27/23 10:44**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
C10-C28 (DRO)	ND	50		mg/kg	1	BGD0949	04/27/23	04/27/23	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **04/27/23 10:44**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: o-Terphenyl		94.4 %		30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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

Project: Noble - Loloff 2,3,B35-19

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
05/04/23 11:43

SS03@4'
2304605-03 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **04/27/23 10:44**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500		mg/kg	1	BGD0950	04/28/23	05/01/23	EPA 8270D SIM	
Anthracene	ND	0.00500		"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500		"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500		"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500		"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500		"	"	"	"	"	"	
Chrysene	ND	0.00500		"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500		"	"	"	"	"	"	
Fluoranthene	ND	0.00500		"	"	"	"	"	"	
Fluorene	ND	0.00500		"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500		"	"	"	"	"	"	
Pyrene	ND	0.00500		"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500		"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500		"	"	"	"	"	"	

Date Sampled: **04/27/23 10:44**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		74.1 %		40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		73.5 %		40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **04/27/23 10:44**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.0554	0.0100		mg/L	1	BGD0988	04/29/23	04/30/23	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **04/27/23 10:44**

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

Project: Noble - Loloff 2,3,B35-19

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
05/04/23 11:43

SS03@4'
2304605-03 (Soil)

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Total Metals by EPA 6020B

Analyte	Result	Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	1.46	0.211		mg/kg dry	1	BGD0940	04/27/23	04/29/23	EPA 6020B	
Barium	34.0	0.422		"	"	"	"	"	"	
Cadmium	ND	0.211		"	"	"	"	"	"	
Copper	2.47	0.422		"	"	"	"	"	"	
Lead	3.49	0.211		"	"	"	"	"	"	
Nickel	2.81	0.422		"	"	"	"	"	"	
Selenium	ND	0.260	0.175	"	"	"	"	"	"	
Silver	ND	0.0211		"	"	"	"	"	"	
Zinc	9.47	0.422		"	"	"	"	"	"	

Hexavalent Chromium by EPA Method 7196

Date Sampled: **04/27/23 10:44**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30		mg/kg dry	1	BGD0969	04/28/23	04/28/23	EPA 7196A	

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

Date Sampled: **04/27/23 10:44**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	268	0.0528		mg/L dry	1	BGD0944	04/27/23	05/02/23	EPA 6020B	
Magnesium	52.7	0.0528		"	"	"	"	"	"	
Sodium	5.35	0.0528		"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **04/27/23 10:44**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.0782	0.00100		units	1	BGE0062	05/02/23	05/02/23	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

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Tasman Geosciences
6855 W. 119th Ave.
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Project: Noble - Loloff 2,3,B35-19

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
05/04/23 11:43

SS03@4'
2304605-03 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **04/27/23 10:44**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
% Solids	94.7			%	1	BGD1018	04/30/23	05/01/23	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **04/27/23 10:44**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Specific Conductance (EC)	0.135	0.0100		mmhos/cm	1	BGD1005	04/30/23	04/30/23	EPA 120.1	

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

Date Sampled: **04/27/23 10:44**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
pH	6.71			pH Units	1	BGD1006	04/30/23	04/30/23	EPA 9045D	

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6855 W. 119th Ave.
Broomfield CO, 80020

Project: Noble - Loloff 2,3,B35-19

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
05/04/23 11:43

SS04@4'
2304605-04 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/27/23 10:48**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Benzene	ND	0.0020		mg/kg	1	BGD0948	04/27/23	04/27/23	EPA 8260B	
Toluene	ND	0.0050		"	"	"	"	"	"	
Ethylbenzene	ND	0.0050		"	"	"	"	"	"	
Xylenes (total)	ND	0.010		"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050		"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050		"	"	"	"	"	"	
Naphthalene	ND	0.0038		"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50		"	"	"	"	"	"	

Date Sampled: **04/27/23 10:48**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: 1,2-Dichloroethane-d4		110 %		50-150		"	"	"	"	
Surrogate: Toluene-d8		97.8 %		50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		104 %		50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **04/27/23 10:48**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
C10-C28 (DRO)	ND	50		mg/kg	1	BGD0949	04/27/23	04/27/23	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **04/27/23 10:48**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: o-Terphenyl		131 %		30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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

Project: Noble - Loloff 2,3,B35-19

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
05/04/23 11:43

SS04@4'
2304605-04 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **04/27/23 10:48**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Acenaphthene	ND	0.00500		mg/kg	1	BGD0950	04/28/23	05/01/23	EPA 8270D SIM	
Anthracene	ND	0.00500		"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500		"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500		"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500		"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500		"	"	"	"	"	"	
Chrysene	ND	0.00500		"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500		"	"	"	"	"	"	
Fluoranthene	ND	0.00500		"	"	"	"	"	"	
Fluorene	ND	0.00500		"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500		"	"	"	"	"	"	
Pyrene	ND	0.00500		"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500		"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500		"	"	"	"	"	"	

Date Sampled: **04/27/23 10:48**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: 2-Methylnaphthalene-d10		84.5 %		40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		72.1 %		40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **04/27/23 10:48**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Boron	0.113	0.0100		mg/L	1	BGD0988	04/29/23	04/30/23	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **04/27/23 10:48**

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

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6855 W. 119th Ave.
Broomfield CO, 80020

Project: Noble - Loloff 2,3,B35-19

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
05/04/23 11:43

SS04@4'
2304605-04 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Arsenic	1.46	0.216	mg/kg dry	1	BGD0940	04/27/23	04/29/23	EPA 6020B
Barium	51.5	0.433	"	"	"	"	"	"
Cadmium	ND	0.216	"	"	"	"	"	"
Copper	3.12	0.433	"	"	"	"	"	"
Lead	4.74	0.216	"	"	"	"	"	"
Nickel	3.45	0.433	"	"	"	"	"	"
Selenium	ND	0.260	0.175	"	"	"	"	"
Silver	0.0242	0.0216	"	"	"	"	"	"
Zinc	12.4	0.433	"	"	"	"	"	"

Hexavalent Chromium by EPA Method 7196

Date Sampled: **04/27/23 10:48**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30		mg/kg dry	1	BGD0969	04/28/23	04/28/23	EPA 7196A	

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

Date Sampled: **04/27/23 10:48**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	39.1	0.0541		mg/L dry	1	BGD0944	04/27/23	05/02/23	EPA 6020B	
Magnesium	8.05	0.0541		"	"	"	"	"	"	
Sodium	1.91	0.0541		"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **04/27/23 10:48**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.0727	0.00100		units	1	BGE0062	05/02/23	05/02/23	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Summit Scientific

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

Project: Noble - Loloff 2,3,B35-19

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
05/04/23 11:43

SS04@4'
2304605-04 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **04/27/23 10:48**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
% Solids	92.5			%	1	BGD1018	04/30/23	05/01/23	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **04/27/23 10:48**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Specific Conductance (EC)	0.186	0.0100		mmhos/cm	1	BGD1005	04/30/23	04/30/23	EPA 120.1	

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

Date Sampled: **04/27/23 10:48**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
pH	7.66			pH Units	1	BGD1006	04/30/23	04/30/23	EPA 9045D	

