

SITE ASSESSMENT REPORT
MUNDS 13-29, DICKERSON 14-29A

COGCC SPILL TRACKING # 459197
COGCC REMEDIATION # 12255

Prepared for:



2115 117th Avenue
Greeley, CO 80631

Prepared by:



6899 North Pecos Street, Unit C
Denver, CO 80221

April 17, 2019

Mr. Jacob Evans
Noble Energy Inc.
2115 117th Avenue
Greeley, CO 80631

Subject: **Site Assessment Report**
 Munds 13-29, Dickerson 14-29A
 Location ID: 333157
 Spill/Release Point ID #: 459197
 Remediation Project #: 12255
 SESW S29 T4N R65W
 Weld County, Colorado

Dear Mr. Evans:

Below please find a copy of the above referenced Site Assessment Report (Report) for the Munds 13-29, Dickerson 14-29A site (Site) in Weld County, Colorado. The text below describes environmental assessment and associated soil and groundwater sampling activities conducted by Tasman Geosciences, Inc. (Tasman), on behalf of Noble Energy, Inc. (Noble), on March 28, 2019.

Introduction

The purpose of this document is to describe the results of site assessment and sampling activities at the Site. The activities described below were performed in response to the discovery of a release from the Munds 13-29, Dickerson 14-29A produced water vessel on November 20, 2018.

Facility Background

The Site is located approximately 4.5 miles east of the Town of Gilcrest in Weld County, Colorado, as shown on Figure 1. The Site is surrounded by crop land, and the legal description is the southeast $\frac{1}{4}$ of the southwest $\frac{1}{4}$ of Section 29, Township 4 North, Range 65 West, of the 6th Principal Meridian. The Site is located on relatively flat terrain. The Site is approximately 50 feet north of Weld County Road 40 and has coordinates of 40.276357°, -104.690061°.

On November 20, 2018, historic impacts were confirmed beneath the Munds 13-29, Dickerson 14-29A tank battery during plug and abandonment activities. The approximate release location is shown on Figure 2. A Form 19 was submitted to the Colorado Oil and Gas Conservation Commission (COGCC) on November 21, 2018. The COGCC subsequently issued Spill/Release Point ID Number 459197 for this event and the site was plugged and abandoned. A Site Investigation and Remediation Workplan (Form 27) was submitted for the site on January 3, 2019 (document 401891478) and approved on January 4, 2019. The COGCC issued Remediation # 12255 for this site. Initial sampling activities were reported in the document *Munds 13-29, Dickerson 14-29A Excavation Summary Report* submitted to Noble on February 19, 2019.

Site Assessment Field Activities

On March 28, 2019 Tasman was retained to assess for any soil or groundwater impacts remaining after the remedial excavation associated with the historic produced water vessel release at the former Munds 13-29, Dickerson 14-29A tank battery. Eight boreholes were installed using direct push drilling techniques. Soil boring locations are illustrated on Figure 2, and boring logs are included in Attachment A. During soil boring activities, soil samples were collected and field screened for volatile organic compounds (VOC) using a photoionization detector (PID) and standard head space sampling techniques. Soil samples from the depth interval exhibiting the highest PID reading above the groundwater table were retained for laboratory analysis. A total of 11 soil samples were submitted to Summit Scientific Laboratory in Golden, Colorado (Summit) for analysis of benzene, toluene, ethylbenzene, and total xylenes (BTEX), naphthalene, and total petroleum hydrocarbons-gasoline range organics (TPH-GRO) using United States Environmental Protection Agency (USEPA) Method 8260B, as well as total petroleum hydrocarbons-diesel range organics (TPH-DRO) using USEPA Method 8015. Soil analytical results are summarized in Table 1 and sample locations are illustrated on Figure 2. Complete laboratory analytical reports are included in Attachment B. Groundwater was not encountered during Site assessment activities.

Results

Laboratory analytical results for the soil samples collected during Site assessment activities indicate that vadose zone soil impacts do not extend north into the crop field. However, analytical results also indicate vadose zone soil impacts in exceedance of applicable COGCC Table 910-1 standards at the BH06 location, approaching the county road to the southwest.

Conclusions

Based on field and laboratory data collected during Site assessment activities, vadose zone hydrocarbon impacts remain in the area of the former tank battery. Vadose zone soil impacts extend in the northern portion of the Site at the TP05 location, and to the southwest portion of the Site at the BH06 location. Additional assessment within the county road right of way would need to be conducted to confirm the extent of vadose zone hydrocarbon impacts in the area of BH06. Vadose zone soil impacts extend to the east and west at locations TP03 and TP08 respectively. Therefore, additional remediation efforts will be completed at the Site to address hydrocarbon impacts to soil. These efforts may include additional test pit or soil borings within the county right of way and excavation and removal of impacted material.

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) 431-1190 if you require additional information.

Sincerely,
Tasman Geosciences, Inc.

A handwritten signature in blue ink that reads 'Brandon Bruns'.

Brandon Bruns, PE
Project Manager

Attached:

Table 1 – Soil Analytical Data

Figure 1 – Site Location Map

Figure 2 – Site Assessment Soil Analytical Figure (11/19/18, 11/20/18, 03/28/19)

Attachment A – Boring Logs

Attachment B – Laboratory Analytical Data Report

TABLES

TABLE 1
SOIL ANALYTICAL DATA
NOBLE ENERGY, INC. -MUNDS 13-29, DICKERSON 14-29A

Soil Sample ID	Date	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	Naphthalene (mg/kg)	TPH-GRO (mg/kg)	TPH-DRO (mg/kg)
COGCC Standard		0.17	85	100	175	23	500	
SS01@3' ⁽¹⁾	11/19/18	0.19	<0.0050	0.032	0.11	<0.010	<50	<50
SS01@5'	11/19/18	3.0	<0.0050	2.9	26	0.082	1,200	69
SS02@3'	11/19/18	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50	<50
SS02@5'	11/19/18	0.036	<0.0050	0.037	0.53	<0.010	<50	<50
SS03@3'	11/19/18	0.0075	<0.0050	0.030	0.24	0.027	<50	<50
SS03@5'	11/19/18	0.049	<0.0050	0.16	1.1	0.042	<50	<50
SS04@3'	11/19/18	0.026	<0.0050	0.072	0.40	0.020	<50	<50
SS04@5'	11/19/18	0.048	<0.0050	0.19	1.8	0.039	<50	<50
SS05@6'	11/19/18	0.31	<0.0050	0.021	<0.010	<0.010	<50	<50
TP03@5'	11/19/18	1.7	<0.0050	0.28	<0.010	0.038	<50	70
TP03@10'	11/19/18	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50	<50
TP05@5'	11/19/18	0.0098	<0.0050	0.029	0.43	<0.010	<50	<50
TP05@10'	11/19/18	0.16	0.25	14	170	0.033	4,600	59
TP07@5'	11/19/18	0.0082	<0.0050	<0.0050	<0.010	<0.010	<50	<50
TP07@10'	11/19/18	0.011	<0.0050	<0.0050	<0.010	<0.010	<50	<50
TP08@5' ⁽²⁾	11/20/18	1.2	<0.0050	3.1	12	0.19	250	110
TP08@10' ⁽²⁾	11/20/18	<0.0020	<0.0050	0.076	1.1	0.070	<50	93
TP08@13'	11/20/18	0.0061	0.027	0.059	0.87	0.021	<50	<50
TP09@5'	11/20/18	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50	<50
TP09@10'	11/20/18	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50	<50
TP09@13' ⁽²⁾	11/20/18	<0.0020	0.015	0.072	1.4	0.059	<50	120
TP10@5'	11/20/18	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50	<50
TP10@10'	11/20/18	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50	<50
TP10@13'	11/20/18	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50	<50
TP11@5'	11/20/18	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50	<50
TP11@10'	11/20/18	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50	<50
TP11@13'	11/20/18	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50	<50
TP12@5'	11/20/18	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50	<50
TP12@10' ⁽²⁾	11/20/18	<0.0020	<0.0050	0.058	0.97	0.067	<50	87
TP12@13' ⁽²⁾	11/20/18	0.0056	0.18	0.33	15	0.060	<50	110
TP13@5'	11/20/18	<0.0020	<0.0050	0.013	0.13	0.011	<50	<50
TP13@10'	11/20/18	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50	<50
TP13@13'	11/20/18	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50	<50
TP14@5'	11/20/18	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50	<50
BH01@15-16'	03/28/19	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50	<50
BH02@14-16'	03/28/19	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50	<50
BH03@10-11'	03/28/19	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50	<50
BH04@9-10'	03/28/19	<0.0020	<0.0050	<0.0050	0.019	<0.010	<50	54
BH04@12-13'	03/28/19	<0.0020	<0.0050	0.023	0.50	0.013	<50	<50
BH05@9-10'	03/28/19	0.034	<0.0050	0.018	0.010	<0.010	<50	<50
BH06@7-8'	03/28/19	0.55	0.0058	0.56	3.9	<0.010	90	<50
BH06@14-16'	03/28/19	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50	<50
BH07@9-10'	03/28/19	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50	54
BH08@8-10'	03/28/19	<0.0020	<0.0050	<0.0050	0.17	<0.010	<50	57
BH08@12-13'	03/28/19	0.015	2.6	0.85	8.8	0.089	<50	150

TABLE 1
SOIL ANALYTICAL DATA
NOBLE ENERGY, INC. -MUNDS 13-29, DICKERSON 14-29A

Soil Sample ID	Date	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	Naphthalene (mg/kg)	TPH-GRO (mg/kg)	TPH-DRO (mg/kg)
COGCC Standard		0.17	85	100	175	23	500	
Soil Sample ID	Date	EC (mmhos/cm)	pH	SAR				
		<4 or 2x BG	6-9	<12				
SS03@3'	11/19/18	5.03	8.59	1.48				

Notes:

COGCC = Colorado Oil and Gas Conservation Commission

TPH-GRO = Total petroleum hydrocarbons - gasoline range organics

TPH-DRO = Total petroleum hydrocarbons - diesel range organics

EC = Specific conductance

mmhos/cm = Millimhos per centimeter

BG = Background

SAR = Sodium adsorption ratio

mg/kg = Milligrams per kilogram

1. The MS/MSD recovery was outside (above) acceptable limits for benzene, ethylbenzene and m,p-Xylene in the MS and/or MSD samples, indicating matrix interference. Since the MS and MSD samples were sourced by field sample SS01@3', the results for benzene, ethylbenzene and m,p-Xylene in sample SS01@3' may be biased high, due to matrix interference.

2. The surrogate recovery for 1,2-Dichloroethane-d4 and/or 4-Bromofluorobenzene in this sample cannot be accurately quantified due to interference from coeluting organic compounds present in the sample extract.

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

Soil standards referenced from COGCC Table 910-1

Highlighted results are equal to or exceed the COGCC Table 910-1 standard

FIGURES

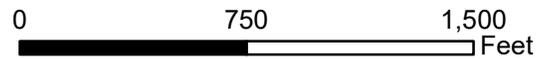
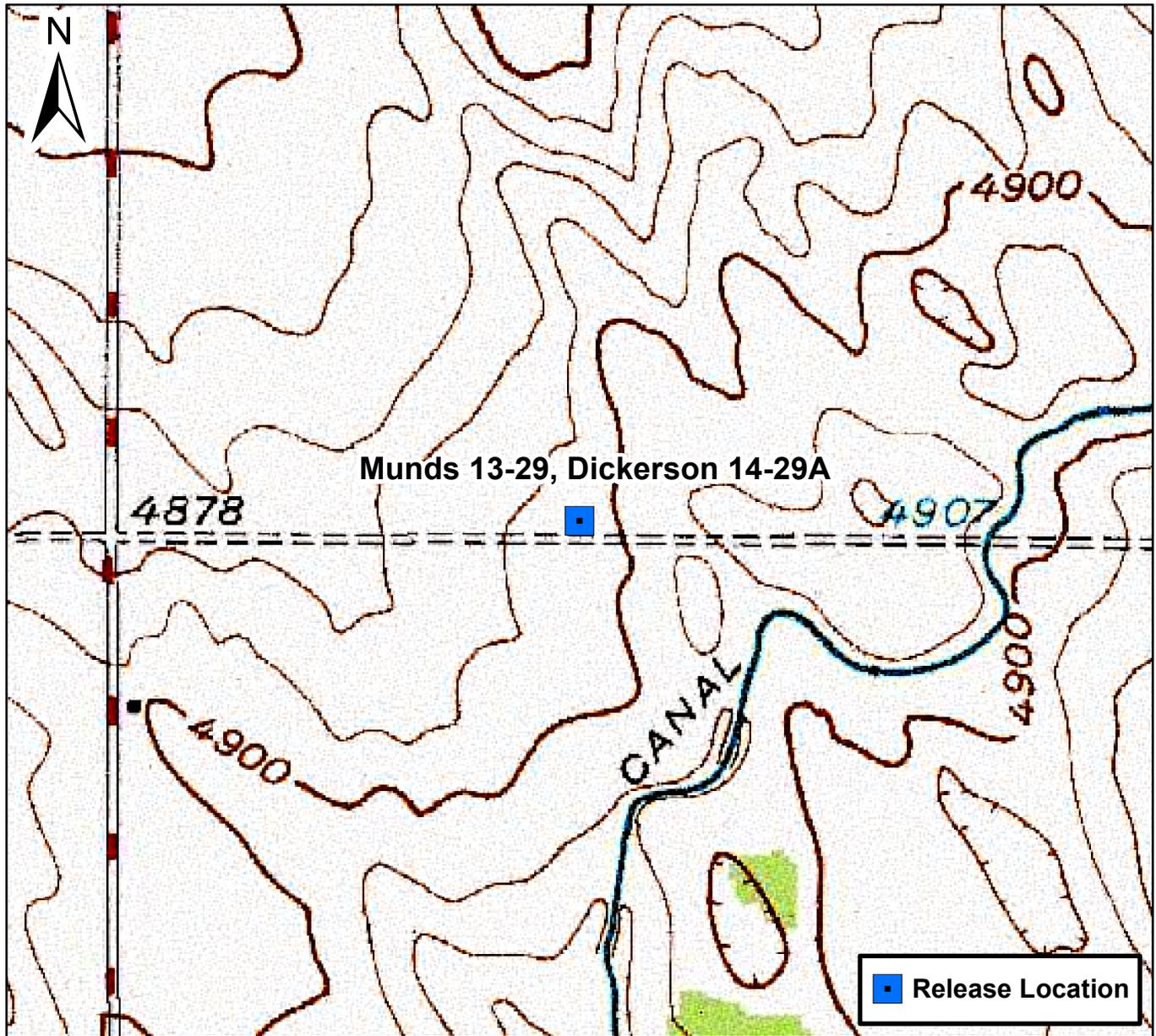
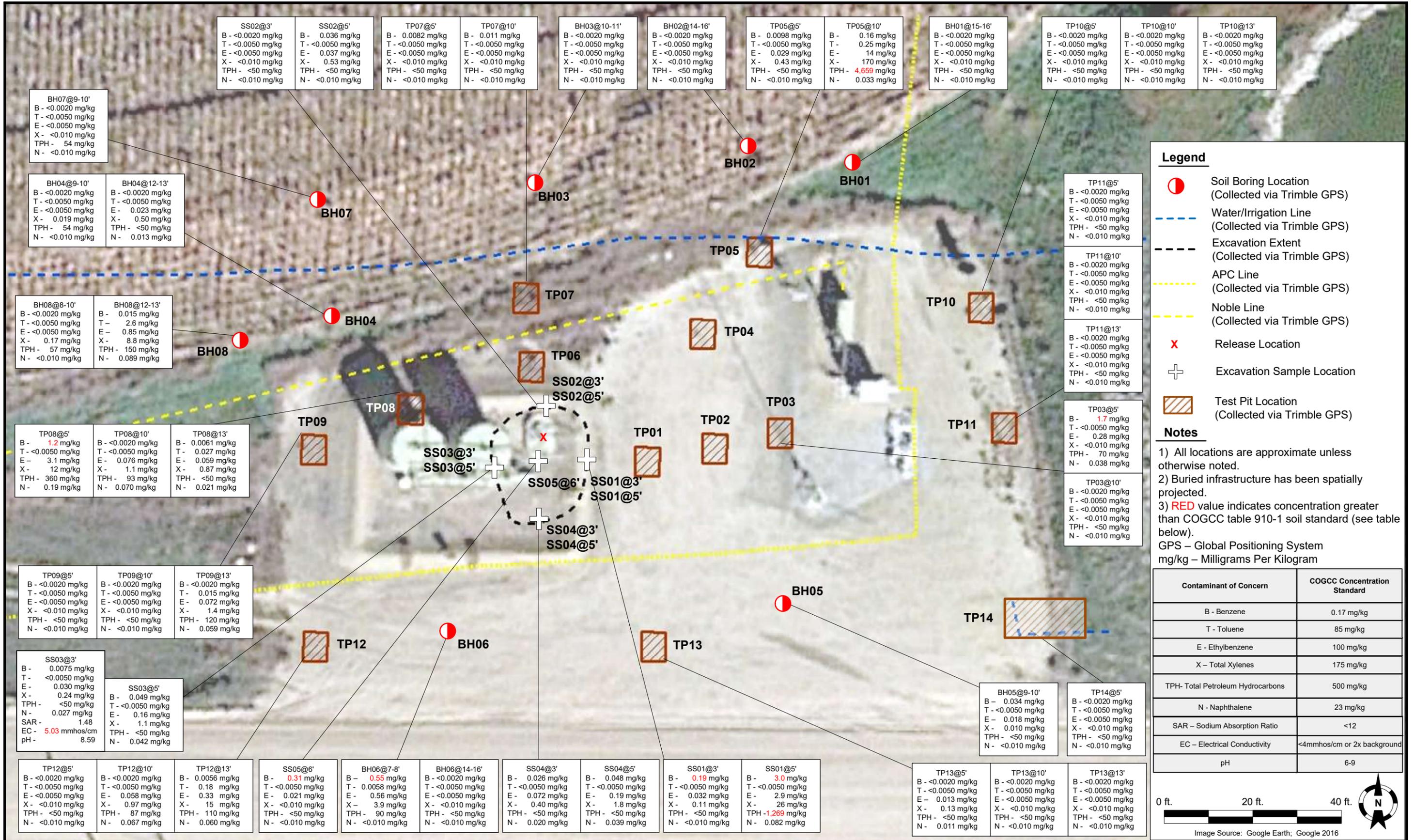


