

**SITE ASSESSMENT REPORT AND
NO FURTHER ACTION REQUEST**

FOSTER 3-35, 6-35, UPPR 53, PAN AM 2

COGCC SPILL TRACKING # 462378
COGCC REMEDIATION # Not Assigned

Prepared for:



2115 117th Avenue
Greeley, CO 80631

Prepared by:



6899 North Pecos Street, Unit C
Denver, CO 80221

October 16, 2019

Mr. Howard Aamold
Noble Energy Inc.
2115 117th Avenue
Greeley, CO 80631

Subject: **Site Assessment and No Further Action Request**
 Foster 3-35, 6-35, UPRR 53, Pan Am 2
 Spill/Release Point ID #: 462378
 Remediation Project #: Not Assigned
 NWNW S35 T3N R65W
 Weld County, Colorado

Dear Mr. Aamold:

Below please find a copy of the above referenced Site Assessment Report and No Further Action Request (Report) for the Foster 3-35, 6-35, UPRR 53, Pan Am 2 site (Site) in Weld County, Colorado. The text below describes the environmental assessment and associated soil sampling activities conducted by Tasman Geosciences, Inc. (Tasman), on behalf of Noble Energy, Inc. (Noble), on June 18, 2019.

Introduction

The purpose of this document is to describe the results of site assessment and sampling activities at the Site on June 18, 2019 and October 11, 2019. The activities described below were performed in response to the discovery of a release from the Foster 3-35, 6-35, UPRR 53, Pan Am 2 dump line on February 15, 2019.

Facility Background

The Site is located approximately 5.1 miles north of the town of Hudson in Weld County, Colorado, as shown on Figure 1. The Site is surrounded by non-crop land, and the legal description is the northwest ¼ of the northwest ¼ of Section 35, Township 3 North, Range 65 West, of the 6th Principal Meridian. The Site is approximately 1.2 miles east of Weld County Road 43 and has coordinates of 40.188767, -104.636141.

On February 15, 2019, the dump line release was discovered after approximately two barrels of production fluids surfaced during operations. A Form 19 was submitted to the Colorado Oil and Gas Conservation Commission (COGCC) on February 22, 2019. The COGCC subsequently issued Spill/Release Point ID Number 462378 for this event and the site shut in.

Site Assessment Field Activities

On June 18, 2019 Tasman completed a site assessment to determine potential soil and groundwater impacts associated with the dump line release at the Foster 3-35, 6-35, UPRR 53, Pan Am 2 tank

battery. Seven boreholes were completed via hand auger. 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 VOCs using a 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. Seven soil samples were submitted to Summit Scientific Laboratory in Golden, Colorado (Summit) for laboratory 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. Samples BH05@0-2' and BH06@0-2' were also analyzed for Sodium Adsorption Ratio (SAR) by USEPA Method 6020 / United States Department of Agriculture (USDA) Method 60 6(2,3A) and Specific Conductance (EC) and pH via American Public Health Association (APHA)/American Society for Testing and Materials (ASTM)/USEPA methods. Soil analytical results are summarized in Table 1. Complete laboratory analytical reports are included in Attachment B. During the assessment, groundwater was encountered at approximately 12 feet below ground surface (ft. bgs). One temporary monitoring well (BH04) was installed to evaluate potential dissolved phase impacts to groundwater. Temporary monitoring well BH04 was developed and sampled using a dedicated, disposable, polyethylene bailer. The groundwater sample (BH04) was submitted to Summit for BTEX analysis using USEPA method 8260B. Following sampling of temporary monitoring well BH04, the well was removed. Groundwater analytical results are summarized in Table 2. The laboratory report is included in Attachment B. All boreholes were backfilled with native soil following the conclusion of assessment activities.

On October 11, 2019, Tasman returned to the site to further assess soil impacts. Five additional soil borings (BH08-BH12) were advanced to approximately 20 ft. bgs using direct push drilling techniques. During drilling activities, groundwater was encountered at approximately 11 ft. bgs. A total of ten soil samples were collected below the observed groundwater table and submitted to Summit for BTEX, naphthalene and TPH – GRO/DRO analysis. Soil analytical results are summarized in Table 1 and sample locations are illustrated in Figure 3. Boring logs are included as Attachment A and the laboratory analytical report is included in Attachment B. All boreholes were backfilled with native soil following the conclusion of assessment activities.

Results

Laboratory analytical results for the soil samples collected in the area of the release during Site assessment activities indicate that BTEX, naphthalene, TPH-GRO and TPH-DRO concentrations are below applicable COGCC Table 910-1 soil standards. Laboratory results for the groundwater sample collected indicate that BTEX concentrations are below applicable COGCC Table 910-1 groundwater standards.