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

Project: Noble - Loloff 2,3,B35-19

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
05/04/23 11:43

FS01@5'
2304605-05 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/27/23 10:50**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Benzene	ND	0.0020		mg/kg	1	BGD0948	04/27/23	04/27/23	EPA 8260B	
Toluene	ND	0.0050		"	"	"	"	"	"	
Ethylbenzene	ND	0.0050		"	"	"	"	"	"	
Xylenes (total)	ND	0.010		"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050		"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050		"	"	"	"	"	"	
Naphthalene	ND	0.0038		"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50		"	"	"	"	"	"	

Date Sampled: **04/27/23 10:50**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: 1,2-Dichloroethane-d4		113 %		50-150		"	"	"	"	
Surrogate: Toluene-d8		98.9 %		50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		105 %		50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **04/27/23 10:50**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
C10-C28 (DRO)	ND	50		mg/kg	1	BGD0949	04/27/23	04/27/23	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **04/27/23 10:50**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: o-Terphenyl		130 %		30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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6855 W. 119th Ave.
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Project: Noble - Loloff 2,3,B35-19

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
05/04/23 11:43

FS01@5'
2304605-05 (Soil)

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PAH by EPA Method 8270D SIM

Date Sampled: **04/27/23 10:50**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500		mg/kg	1	BGD0950	04/28/23	05/01/23	EPA 8270D SIM	
Anthracene	ND	0.00500		"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500		"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500		"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500		"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500		"	"	"	"	"	"	
Chrysene	ND	0.00500		"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500		"	"	"	"	"	"	
Fluoranthene	ND	0.00500		"	"	"	"	"	"	
Fluorene	ND	0.00500		"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500		"	"	"	"	"	"	
Pyrene	ND	0.00500		"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500		"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500		"	"	"	"	"	"	

Date Sampled: **04/27/23 10:50**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		72.0 %		40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		68.7 %		40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **04/27/23 10:50**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.0234	0.0100		mg/L	1	BGD0988	04/29/23	04/30/23	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **04/27/23 10:50**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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05/04/23 11:43

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2304605-05 (Soil)

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Total Metals by EPA 6020B

Analyte	Result	Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	2.81	0.224		mg/kg dry	1	BGD0940	04/27/23	04/29/23	EPA 6020B	
Barium	72.5	0.447		"	"	"	"	"	"	
Cadmium	ND	0.224		"	"	"	"	"	"	
Copper	4.31	0.447		"	"	"	"	"	"	
Lead	6.50	0.224		"	"	"	"	"	"	
Nickel	5.26	0.447		"	"	"	"	"	"	
Selenium	ND	0.260	0.175	"	"	"	"	"	"	
Silver	ND	0.0224		"	"	"	"	"	"	
Zinc	18.5	0.447		"	"	"	"	"	"	

Hexavalent Chromium by EPA Method 7196

Date Sampled: **04/27/23 10:50**

Analyte	Result	Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30		mg/kg dry	1	BGD0969	04/28/23	04/28/23	EPA 7196A	

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

Date Sampled: **04/27/23 10:50**

Analyte	Result	Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	310	0.0559		mg/L dry	1	BGD0944	04/27/23	05/02/23	EPA 6020B	
Magnesium	42.6	0.0559		"	"	"	"	"	"	
Sodium	4.55	0.0559		"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **04/27/23 10:50**

Analyte	Result	Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.0643	0.00100		units	1	BGE0062	05/02/23	05/02/23	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

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FS01@5'
2304605-05 (Soil)

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Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **04/27/23 10:50**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
% Solids	89.4			%	1	BGD1018	04/30/23	05/01/23	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **04/27/23 10:50**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Specific Conductance (EC)	0.199	0.0100		mmhos/cm	1	BGD1005	04/30/23	04/30/23	EPA 120.1	

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

Date Sampled: **04/27/23 10:50**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
pH	7.85			pH Units	1	BGD1006	04/30/23	04/30/23	EPA 9045D	

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05/04/23 11:43

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 BGD0948 - EPA 5030 Soil MS

Blank (BGD0948-BLK1)

Prepared & Analyzed: 04/27/23

Benzene	ND	0.0020	mg/kg							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
1,2,4-Trimethylbenzene	ND	0.0050	"							
1,3,5-Trimethylbenzene	ND	0.0050	"							
Naphthalene	ND	0.0038	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
Surrogate: 1,2-Dichloroethane-d4	0.0426		"	0.0400		107	50-150			
Surrogate: Toluene-d8	0.0393		"	0.0400		98.2	50-150			
Surrogate: 4-Bromofluorobenzene	0.0512		"	0.0400		128	50-150			

LCS (BGD0948-BS1)

Prepared & Analyzed: 04/27/23

Benzene	0.110	0.0020	mg/kg	0.100		110	70-130			
Toluene	0.105	0.0050	"	0.100		105	70-130			
Ethylbenzene	0.0964	0.0050	"	0.100		96.4	70-130			
m,p-Xylene	0.231	0.010	"	0.200		115	70-130			
o-Xylene	0.110	0.0050	"	0.100		110	70-130			
1,2,4-Trimethylbenzene	0.111	0.0050	"	0.100		111	70-130			
1,3,5-Trimethylbenzene	0.0951	0.0050	"	0.100		95.1	70-130			
Naphthalene	0.106	0.0038	"	0.100		106	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0425		"	0.0400		106	50-150			
Surrogate: Toluene-d8	0.0395		"	0.0400		98.8	50-150			
Surrogate: 4-Bromofluorobenzene	0.0401		"	0.0400		100	50-150			

Matrix Spike (BGD0948-MS1)

Source: 2304603-03

Prepared & Analyzed: 04/27/23

Benzene	0.110	0.0020	mg/kg	0.100	ND	110	70-130			
Toluene	0.104	0.0050	"	0.100	ND	104	70-130			
Ethylbenzene	0.0943	0.0050	"	0.100	ND	94.3	70-130			
m,p-Xylene	0.225	0.010	"	0.200	ND	112	70-130			
o-Xylene	0.104	0.0050	"	0.100	ND	104	70-130			
1,2,4-Trimethylbenzene	0.106	0.0050	"	0.100	ND	106	70-130			
1,3,5-Trimethylbenzene	0.103	0.0050	"	0.100	ND	103	70-130			
Naphthalene	0.109	0.0038	"	0.100	ND	109	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0419		"	0.0400		105	50-150			
Surrogate: Toluene-d8	0.0394		"	0.0400		98.6	50-150			
Surrogate: 4-Bromofluorobenzene	0.0391		"	0.0400		97.6	50-150			

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Project: Noble - Loloff 2,3,B35-19

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
05/04/23 11:43

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

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

Batch BGD0948 - EPA 5030 Soil MS

Matrix Spike Dup (BGD0948-MSD1)

Source: 2304603-03

Prepared: 04/27/23 Analyzed: 04/28/23

Benzene	0.108	0.0020	mg/kg	0.100	ND	108	70-130	1.07	30	
Toluene	0.102	0.0050	"	0.100	ND	102	70-130	2.30	30	
Ethylbenzene	0.0927	0.0050	"	0.100	ND	92.7	70-130	1.70	30	
m,p-Xylene	0.226	0.010	"	0.200	ND	113	70-130	0.838	30	
o-Xylene	0.109	0.0050	"	0.100	ND	109	70-130	4.22	30	
1,2,4-Trimethylbenzene	0.103	0.0050	"	0.100	ND	103	70-130	3.00	30	
1,3,5-Trimethylbenzene	0.0966	0.0050	"	0.100	ND	96.6	70-130	6.11	30	
Naphthalene	0.114	0.0038	"	0.100	ND	114	70-130	4.25	30	
Surrogate: 1,2-Dichloroethane-d4	0.0427		"	0.0400		107	50-150			
Surrogate: Toluene-d8	0.0380		"	0.0400		95.0	50-150			
Surrogate: 4-Bromofluorobenzene	0.0389		"	0.0400		97.3	50-150			