Figure 1

Site Location Map
 Munds 13-29, Dickerson 14-29A
 SESW S29 T4N R65W
 Weld County, Colorado





DATE: 04/12/2019
 DESIGNED BY: DA
 DRAWN BY: JW



Noble Energy, Inc. – DJ Basin
Munds 13-29, Dickerson 14-29A
 SESW, Section 29, Township 4 North, Range 65 West
 Weld County, Colorado

Site Assessment Analytical
 Figure
 (11/19/18, 11/20/18, 3/28/19)

FIGURE
 2

ATTACHMENT A

BORING LOGS



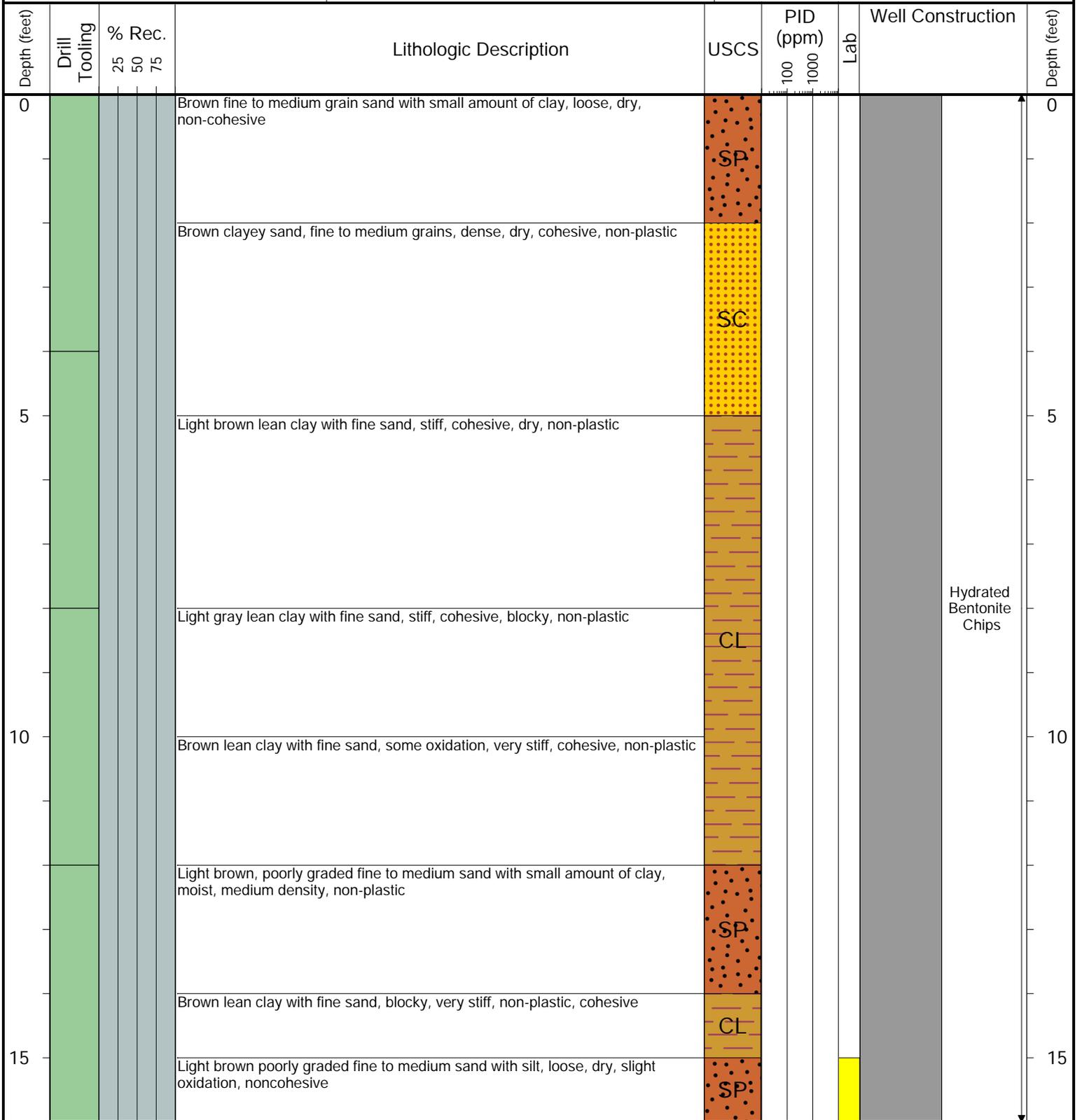
6899 Pecos Street, Unit C
Denver, Colorado 80221

CLIENT: Noble Energy
 LOGGED BY: Max Garza
 PROJECT MANAGER: Brandon Bruns
 DRILLING CONTRACTOR: Tasman Geosciences
 DRILLING EQUIPMENT: PowerProbe
 DRILL BIT SIZE (INCHES): 2.375"
 DATE STARTED - COMPLETED: 3/28/19 - 3/28/19
 TOTAL WELL DEPTH (FT. BGS): 16
 DEPTH TO WATER (FT. BGS): ND

Munds 13-29, Dickerson 14-29A

BORING / WELL ID: BH01

LOCATION: Weld County, Colorado
 LATITUDE (WGS 84): 40.276524258866
 LONGITUDE (WGS 84): -104.68980760195
 CASING ELEVATION (FT. AMSL): NM
 GROUND ELEVATION (FT. AMSL): NM



Drilling / Sample Method:

- Macro-Core
- Solid Stem Auger
- Hand Auger

Laboratory Sample Types:

- Geotechnical Lab
- Analytical Chemistry Lab
- Geotechnical & Analytical Chemistry Lab



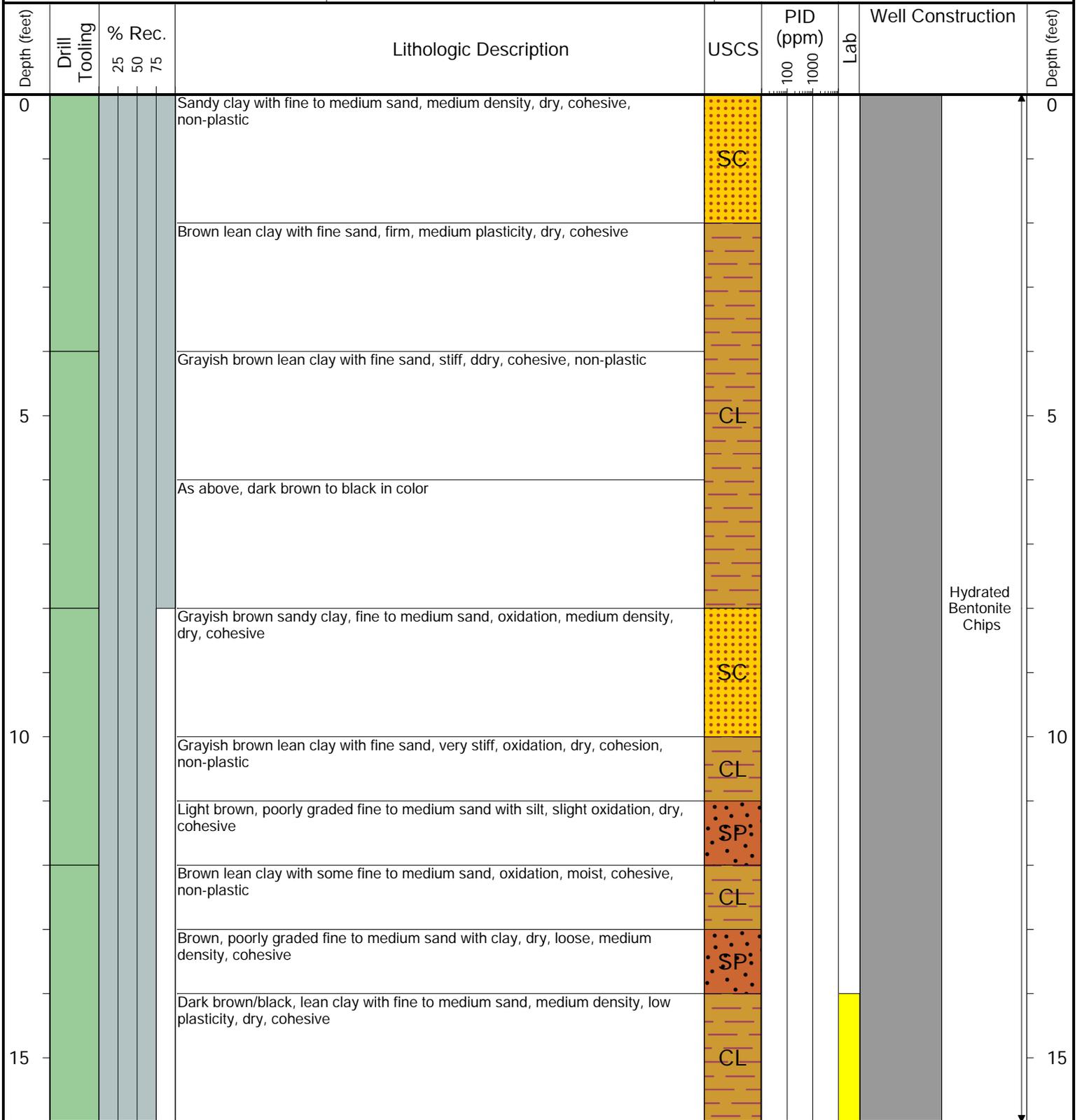
6899 Pecos Street, Unit C
Denver, Colorado 80221

CLIENT: Noble Energy
 LOGGED BY: Max Garza
 PROJECT MANAGER: Brandon Bruns
 DRILLING CONTRACTOR: Tasman Geosciences
 DRILLING EQUIPMENT: PowerProbe
 DRILL BIT SIZE (INCHES): 2.375"
 DATE STARTED - COMPLETED: 3/28/19 - 3/28/19
 TOTAL WELL DEPTH (FT. BGS): 16
 DEPTH TO WATER (FT. BGS): ND

Munds 13-29, Dickerson 14-29A

BORING / WELL ID: BH02

LOCATION: Weld County, Colorado
 LATITUDE (WGS 84): 40.276510918696
 LONGITUDE (WGS 84): -104.69006583377
 CASING ELEVATION (FT. AMSL): NM
 GROUND ELEVATION (FT. AMSL): NM



Drilling / Sample Method:

- Macro-Core
- Solid Stem Auger
- Hand Auger
- Hollow Stem Auger

Laboratory Sample Types:

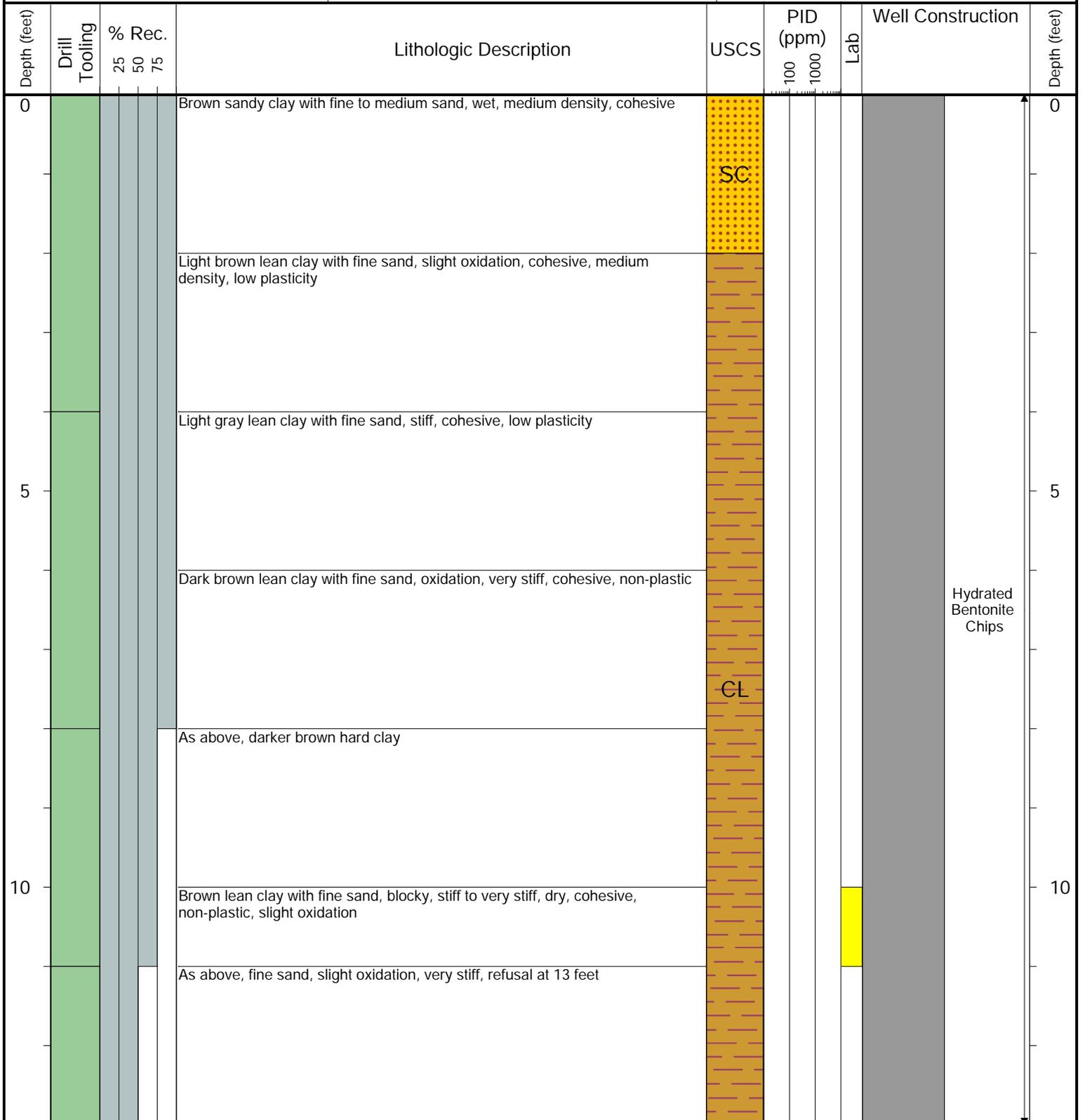
- Geotechnical Lab
- Analytical Chemistry Lab
- Geotechnical & Analytical Chemistry Lab