No Further Action Request

Based on field and laboratory data collected during site assessment activities, a No Further Action (NFA) designation is being requested from the COGCC for this project.

Remarks

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

Please contact me at (720) 431-1190 if you require additional information.

Sincerely,
Tasman Geosciences, Inc.



Brandon Bruns, PE
Project Manager

Attached:

Table 1 – Soil Analytical Data

Table 2 – Groundwater Analytical Data

Figure 1 – Site Location Map

Figure 2 – Site Assessment Soil and Groundwater Assessment Analytical Results Map
(June 18, 2019)

Figure 3 – Soil Site Assessment Soil Analytical Results Map (October 11, 2019)

Attachment A – Boring Logs

Attachment B – Laboratory Analytical Data Report

TABLES

TABLE 1
SOIL ANALYTICAL DATA
NOBLE ENERGY, INC. - FOSTER 3-35, 6-35, UPRR 53, PAN AM 2

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	
BH01@6-7'	06/18/19	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50	<50
BH02@6-8'	06/18/19	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50	<50
BH03@6-8'	06/18/19	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50	<50
BH04@10-12'	06/18/19	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50	<50
BH05@0-2'	06/18/19	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50	<50
BH06@0-2'	06/18/19	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50	<50
BH07@10-12'	06/18/19	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50	<50
BH08@16-18	10/11/19	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50	<50
BH08@18-20	10/11/19	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50	<50
BH09@11-12	10/11/19	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50	<50
BH09@18-20	10/11/19	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50	<50
BH10@12-14	10/11/19	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50	<50
BH10@18-20	10/11/19	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50	<50
BH11@12-14	10/11/19	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50	<50
BH11@18-20	10/11/19	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50	<50
BH12@12-14	10/11/19	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50	<50
BH12@18-20	10/11/19	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50	<50

Soil Sample ID	Date	SAR	pH	EC (mmhos/cm)
COGCC Standard		<12	6-9	<4mmhos/cm
BH05@0-2' ^H	06/18/19	0.574	8.79	0.229
BH06@0-2' ^H	06/18/19	0.553	8.73	0.250

Notes:

COGCC = Colorado Oil and Gas Conservation Commission

TPH-GRO = Total petroleum hydrocarbons - gasoline range organics

TPH-DRO = Total petroleum hydrocarbons - diesel range organics

mg/kg = Milligrams per kilogram

SAR = Sodium Adsorption Ratio

EC = Specific Conductance

mmhos/cm = millimhos per centimeter

H = pH was analyzed outside of the recommended holding time

< = 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

TABLE 2
GROUNDWATER ANALYTICAL DATA
NOBLE ENERGY, INC. - FOSTER 3-35, 6-35, UPRR 53, PAN AM 2

Monitoring Well ID	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
COGCC Standard		5	560	700	1,400
BH04	06/18/19	3.9	<1.0	<1.0	350