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Project: Noble - Loloff 2,3,B35-19

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
05/04/23 11:43

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch BGD0949 - EPA 3550A

Blank (BGD0949-BLK1)

Prepared: 04/27/23 Analyzed: 04/28/23

C10-C28 (DRO)	ND	50	mg/kg							
C28-C36 (ORO)	ND	50	"							
Surrogate: o-Terphenyl	16.2		"	12.5		130	30-150			

LCS (BGD0949-BS1)

Prepared: 04/27/23 Analyzed: 04/28/23

C10-C28 (DRO)	509	50	mg/kg	500		102	70-130			
Surrogate: o-Terphenyl	11.5		"	12.5		91.8	30-150			

Matrix Spike (BGD0949-MS1)

Source: 2304603-02

Prepared: 04/27/23 Analyzed: 04/28/23

C10-C28 (DRO)	582	50	mg/kg	500	25.5	111	70-130			
Surrogate: o-Terphenyl	14.1		"	12.5		112	30-150			

Matrix Spike Dup (BGD0949-MSD1)

Source: 2304603-02

Prepared: 04/27/23 Analyzed: 04/28/23

C10-C28 (DRO)	553	50	mg/kg	500	25.5	106	70-130	5.12	20	
Surrogate: o-Terphenyl	13.7		"	12.5		110	30-150			

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Project: Noble - Loloff 2,3,B35-19

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
05/04/23 11:43

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 BGD0950 - EPA 5030 Soil MS

Blank (BGD0950-BLK1)

Prepared: 04/28/23 Analyzed: 05/01/23

Acenaphthene	ND	0.00500	mg/kg							
Anthracene	ND	0.00500	"							
Benzo (a) anthracene	ND	0.00500	"							
Benzo (a) pyrene	ND	0.00500	"							
Benzo (b) fluoranthene	ND	0.00500	"							
Benzo (k) fluoranthene	ND	0.00500	"							
Chrysene	ND	0.00500	"							
Dibenz (a,h) anthracene	ND	0.00500	"							
Fluoranthene	ND	0.00500	"							
Fluorene	ND	0.00500	"							
Indeno (1,2,3-cd) pyrene	ND	0.00500	"							
Pyrene	ND	0.00500	"							
1-Methylnaphthalene	ND	0.00500	"							
2-Methylnaphthalene	ND	0.00500	"							
Surrogate: 2-Methylnaphthalene-d10	0.0336		"	0.0333		101	40-150			
Surrogate: Fluoranthene-d10	0.0369		"	0.0333		111	40-150			

LCS (BGD0950-BS1)

Prepared: 04/28/23 Analyzed: 05/01/23

Acenaphthene	0.0267	0.00500	mg/kg	0.0333	80.0	31-137
Anthracene	0.0275	0.00500	"	0.0333	82.6	30-120
Benzo (a) anthracene	0.0391	0.00500	"	0.0333	117	30-120
Benzo (a) pyrene	0.0284	0.00500	"	0.0333	85.1	30-120
Benzo (b) fluoranthene	0.0337	0.00500	"	0.0333	101	30-120
Benzo (k) fluoranthene	0.0301	0.00500	"	0.0333	90.2	30-120
Chrysene	0.0251	0.00500	"	0.0333	75.3	30-120
Dibenz (a,h) anthracene	0.0245	0.00500	"	0.0333	73.4	30-120
Fluoranthene	0.0282	0.00500	"	0.0333	84.5	30-120
Fluorene	0.0269	0.00500	"	0.0333	80.7	30-120
Indeno (1,2,3-cd) pyrene	0.0225	0.00500	"	0.0333	67.6	30-120
Pyrene	0.0246	0.00500	"	0.0333	73.8	35-142
1-Methylnaphthalene	0.0233	0.00500	"	0.0333	69.9	35-142
2-Methylnaphthalene	0.0293	0.00500	"	0.0333	88.0	35-142
Surrogate: 2-Methylnaphthalene-d10	0.0315		"	0.0333	94.6	40-150
Surrogate: Fluoranthene-d10	0.0324		"	0.0333	97.2	40-150

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Project: Noble - Loloff 2,3,B35-19

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
05/04/23 11:43

PAH by EPA Method 8270D SIM - Quality Control

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

Batch BGD0950 - EPA 5030 Soil MS

Matrix Spike (BGD0950-MS1)

Source: 2304549-01

Prepared: 04/28/23 Analyzed: 05/01/23

Acenaphthene	0.0189	0.00500	mg/kg	0.0333	ND	56.7	31-137				
Anthracene	0.0189	0.00500	"	0.0333	ND	56.7	30-120				
Benzo (a) anthracene	0.0341	0.00500	"	0.0333	ND	102	30-120				
Benzo (a) pyrene	0.0188	0.00500	"	0.0333	ND	56.5	30-120				
Benzo (b) fluoranthene	0.0172	0.00500	"	0.0333	ND	51.5	30-120				
Benzo (k) fluoranthene	0.0170	0.00500	"	0.0333	ND	51.0	30-120				
Chrysene	0.0173	0.00500	"	0.0333	ND	52.0	30-120				
Dibenz (a,h) anthracene	0.0141	0.00500	"	0.0333	ND	42.3	30-120				
Fluoranthene	0.0195	0.00500	"	0.0333	ND	58.4	30-120				
Fluorene	0.0192	0.00500	"	0.0333	ND	57.6	30-120				
Indeno (1,2,3-cd) pyrene	0.0157	0.00500	"	0.0333	ND	47.0	30-120				
Pyrene	0.0170	0.00500	"	0.0333	ND	51.1	35-142				
1-Methylnaphthalene	0.0187	0.00500	"	0.0333	ND	56.0	15-130				
2-Methylnaphthalene	0.0216	0.00500	"	0.0333	ND	64.7	15-130				
Surrogate: 2-Methylnaphthalene-d10	0.0235		"	0.0333		70.5	40-150				
Surrogate: Fluoranthene-d10	0.0237		"	0.0333		71.1	40-150				

Matrix Spike Dup (BGD0950-MSD1)