6899 Pecos Street, Unit C
Denver, Colorado 80221

CLIENT: Noble Energy
 LOGGED BY: Max Garza
 PROJECT MANAGER: Brandon Bruns
 DRILLING CONTRACTOR: Tasman Geosciences
 DRILLING EQUIPMENT: PowerProbe
 DRILL BIT SIZE (INCHES): 2.375"
 DATE STARTED - COMPLETED: 3/28/19 - 3/28/19
 TOTAL WELL DEPTH (FT. BGS): 13
 DEPTH TO WATER (FT. BGS): ND

Munds 13-29, Dickerson 14-29A
 BORING / WELL ID: BH03
 LOCATION: Weld County, Colorado
 LATITUDE (WGS 84): 40.276535480787
 LONGITUDE (WGS 84): -104.68989231762
 CASING ELEVATION (FT. AMSL): NM
 GROUND ELEVATION (FT. AMSL): NM



Drilling / Sample Method:

- Macro-Core
- Solid Stem Auger
- Hollow Stem Auger
- Hand Auger

Laboratory Sample Types:

- Geotechnical Lab
- Analytical Chemistry Lab
- Geotechnical & Analytical Chemistry Lab



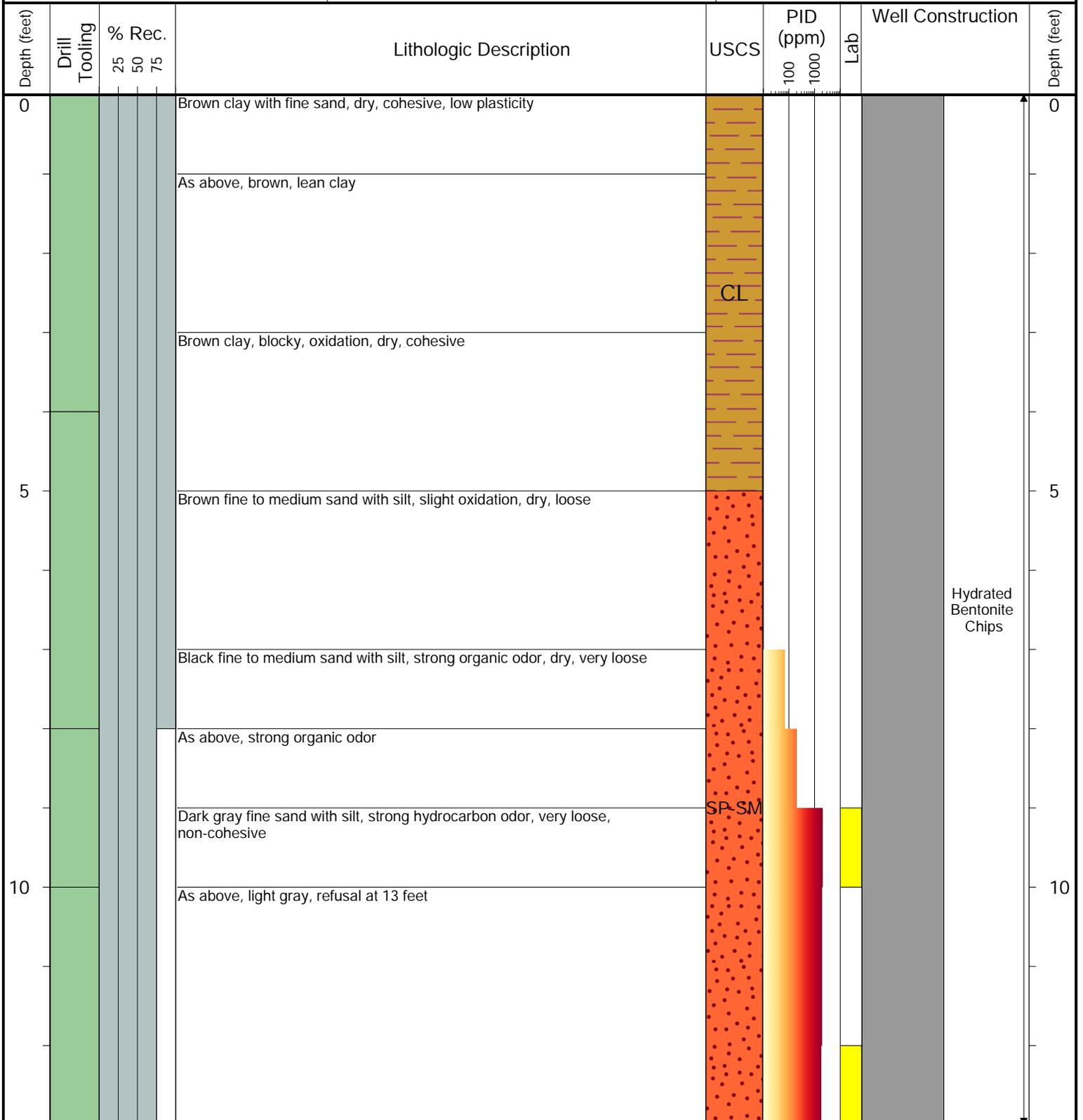
6899 Pecos Street, Unit C
Denver, Colorado 80221

CLIENT: Noble Energy
 LOGGED BY: Max Garza
 PROJECT MANAGER: Brandon Bruns
 DRILLING CONTRACTOR: Tasman Geosciences
 DRILLING EQUIPMENT: PowerProbe
 DRILL BIT SIZE (INCHES): 2.375"
 DATE STARTED - COMPLETED: 3/28/19 - 3/28/19
 TOTAL WELL DEPTH (FT. BGS): 13
 DEPTH TO WATER (FT. BGS): ND

Munds 13-29, Dickerson 14-29A

BORING / WELL ID: BH04

LOCATION: Weld County, Colorado
 LATITUDE (WGS 84): 40.276430953676
 LONGITUDE (WGS 84): -104.69022952436
 CASING ELEVATION (FT. AMSL): NM
 GROUND ELEVATION (FT. AMSL): NM



Drilling / Sample Method:

- Macro-Core
- Solid Stem Auger
- Hollow Stem Auger
- Hand Auger

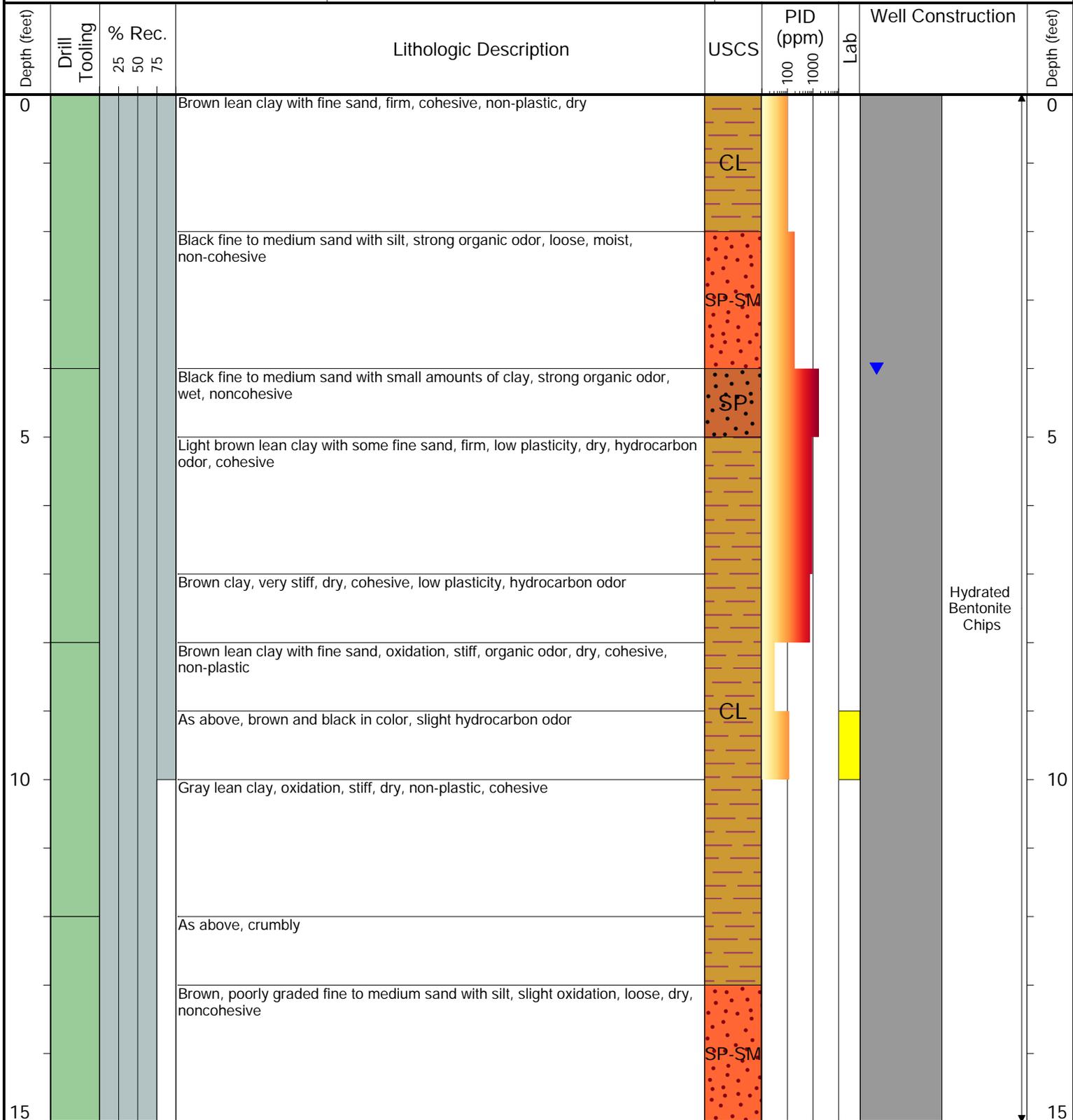
Laboratory Sample Types:

- Geotechnical Lab
- Analytical Chemistry Lab
- Geotechnical & Analytical Chemistry Lab



6899 Pecos Street, Unit C
Denver, Colorado 80221

CLIENT: Noble Energy	Munds 13-29, Dickerson 14-29A
LOGGED BY: Max Garza	
PROJECT MANAGER: Brandon Bruns	BORING / WELL ID: BH05
DRILLING CONTRACTOR: Tasman Geosciences	
DRILLING EQUIPMENT: PowerProbe	LOCATION: Weld County, Colorado
DRILL BIT SIZE (INCHES): 2.375"	LATITUDE (WGS 84): 40.276501885256
DATE STARTED - COMPLETED: 3/28/19 - 3/28/19	LONGITUDE (WGS 84): -104.69024138076
TOTAL WELL DEPTH (FT. BGS): 15	CASING ELEVATION (FT. AMSL): NM
DEPTH TO WATER (FT. BGS): 4	GROUND ELEVATION (FT. AMSL): NM



Drilling / Sample Method:

- [Green box] Macro-Core
- [Green box] Solid Stem Auger
- [Blue box] Hand Auger

Laboratory Sample Types:

- [Purple box] Geotechnical Lab
- [Yellow box] Analytical Chemistry Lab
- [Blue/Yellow box] Geotechnical & Analytical Chemistry Lab



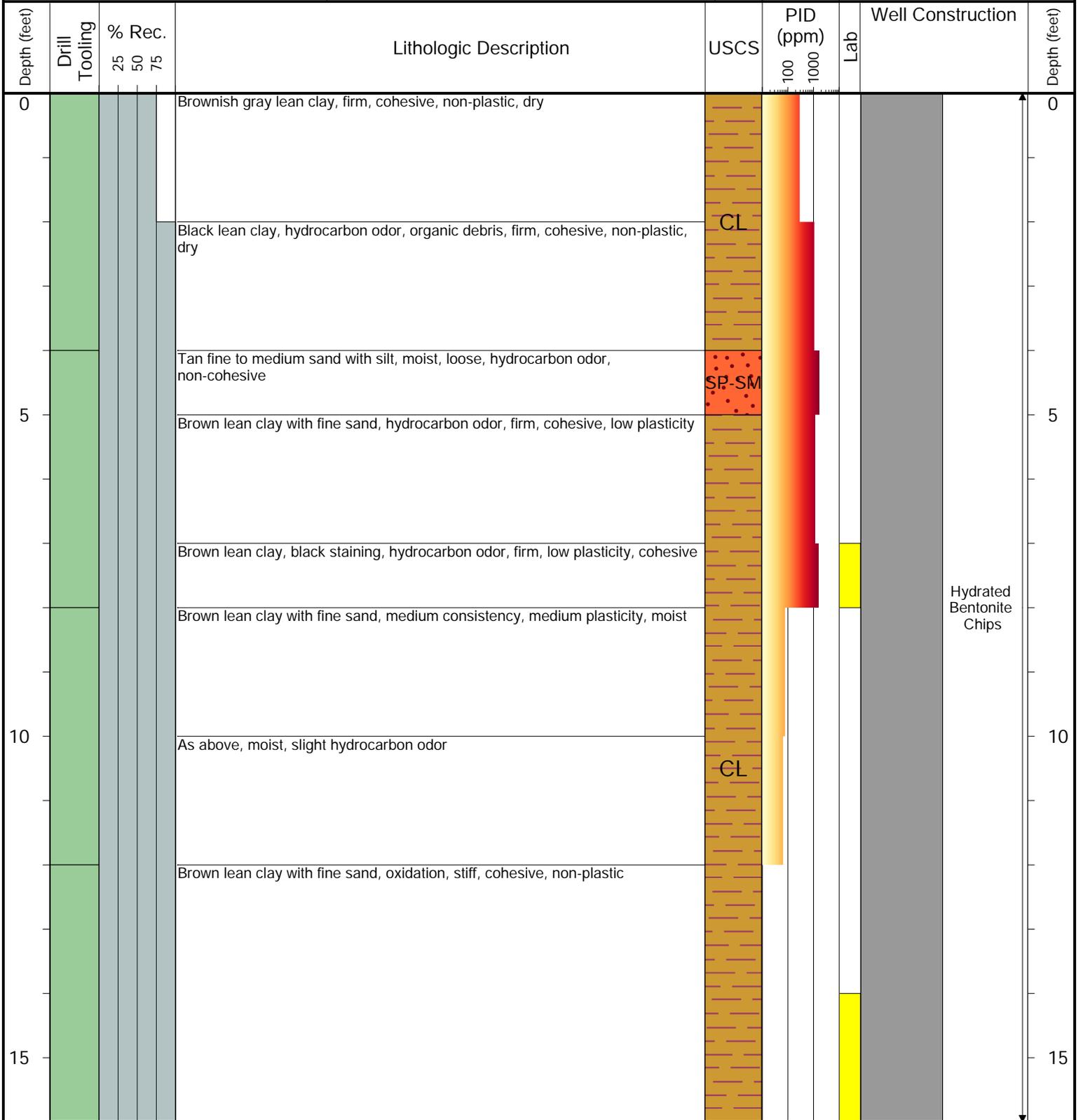
6899 Pecos Street, Unit C
Denver, Colorado 80221