COGCC = Colorado Oil and Gas Conservation Commission

µg/L = Micrograms per liter

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

Groundwater standards referenced from COGCC Table 910-1

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

FIGURES

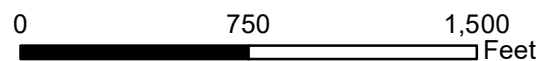
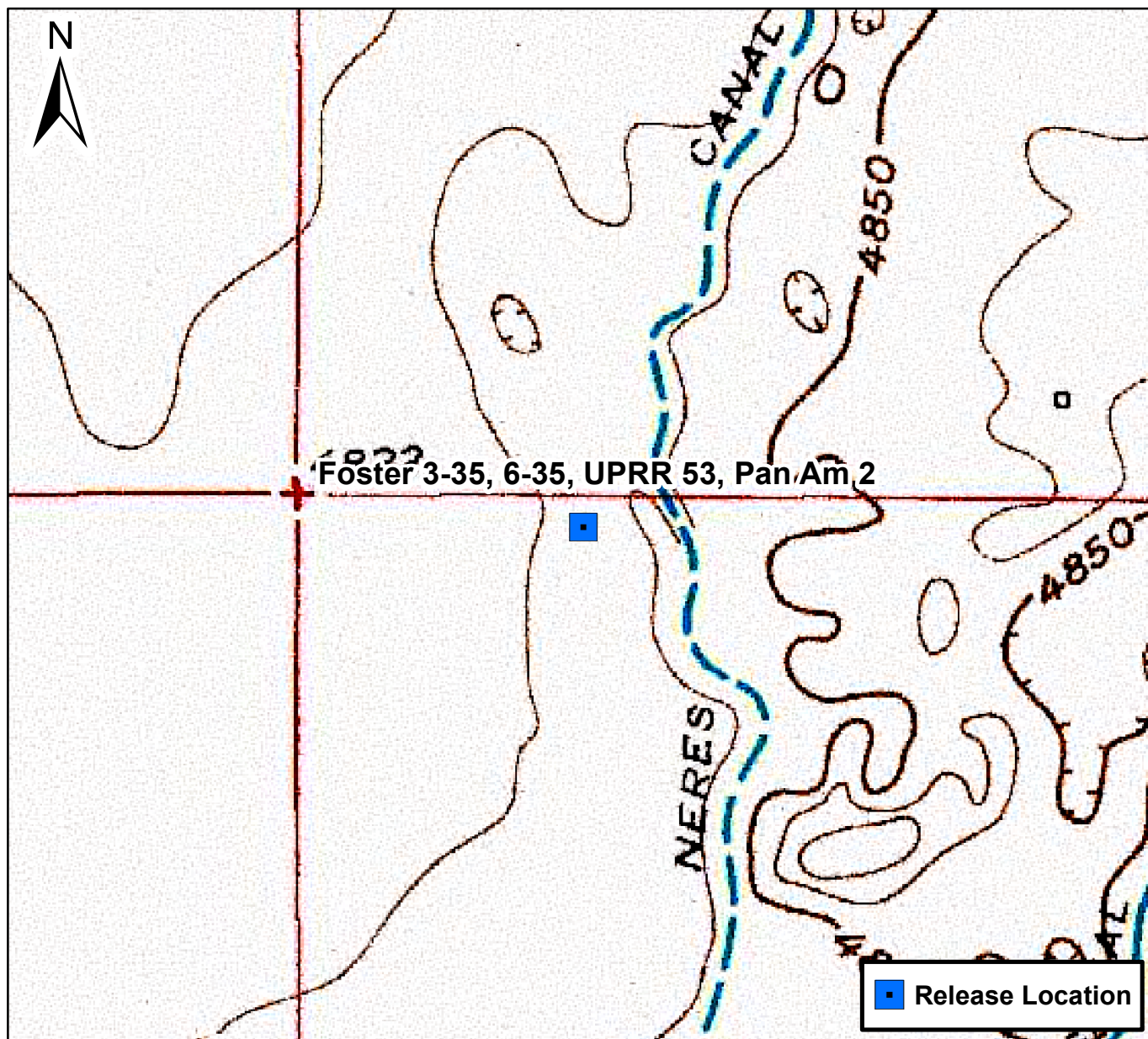
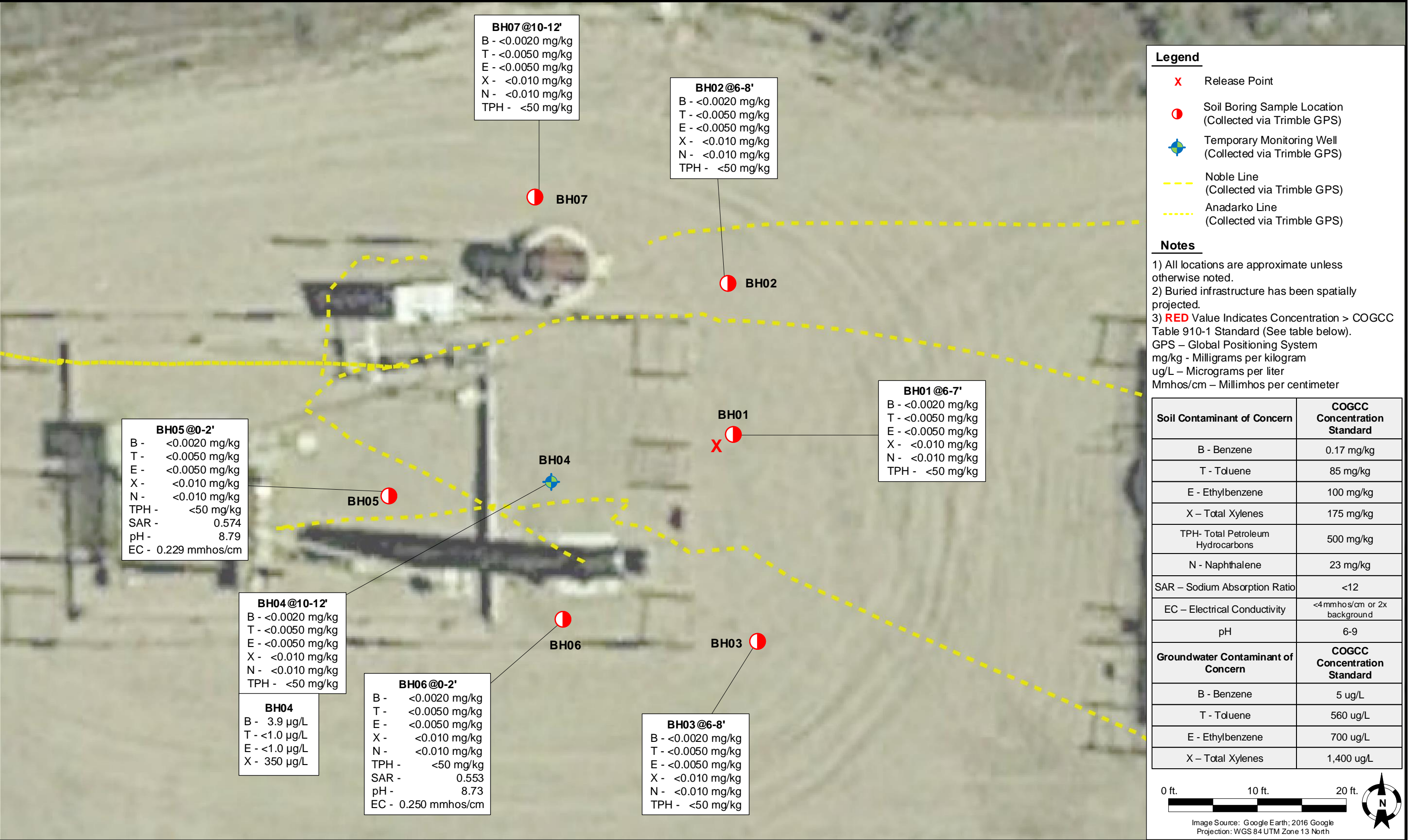
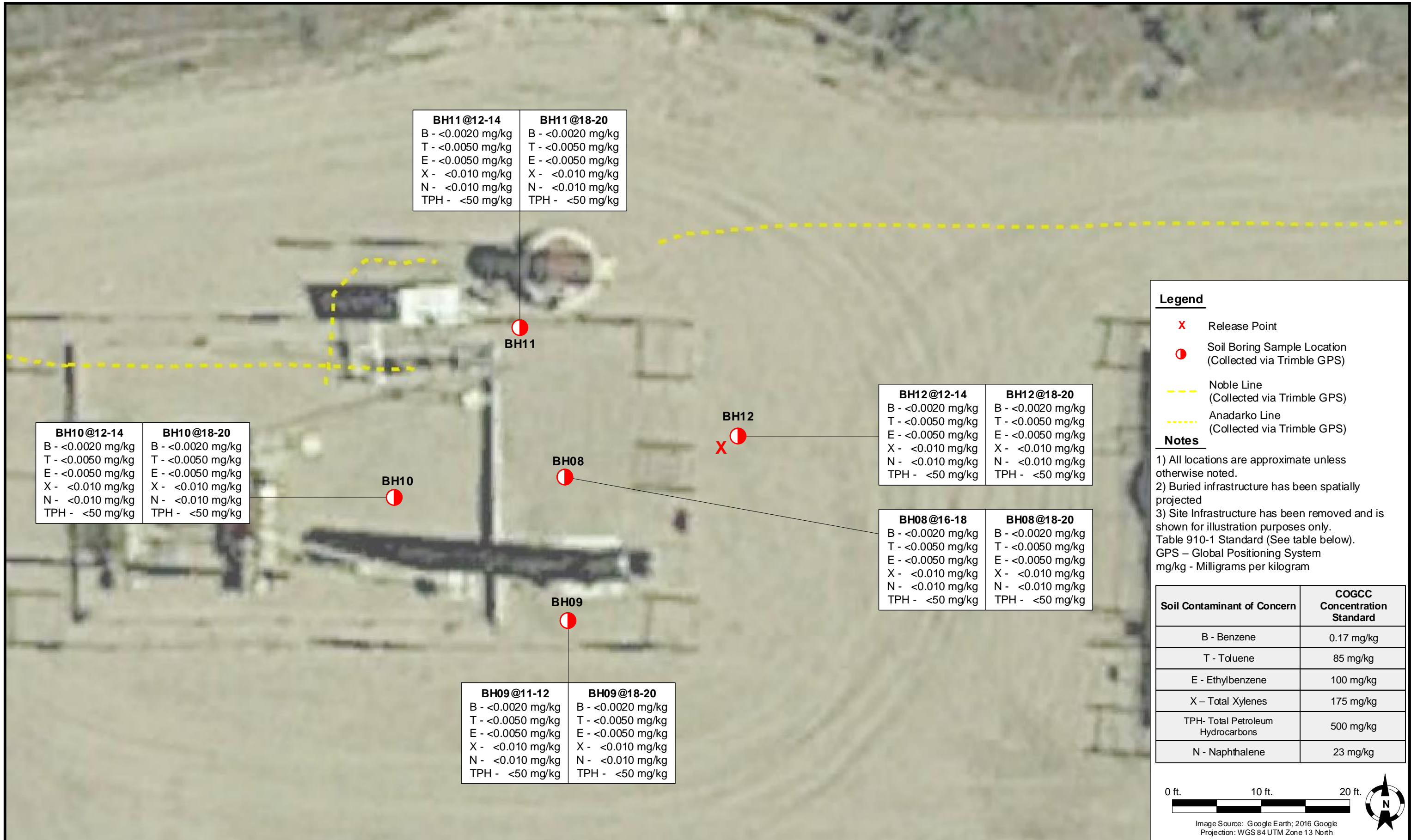