Source: 2304549-01

Prepared: 04/28/23 Analyzed: 05/01/23

Acenaphthene	0.0212	0.00500	mg/kg	0.0333	ND	63.5	31-137	11.4	30		
Anthracene	0.0210	0.00500	"	0.0333	ND	63.0	30-120	10.5	30		
Benzo (a) anthracene	0.0400	0.00500	"	0.0333	ND	120	30-120	15.9	30		
Benzo (a) pyrene	0.0147	0.00500	"	0.0333	ND	44.2	30-120	24.5	30		
Benzo (b) fluoranthene	0.0200	0.00500	"	0.0333	ND	59.9	30-120	15.2	30		
Benzo (k) fluoranthene	0.0193	0.00500	"	0.0333	ND	58.0	30-120	12.8	30		
Chrysene	0.0200	0.00500	"	0.0333	ND	60.0	30-120	14.3	30		
Dibenz (a,h) anthracene	0.0150	0.00500	"	0.0333	ND	45.0	30-120	6.36	30		
Fluoranthene	0.0221	0.00500	"	0.0333	ND	66.3	30-120	12.6	30		
Fluorene	0.0217	0.00500	"	0.0333	ND	65.1	30-120	12.2	30		
Indeno (1,2,3-cd) pyrene	0.0160	0.00500	"	0.0333	ND	48.1	30-120	2.35	30		
Pyrene	0.0183	0.00500	"	0.0333	ND	55.0	35-142	7.34	30		
1-Methylnaphthalene	0.0194	0.00500	"	0.0333	ND	58.3	15-130	4.03	50		
2-Methylnaphthalene	0.0215	0.00500	"	0.0333	ND	64.4	15-130	0.471	50		
Surrogate: 2-Methylnaphthalene-d10	0.0244		"	0.0333		73.3	40-150				
Surrogate: Fluoranthene-d10	0.0269		"	0.0333		80.8	40-150				

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Project: Noble - Loloff 2,3,B35-19

Project Number: [none]
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Reported:
05/04/23 11:43

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

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

Batch BGD0988 - EPA 3050B

Blank (BGD0988-BLK1)

Prepared: 04/29/23 Analyzed: 04/30/23

Boron ND 0.0100 mg/L

LCS (BGD0988-BS1)

Prepared: 04/29/23 Analyzed: 04/30/23

Boron 4.83 0.0100 mg/L 5.00 96.5 80-120

Duplicate (BGD0988-DUP1)

Source: 2304569-01

Prepared: 04/29/23 Analyzed: 04/30/23

Boron 0.104 0.0100 mg/L 0.111 6.12 20

Matrix Spike (BGD0988-MS1)

Source: 2304569-01

Prepared: 04/29/23 Analyzed: 04/30/23

Boron 4.91 0.0100 mg/L 5.00 0.111 96.0 75-125

Matrix Spike Dup (BGD0988-MSD1)

Source: 2304569-01

Prepared: 04/29/23 Analyzed: 04/30/23

Boron 5.09 0.0100 mg/L 5.00 0.111 99.5 75-125 3.46 25

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 - Loloff 2,3,B35-19

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
05/04/23 11:43

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 BGD0940 - EPA 3050B

Blank (BGD0940-BLK1)

Prepared: 04/27/23 Analyzed: 04/28/23

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

LCS (BGD0940-BS1)

Prepared: 04/27/23 Analyzed: 04/28/23

Arsenic	34.7	0.200	mg/kg wet	40.0	86.7	80-120
Barium	35.7	0.400	"	40.0	89.2	80-120
Cadmium	2.00	0.200	"	2.00	99.8	80-120
Copper	34.9	0.400	"	40.0	87.2	80-120
Lead	18.7	0.200	"	20.0	93.7	80-120
Nickel	34.7	0.400	"	40.0	86.8	80-120
Selenium	3.69	0.260	"	4.00	92.2	80-120
Silver	1.98	0.0200	"	2.00	98.9	80-120
Zinc	35.2	0.400	"	40.0	88.1	80-120

Duplicate (BGD0940-DUP1)

Source: 2304116-01

Prepared: 04/27/23 Analyzed: 04/28/23

Arsenic	1.58	0.225	mg/kg dry	1.40	12.0	20
Barium	50.9	0.450	"	43.5	15.6	20
Cadmium	0.182	0.225	"	0.156	15.1	20
Copper	7.03	0.450	"	6.55	7.08	20
Lead	18.1	0.225	"	15.9	13.0	20
Nickel	4.03	0.450	"	3.64	10.0	20
Selenium	ND	0.260	"	ND		20
Silver	0.0315	0.0225	"	0.0261	18.8	20
Zinc	20.0	0.450	"	18.3	8.95	20

Summit Scientific

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

Project: Noble - Loloff 2,3,B35-19

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
05/04/23 11:43

Total Metals by EPA 6020B - Quality Control
Summit Scientific

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

Batch BGD0940 - EPA 3050B

Matrix Spike (BGD0940-MS1)		Source: 2304116-01			Prepared: 04/27/23 Analyzed: 04/28/23					
Arsenic	37.5	0.225	mg/kg dry	45.0	1.40	80.4	75-125			
Barium	89.6	0.450	"	45.0	43.5	102	75-125			
Cadmium	2.03	0.225	"	2.25	0.156	83.2	75-125			
Copper	55.5	0.450	"	45.0	6.55	109	75-125			
Lead	ND	0.225	"	22.5	15.9	NR	75-125			QM-07
Nickel	30.4	0.450	"	45.0	3.64	59.5	75-125			QM-07
Selenium	3.39	0.260	"	4.50	ND	75.5	75-125			
Silver	1.84	0.0225	"	2.25	0.0261	80.6	75-125			
Zinc	47.8	0.450	"	45.0	18.3	65.7	75-125			QM-07

Matrix Spike Dup (BGD0940-MSD1)		Source: 2304116-01			Prepared: 04/27/23 Analyzed: 04/28/23					
Arsenic	38.3	0.225	mg/kg dry	45.0	1.40	82.1	75-125	2.01	25	
Barium	92.5	0.450	"	45.0	43.5	109	75-125	3.20	25	
Cadmium	2.07	0.225	"	2.25	0.156	85.1	75-125	2.04	25	
Copper	56.1	0.450	"	45.0	6.55	110	75-125	1.16	25	
Lead	48.1	0.225	"	22.5	15.9	143	75-125	200	25	QM-07
Nickel	30.9	0.450	"	45.0	3.64	60.6	75-125	1.64	25	QM-07
Selenium	3.44	0.260	"	4.50	ND	76.5	75-125	1.32	25	
Silver	1.90	0.0225	"	2.25	0.0261	83.2	75-125	3.03	25	
Zinc	48.2	0.450	"	45.0	18.3	66.5	75-125	0.807	25	QM-07

Summit Scientific

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

Project: Noble - Loloff 2,3,B35-19

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
05/04/23 11:43

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 BGD0969 - 3060A Mod

Blank (BGD0969-BLK1)

Prepared & Analyzed: 04/28/23

Chromium, Hexavalent ND 0.30 mg/kg wet

LCS (BGD0969-BS1)

Prepared & Analyzed: 04/28/23

Chromium, Hexavalent 20.6 0.30 mg/kg wet 25.0 82.2 80-120

Duplicate (BGD0969-DUP1)

Source: 2304472-01

Prepared & Analyzed: 04/28/23

Chromium, Hexavalent ND 0.30 mg/kg dry ND 20

Matrix Spike (BGD0969-MS1)

Source: 2304472-01

Prepared & Analyzed: 04/28/23

Chromium, Hexavalent 26.4 0.30 mg/kg dry 29.2 ND 90.2 75-125

Matrix Spike Dup (BGD0969-MSD2)

Source: 2304472-01

Prepared & Analyzed: 04/28/23

Chromium, Hexavalent 26.7 0.30 mg/kg dry 29.2 ND 91.4 75-125 1.32 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 - Loloff 2,3,B35-19