CLIENT: Noble Energy
 LOGGED BY: Max Garza
 PROJECT MANAGER: Brandon Bruns
 DRILLING CONTRACTOR: Tasman Geosciences
 DRILLING EQUIPMENT: PowerProbe
 DRILL BIT SIZE (INCHES): 2.375"
 DATE STARTED - COMPLETED: 3/28/19 - 3/28/19
 TOTAL WELL DEPTH (FT. BGS): 16
 DEPTH TO WATER (FT. BGS): ND

Munds 13-29, Dickerson 14-29A

BORING / WELL ID: BH06

LOCATION: Weld County, Colorado
 LATITUDE (WGS 84): 40.276415618172
 LONGITUDE (WGS 84): -104.69030375789
 CASING ELEVATION (FT. AMSL): NM
 GROUND ELEVATION (FT. AMSL): NM



Drilling / Sample Method:

- Macro-Core
- Solid Stem Auger
- Hand Auger

Laboratory Sample Types:

- Geotechnical Lab
- Analytical Chemistry Lab
- Geotechnical & Analytical Chemistry Lab



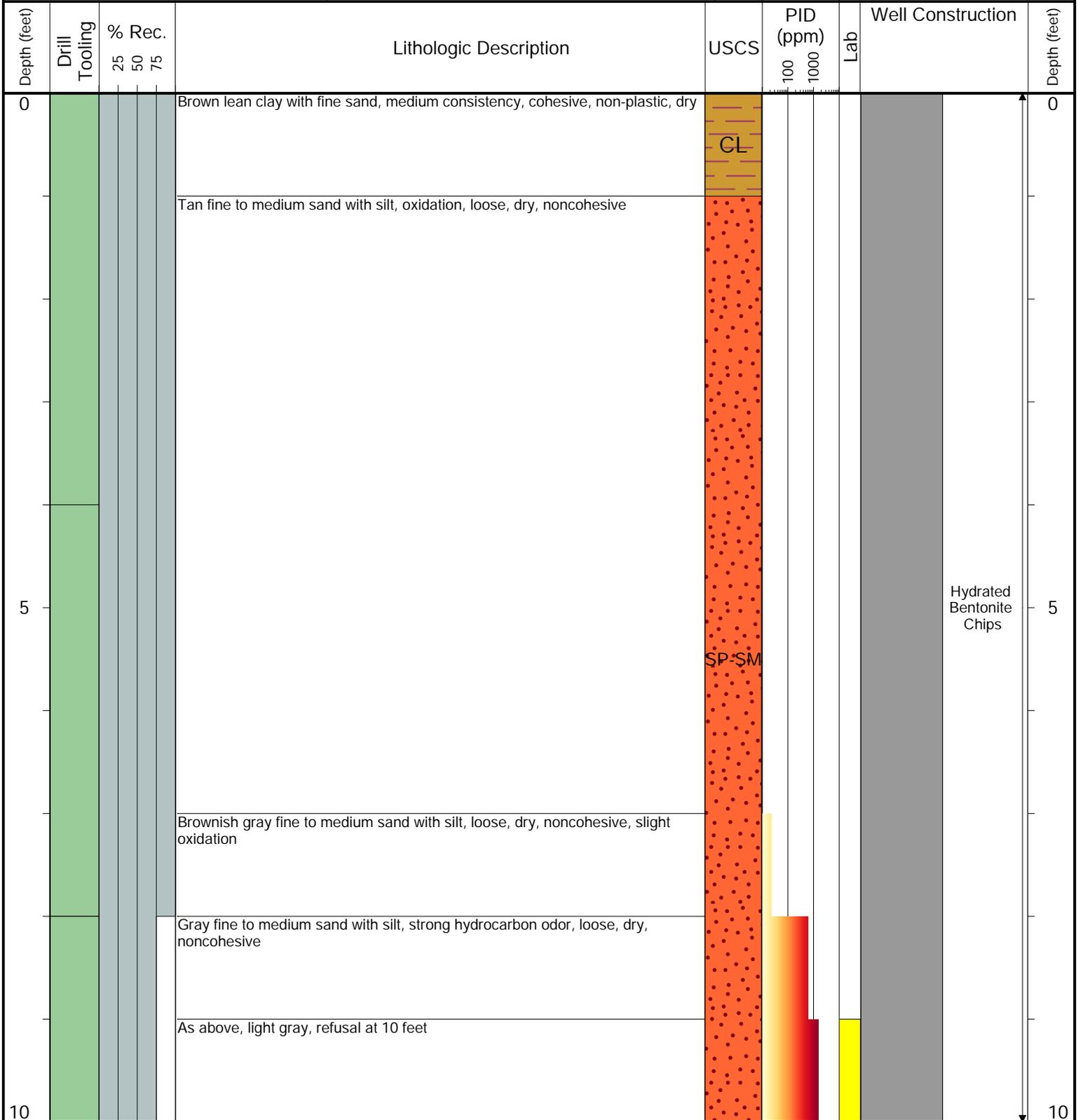
6899 Pecos Street, Unit C
Denver, Colorado 80221

CLIENT: Noble Energy
 LOGGED BY: Max Garza
 PROJECT MANAGER: Brandon Bruns
 DRILLING CONTRACTOR: Tasman Geosciences
 DRILLING EQUIPMENT: PowerProbe
 DRILL BIT SIZE (INCHES): 2.375"
 DATE STARTED - COMPLETED: 3/28/19 - 3/28/19
 TOTAL WELL DEPTH (FT. BGS): 10
 DEPTH TO WATER (FT. BGS): ND

Munds 13-29, Dickerson 14-29A

BORING / WELL ID: BH07

LOCATION: Weld County, Colorado
 LATITUDE (WGS 84): 40.276235443752
 LONGITUDE (WGS 84): -104.69013640078
 CASING ELEVATION (FT. AMSL): NM
 GROUND ELEVATION (FT. AMSL): NM



Drilling / Sample Method:

- [Green box] Macro-Core
- [Green box] Solid Stem Auger
- [Dark Green box] Hollow Stem Auger
- [Blue box] Hand Auger

Laboratory Sample Types:

- [Purple box] Geotechnical Lab
- [Yellow box] Analytical Chemistry Lab
- [Blue/Yellow box] Geotechnical & Analytical Chemistry Lab



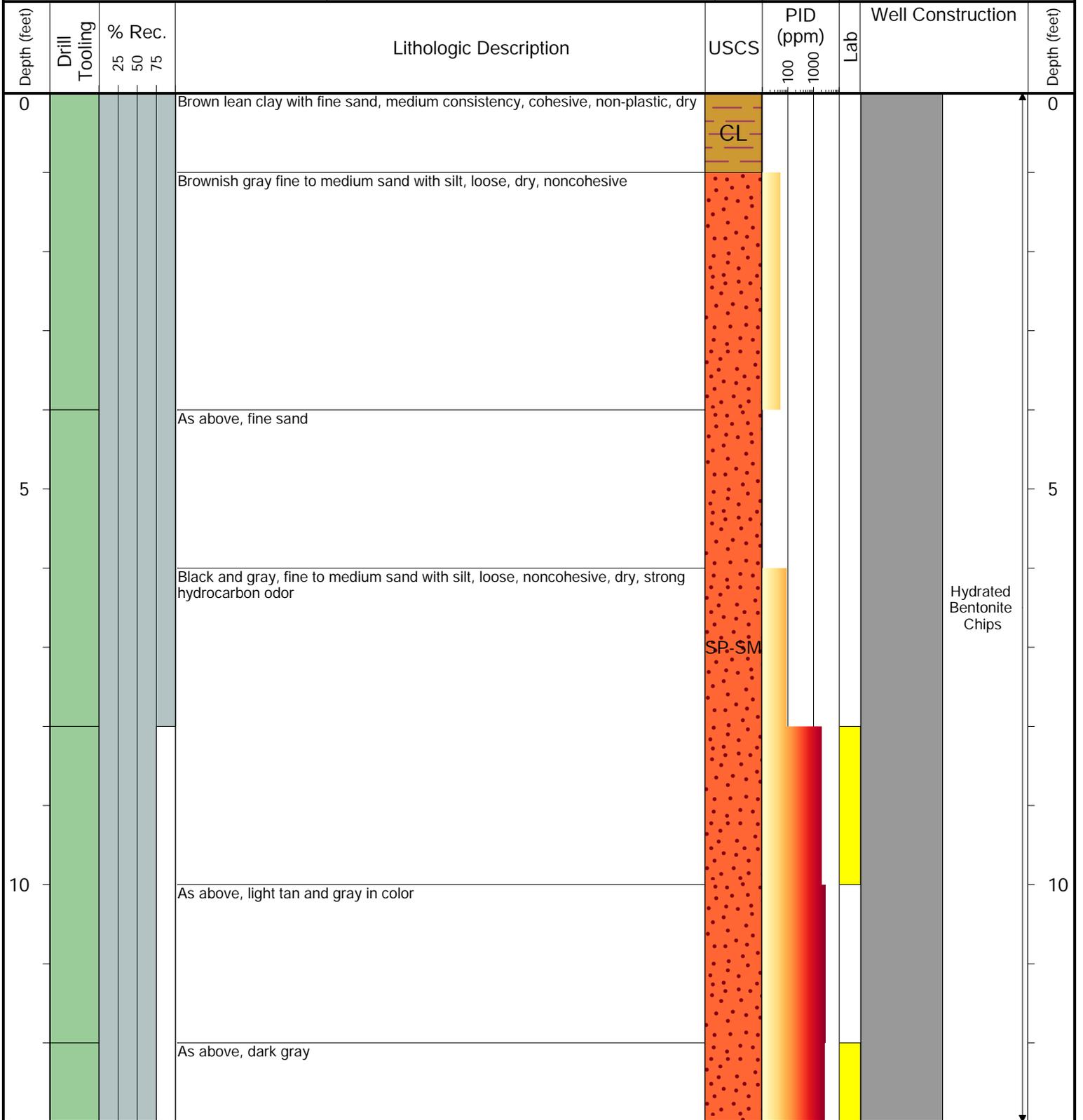
6899 Pecos Street, Unit C
Denver, Colorado 80221

CLIENT: Noble Energy
 LOGGED BY: Max Garza
 PROJECT MANAGER: Brandon Bruns
 DRILLING CONTRACTOR: Tasman Geosciences
 DRILLING EQUIPMENT: PowerProbe
 DRILL BIT SIZE (INCHES): 2.375"
 DATE STARTED - COMPLETED: 3/28/19 - 3/28/19
 TOTAL WELL DEPTH (FT. BGS): 13
 DEPTH TO WATER (FT. BGS): ND

Munds 13-29, Dickerson 14-29A

BORING / WELL ID: BH08

LOCATION: Weld County, Colorado
 LATITUDE (WGS 84): 40.276251599439
 LONGITUDE (WGS 84): -104.68986460069
 CASING ELEVATION (FT. AMSL): NM
 GROUND ELEVATION (FT. AMSL): NM



Drilling / Sample Method:

- Macro-Core
- Solid Stem Auger
- Hand Auger

Laboratory Sample Types:

- Geotechnical Lab
- Analytical Chemistry Lab
- Geotechnical & Analytical Chemistry Lab

ATTACHMENT B

LABORATORY ANALYTICAL DATA REPORTS

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

November 20, 2018

Brandon Bruns

Tasman Geosciences

6899 Pecos St, Unit C

Denver, CO 80221

RE: Noble - Munds 13-29, Dickerson 14-29A

Enclosed are the results of analyses for samples received by Summit Scientific on 11/19/18 18:42. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink on a light blue background. The signature reads "Muri Premer" in a cursive script.

Muri Premer For Ben Shrewsbury

Laboratory Manager



Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Munds 13-29, Dickerson 14-29A

Project Number: [none]
Project Manager: Brandon Brun

Reported:
11/20/18 15:46

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS01@3'	1811222-01	Soil	11/19/18 15:00	11/19/18 18:42
SS01@5'	1811222-02	Soil	11/19/18 15:02	11/19/18 18:42
SS02@3'	1811222-03	Soil	11/19/18 15:04	11/19/18 18:42
SS02@5'	1811222-04	Soil	11/19/18 15:06	11/19/18 18:42
SS03@3'	1811222-05	Soil	11/19/18 15:07	11/19/18 18:42
SS03@5'	1811222-06	Soil	11/19/18 15:08	11/19/18 18:42
SS04@3'	1811222-07	Soil	11/19/18 15:10	11/19/18 18:42
SS04@5'	1811222-08	Soil	11/19/18 15:12	11/19/18 18:42
SS05@6'	1811222-09	Soil	11/19/18 15:14	11/19/18 18:42
TP03@5'	1811222-10	Soil	11/19/18 15:30	11/19/18 18:42
TP03@10'	1811222-11	Soil	11/19/18 15:46	11/19/18 18:42
TP05@5'	1811222-12	Soil	11/19/18 16:00	11/19/18 18:42
TP05@10'	1811222-13	Soil	11/19/18 16:05	11/19/18 18:42
TP07@5'	1811222-14	Soil	11/19/18 16:20	11/19/18 18:42
TP07@10'	1811222-15	Soil	11/19/18 16:25	11/19/18 18:42

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

1811222.1

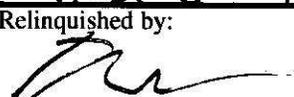
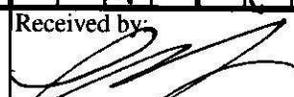
741 Corporate Circle Suite I ♦ Golden, Colorado 80401
303-277-9310 ♦ 303-374-5933 Fax

Page 1 of 2

Client: Noble/Tasman
Address: -
City/State/Zip: -
Phone: 303-487-1228 Fax: -
Sampler Name: GA

Project Manager: Brandon Bruns, Invoice: Jacob Evans
E-Mail: Bbruns@tasman-geo.com
Project Name: Mounds 13-29, Dickerson 14-29A
Project Number: -

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative				Matrix		Analyze For:				Special Instructions			
				HCl	HNO ₃	None	Other (Specify)	Groundwater	Soil	Air - Canister Serial #	Other (Specify)	8260 BTEX	8260B GBTEXN		8015 DRO	pH, EC, SAR	
SS01 @ 3'	11/19/18	1500	1			X						X					
SS01 @ 5'		1502	1			X						X					
SS02 @ 3'		1504	1			X						X					
SS02 @ 5'		1506	1			X						X					
SS03 @ 3'		1507	1			X						X	X				
SS03 @ 5'		1508	1			X						X					
SS04 @ 3'		1510	1			X						X					
SS04 @ 5'		1512	1			X						X					
SS05 @ 6'		1514	1			X						X					
T103 @ 5'	↓	1530	1			X						X					

Relinquished by: 	Date/Time: <u>11/19/18</u> 1840	Received by: 	Date/Time: <u>11-19-18</u> 1840	Turn Around Time (Check) Same Day <input checked="" type="checkbox"/> 72 Hours <input type="checkbox"/> 24 Hours <input type="checkbox"/> Standard <input type="checkbox"/> 48 Hours <input type="checkbox"/>	Notes:
Relinquished by:	Date/Time:	Received by:	Date/Time:		
Relinquished by:	Date/Time:	Received in Lab by:	Date/Time:		
				Sample Integrity: Temperature Upon Receipt: <u>4.3</u> Intact: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	