Figure 1

Site Location Map
 Foster 3-35, 6-35, UPRR 53, Pan Am 2
 NWNW S35 T3N R65W
 Weld County, Colorado







Legend

- X Release Point
- Soil Boring Sample Location (Collected via Trimble GPS)
- - - Noble Line (Collected via Trimble GPS)
- - - Anadarko Line (Collected via Trimble GPS)

Notes

- 1) All locations are approximate unless otherwise noted.
- 2) Buried infrastructure has been spatially projected
- 3) Site Infrastructure has been removed and is shown for illustration purposes only. Table 910-1 Standard (See table below). GPS – Global Positioning System mg/kg - Milligrams per kilogram

Soil Contaminant of Concern	COGCC Concentration Standard
B - Benzene	0.17 mg/kg
T - Toluene	85 mg/kg
E - Ethylbenzene	100 mg/kg
X – Total Xylenes	175 mg/kg
TPH- Total Petroleum Hydrocarbons	500 mg/kg
N - Naphthalene	23 mg/kg

0 ft. 10 ft. 20 ft.

Image Source: Google Earth; 2016 Google
Projection: WGS 84 UTM Zone 13 North

ATTACHMENT A

BORING LOGS



6855 W. 119th Avenue
Broomfield, Colorado 80020

CLIENT: Noble Energy

LOGGED BY: Tanner Cook

PROJECT MANAGER: Brandon Bruns, P.E.

DRILLING CONTRACTOR: Tasman Geosciences Inc.

DRILLING EQUIPMENT: Geoprobe

DRILL BIT SIZE (INCHES): 2"