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
05/04/23 11:43

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

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

Batch BGD0944 - General Preparation

Blank (BGD0944-BLK1)

Prepared: 04/27/23 Analyzed: 05/02/23

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

LCS (BGD0944-BS1)

Prepared: 04/27/23 Analyzed: 05/02/23

Calcium	4.66	0.0500	mg/L wet	5.00	93.3	70-130
Magnesium	4.26	0.0500	"	5.00	85.1	70-130
Sodium	4.05	0.0500	"	5.00	80.9	70-130

Summit Scientific

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

Project: Noble - Loloff 2,3,B35-19

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
05/04/23 11:43

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

Summit Scientific

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

Batch BGD1018 - General Preparation

Duplicate (BGD1018-DUP1)		Source: 2304524-01		Prepared: 04/30/23 Analyzed: 05/01/23	
% Solids	85.0		%	85.2	0.234 20

Summit Scientific

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

Project: Noble - Loloff 2,3,B35-19

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
05/04/23 11:43

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

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

Batch BGD1005 - General Preparation

Blank (BGD1005-BLK1)

Prepared & Analyzed: 04/30/23

Specific Conductance (EC) ND 0.0100 mmhos/cm

LCS (BGD1005-BS1)

Prepared & Analyzed: 04/30/23

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

Duplicate (BGD1005-DUP1)

Source: 2304576-01

Prepared & Analyzed: 04/30/23

Specific Conductance (EC) 1.15 0.0100 mmhos/cm 1.17 1.55 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 - Loloff 2,3,B35-19

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
05/04/23 11:43

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

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

Batch BGD1006 - General Preparation

LCS (BGD1006-BS1)

Prepared & Analyzed: 04/30/23

pH	9.07	pH Units	9.18	98.8	95-105
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Duplicate (BGD1006-DUP1)

Source: 2304576-01

Prepared & Analyzed: 04/30/23

pH	7.34	pH Units	7.44	1.35	20
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Summit Scientific

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



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

Project: Noble - Loloff 2,3,B35-19

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
05/04/23 11:43

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

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80401

303.277.9310

May 30, 2023

Jacob Whritenour

Tasman Geosciences

6855 W. 119th Ave.

Broomfield, CO 80020

RE: Noble - Lolofifi 2,3,B35-19

Work Order # 2305450

Enclosed are the results of analyses for samples received by Summit Scientific on 05/18/23 17:50. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

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

Scott Sheely For Paul Shrewsbury

President



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

Project: Noble - Loloff 2,3,B35-19

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
05/30/23 15:09

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS05@4'	2305450-01	Soil	05/18/23 09:30	05/18/23 17:50

Summit Scientific

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

SUMMIT SCIENTIFIC

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

Lab ID	Page 1 of 1
2305450	

		Send Data To:		Send Invoice To:	
Client: Noble / Tasman		Project Manager: Jake Whritenour		Company: Chevron	
Address: 6855 W. 119th Ave		E-Mail: Jwhritenour@tasman-geo.com		Project Name/Location: <u>Loloff 2,3 B35-19</u>	
City/State/Zip: Broomfield, CO 80020				AFE#:	
Phone: 303-261-6246		Project Name: <u>Loloff 2,3 B35-19</u>		PO/Billing Codes:	
Sampler Name: Stanley Gilbert		Project Number:		Contact: <u>Jacob Rulla</u>	

					Preservative				Matrix				Analysis Requested								Special Instructions	
ID	Sample Description	Date Sampled	Time Sampled	# of containers	HCl	HNO3	None	Other _____	Water	Soil	Air-Canister #	Other _____	VOC - 915	TPH - 915	PAH - 915	pH,EC,SAR	Boron - HWS	Metals - 915	HOLD			pH, EC, SAR by saturated paste
1	SS05@ 4'	5/18/23	09:30	2			/			/			/	/	/	/	/	/				
2																						
3																						
4																						
5																						
6																						
7																						
8																						
9																						
10																						
11																						
12																						
13																						
14																						
15																						

Relinquished by: <u>Martin Medeiros</u>	Date/Time: <u>5/18/23 14:00</u>	Received by: <u>[Signature]</u>	Date/Time: <u>5/18/23 14:00</u>	TAT Business Days	Field DO	Notes:
				Same Day	Field EC	
Relinquished by: <u>Tasman Geo</u>	Date/Time: <u>5/18/23 17:50</u>	Received by: <u>[Signature]</u>	Date/Time: <u>5/18/23 17:50</u>	1 Day	Field ORP	
				2 Days	Field pH	
Relinquished by:	Date/Time:	Received by:	Date/Time:	3 Days	Field Temp.	
				Standard	<input checked="" type="checkbox"/> Field Turb.	
Temperature Upon Receipt: <u>10.2</u>		Corrected Temperature: <u>0</u>		IR gun #: <u>1</u>	HNO3 lot #: _____	

S₂

Sample Receipt Checklist

S2 Work Order# 2305450Client: Ndeftasman Client Project ID: 1010423B35-19Shipped 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) 10.2Thermometer # 1

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

Additional Comments (if any):

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

5/18/23
Date/Time



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

Project: Noble - Loloff 2,3,B35-19

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
05/30/23 15:09

SS05@4'
2305450-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/18/23 09:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Benzene	ND	0.0020		mg/kg	1	BGE0713	05/19/23	05/19/23	EPA 8260B	
Toluene	ND	0.0050		"	"	"	"	"	"	
Ethylbenzene	ND	0.0050		"	"	"	"	"	"	
Xylenes (total)	ND	0.010		"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050		"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050		"	"	"	"	"	"	
Naphthalene	ND	0.0038		"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50		"	"	"	"	"	"	

Date Sampled: **05/18/23 09:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: 1,2-Dichloroethane-d4		109 %		50-150		"	"	"	"	
Surrogate: Toluene-d8		98.7 %		50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		104 %		50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/18/23 09:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
C10-C28 (DRO)	ND	50		mg/kg	1	BGE0715	05/19/23	05/20/23	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **05/18/23 09:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: o-Terphenyl		121 %		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 - Loloff 2,3,B35-19

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
05/30/23 15:09

SS05@4'
2305450-01 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **05/18/23 09:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Acenaphthene	ND	0.00500		mg/kg	1	BGE0674	05/19/23	05/20/23	EPA 8270D SIM	
Anthracene	ND	0.00500		"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500		"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500		"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500		"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500		"	"	"	"	"	"	
Chrysene	ND	0.00500		"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500		"	"	"	"	"	"	
Fluoranthene	ND	0.00500		"	"	"	"	"	"	
Fluorene	ND	0.00500		"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500		"	"	"	"	"	"	
Pyrene	ND	0.00500		"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500		"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500		"	"	"	"	"	"	

Date Sampled: **05/18/23 09:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: 2-Methylnaphthalene-d10		60.2 %		40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		80.0 %		40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **05/18/23 09:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Boron	0.227	0.0100		mg/L	1	BGE0839	05/24/23	05/27/23	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **05/18/23 09:30**