Summit Scientific

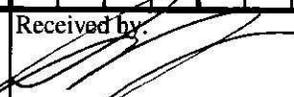
18112222

741 Corporate Circle Suite I ♦ Golden, Colorado 80401
303-277-9310 ♦ 303-374-5933 Fax

Page 2 of 2

Client: Noble/Tasman
Address: -
City/State/Zip: -
Phone: 303-487-1228 Fax: -
Sampler Name: -

Project Manager: Brandon Bruns, Invoice: Jacob Evans
E-Mail: Bbruns@tasman-geo.com
Project Name: Munds 13-29, Dickerson 14-29A
Project Number: -

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative				Matrix			Analyze For:				Special Instructions				
				HCl	HNO ₃	None	Other (Specify)	Groundwater	Soil	Air - Canister Serial #	Other (Specify)	8260 BTEX	8260B GBTEXN	8015 DRO		pH, EC, SAR			
TP03 @ 10'	11/19/18	1546	1			+													
TP05 @ 5'	↓	1600	1			+													
TP05 @ 10'	↓	1605	1			+													
TP07 @ 5'	↓	1620	1			+													
TP07 @ 10'	↓	1626	1			+													
Relinquished by: 				Date/Time: <u>11/19/18 1840</u>				Received by: 				Date/Time: <u>11-19-18 1840</u>				Turn Around Time (Check)		Notes:	
Relinquished by:				Date/Time:				Received by:				Date/Time:				Same Day <input checked="" type="checkbox"/> 72 Hours <input type="checkbox"/>			
Relinquished by:				Date/Time:				Received in Lab by:				Date/Time:				24 Hours <input type="checkbox"/> Standard <input type="checkbox"/>			
Relinquished by:				Date/Time:				Received in Lab by:				Date/Time:				48 Hours <input type="checkbox"/>		Sample Integrity:	
Relinquished by:				Date/Time:				Received in Lab by:				Date/Time:				Temperature Upon Receipt: <u>4.3</u>		Intact: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	

Sample Receipt Checklist

S2 Work Order: 1611222

Client: Noble / Tasman Client Project ID: Mounds 13-29, Dickerson 14-29A

Shipped Via: Pickup Airbill #: _____
(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Matrix (check all that apply): Air Soil/Solid Water Other: _____
(Describe)

Temp (°C)	<u>4.3</u>
-----------	------------

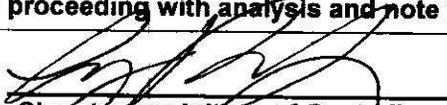
Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C ⁽¹⁾ ?				
NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun.	/			
Were all samples received intact ⁽¹⁾ ?	/			
Was adequate sample volume provided ⁽¹⁾ ?	/			
If custody seals are present, are they intact ⁽¹⁾ ?			/	
Are samples with holding times due within 48 hours sample due within 48 hours present?			/	
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	/			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	/			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	/			
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	/			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.			/	
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ?				
Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect			/	
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ?				
Record the pH in Comments.			/	
If dissolved metals are requested, were samples field filtered?				
			/	

Additional Comments (if any):

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

UP
 Custodian Printed Name or Initials


 Signature or Initials of Custodian

11.19.18 1840
 Date/Time



Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Munds 13-29, Dickerson 14-29A

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
11/20/18 15:46

SS01@3'
1811222-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/19/18 15:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	0.19	0.0020	mg/kg	1	1811250	11/19/18	11/19/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.032	0.0050	"	"	"	"	"	"	
Xylenes (total)	0.11	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **11/19/18 15:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		127 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		94.9 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		128 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/19/18 15:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1811252	11/19/18	11/19/18	EPA 8015M	

Date Sampled: **11/19/18 15:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		83.2 %	30-150		"	"	"	"	

Summit Scientific

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Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Munds 13-29, Dickerson 14-29A

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
11/20/18 15:46

SS01@5'
1811222-02 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/19/18 15:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	3.0	0.20	mg/kg	100	1811250	11/19/18	11/20/18	EPA 8260B	
Toluene	ND	0.0050	"	1	"	"	"	"	
Ethylbenzene	2.9	0.50	"	100	"	"	"	"	
Xylenes (total)	26	1.0	"	"	"	"	"	"	
Naphthalene	0.082	0.010	"	1	"	"	"	"	
Gasoline Range Hydrocarbons	1200	50	"	100	"	"	"	"	

Date Sampled: **11/19/18 15:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		89.0 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		93.8 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		134 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/19/18 15:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	69	50	mg/kg	1	1811252	11/19/18	11/19/18	EPA 8015M	

Date Sampled: **11/19/18 15:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		83.0 %	30-150		"	"	"	"	

Summit Scientific

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Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Munds 13-29, Dickerson 14-29A

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
11/20/18 15:46

SS02@3'
1811222-03 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/19/18 15:04**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	0.0020	mg/kg	1	1811250	11/19/18	11/19/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **11/19/18 15:04**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		81.7 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		94.9 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		95.4 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/19/18 15:04**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
C10-C28 (DRO)	ND	50	mg/kg	1	1811252	11/19/18	11/19/18	EPA 8015M	

Date Sampled: **11/19/18 15:04**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: o-Terphenyl		83.8 %	30-150		"	"	"	"	

Summit Scientific

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Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Munds 13-29, Dickerson 14-29A

Project Number: [none]
Project Manager: Brandon Brun

Reported:
11/20/18 15:46

SS02@5'
1811222-04 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/19/18 15:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	0.036	0.0020	mg/kg	1	1811250	11/19/18	11/19/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.037	0.0050	"	"	"	"	"	"	
Xylenes (total)	0.53	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **11/19/18 15:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		94.0 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		83.4 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		112 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/19/18 15:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1811252	11/19/18	11/19/18	EPA 8015M	

Date Sampled: **11/19/18 15:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		86.8 %	30-150		"	"	"	"	

Summit Scientific

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Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Munds 13-29, Dickerson 14-29A

Project Number: [none]
Project Manager: Brandon Brun

Reported:
11/20/18 15:46

SS03@3'
1811222-05 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/19/18 15:07**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	0.0075	0.0020	mg/kg	1	1811250	11/19/18	11/20/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.030	0.0050	"	"	"	"	"	"	
Xylenes (total)	0.24	0.010	"	"	"	"	"	"	
Naphthalene	0.027	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **11/19/18 15:07**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		96.0 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		95.5 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		156 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/19/18 15:07**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1811252	11/19/18	11/19/18	EPA 8015M	

Date Sampled: **11/19/18 15:07**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		81.2 %	30-150		"	"	"	"	

Soluble Nutrients by EPA 6020/USDA60 6(2, 3A) - Dry Weight Basis

Date Sampled: **11/19/18 15:07**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	1820	12.4	mg/kg dry	1	1811238	11/19/18	11/19/18	EPA 6020B	
Magnesium	993	6.18	"	"	"	"	"	"	

Summit Scientific

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Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Munds 13-29, Dickerson 14-29A

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
11/20/18 15:46

SS03@3'
1811222-05 (Soil)

Summit Scientific

Soluble Nutrients by EPA 6020/USDA60 6(2, 3A) - Dry Weight Basis

Sodium	317	6.18	mg/kg dry	1	1811238	11/19/18	11/19/18	EPA 6020B
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Calculated Analysis

Date Sampled: **11/19/18 15:07**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	1.48	0.100	units	1	1811265	11/20/18	11/20/18	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **11/19/18 15:07**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	80.9		%	1	1811243	11/19/18	11/20/18	Calculation	
pH	8.59		pH Units	"	1811254	11/19/18	11/19/18	EPA 9045D	

Specific Conductance by EPA Method 120.1

Date Sampled: **11/19/18 15:07**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	5.03	0.0100	mmhos/cm	1	1811253	11/19/18	11/19/18	EPA 120.1	

Summit Scientific

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Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Munds 13-29, Dickerson 14-29A

Project Number: [none]
Project Manager: Brandon Brun

Reported:
11/20/18 15:46

SS03@5'
1811222-06 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/19/18 15:08**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	0.049	0.0020	mg/kg	1	1811250	11/19/18	11/20/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.16	0.0050	"	"	"	"	"	"	
Xylenes (total)	1.1	0.010	"	"	"	"	"	"	
Naphthalene	0.042	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **11/19/18 15:08**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		124 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		95.2 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		104 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/19/18 15:08**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1811252	11/19/18	11/19/18	EPA 8015M	

Date Sampled: **11/19/18 15:08**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		83.7 %	30-150		"	"	"	"	

Summit Scientific

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



Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Munds 13-29, Dickerson 14-29A

Project Number: [none]
Project Manager: Brandon Brun

Reported:
11/20/18 15:46

SS04@3'
1811222-07 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/19/18 15:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	0.026	0.0020	mg/kg	1	1811250	11/19/18	11/20/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.072	0.0050	"	"	"	"	"	"	
Xylenes (total)	0.40	0.010	"	"	"	"	"	"	
Naphthalene	0.020	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **11/19/18 15:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		93.3 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		94.6 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		133 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/19/18 15:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1811252	11/19/18	11/19/18	EPA 8015M	

Date Sampled: **11/19/18 15:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		82.1 %	30-150		"	"	"	"	

Summit Scientific

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



Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Munds 13-29, Dickerson 14-29A

Project Number: [none]
Project Manager: Brandon Brun

Reported:
11/20/18 15:46

SS04@5'
1811222-08 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/19/18 15:12**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	0.048	0.0020	mg/kg	1	1811250	11/19/18	11/20/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.19	0.0050	"	"	"	"	"	"	
Xylenes (total)	1.8	1.0	"	100	"	"	"	"	
Naphthalene	0.039	0.010	"	1	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **11/19/18 15:12**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		93.5 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		95.8 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.9 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/19/18 15:12**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1811252	11/19/18	11/19/18	EPA 8015M	

Date Sampled: **11/19/18 15:12**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		82.6 %	30-150		"	"	"	"	

Summit Scientific

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Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Munds 13-29, Dickerson 14-29A

Project Number: [none]
Project Manager: Brandon Brun

Reported:
11/20/18 15:46

SS05@6'
1811222-09 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/19/18 15:14**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	0.31	0.0020	mg/kg	1	1811250	11/19/18	11/19/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.021	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **11/19/18 15:14**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		85.7 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		96.0 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		105 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/19/18 15:14**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1811252	11/19/18	11/20/18	EPA 8015M	

Date Sampled: **11/19/18 15:14**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		85.2 %	30-150		"	"	"	"	

Summit Scientific

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Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Munds 13-29, Dickerson 14-29A

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
11/20/18 15:46

TP03@5'
1811222-10 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/19/18 15:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	1.7	0.020	mg/kg	10	1811250	11/19/18	11/19/18	EPA 8260B	
Toluene	ND	0.0050	"	1	"	"	"	"	
Ethylbenzene	0.28	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	0.038	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **11/19/18 15:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		120 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		91.0 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		157 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/19/18 15:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	70	50	mg/kg	1	1811252	11/19/18	11/20/18	EPA 8015M	

Date Sampled: **11/19/18 15:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		79.5 %	30-150		"	"	"	"	

Summit Scientific

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Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Munds 13-29, Dickerson 14-29A

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
11/20/18 15:46

TP03@10'
1811222-11 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/19/18 15:46**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	0.0020	mg/kg	1	1811250	11/19/18	11/19/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **11/19/18 15:46**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		71.1 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.6 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		94.9 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/19/18 15:46**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
C10-C28 (DRO)	ND	50	mg/kg	1	1811252	11/19/18	11/20/18	EPA 8015M	

Date Sampled: **11/19/18 15:46**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: o-Terphenyl		84.1 %	30-150		"	"	"	"	

Summit Scientific

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Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Munds 13-29, Dickerson 14-29A

Project Number: [none]
Project Manager: Brandon Brun

Reported:
11/20/18 15:46

TP05@5'
1811222-12 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/19/18 16:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	0.0098	0.0020	mg/kg	1	1811250	11/19/18	11/19/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.029	0.0050	"	"	"	"	"	"	
Xylenes (total)	0.43	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **11/19/18 16:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		88.8 %	23-173		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		84.9 %	20-170		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		107 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/19/18 16:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1811252	11/19/18	11/20/18	EPA 8015M	

Date Sampled: **11/19/18 16:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		84.3 %	30-150		"	"	"	"	

Summit Scientific

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Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Munds 13-29, Dickerson 14-29A

Project Number: [none]
Project Manager: Brandon Brun

Reported:
11/20/18 15:46

TP05@10'
1811222-13 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/19/18 16:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	0.16	0.0020	mg/kg	1	1811250	11/19/18	11/20/18	EPA 8260B	
Toluene	0.25	0.0050	"	"	"	"	"	"	
Ethylbenzene	14	0.50	"	100	"	"	"	"	
Xylenes (total)	170	1.0	"	"	"	"	"	"	
Naphthalene	0.033	0.010	"	1	"	"	"	"	
Gasoline Range Hydrocarbons	4600	50	"	100	"	"	"	"	

Date Sampled: **11/19/18 16:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		124 %	23-173		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		94.5 %	20-170		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		152 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/19/18 16:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	59	50	mg/kg	1	1811252	11/19/18	11/20/18	EPA 8015M	

Date Sampled: **11/19/18 16:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		83.1 %	30-150		"	"	"	"	

Summit Scientific

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Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Munds 13-29, Dickerson 14-29A

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
11/20/18 15:46

TP07@5'
1811222-14 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/19/18 16:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	0.0082	0.0020	mg/kg	1	1811250	11/19/18	11/19/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **11/19/18 16:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		83.9 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		94.8 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.6 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/19/18 16:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1811252	11/19/18	11/20/18	EPA 8015M	

Date Sampled: **11/19/18 16:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		85.1 %	30-150		"	"	"	"	

Summit Scientific

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Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Munds 13-29, Dickerson 14-29A

Project Number: [none]
Project Manager: Brandon Brun

Reported:
11/20/18 15:46

TP07@10'
1811222-15 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/19/18 16:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	0.011	0.0020	mg/kg	1	1811250	11/19/18	11/19/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **11/19/18 16:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		88.1 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.8 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		102 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/19/18 16:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1811252	11/19/18	11/20/18	EPA 8015M	

Date Sampled: **11/19/18 16:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		84.0 %	30-150		"	"	"	"	

Summit Scientific

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Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Munds 13-29, Dickerson 14-29A

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
11/20/18 15:46

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch 1811250 - EPA 5030 Soil MS

Blank (1811250-BLK1)

Prepared: 11/19/18 Analyzed: 11/20/18

Benzene	ND	0.0020	mg/kg							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
Naphthalene	ND	0.010	"							
Gasoline Range Hydrocarbons	ND	50	"							
Surrogate: 1,2-Dichloroethane-d4	0.0358		"	0.0396		90.5	23-173			
Surrogate: Toluene-d8	0.0403		"	0.0400		101	20-170			
Surrogate: 4-Bromofluorobenzene	0.0417		"	0.0400		104	21-167			

LCS (1811250-BS1)

Prepared: 11/19/18 Analyzed: 11/20/18

Benzene	0.101	0.0020	mg/kg	0.100		101	70-130			
Toluene	0.106	0.0050	"	0.100		106	70-130			
Ethylbenzene	0.112	0.0050	"	0.100		112	70-130			
m,p-Xylene	0.197	0.010	"	0.200		98.6	70-130			
o-Xylene	0.0979	0.0050	"	0.100		97.9	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0375		"	0.0396		94.7	23-173			
Surrogate: Toluene-d8	0.0398		"	0.0400		99.4	20-170			
Surrogate: 4-Bromofluorobenzene	0.0411		"	0.0400		103	21-167			

Matrix Spike (1811250-MS1)