DATE STARTED - COMPLETED: 43749

TOTAL WELL DEPTH (FT. BGS): 20

DEPTH WATER ENCOUNTERED (FT. BGS): 11.5

Foster 3-35, 6-35, UPRR 53, Pan Am 2

BORING ID: BH08

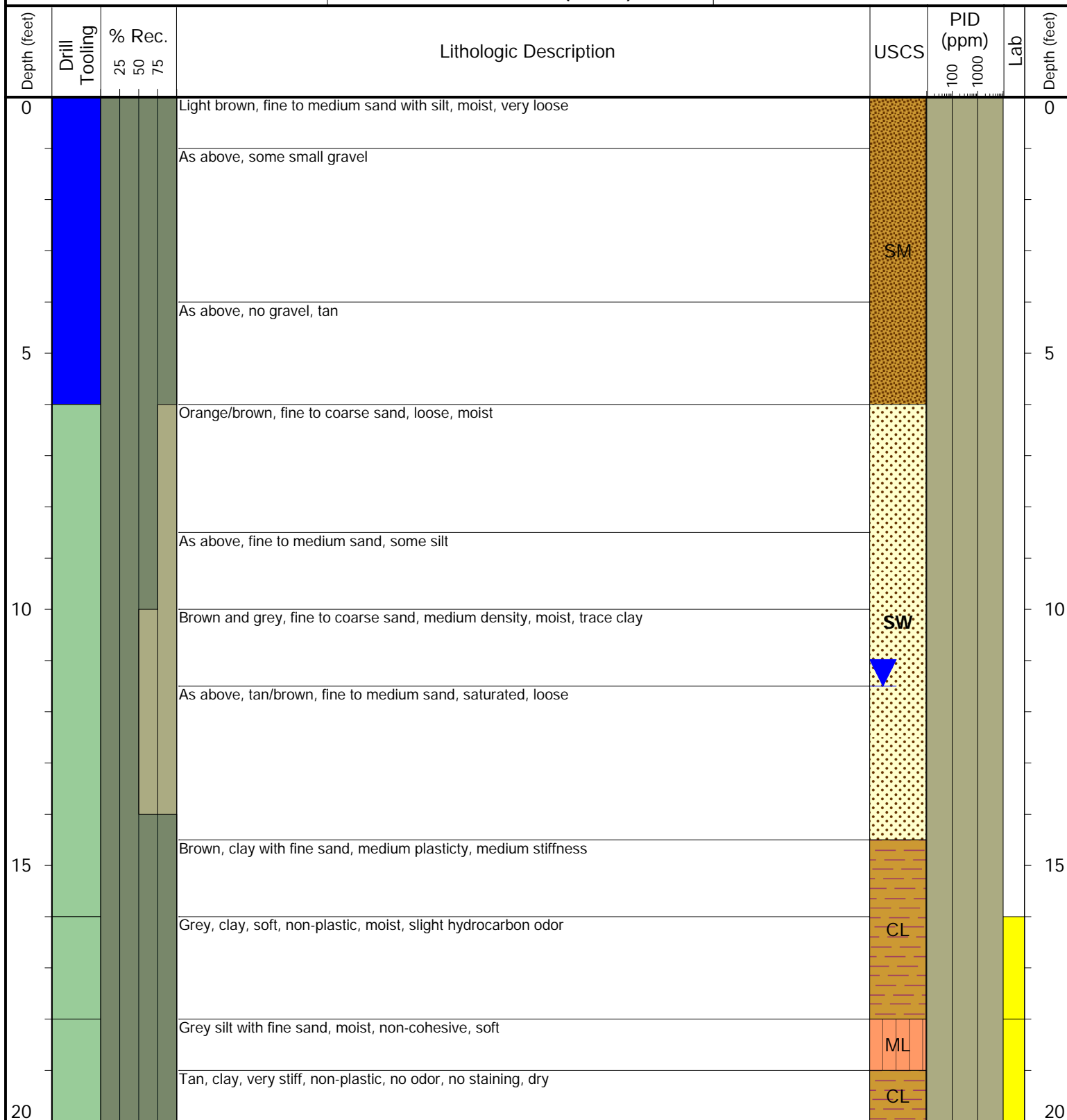
LOCATION: Weld County, Colorado

NORTHING (CO STATE PLANE): -104.636095

EASTING (CO STATE PLANE): 40.188768

GROUND ELEVATION (FT. AMSL):

ABANDONMENT METHOD: Native Soil



Drilling / Sample Method:

Macro-Core

Expendable Well Tip

Perforated Injection Tool

Hand Auger

Laboratory Sample Types:

Geotechnical Lab

Analytical Chemistry Lab

Geotechnical & Analytical Chemistry Lab



6855 W. 119th Avenue
Broomfield, Colorado 80020

CLIENT: Noble Energy

LOGGED BY: Tanner Cook

PROJECT MANAGER: Brandon Bruns, P.E.

DRILLING CONTRACTOR: Tasman Geosciences Inc.

DRILLING EQUIPMENT: Geoprobe

DRILL BIT SIZE (INCHES): 2"