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

Summit Scientific

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

Project: Noble - Loloff 2,3,B35-19

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
05/30/23 15:09

SS05@4'
2305450-01 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Arsenic	1.37	0.242	mg/kg dry	1	BGE0782	05/23/23	05/23/23	EPA 6020B
Barium	75.2	0.483	"	"	"	"	"	"
Cadmium	ND	0.242	"	"	"	"	"	"
Copper	3.52	0.483	"	"	"	"	"	"
Lead	8.32	0.242	"	"	"	"	"	"
Nickel	2.93	0.483	"	"	"	"	"	"
Selenium	ND	0.260	0.175	"	"	"	"	"
Silver	0.0372	0.0242	"	"	"	"	"	"
Zinc	13.0	0.483	"	"	"	"	"	"

Hexavalent Chromium by EPA Method 7196

Date Sampled: **05/18/23 09:30**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30		mg/kg dry	1	BGE0685	05/19/23	05/19/23	EPA 7196A	

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

Date Sampled: **05/18/23 09:30**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	104	0.0604		mg/L dry	1	BGE0872	05/24/23	05/26/23	EPA 6020B	
Magnesium	24.5	0.0604		"	"	"	"	"	"	
Sodium	5.62	0.0604		"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **05/18/23 09:30**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.129	0.00100		units	1	BGE1002	05/29/23	05/29/23	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

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

Project: Noble - Loloff 2,3,B35-19

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
05/30/23 15:09

SS05@4'
2305450-01 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/18/23 09:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
% Solids	82.8			%	1	BGE0687	05/19/23	05/19/23	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **05/18/23 09:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Specific Conductance (EC)	0.253	0.0100		mmhos/cm	1	BGE0905	05/25/23	05/25/23	EPA 120.1	

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

Date Sampled: **05/18/23 09:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
pH	7.36			pH Units	1	BGE0904	05/25/23	05/25/23	EPA 9045D	

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Project: Noble - Loloff 2,3,B35-19

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
05/30/23 15:09

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 BGE0713 - EPA 5030 Soil MS

Blank (BGE0713-BLK1)

Prepared & Analyzed: 05/19/23

Benzene	ND	0.0020	mg/kg							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
1,2,4-Trimethylbenzene	ND	0.0050	"							
1,3,5-Trimethylbenzene	ND	0.0050	"							
Naphthalene	ND	0.0038	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
Surrogate: 1,2-Dichloroethane-d4	0.0432		"	0.0400		108	50-150			
Surrogate: Toluene-d8	0.0381		"	0.0400		95.2	50-150			
Surrogate: 4-Bromofluorobenzene	0.0396		"	0.0400		99.1	50-150			

LCS (BGE0713-BS1)

Prepared & Analyzed: 05/19/23

Benzene	0.0731	0.0020	mg/kg	0.100		73.1	70-130			
Toluene	0.0881	0.0050	"	0.100		88.1	70-130			
Ethylbenzene	0.108	0.0050	"	0.100		108	70-130			
m,p-Xylene	0.217	0.010	"	0.200		108	70-130			
o-Xylene	0.103	0.0050	"	0.100		103	70-130			
1,2,4-Trimethylbenzene	0.117	0.0050	"	0.100		117	70-130			
1,3,5-Trimethylbenzene	0.120	0.0050	"	0.100		120	70-130			
Naphthalene	0.0867	0.0038	"	0.100		86.7	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0401		"	0.0400		100	50-150			
Surrogate: Toluene-d8	0.0385		"	0.0400		96.2	50-150			
Surrogate: 4-Bromofluorobenzene	0.0368		"	0.0400		91.9	50-150			

Matrix Spike (BGE0713-MS1)

Source: 2305443-01

Prepared & Analyzed: 05/19/23

Benzene	0.0713	0.0020	mg/kg	0.100	ND	71.3	70-130			
Toluene	0.0900	0.0050	"	0.100	ND	90.0	70-130			
Ethylbenzene	0.111	0.0050	"	0.100	ND	111	70-130			
m,p-Xylene	0.234	0.010	"	0.200	0.0164	109	70-130			
o-Xylene	0.115	0.0050	"	0.100	0.0118	103	70-130			
1,2,4-Trimethylbenzene	0.148	0.0050	"	0.100	0.0326	116	70-130			
1,3,5-Trimethylbenzene	0.123	0.0050	"	0.100	0.00927	114	70-130			
Naphthalene	0.105	0.0038	"	0.100	0.0106	94.1	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0388		"	0.0400		96.9	50-150			
Surrogate: Toluene-d8	0.0384		"	0.0400		95.9	50-150			
Surrogate: 4-Bromofluorobenzene	0.0399		"	0.0400		99.8	50-150			

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6855 W. 119th Ave.
Broomfield CO, 80020

Project: Noble - Loloff 2,3,B35-19

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
05/30/23 15:09

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 BGE0713 - EPA 5030 Soil MS

Matrix Spike Dup (BGE0713-MSD1)	Source: 2305443-01			Prepared & Analyzed: 05/19/23						
Benzene	0.0724	0.0020	mg/kg	0.100	ND	72.4	70-130	1.59	30	
Toluene	0.0895	0.0050	"	0.100	ND	89.5	70-130	0.602	30	
Ethylbenzene	0.106	0.0050	"	0.100	ND	106	70-130	3.81	30	
m,p-Xylene	0.222	0.010	"	0.200	0.0164	103	70-130	5.39	30	
o-Xylene	0.110	0.0050	"	0.100	0.0118	98.2	70-130	4.01	30	
1,2,4-Trimethylbenzene	0.141	0.0050	"	0.100	0.0326	108	70-130	5.36	30	
1,3,5-Trimethylbenzene	0.120	0.0050	"	0.100	0.00927	111	70-130	2.54	30	
Naphthalene	0.106	0.0038	"	0.100	0.0106	95.7	70-130	1.54	30	
Surrogate: 1,2-Dichloroethane-d4	0.0404		"	0.0400		101	50-150			
Surrogate: Toluene-d8	0.0392		"	0.0400		98.0	50-150			
Surrogate: 4-Bromofluorobenzene	0.0401		"	0.0400		100	50-150			

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Project: Noble - Loloff 2,3,B35-19

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
05/30/23 15:09

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 BGE0715 - EPA 3550A

Blank (BGE0715-BLK1)

Prepared: 05/19/23 Analyzed: 05/20/23

C10-C28 (DRO)	ND	50	mg/kg							
C28-C36 (ORO)	ND	50	"							
Surrogate: o-Terphenyl	15.8		"	12.5		126	30-150			

LCS (BGE0715-BS1)

Prepared: 05/19/23 Analyzed: 05/20/23

C10-C28 (DRO)	573	50	mg/kg	500		115	70-130			
Surrogate: o-Terphenyl	15.8		"	12.5		126	30-150			

Matrix Spike (BGE0715-MS1)

Source: 2305443-01

Prepared: 05/19/23 Analyzed: 05/20/23

C10-C28 (DRO)	500	50	mg/kg	500	105	79.0	70-130			
Surrogate: o-Terphenyl	16.3		"	12.5		130	30-150			

Matrix Spike Dup (BGE0715-MSD1)

Source: 2305443-01

Prepared: 05/19/23 Analyzed: 05/20/23

C10-C28 (DRO)	513	50	mg/kg	500	105	81.4	70-130	2.46	20	
Surrogate: o-Terphenyl	16.0		"	12.5		128	30-150			