Source: 1811222-01

Prepared: 11/19/18 Analyzed: 11/20/18

Benzene	0.430	0.0020	mg/kg	0.100	0.186	243	70-130			QM-07
Toluene	0.122	0.0050	"	0.100	ND	122	70-130			
Ethylbenzene	0.177	0.0050	"	0.100	0.0324	144	70-130			QM-07
m,p-Xylene	0.369	0.010	"	0.200	0.110	129	70-130			
o-Xylene	0.122	0.0050	"	0.100	ND	122	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0425		"	0.0396		107	23-173			
Surrogate: Toluene-d8	0.0389		"	0.0400		97.2	20-170			
Surrogate: 4-Bromofluorobenzene	0.0448		"	0.0400		112	21-167			

Summit Scientific

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Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Munds 13-29, Dickerson 14-29A

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
11/20/18 15:46

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

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

Batch 1811250 - EPA 5030 Soil MS

Matrix Spike Dup (1811250-MSD1)	Source: 1811222-01			Prepared: 11/19/18 Analyzed: 11/20/18						
Benzene	0.543	0.0020	mg/kg	0.100	0.186	357	70-130	23.3	30	QM-07
Toluene	0.129	0.0050	"	0.100	ND	129	70-130	5.78	30	
Ethylbenzene	0.197	0.0050	"	0.100	0.0324	164	70-130	10.7	30	QM-07
m,p-Xylene	0.384	0.010	"	0.200	0.110	137	70-130	3.85	30	QM-07
o-Xylene	0.128	0.0050	"	0.100	ND	128	70-130	5.33	30	
Surrogate: 1,2-Dichloroethane-d4	0.0451		"	0.0396		114	23-173			
Surrogate: Toluene-d8	0.0392		"	0.0400		98.1	20-170			
Surrogate: 4-Bromofluorobenzene	0.0449		"	0.0400		112	21-167			

Summit Scientific

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Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Munds 13-29, Dickerson 14-29A

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
11/20/18 15:46

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch 1811252 - EPA 3550A

Blank (1811252-BLK1)

Prepared: 11/19/18 Analyzed: 11/20/18

C10-C28 (DRO) ND 50 mg/kg

LCS (1811252-BS1)

Prepared: 11/19/18 Analyzed: 11/20/18

C10-C28 (DRO) 556 50 mg/kg 500 111 70-130

Matrix Spike (1811252-MS1)

Source: 1811222-01

Prepared: 11/19/18 Analyzed: 11/20/18

C10-C28 (DRO) 617 50 mg/kg 500 27.6 118 70-130

Matrix Spike Dup (1811252-MSD1)

Source: 1811222-01

Prepared: 11/19/18 Analyzed: 11/20/18

C10-C28 (DRO) 624 50 mg/kg 500 27.6 119 70-130 1.04 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
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Munds 13-29, Dickerson 14-29A

Project Number: [none]
Project Manager: Brandon Brun

Reported:
11/20/18 15:46

Soluble Nutrients by EPA 6020/USDA60 6(2, 3A) - Dry Weight Basis - Quality Control

Summit Scientific

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

Batch 1811238 - General Preparation

Blank (1811238-BLK1)

Prepared & Analyzed: 11/19/18

Calcium	ND	10.0	mg/kg wet							
Magnesium	ND	5.00	"							
Sodium	ND	5.00	"							

LCS (1811238-BS1)

Prepared & Analyzed: 11/19/18

Calcium	565	10.0	mg/kg wet	500	113	70-130			
Magnesium	587	5.00	"	500	117	70-130			
Sodium	561	5.00	"	500	112	70-130			

Duplicate (1811238-DUP1)

Source: 1811206-01

Prepared & Analyzed: 11/19/18

Calcium	484	11.1	mg/kg dry	473			2.30	20
Magnesium	237	5.55	"	247			3.87	20
Sodium	54.9	5.55	"	53.4			2.80	20

Matrix Spike (1811238-MS1)

Source: 1811206-01

Prepared & Analyzed: 11/19/18

Calcium	967	11.1	mg/kg dry	555	473	89.0	70-130	
Magnesium	856	5.55	"	555	247	110	70-130	
Sodium	663	5.55	"	555	53.4	110	70-130	

Matrix Spike Dup (1811238-MSD1)

Source: 1811206-01

Prepared & Analyzed: 11/19/18

Calcium	929	11.1	mg/kg dry	555	473	82.3	70-130	3.92	25
Magnesium	769	5.55	"	555	247	94.0	70-130	10.7	25
Sodium	581	5.55	"	555	53.4	95.1	70-130	13.3	25

Summit Scientific

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Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Munds 13-29, Dickerson 14-29A

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
11/20/18 15:46

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

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

Batch 1811243 - General Preparation

Duplicate (1811243-DUP1)		Source: 1811206-01		Prepared: 11/19/18 Analyzed: 11/20/18		
% Solids	90.0		%		90.1	0.200 20

Batch 1811254 - General Preparation

LCS (1811254-BS1)				Prepared & Analyzed: 11/19/18	
pH	9.1		pH Units	9.18	99.5 95-105
Duplicate (1811254-DUP1)		Source: 1811220-01		Prepared & Analyzed: 11/19/18	
pH	8.4		pH Units	8.6	1.76 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
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Munds 13-29, Dickerson 14-29A

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
11/20/18 15:46

Specific Conductance by EPA Method 120.1 - Quality Control
Summit Scientific

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

Batch 1811253 - General Preparation

Blank (1811253-BLK1)

Prepared & Analyzed: 11/19/18

Specific Conductance (EC) ND 0.0100 mmhos/cm

LCS (1811253-BS1)

Prepared & Analyzed: 11/19/18

Specific Conductance (EC) 0.751 0.0100 mmhos/cm 0.750 100 90-110

Duplicate (1811253-DUP1)

Source: 1811220-01

Prepared & Analyzed: 11/19/18

Specific Conductance (EC) 0.446 0.0100 mmhos/cm 0.445 0.213 20

Summit Scientific

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Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Munds 13-29, Dickerson 14-29A

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
11/20/18 15:46

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 80403

303.277.9310

November 27, 2018

Brandon Bruns

Tasman Geosciences

6899 Pecos St, Unit C

Denver, CO 80221

RE: Noble - Munds 13-29, Dickerson 14-29A

Enclosed are the results of analyses for samples received by Summit Scientific on 11/20/18 18:50. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'Paul Shrewsbury', written in a cursive style.

Paul Shrewsbury For Ben Shrewsbury

Laboratory Manager



Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Munds 13-29, Dickerson 14-29A

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
11/27/18 10:58

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
TP08@5'	1811250-01	Soil	11/20/18 09:30	11/20/18 18:50
TP08@10'	1811250-02	Soil	11/20/18 09:35	11/20/18 18:50
TP08@13'	1811250-03	Soil	11/20/18 09:40	11/20/18 18:50
TP09@5'	1811250-04	Soil	11/20/18 10:00	11/20/18 18:50
TP09@10'	1811250-05	Soil	11/20/18 10:05	11/20/18 18:50
TP09@13'	1811250-06	Soil	11/20/18 10:10	11/20/18 18:50
TP10@5'	1811250-07	Soil	11/20/18 10:50	11/20/18 18:50
TP10@10'	1811250-08	Soil	11/20/18 10:55	11/20/18 18:50
TP10@13'	1811250-09	Soil	11/20/18 11:00	11/20/18 18:50
TP11@5'	1811250-10	Soil	11/20/18 11:15	11/20/18 18:50
TP11@10'	1811250-11	Soil	11/20/18 11:20	11/20/18 18:50
TP11@13'	1811250-12	Soil	11/20/18 11:25	11/20/18 18:50
TP12@5'	1811250-13	Soil	11/20/18 14:30	11/20/18 18:50
TP12@10'	1811250-14	Soil	11/20/18 14:32	11/20/18 18:50
TP12@13'	1811250-15	Soil	11/20/18 14:40	11/20/18 18:50
TP13@5'	1811250-16	Soil	11/20/18 15:30	11/20/18 18:50
TP13@10'	1811250-17	Soil	11/20/18 15:35	11/20/18 18:50
TP13@13'	1811250-18	Soil	11/20/18 15:40	11/20/18 18:50
TP14@5'	1811250-19	Soil	11/20/18 16:50	11/20/18 18:50

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

1811250.1

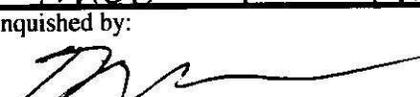
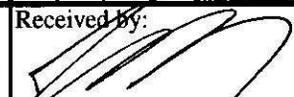
741 Corporate Circle Suite I ♦ Golden, Colorado 80401
303-277-9310 ♦ 303-374-5933 Fax

Page 1 of 2

Client: Noble/Tasman
Address: -
City/State/Zip: -
Phone: 303-487-1228 Fax: -
Sampler Name: GB

Project Manager: Brandon Bruns, Invoice: Jacob Evans
E-Mail: Bbruns@tasman-geo.com
Project Name: Munds 13-29, Dickerson 14-29A
Project Number: -

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative				Matrix			Analyze For:				Special Instructions	
				HCl	HNO ₃	None	Other (Specify)	Groundwater	Soil	Air - Canister Serial #	Other (Specify)	8260 BTEX	8260B GBTEXN	8015 DRO		pH, EC, SAR
TP08@5'	11/20/18	0930	1			X			X				X	X		
TP08@10'		0935	1													
TP08@13'		0940	1													
TP09@5'		1000	1													
TP09@10'		1005	1													
TP09@13'		1010	1													
TP10@5'		1050	1													
TP10@10'		1055	1													
TP10@13'		1100	1													
TP10@5'		1115	1													

Relinquished by: 	Date/Time: <u>11/20/18</u> <u>1650</u>	Received by: 	Date/Time: <u>11-20-18</u> <u>1650</u>	Turn Around Time (Check) Same Day <input type="checkbox"/> 72 Hours <input type="checkbox"/> 24 Hours <input type="checkbox"/> Standard <input checked="" type="checkbox"/> 48 Hours <input type="checkbox"/>	Notes:
Relinquished by:	Date/Time:	Received by:	Date/Time:		
Relinquished by:	Date/Time:	Received in Lab by:	Date/Time:		
				Sample Integrity: Temperature Upon Receipt: <u>4.5</u> Intact: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	

Summit Scientific

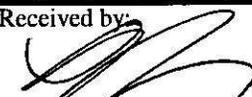
1811250.2

741 Corporate Circle Suite I ♦ Golden, Colorado 80401
303-277-9310 ♦ 303-374-5933 Fax

Client: Noble/Tasman
Address: -
City/State/Zip: -
Phone: 303-487-1228 Fax: -
Sampler Name: GB

Project Manager: Brandon Bruns, Invoice: Jacob Evans
E-Mail: Bbruns@tasman-geo.com
Project Name: Muds 13-29, Dickerson 14-29A
Project Number: -

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative				Matrix			Analyze For:				Special Instructions		
				HCl	HNO ₃	None	Other (Specify)	Groundwater	Soil	Air - Canister Serial #	Other (Specify)	8260 BTEX	8260B GBTEXN	8015 DRO		PH, EC, SAR	
TP11 @ 10'	1120	11/20/18	1			X			X				X	X			
TP11 @ 13'	1125																
TP12 @ 5'	1430																
TP12 @ 10'	1432																
TP12 @ 13'	1440																
TP13 @ 5'	1530																
TP13 @ 10'	1535																
TP13 @ 13'	1540																
TP14 @ 5'	1650																

Relinquished by: 	Date/Time: <u>1850</u> <u>11/20/18</u>	Received by: 	Date/Time: <u>11-20-18</u> <u>1850</u>	Turn Around Time (Check)	Notes:
Relinquished by:	Date/Time:	Received by:	Date/Time:	Same Day <input type="checkbox"/>	72 Hours <input type="checkbox"/> Standard <input checked="" type="checkbox"/>
Relinquished by:	Date/Time:	Received by:	Date/Time:	24 Hours <input type="checkbox"/>	
Relinquished by:	Date/Time:	Received in Lab by:	Date/Time:	48 Hours <input type="checkbox"/>	
				Sample Integrity:	
				Temperature Upon Receipt: <u>4.5</u>	
				Intact: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	

1811250

Sample Receipt Checklist

S2 Work Order _____

Client: Noble/Tasman Client Project ID: Munds 13-29, Dickerson 14-29A

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

Matrix (check all that apply): Air Soil/Solid Water Other: _____
(Describe)

Temp (°C)	4.5
-----------	-----

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C ⁽¹⁾ ? NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun.	<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"/>	
If custody seals are present, are they intact ⁽¹⁾ ?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples with holding times due within 48 hours sample due within 48 hours present?	<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"/>	
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"/>	
Is the COC properly relinquished by the client w/ date and time recorded ⁽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, H2SO4, NaOH, HNO3, ect	<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.				

UP
Custodian Printed Name or Initials

[Signature]
Signature of Custodian

11.20.18 1259
Date/Time



Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Munds 13-29, Dickerson 14-29A

Project Number: [none]
Project Manager: Brandon Brun

Reported:
11/27/18 10:58

TP08@5'
1811250-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/20/18 09:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	1.2	0.20	mg/kg	100	1811287	11/21/18	11/22/18	EPA 8260B	
Toluene	ND	0.0050	"	1	"	"	"	"	
Ethylbenzene	3.1	0.0050	"	"	"	"	"	"	
Xylenes (total)	12	1.0	"	100	"	"	11/21/18	"	
Naphthalene	0.19	0.010	"	1	"	"	11/22/18	"	
Gasoline Range Hydrocarbons	250	50	"	"	"	"	"	"	

Date Sampled: **11/20/18 09:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4	494 %	23-173	"	"	"	"	"	"	S-02
Surrogate: Toluene-d8	83.1 %	20-170	"	"	"	"	"	"	
Surrogate: 4-Bromofluorobenzene	818 %	21-167	"	"	"	"	"	"	S-02

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/20/18 09:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	110	50	mg/kg	1	1811288	"	11/21/18	EPA 8015M	

Date Sampled: **11/20/18 09:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl	90.4 %	30-150	"	"	"	"	"	"	

Summit Scientific

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



Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Munds 13-29, Dickerson 14-29A

Project Number: [none]
Project Manager: Brandon Brun

Reported:
11/27/18 10:58

TP08@10'
1811250-02 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/20/18 09:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1811287	11/21/18	11/22/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.076	0.0050	"	"	"	"	"	"	
Xylenes (total)	1.1	0.010	"	"	"	"	"	"	
Naphthalene	0.070	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **11/20/18 09:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		97.7 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		96.1 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		201 %	21-167		"	"	"	"	S-02

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/20/18 09:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	93	50	mg/kg	1	1811288	"	11/21/18	EPA 8015M	

Date Sampled: **11/20/18 09:35**

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

Summit Scientific

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Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Munds 13-29, Dickerson 14-29A

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
11/27/18 10:58

TP08@13'
1811250-03 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/20/18 09:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	0.0061	0.0020	mg/kg	1	1811287	11/21/18	11/22/18	EPA 8260B	
Toluene	0.027	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.059	0.0050	"	"	"	"	"	"	
Xylenes (total)	0.87	0.010	"	"	"	"	"	"	
Naphthalene	0.021	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **11/20/18 09:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		85.9 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.2 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		132 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/20/18 09:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1811288	"	11/21/18	EPA 8015M	

Date Sampled: **11/20/18 09:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		93.4 %	30-150		"	"	"	"	

Summit Scientific

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Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Munds 13-29, Dickerson 14-29A

Project Number: [none]
Project Manager: Brandon Brun

Reported:
11/27/18 10:58

TP09@5'
1811250-04 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/20/18 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1811287	11/21/18	11/22/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **11/20/18 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		84.8 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.9 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		99.2 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/20/18 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1811288	"	11/22/18	EPA 8015M	