DATE STARTED - COMPLETED: 43749

TOTAL WELL DEPTH (FT. BGS): 20

DEPTH WATER ENCOUNTERED (FT. BGS): 11

Foster 3-35, 6-35, UPRR 53, Pan Am 2

BORING ID: BH09

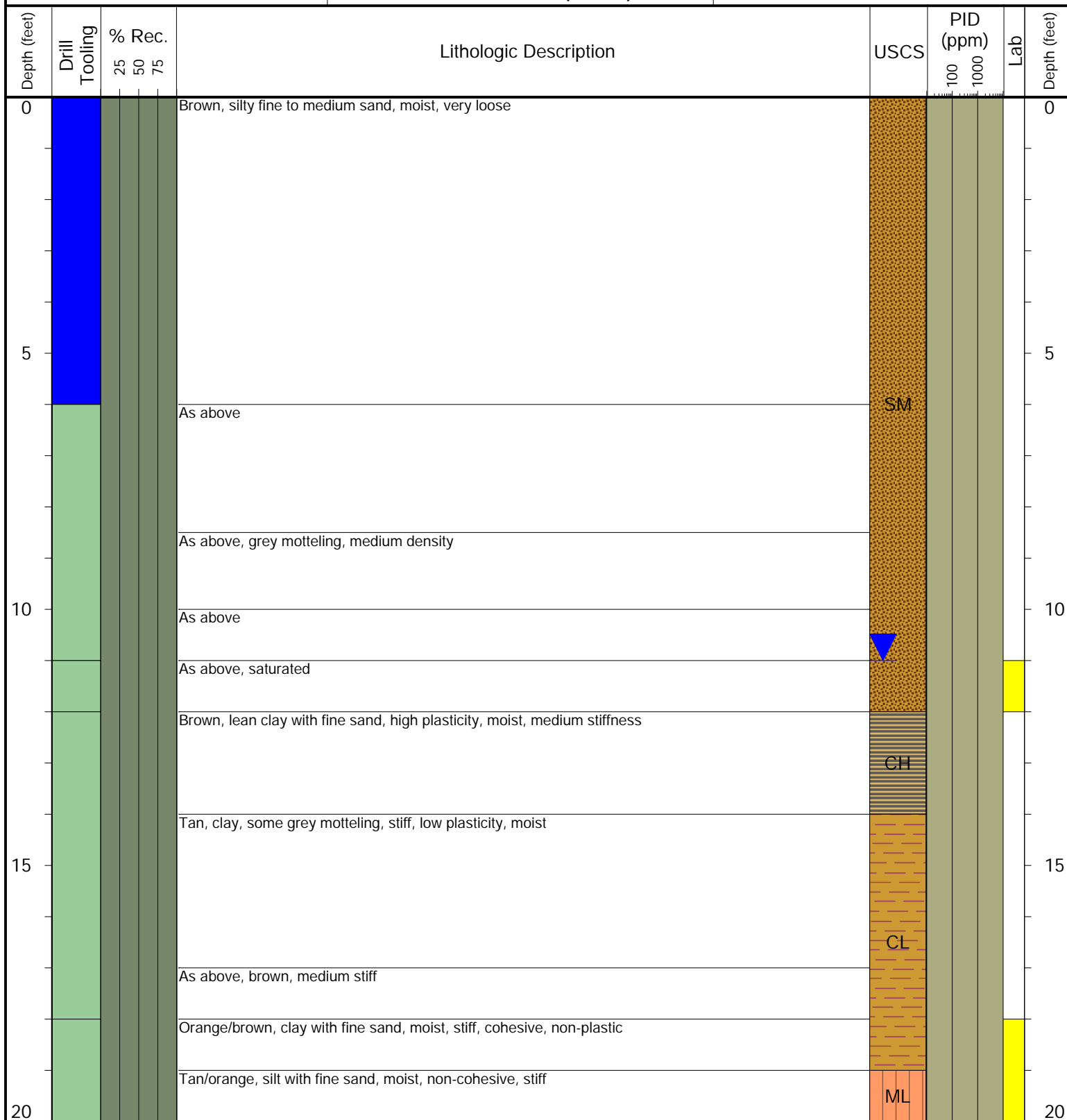
LOCATION: Weld County, Colorado

NORTHING (CO STATE PLANE): -104.636163

EASTING (CO STATE PLANE): 40.188711

GROUND ELEVATION (FT. AMSL):

ABANDONMENT METHOD: Native Soil



Drilling / Sample Method:

Macro-Core

Expendable Well Tip

Perforated Injection Tool

Hand Auger

Laboratory Sample Types:

Geotechnical Lab

Analytical Chemistry Lab

Geotechnical & Analytical Chemistry Lab



6855 W. 119th Avenue
Broomfield, Colorado 80020

CLIENT: Noble Energy

LOGGED BY: Tanner Cook

PROJECT MANAGER: Brandon Bruns, P.E.

DRILLING CONTRACTOR: Tasman Geosciences Inc.

DRILLING EQUIPMENT: Geoprobe

DRILL BIT SIZE (INCHES): 2"