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

Project: Noble - Loloff 2,3,B35-19

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
05/30/23 15:09

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 BGE0674 - EPA 5030 Soil MS

Blank (BGE0674-BLK1)

Prepared & Analyzed: 05/19/23

Acenaphthene	ND	0.00500	mg/kg
Anthracene	ND	0.00500	"
Benzo (a) anthracene	ND	0.00500	"
Benzo (a) pyrene	ND	0.00500	"
Benzo (b) fluoranthene	ND	0.00500	"
Benzo (k) fluoranthene	ND	0.00500	"
Chrysene	ND	0.00500	"
Dibenz (a,h) anthracene	ND	0.00500	"
Fluoranthene	ND	0.00500	"
Fluorene	ND	0.00500	"
Indeno (1,2,3-cd) pyrene	ND	0.00500	"
Pyrene	ND	0.00500	"
1-Methylnaphthalene	ND	0.00500	"
2-Methylnaphthalene	ND	0.00500	"

Surrogate: 2-Methylnaphthalene-d10	0.0237	"	0.0333	71.2	40-150
Surrogate: Fluoranthene-d10	0.0293	"	0.0333	87.9	40-150

LCS (BGE0674-BS1)

Prepared & Analyzed: 05/19/23

Acenaphthene	0.0257	0.00500	mg/kg	0.0333	77.2	31-137
Anthracene	0.0273	0.00500	"	0.0333	81.8	30-120
Benzo (a) anthracene	0.0282	0.00500	"	0.0333	84.5	30-120
Benzo (a) pyrene	0.0246	0.00500	"	0.0333	73.8	30-120
Benzo (b) fluoranthene	0.0239	0.00500	"	0.0333	71.7	30-120
Benzo (k) fluoranthene	0.0243	0.00500	"	0.0333	72.9	30-120
Chrysene	0.0280	0.00500	"	0.0333	83.9	30-120
Dibenz (a,h) anthracene	0.0213	0.00500	"	0.0333	63.9	30-120
Fluoranthene	0.0257	0.00500	"	0.0333	77.2	30-120
Fluorene	0.0253	0.00500	"	0.0333	75.9	30-120
Indeno (1,2,3-cd) pyrene	0.0143	0.00500	"	0.0333	43.0	30-120
Pyrene	0.0289	0.00500	"	0.0333	86.6	35-142
1-Methylnaphthalene	0.0171	0.00500	"	0.0333	51.4	35-142
2-Methylnaphthalene	0.0205	0.00500	"	0.0333	61.6	35-142

Surrogate: 2-Methylnaphthalene-d10	0.0243	"	0.0333	72.8	40-150
Surrogate: Fluoranthene-d10	0.0261	"	0.0333	78.4	40-150

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

Project: Noble - Loloff 2,3,B35-19

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
05/30/23 15:09

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 BGE0674 - EPA 5030 Soil MS

Matrix Spike (BGE0674-MS1)

Source: 2305434-01

Prepared & Analyzed: 05/19/23

Acenaphthene	0.0207	0.00500	mg/kg	0.0333	ND	62.0	31-137				
Anthracene	0.0207	0.00500	"	0.0333	ND	62.2	30-120				
Benzo (a) anthracene	0.0236	0.00500	"	0.0333	ND	70.8	30-120				
Benzo (a) pyrene	0.0196	0.00500	"	0.0333	ND	58.7	30-120				
Benzo (b) fluoranthene	0.0179	0.00500	"	0.0333	ND	53.8	30-120				
Benzo (k) fluoranthene	0.0182	0.00500	"	0.0333	ND	54.6	30-120				
Chrysene	0.0208	0.00500	"	0.0333	ND	62.5	30-120				
Dibenz (a,h) anthracene	0.0145	0.00500	"	0.0333	ND	43.5	30-120				
Fluoranthene	0.0201	0.00500	"	0.0333	ND	60.4	30-120				
Fluorene	0.0208	0.00500	"	0.0333	ND	62.3	30-120				
Indeno (1,2,3-cd) pyrene	0.0193	0.00500	"	0.0333	ND	57.9	30-120				
Pyrene	0.0215	0.00500	"	0.0333	ND	64.6	35-142				
1-Methylnaphthalene	0.0189	0.00500	"	0.0333	ND	56.6	15-130				
2-Methylnaphthalene	0.0174	0.00500	"	0.0333	ND	52.3	15-130				
Surrogate: 2-Methylnaphthalene-d10	0.0170		"	0.0333		51.0	40-150				
Surrogate: Fluoranthene-d10	0.0218		"	0.0333		65.5	40-150				

Matrix Spike Dup (BGE0674-MSD1)

Source: 2305434-01

Prepared & Analyzed: 05/19/23

Acenaphthene	0.0208	0.00500	mg/kg	0.0333	ND	62.3	31-137	0.550	30
Anthracene	0.0224	0.00500	"	0.0333	ND	67.3	30-120	7.84	30
Benzo (a) anthracene	0.0265	0.00500	"	0.0333	ND	79.6	30-120	11.7	30
Benzo (a) pyrene	0.0230	0.00500	"	0.0333	ND	69.1	30-120	16.2	30
Benzo (b) fluoranthene	0.0220	0.00500	"	0.0333	ND	66.1	30-120	20.5	30
Benzo (k) fluoranthene	0.0203	0.00500	"	0.0333	ND	60.9	30-120	10.8	30
Chrysene	0.0233	0.00500	"	0.0333	ND	69.8	30-120	11.0	30
Dibenz (a,h) anthracene	0.0168	0.00500	"	0.0333	ND	50.4	30-120	14.7	30
Fluoranthene	0.0229	0.00500	"	0.0333	ND	68.6	30-120	12.8	30
Fluorene	0.0209	0.00500	"	0.0333	ND	62.8	30-120	0.846	30
Indeno (1,2,3-cd) pyrene	0.0215	0.00500	"	0.0333	ND	64.4	30-120	10.6	30
Pyrene	0.0243	0.00500	"	0.0333	ND	72.8	35-142	11.9	30
1-Methylnaphthalene	0.0153	0.00500	"	0.0333	ND	45.9	15-130	20.9	50
2-Methylnaphthalene	0.0192	0.00500	"	0.0333	ND	57.5	15-130	9.50	50
Surrogate: 2-Methylnaphthalene-d10	0.0212		"	0.0333		63.6	40-150		
Surrogate: Fluoranthene-d10	0.0241		"	0.0333		72.4	40-150		

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

Project: Noble - Loloff 2,3,B35-19

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
05/30/23 15:09

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 BGE0839 - EPA 3050B

Blank (BGE0839-BLK1)

Prepared: 05/24/23 Analyzed: 05/27/23

Boron ND 0.0100 mg/L

LCS (BGE0839-BS1)

Prepared: 05/24/23 Analyzed: 05/27/23

Boron 4.89 0.0100 mg/L 5.00 97.8 80-120

Duplicate (BGE0839-DUP1)

Source: 2305449-01

Prepared: 05/24/23 Analyzed: 05/27/23

Boron 0.158 0.0100 mg/L 0.158 0.133 20

Matrix Spike (BGE0839-MS1)

Source: 2305449-01

Prepared: 05/24/23 Analyzed: 05/27/23

Boron 5.35 0.0100 mg/L 5.00 0.158 104 75-125

Matrix Spike Dup (BGE0839-MSD1)