Date Sampled: **11/20/18 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		93.8 %	30-150		"	"	"	"	

Summit Scientific

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



Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Munds 13-29, Dickerson 14-29A

Project Number: [none]
Project Manager: Brandon Brun

Reported:
11/27/18 10:58

TP09@10'
1811250-05 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/20/18 10:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1811287	11/21/18	11/22/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **11/20/18 10:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		89.3 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.4 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		101 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/20/18 10:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1811288	"	11/22/18	EPA 8015M	

Date Sampled: **11/20/18 10:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		92.9 %	30-150		"	"	"	"	

Summit Scientific

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



Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Munds 13-29, Dickerson 14-29A

Project Number: [none]
Project Manager: Brandon Brun

Reported:
11/27/18 10:58

TP09@13'
1811250-06 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/20/18 10:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1811287	11/21/18	11/22/18	EPA 8260B	
Toluene	0.015	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.072	0.0050	"	"	"	"	"	"	
Xylenes (total)	1.4	0.010	"	"	"	"	"	"	
Naphthalene	0.059	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **11/20/18 10:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		85.4 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		93.4 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		223 %	21-167		"	"	"	"	S-02

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/20/18 10:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	120	50	mg/kg	1	1811288	"	11/22/18	EPA 8015M	

Date Sampled: **11/20/18 10:10**

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

Summit Scientific

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



Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Munds 13-29, Dickerson 14-29A

Project Number: [none]
Project Manager: Brandon Brun

Reported:
11/27/18 10:58

TP10@5'
1811250-07 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/20/18 10:50**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	0.0020	mg/kg	1	1811287	11/21/18	11/22/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **11/20/18 10:50**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		103 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.5 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		100 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/20/18 10:50**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
C10-C28 (DRO)	ND	50	mg/kg	1	1811288	"	11/22/18	EPA 8015M	

Date Sampled: **11/20/18 10:50**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: o-Terphenyl		88.4 %	30-150		"	"	"	"	

Summit Scientific

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



Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Munds 13-29, Dickerson 14-29A

Project Number: [none]
Project Manager: Brandon Brun

Reported:
11/27/18 10:58

TP10@10'
1811250-08 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/20/18 10:55**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	0.0020	mg/kg	1	1811287	11/21/18	11/22/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **11/20/18 10:55**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		82.7 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		90.1 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		105 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/20/18 10:55**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
C10-C28 (DRO)	ND	50	mg/kg	1	1811288	"	11/22/18	EPA 8015M	

Date Sampled: **11/20/18 10:55**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: o-Terphenyl		92.5 %	30-150		"	"	"	"	

Summit Scientific

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Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Munds 13-29, Dickerson 14-29A

Project Number: [none]
Project Manager: Brandon Brun

Reported:
11/27/18 10:58

TP10@13'
1811250-09 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/20/18 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1811287	11/21/18	11/22/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **11/20/18 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		86.8 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		96.6 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.5 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/20/18 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1811288	"	11/22/18	EPA 8015M	

Date Sampled: **11/20/18 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		93.5 %	30-150		"	"	"	"	

Summit Scientific

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



Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Munds 13-29, Dickerson 14-29A

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
11/27/18 10:58

TP11@5'
1811250-10 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/20/18 11:15**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	1811287	11/21/18	11/22/18	EPA 8260B	
Toluene	ND	0.0050		"	"	"	"	"	"	
Ethylbenzene	ND	0.0050		"	"	"	"	"	"	
Xylenes (total)	ND	0.010		"	"	"	"	"	"	
Naphthalene	ND	0.010		"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50		"	"	"	"	"	"	

Date Sampled: **11/20/18 11:15**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		87.6 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		96.3 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		97.9 %		21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/20/18 11:15**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	ND	50		mg/kg	1	1811288	"	11/22/18	EPA 8015M	

Date Sampled: **11/20/18 11:15**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl		94.2 %		30-150		"	"	"	"	

Summit Scientific

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Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Munds 13-29, Dickerson 14-29A

Project Number: [none]
Project Manager: Brandon Brun

Reported:
11/27/18 10:58

TP11@10'
1811250-11 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/20/18 11:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1811287	11/21/18	11/22/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **11/20/18 11:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		85.2 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.4 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		106 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/20/18 11:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1811288	"	11/22/18	EPA 8015M	

Date Sampled: **11/20/18 11:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		95.6 %	30-150		"	"	"	"	

Summit Scientific

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Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Munds 13-29, Dickerson 14-29A

Project Number: [none]
Project Manager: Brandon Brun

Reported:
11/27/18 10:58

TP11@13'
1811250-12 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/20/18 11:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1811287	11/21/18	11/22/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **11/20/18 11:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		88.3 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.0 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		97.8 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/20/18 11:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1811288	"	11/22/18	EPA 8015M	

Date Sampled: **11/20/18 11:25**

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

Summit Scientific

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Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Munds 13-29, Dickerson 14-29A

Project Number: [none]
Project Manager: Brandon Brun

Reported:
11/27/18 10:58

TP12@5'
1811250-13 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/20/18 14:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1811287	11/21/18	11/22/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **11/20/18 14:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		83.3 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		92.6 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		93.8 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/20/18 14:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1811288	"	11/22/18	EPA 8015M	

Date Sampled: **11/20/18 14:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		92.5 %	30-150		"	"	"	"	

Summit Scientific

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Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Munds 13-29, Dickerson 14-29A

Project Number: [none]
Project Manager: Brandon Brun

Reported:
11/27/18 10:58

TP12@10'
1811250-14 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/20/18 14:32**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1811287	11/21/18	11/22/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.058	0.0050	"	"	"	"	"	"	
Xylenes (total)	0.97	0.010	"	"	"	"	"	"	
Naphthalene	0.067	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **11/20/18 14:32**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		84.4 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		92.3 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		206 %	21-167		"	"	"	"	S-02

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/20/18 14:32**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	87	50	mg/kg	1	1811288	"	11/22/18	EPA 8015M	

Date Sampled: **11/20/18 14:32**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		93.0 %	30-150		"	"	"	"	

Summit Scientific

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



Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Munds 13-29, Dickerson 14-29A

Project Number: [none]
Project Manager: Brandon Brun

Reported:
11/27/18 10:58

TP12@13'
1811250-15 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/20/18 14:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	0.0056	0.0020	mg/kg	1	1811287	11/21/18	11/22/18	EPA 8260B	
Toluene	0.18	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.33	0.0050	"	"	"	"	"	"	
Xylenes (total)	15	1.0	"	100	"	"	11/22/18	"	
Naphthalene	0.060	0.010	"	1	"	"	11/22/18	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **11/20/18 14:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		89.8 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		95.1 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		213 %	21-167		"	"	"	"	S-02

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/20/18 14:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	110	50	mg/kg	1	1811288	"	11/22/18	EPA 8015M	

Date Sampled: **11/20/18 14:40**

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

Summit Scientific

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



Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Munds 13-29, Dickerson 14-29A

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
11/27/18 10:58

TP13@5'
1811250-16 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/20/18 15:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	1811287	11/21/18	11/22/18	EPA 8260B	
Toluene	ND	0.0050		"	"	"	"	"	"	
Ethylbenzene	0.013	0.0050		"	"	"	"	"	"	
Xylenes (total)	0.13	0.010		"	"	"	"	"	"	
Naphthalene	0.011	0.010		"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50		"	"	"	"	"	"	

Date Sampled: **11/20/18 15:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		92.8 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		95.6 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		147 %		21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/20/18 15:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	ND	50		mg/kg	1	1811288	"	11/22/18	EPA 8015M	

Date Sampled: **11/20/18 15:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl		97.2 %		30-150		"	"	"	"	

Summit Scientific

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



Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Munds 13-29, Dickerson 14-29A

Project Number: [none]
Project Manager: Brandon Brun

Reported:
11/27/18 10:58

TP13@10'
1811250-17 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/20/18 15:35**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	0.0020	mg/kg	1	1811287	11/21/18	11/22/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **11/20/18 15:35**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		85.8 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.2 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.2 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/20/18 15:35**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
C10-C28 (DRO)	ND	50	mg/kg	1	1811288	"	11/22/18	EPA 8015M	

Date Sampled: **11/20/18 15:35**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: o-Terphenyl		94.2 %	30-150		"	"	"	"	

Summit Scientific

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



Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Munds 13-29, Dickerson 14-29A

Project Number: [none]
Project Manager: Brandon Brun

Reported:
11/27/18 10:58

TP13@13'
1811250-18 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/20/18 15:40**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	0.0020	mg/kg	1	1811287	11/21/18	11/22/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **11/20/18 15:40**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		86.6 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.2 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		107 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/20/18 15:40**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
C10-C28 (DRO)	ND	50	mg/kg	1	1811288	"	11/22/18	EPA 8015M	

Date Sampled: **11/20/18 15:40**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: o-Terphenyl		97.6 %	30-150		"	"	"	"	

Summit Scientific

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



Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Munds 13-29, Dickerson 14-29A

Project Number: [none]
Project Manager: Brandon Brun

Reported:
11/27/18 10:58

TP14@5'
1811250-19 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/20/18 16:50**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	0.0020	mg/kg	1	1811287	11/21/18	11/22/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **11/20/18 16:50**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		87.9 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		96.4 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		100 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/20/18 16:50**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
C10-C28 (DRO)	ND	50	mg/kg	1	1811288	"	11/22/18	EPA 8015M	

Date Sampled: **11/20/18 16:50**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: o-Terphenyl		91.7 %	30-150		"	"	"	"	

Summit Scientific

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



Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Munds 13-29, Dickerson 14-29A

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
11/27/18 10:58

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch 1811287 - EPA 5030 Soil MS

Blank (1811287-BLK1)

Prepared: 11/21/18 Analyzed: 11/22/18

Benzene	ND	0.0020	mg/kg							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
Naphthalene	ND	0.010	"							
Gasoline Range Hydrocarbons	ND	50	"							
Surrogate: 1,2-Dichloroethane-d4	0.0401		"	0.0396		101	23-173			
Surrogate: Toluene-d8	0.0406		"	0.0400		102	20-170			
Surrogate: 4-Bromofluorobenzene	0.0409		"	0.0400		102	21-167			

LCS (1811287-BS1)

Prepared: 11/21/18 Analyzed: 11/22/18

Benzene	0.0789	0.0020	mg/kg	0.100		78.9	70-130			
Toluene	0.0932	0.0050	"	0.100		93.2	70-130			
Ethylbenzene	0.105	0.0050	"	0.100		105	70-130			
m,p-Xylene	0.207	0.010	"	0.200		103	70-130			
o-Xylene	0.100	0.0050	"	0.100		100	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0434		"	0.0396		110	23-173			
Surrogate: Toluene-d8	0.0399		"	0.0400		99.7	20-170			
Surrogate: 4-Bromofluorobenzene	0.0398		"	0.0400		99.5	21-167			

Matrix Spike (1811287-MS1)

Source: 1811250-07

Prepared: 11/21/18 Analyzed: 11/22/18

Benzene	0.0778	0.0020	mg/kg	0.100	ND	77.8	70-130			
Toluene	0.0909	0.0050	"	0.100	ND	90.9	70-130			
Ethylbenzene	0.106	0.0050	"	0.100	ND	106	70-130			
m,p-Xylene	0.214	0.010	"	0.200	ND	107	70-130			
o-Xylene	0.101	0.0050	"	0.100	ND	101	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0425		"	0.0396		107	23-173			
Surrogate: Toluene-d8	0.0396		"	0.0400		99.0	20-170			
Surrogate: 4-Bromofluorobenzene	0.0403		"	0.0400		101	21-167			

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
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Munds 13-29, Dickerson 14-29A

Project Number: [none]
Project Manager: Brandon Brun

Reported:
11/27/18 10:58

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

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

Batch 1811287 - EPA 5030 Soil MS

Matrix Spike Dup (1811287-MSD1)

Source: 1811250-07

Prepared: 11/21/18 Analyzed: 11/22/18

Benzene	0.0792	0.0020	mg/kg	0.100	ND	79.2	70-130	1.68	30	
Toluene	0.0916	0.0050	"	0.100	ND	91.6	70-130	0.855	30	
Ethylbenzene	0.111	0.0050	"	0.100	ND	111	70-130	4.52	30	
m,p-Xylene	0.220	0.010	"	0.200	ND	110	70-130	2.70	30	
o-Xylene	0.107	0.0050	"	0.100	ND	107	70-130	5.02	30	
Surrogate: 1,2-Dichloroethane-d4	0.0435		"	0.0396		110	23-173			
Surrogate: Toluene-d8	0.0392		"	0.0400		98.0	20-170			
Surrogate: 4-Bromofluorobenzene	0.0409		"	0.0400		102	21-167			

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
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Munds 13-29, Dickerson 14-29A

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
11/27/18 10:58

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch 1811288 - EPA 3550A

Blank (1811288-BLK1)

Prepared & Analyzed: 11/21/18

C10-C28 (DRO) ND 50 mg/kg

LCS (1811288-BS1)

Prepared & Analyzed: 11/21/18

C10-C28 (DRO) 549 50 mg/kg 500 110 70-130

Matrix Spike (1811288-MS1)

Source: 1811250-01

Prepared & Analyzed: 11/21/18

C10-C28 (DRO) 631 50 mg/kg 500 113 104 70-130

Matrix Spike Dup (1811288-MSD1)

Source: 1811250-01

Prepared & Analyzed: 11/21/18

C10-C28 (DRO) 673 50 mg/kg 500 113 112 70-130 6.55 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
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Munds 13-29, Dickerson 14-29A

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
11/27/18 10:58

Notes and Definitions

- S-02 The surrogate recovery for this sample cannot be accurately quantified due to interference from coeluting organic compounds present in the sample extract.
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

April 05, 2019

Brandon Bruns

Tasman Geosciences

6899 Pecos St, Unit C

Denver, CO 80221

RE: Noble - Munds 13-29, Dickerson 14-29A

Enclosed are the results of analyses for samples received by Summit Scientific on 03/28/19 18:00. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Muri Premer". The signature is written in a cursive style with a large initial "M" and a long, sweeping underline.

Muri Premer For Ben Shrewsbury

Laboratory Manager



Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Munds 13-29, Dickerson 14-29A

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
04/05/19 14:45

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH01@15-16'	1903322-01	Soil	03/28/19 09:40	03/28/19 18:00
BH02@14-16'	1903322-02	Soil	03/28/19 10:25	03/28/19 18:00
BH03@10-11'	1903322-03	Soil	03/28/19 11:00	03/28/19 18:00
BH04@9-10'	1903322-04	Soil	03/28/19 11:45	03/28/19 18:00
BH04@12-13'	1903322-05	Soil	03/28/19 11:45	03/28/19 18:00
BH05@9-10'	1903322-06	Soil	03/28/19 12:35	03/28/19 18:00
BH06@7-8'	1903322-07	Soil	03/28/19 13:15	03/28/19 18:00
BH06@14-16'	1903322-08	Soil	03/28/19 13:20	03/28/19 18:00
BH07@9-10'	1903322-09	Soil	03/28/19 13:45	03/28/19 18:00
BH08@8-10'	1903322-10	Soil	03/28/19 14:15	03/28/19 18:00
BH08@12-13'	1903322-11	Soil	03/28/19 14:15	03/28/19 18:00

Summit Scientific

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

Summit Scientific

S₂

1903322.1

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

Client: Noble / Tasman	Project Manager: Brandon Bruns, Invoice: Jacob Evans
Address: 6899 Pecos Street	E-Mail: Bbruns@tasman-geo.com
City/State/Zip: Denver / CO/ 80221	
Phone: 970.210.6571	Project Name: <u>MUNDS 13-29, DICKERSON 14-29A</u>
Sampler Name: T. Lichtenberg	Project Number: <u> </u>

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested				Special Instructions
					HCl	HNO3	None	Other	Water	Soil	Air-Canister #	Other	8260 BTEX	8260B GBTEXN	8015 DRO	pH, EC, SAR	
1	BH01 @ 15-16'	3/28/19	940	1			X			X			X	X			
2	BH02 @ 14-16'		1025														
3	BH03 @ 10-11'		1100														
4	BH04 @ 9-10'		1145														
5	BH04 @ 12-13'		1145														
6	BH05 @ 9-10'		1235														
7	BH06 @ 7-8'		135														
8	BH06 @ 14-16'		1320														
9	BH07 @ 9-10'		1345														
10	BH08 @ 8-10'		1415														

Relinquished by:  Date/Time: 3/28/19 @ 1030	Received by: Tasman's Lock Box Date/Time: 3/28/19 @ 1030	Turn Around Time (Check) Same Day <input type="checkbox"/> 72 hours 24 hours <input type="checkbox"/> Standard <input checked="" type="checkbox"/> 48 hours <input type="checkbox"/> Sample Integrity: Temperature Upon Receipt: <u>10.9</u> Samples Intact: <input checked="" type="radio"/> Yes <input type="radio"/> No	Notes:
Relinquished by: Tasman's Lock Box Date/Time: 3.28.19 1800	Received by:  Date/Time: 3.28.19 1600		
Relinquished by: Date/Time:	Received by: Date/Time:		

Summit Scientific

S₂

1903322.2

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

Page 2 of 2

Client: Noble / Tasman	Project Manager: Brandon Bruns, Invoice: Jacob Evans
Address: 6899 Pecos Street	E-Mail: Bbruns@tasman-geo.com
City/State/Zip: Denver / CO/ 80221	
Phone: 970.210.6571	Project Name: <u>MUNDS 13-29, DICKERSON 14-29A</u>
Sampler Name: T. Lichtenberg	Project Number: <u> </u>

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix			Analysis Requested				Special Instructions		
					HCl	HNO3	None	Other	Water	Soil	Air-Canister #	Other	8260 BTEX	8260B GBTEXN	8015 DRO		pH, EC, SAR	
1	BH08 @ 12-13'	3/28/19	1415	1			X						X	X				
2																		
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		

Relinquished by:  Date/Time: 3/28/19 @ 1030	Received by: Tasman's Lock Box Date/Time: 3/28/19 @ 1030	Turn Around Time (Check) Same Day <input type="checkbox"/> 72 hours 24 hours <input type="checkbox"/> Standard <input checked="" type="checkbox"/> 48 hours <input type="checkbox"/> Sample Integrity: Temperature Upon Receipt: <u>10.9</u> Samples Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Notes:
Relinquished by: Tasman's Lock Box Date/Time: 3-28-19 1500	Received by:  Date/Time: 3-28-19 1500		
Relinquished by: Date/Time:	Received by: Date/Time:		

Sample Receipt Checklist

S2 Work Order 1903322.2

Client: Noble / Tasman Client Project ID: Munds 13-29, Dickerson 14-29A

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

Matrix (check all that apply): Air Soil/Solid Water Other: _____
(Describe)

Temp (°C)	10.9
-----------	------

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C ⁽¹⁾ ? NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun.	<input checked="" type="checkbox"/>			on ice
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
If custody seals are present, are they intact ⁽¹⁾ ?			<input checked="" type="checkbox"/>	
Are samples with holding times due within 48 hours sample due within 48 hours present?			<input checked="" type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.			<input checked="" type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ? Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect			<input checked="" type="checkbox"/>	
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ? Record the pH in Comments.			<input checked="" type="checkbox"/>	
If dissolved metals are requested, were samples field filtered?			<input checked="" type="checkbox"/>	
Additional Comments (if any):				
⁽¹⁾ If NO, then contact the client before proceeding with analysis and note in case narrative.				

CP
Custodian Printed Name or Initials

[Signature]
Signature of Custodian

3.28.19 1830
Date/Time



Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Munds 13-29, Dickerson 14-29A

Project Number: [none]
Project Manager: Brandon Brun

Reported:
04/05/19 14:45

BH01@15-16'
1903322-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/28/19 09:40**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	0.0020	mg/kg	1	1904002	04/01/19	04/02/19	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **03/28/19 09:40**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		79.5 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		92.9 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		91.9 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **03/28/19 09:40**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
C10-C28 (DRO)	ND	50	mg/kg	1	1904004	04/01/19	04/03/19	EPA 8015M	

Date Sampled: **03/28/19 09:40**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: o-Terphenyl		77.6 %	30-150		"	"	"	"	

Summit Scientific

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



Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Munds 13-29, Dickerson 14-29A

Project Number: [none]
Project Manager: Brandon Brun

Reported:
04/05/19 14:45

BH02@14-16'
1903322-02 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/28/19 10:25**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	0.0020	mg/kg	1	1904002	04/01/19	04/03/19	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **03/28/19 10:25**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		88.0 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.9 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		104 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **03/28/19 10:25**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
C10-C28 (DRO)	ND	50	mg/kg	1	1904004	04/01/19	04/03/19	EPA 8015M	

Date Sampled: **03/28/19 10:25**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: o-Terphenyl		79.8 %	30-150		"	"	"	"	

Summit Scientific

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



Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Munds 13-29, Dickerson 14-29A

Project Number: [none]
Project Manager: Brandon Brun

Reported:
04/05/19 14:45

BH03@10-11'
1903322-03 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/28/19 11:00**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	0.0020	mg/kg	1	1904002	04/01/19	04/03/19	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **03/28/19 11:00**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		86.2 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.2 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		101 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **03/28/19 11:00**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
C10-C28 (DRO)	ND	50	mg/kg	1	1904004	04/01/19	04/03/19	EPA 8015M	

Date Sampled: **03/28/19 11:00**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: o-Terphenyl		79.3 %	30-150		"	"	"	"	

Summit Scientific

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



Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Munds 13-29, Dickerson 14-29A

Project Number: [none]
Project Manager: Brandon Brun

Reported:
04/05/19 14:45

BH04@9-10'
1903322-04 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/28/19 11:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1904002	04/01/19	04/04/19	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	0.019	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **03/28/19 11:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		104 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		129 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **03/28/19 11:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	54	50	mg/kg	1	1904004	04/01/19	04/03/19	EPA 8015M	

Date Sampled: **03/28/19 11:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		83.0 %	30-150		"	"	"	"	

Summit Scientific

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



Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Munds 13-29, Dickerson 14-29A

Project Number: [none]
Project Manager: Brandon Brun

Reported:
04/05/19 14:45

BH04@12-13'
1903322-05 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/28/19 11:45**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	1904002	04/01/19	04/03/19	EPA 8260B	
Toluene	ND	0.0050		"	"	"	"	"	"	
Ethylbenzene	0.023	0.0050		"	"	"	"	"	"	
Xylenes (total)	0.50	0.010		"	"	"	"	"	"	
Naphthalene	0.013	0.010		"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50		"	"	"	"	"	"	

Date Sampled: **03/28/19 11:45**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		84.7 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		99.2 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		132 %		21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **03/28/19 11:45**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	ND	50		mg/kg	1	1904004	04/01/19	04/04/19	EPA 8015M	

Date Sampled: **03/28/19 11:45**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl		82.6 %		30-150		"	"	"	"	

Summit Scientific

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Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Munds 13-29, Dickerson 14-29A

Project Number: [none]
Project Manager: Brandon Brun

Reported:
04/05/19 14:45

BH05@9-10'
1903322-06 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/28/19 12:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	0.034	0.0020	mg/kg	1	1904002	04/01/19	04/04/19	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.018	0.0050	"	"	"	"	"	"	
Xylenes (total)	0.010	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **03/28/19 12:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		141 %	23-173	"	"	"	"	"	
<i>Surrogate: Toluene-d8</i>		98.5 %	20-170	"	"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		116 %	21-167	"	"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **03/28/19 12:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1904004	04/01/19	04/04/19	EPA 8015M	

Date Sampled: **03/28/19 12:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		90.3 %	30-150	"	"	"	"	"	

Summit Scientific

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Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Munds 13-29, Dickerson 14-29A

Project Number: [none]
Project Manager: Brandon Brun

Reported:
04/05/19 14:45

BH06@7-8'
1903322-07 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/28/19 13:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	0.55	0.0020	mg/kg	1	1904002	04/01/19	04/05/19	EPA 8260B	
Toluene	0.0058	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.56	0.0050	"	"	"	"	"	"	
Xylenes (total)	3.9	0.10	"	10	"	"	"	"	
Naphthalene	ND	0.010	"	1	"	"	"	"	
Gasoline Range Hydrocarbons	90	50	"	"	"	"	"	"	

Date Sampled: **03/28/19 13:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		169 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.2 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		159 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **03/28/19 13:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1904004	04/01/19	04/04/19	EPA 8015M	

Date Sampled: **03/28/19 13:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		85.9 %	30-150		"	"	"	"	

Summit Scientific

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Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Munds 13-29, Dickerson 14-29A

Project Number: [none]
Project Manager: Brandon Brun

Reported:
04/05/19 14:45

BH06@14-16'
1903322-08 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/28/19 13:20**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	0.0020	mg/kg	1	1904002	04/01/19	04/04/19	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **03/28/19 13:20**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		105 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		104 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		94.8 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **03/28/19 13:20**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
C10-C28 (DRO)	ND	50	mg/kg	1	1904004	04/01/19	04/04/19	EPA 8015M	

Date Sampled: **03/28/19 13:20**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: o-Terphenyl		84.7 %	30-150		"	"	"	"	

Summit Scientific

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



Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Munds 13-29, Dickerson 14-29A

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
04/05/19 14:45

BH07@9-10'
1903322-09 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/28/19 13:45**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	0.0020	mg/kg	1	1904002	04/01/19	04/04/19	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **03/28/19 13:45**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		107 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		103 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		109 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **03/28/19 13:45**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
C10-C28 (DRO)	54	50	mg/kg	1	1904004	04/01/19	04/04/19	EPA 8015M	

Date Sampled: **03/28/19 13:45**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: o-Terphenyl		81.3 %	30-150		"	"	"	"	

Summit Scientific

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Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Munds 13-29, Dickerson 14-29A

Project Number: [none]
Project Manager: Brandon Brun

Reported:
04/05/19 14:45

BH08@8-10'
1903322-10 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/28/19 14:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1904002	04/01/19	04/04/19	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	0.17	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **03/28/19 14:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		107 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.3 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		145 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **03/28/19 14:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	57	50	mg/kg	1	1904004	04/01/19	04/04/19	EPA 8015M	

Date Sampled: **03/28/19 14:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		2.32 %	30-150		"	"	"	"	

Summit Scientific

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Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Munds 13-29, Dickerson 14-29A

Project Number: [none]
Project Manager: Brandon Brun

Reported:
04/05/19 14:45

BH08@12-13'
1903322-11 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/28/19 14:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	0.015	0.0020	mg/kg	1	1904002	04/01/19	04/05/19	EPA 8260B	
Toluene	2.6	0.050	"	10	"	"	"	"	
Ethylbenzene	0.85	0.050	"	"	"	"	"	"	
Xylenes (total)	8.8	0.10	"	"	"	"	"	"	
Naphthalene	0.089	0.010	"	1	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	10	"	"	"	"	

Date Sampled: **03/28/19 14:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		123 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		103 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		143 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **03/28/19 14:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	150	50	mg/kg	1	1904004	04/01/19	04/04/19	EPA 8015M	

Date Sampled: **03/28/19 14:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		83.3 %	30-150		"	"	"	"	

Summit Scientific

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Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Munds 13-29, Dickerson 14-29A

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
04/05/19 14:45

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch 1904002 - EPA 5030 Soil MS

Blank (1904002-BLK1)

Prepared: 04/01/19 Analyzed: 04/02/19

Benzene	ND	0.0020	mg/kg							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
Naphthalene	ND	0.010	"							
Gasoline Range Hydrocarbons	ND	50	"							
Surrogate: 1,2-Dichloroethane-d4	0.0322		"	0.0400		80.5	23-173			
Surrogate: Toluene-d8	0.0375		"	0.0400		93.8	20-170			
Surrogate: 4-Bromofluorobenzene	0.0360		"	0.0400		89.9	21-167			

LCS (1904002-BS1)

Prepared: 04/01/19 Analyzed: 04/02/19

Benzene	0.0914	0.0020	mg/kg	0.100		91.4	70-130			
Toluene	0.0986	0.0050	"	0.100		98.6	70-130			
Ethylbenzene	0.103	0.0050	"	0.100		103	70-130			
m,p-Xylene	0.216	0.010	"	0.200		108	70-130			
o-Xylene	0.0999	0.0050	"	0.100		99.9	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0319		"	0.0400		79.8	23-173			
Surrogate: Toluene-d8	0.0376		"	0.0400		94.0	20-170			
Surrogate: 4-Bromofluorobenzene	0.0365		"	0.0400		91.3	21-167			

Matrix Spike (1904002-MS1)

Source: 1903322-01

Prepared: 04/01/19 Analyzed: 04/02/19

Benzene	0.0909	0.0020	mg/kg	0.100	ND	90.9	70-130			
Toluene	0.0980	0.0050	"	0.100	ND	98.0	70-130			
Ethylbenzene	0.104	0.0050	"	0.100	ND	104	70-130			
m,p-Xylene	0.220	0.010	"	0.200	ND	110	70-130			
o-Xylene	0.100	0.0050	"	0.100	ND	100	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0320		"	0.0400		80.1	23-173			
Surrogate: Toluene-d8	0.0364		"	0.0400		91.1	20-170			
Surrogate: 4-Bromofluorobenzene	0.0355		"	0.0400		88.6	21-167			

Summit Scientific

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Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Munds 13-29, Dickerson 14-29A

Project Number: [none]
Project Manager: Brandon Brun

Reported:
04/05/19 14:45

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

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

Batch 1904002 - EPA 5030 Soil MS

Matrix Spike Dup (1904002-MSD1)	Source: 1903322-01			Prepared: 04/01/19 Analyzed: 04/02/19					
Benzene	0.0899	0.0020	mg/kg	0.100	ND	89.9	70-130	1.06	30
Toluene	0.0984	0.0050	"	0.100	ND	98.4	70-130	0.367	30
Ethylbenzene	0.104	0.0050	"	0.100	ND	104	70-130	0.0290	30
m,p-Xylene	0.220	0.010	"	0.200	ND	110	70-130	0.246	30
o-Xylene	0.101	0.0050	"	0.100	ND	101	70-130	0.807	30
Surrogate: 1,2-Dichloroethane-d4	0.0331		"	0.0400		82.6	23-173		
Surrogate: Toluene-d8	0.0368		"	0.0400		92.1	20-170		
Surrogate: 4-Bromofluorobenzene	0.0360		"	0.0400		90.1	21-167		

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
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Munds 13-29, Dickerson 14-29A

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
04/05/19 14:45

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch 1904004 - EPA 3550A

Blank (1904004-BLK1)

Prepared: 04/01/19 Analyzed: 04/03/19

C10-C28 (DRO) ND 50 mg/kg

LCS (1904004-BS1)

Prepared: 04/01/19 Analyzed: 04/03/19

C10-C28 (DRO) 444 50 mg/kg 500 88.7 70-130

Matrix Spike (1904004-MS1)

Source: 1903322-01

Prepared: 04/01/19 Analyzed: 04/03/19

C10-C28 (DRO) 432 50 mg/kg 500 25.6 81.2 70-130

Matrix Spike Dup (1904004-MSD1)

Source: 1903322-01

Prepared: 04/01/19 Analyzed: 04/03/19

C10-C28 (DRO) 416 50 mg/kg 500 25.6 78.0 70-130 3.75 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
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Munds 13-29, Dickerson 14-29A

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
04/05/19 14:45

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