Source: 2305449-01

Prepared: 05/24/23 Analyzed: 05/27/23

Boron 5.53 0.0100 mg/L 5.00 0.158 107 75-125 3.27 25

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

Project: Noble - Loloff 2,3,B35-19

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
05/30/23 15:09

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 BGE0782 - EPA 3050B

Blank (BGE0782-BLK1)

Prepared & Analyzed: 05/23/23

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

LCS (BGE0782-BS1)

Prepared: 05/23/23 Analyzed: 05/24/23

Arsenic	38.8	0.200	mg/kg wet	40.0	97.1	80-120
Barium	38.9	0.400	"	40.0	97.1	80-120
Cadmium	1.98	0.200	"	2.00	98.9	80-120
Copper	40.5	0.400	"	40.0	101	80-120
Lead	18.8	0.200	"	20.0	93.9	80-120
Nickel	39.1	0.400	"	40.0	97.7	80-120
Selenium	4.33	0.260	"	4.00	108	80-120
Silver	2.00	0.0200	"	2.00	99.9	80-120
Zinc	38.1	0.400	"	40.0	95.1	80-120

Duplicate (BGE0782-DUP1)

Source: 2305437-01

Prepared: 05/23/23 Analyzed: 05/24/23

Arsenic	0.507	0.219	mg/kg dry	0.513	1.11	20
Barium	87.6	0.437	"	92.3	5.21	20
Cadmium	0.0664	0.219	"	0.0725	8.81	20
Copper	2.10	0.437	"	2.06	2.00	20
Lead	2.96	0.219	"	3.07	3.87	20
Nickel	1.27	0.437	"	1.27	0.757	20
Selenium	ND	0.260	"	ND		20
Silver	0.0144	0.0219	"	0.0166	14.1	20
Zinc	6.96	0.437	"	6.67	4.15	20

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

Project: Noble - Loloff 2,3,B35-19

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
05/30/23 15:09

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 BGE0782 - EPA 3050B

Matrix Spike (BGE0782-MS1)		Source: 2305437-01			Prepared: 05/23/23 Analyzed: 05/24/23					
Arsenic	14.9	0.219	mg/kg dry	43.7	0.513	33.0	75-125			QM-05
Barium	146	0.437	"	43.7	92.3	123	75-125			
Cadmium	1.84	0.219	"	2.19	0.0725	80.8	75-125			
Copper	17.0	0.437	"	43.7	2.06	34.2	75-125			QM-05
Lead	19.8	0.219	"	21.9	3.07	76.3	75-125			
Nickel	16.1	0.437	"	43.7	1.27	34.0	75-125			QM-05
Selenium	4.09	0.260	"	4.37	ND	93.5	75-125			
Silver	1.81	0.0219	"	2.19	0.0166	82.1	75-125			
Zinc	22.3	0.437	"	43.7	6.67	35.7	75-125			QM-05

Matrix Spike Dup (BGE0782-MSD1)		Source: 2305437-01			Prepared: 05/23/23 Analyzed: 05/24/23					
Arsenic	15.2	0.219	mg/kg dry	43.7	0.513	33.7	75-125	2.00	25	QM-05
Barium	145	0.437	"	43.7	92.3	120	75-125	0.825	25	
Cadmium	1.83	0.219	"	2.19	0.0725	80.5	75-125	0.429	25	
Copper	17.1	0.437	"	43.7	2.06	34.3	75-125	0.369	25	QM-05
Lead	19.6	0.219	"	21.9	3.07	75.7	75-125	0.739	25	
Nickel	16.1	0.437	"	43.7	1.27	33.9	75-125	0.147	25	QM-05
Selenium	4.42	0.260	"	4.37	ND	101	75-125	7.96	25	
Silver	1.77	0.0219	"	2.19	0.0166	80.1	75-125	2.52	25	
Zinc	22.1	0.437	"	43.7	6.67	35.3	75-125	0.664	25	QM-05

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 - Loloff 2,3,B35-19

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
05/30/23 15:09

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 BGE0685 - 3060A Mod

Blank (BGE0685-BLK1)

Prepared & Analyzed: 05/19/23

Chromium, Hexavalent ND 0.30 mg/kg wet

LCS (BGE0685-BS1)

Prepared & Analyzed: 05/19/23

Chromium, Hexavalent 24.1 0.30 mg/kg wet 25.0 96.4 80-120

Duplicate (BGE0685-DUP1)

Source: 2305435-01

Prepared & Analyzed: 05/19/23

Chromium, Hexavalent ND 0.30 mg/kg dry ND 20

Matrix Spike (BGE0685-MS1)

Source: 2305435-01

Prepared & Analyzed: 05/19/23

Chromium, Hexavalent 27.0 0.30 mg/kg dry 28.7 ND 94.2 75-125

Matrix Spike Dup (BGE0685-MSD1)

Source: 2305435-01

Prepared & Analyzed: 05/19/23

Chromium, Hexavalent 27.1 0.30 mg/kg dry 28.7 ND 94.4 75-125 0.212 20

Summit Scientific

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

Project: Noble - Loloff 2,3,B35-19

Project Number: [none]

Project Manager: Jacob Whritenour

Reported:

05/30/23 15:09

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

Summit Scientific

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

Batch BGE0872 - General Preparation

Blank (BGE0872-BLK1)

Prepared: 05/24/23 Analyzed: 05/26/23

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

LCS (BGE0872-BS1)

Prepared: 05/24/23 Analyzed: 05/26/23

Calcium	4.36	0.0500	mg/L wet	5.00	87.1	70-130
Magnesium	4.56	0.0500	"	5.00	91.3	70-130
Sodium	4.50	0.0500	"	5.00	90.0	70-130

Summit Scientific

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

Project: Noble - Loloff 2,3,B35-19

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
05/30/23 15:09

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 BGE0687 - General Preparation

Duplicate (BGE0687-DUP1)		Source: 2305374-01			Prepared & Analyzed: 05/19/23					
% Solids	93.0		%		93.3		0.327		20	

Summit Scientific

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

Project: Noble - Loloff 2,3,B35-19

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
05/30/23 15:09

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 BGE0905 - General Preparation

Blank (BGE0905-BLK1)

Prepared & Analyzed: 05/25/23

Specific Conductance (EC) ND 0.0100 mmhos/cm

LCS (BGE0905-BS1)

Prepared & Analyzed: 05/25/23

Specific Conductance (EC) 0.150 0.0100 mmhos/cm 0.150 100 95-105

Duplicate (BGE0905-DUP1)

Source: 2305439-01

Prepared & Analyzed: 05/25/23

Specific Conductance (EC) 0.616 0.0100 mmhos/cm 0.631 2.44 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 - Loloff 2,3,B35-19

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
05/30/23 15:09

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

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

Batch BGE0904 - General Preparation

LCS (BGE0904-BS1)

Prepared & Analyzed: 05/25/23

pH	8.99	pH Units	9.18	97.9	95-105
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Duplicate (BGE0904-DUP1)

Source: 2305439-01

Prepared & Analyzed: 05/25/23

pH	10.4	pH Units	10.3	1.16	20
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Summit Scientific

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

Project: Noble - Loloff 2,3,B35-19

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
05/30/23 15:09

Notes and Definitions

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