DATE STARTED - COMPLETED: 43749

TOTAL WELL DEPTH (FT. BGS): 20

DEPTH WATER ENCOUNTERED (FT. BGS): 11.5

Foster 3-35, 6-35, UPRR 53, Pan Am 2

BORING ID: BH10

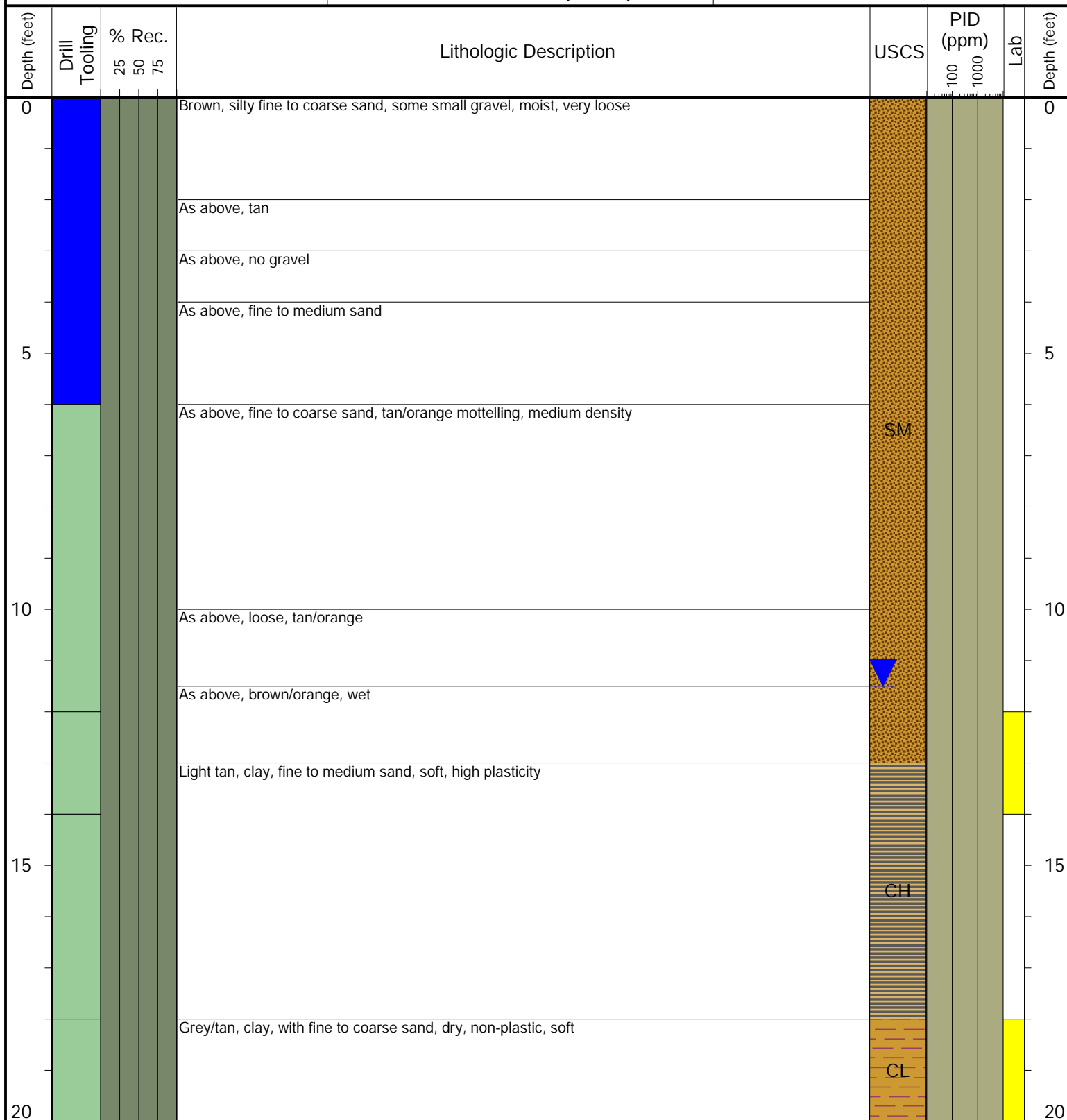
LOCATION: Weld County, Colorado

NORTHING (CO STATE PLANE): -104.636233

EASTING (CO STATE PLANE): 40.188749

GROUND ELEVATION (FT. AMSL):

ABANDONMENT METHOD: Native Soil



Drilling / Sample Method:

Macro-Core

Expendable Well Tip

Perforated Injection Tool

Hand Auger

Laboratory Sample Types:

Geotechnical Lab

Analytical Chemistry Lab

Geotechnical & Analytical Chemistry Lab



6855 W. 119th Avenue
Broomfield, Colorado 80020

CLIENT: Noble Energy

LOGGED BY: Tanner Cook

PROJECT MANAGER: Brandon Bruns, P.E.

DRILLING CONTRACTOR: Tasman Geosciences Inc.

DRILLING EQUIPMENT: Geoprobe

DRILL BIT SIZE (INCHES): 2"

DATE STARTED - COMPLETED: 43749

TOTAL WELL DEPTH (FT. BGS): 20

DEPTH WATER ENCOUNTERED (FT. BGS): 11.5

Foster 3-35, 6-35, UPRR 53, Pan Am 2

BORING ID: BH11

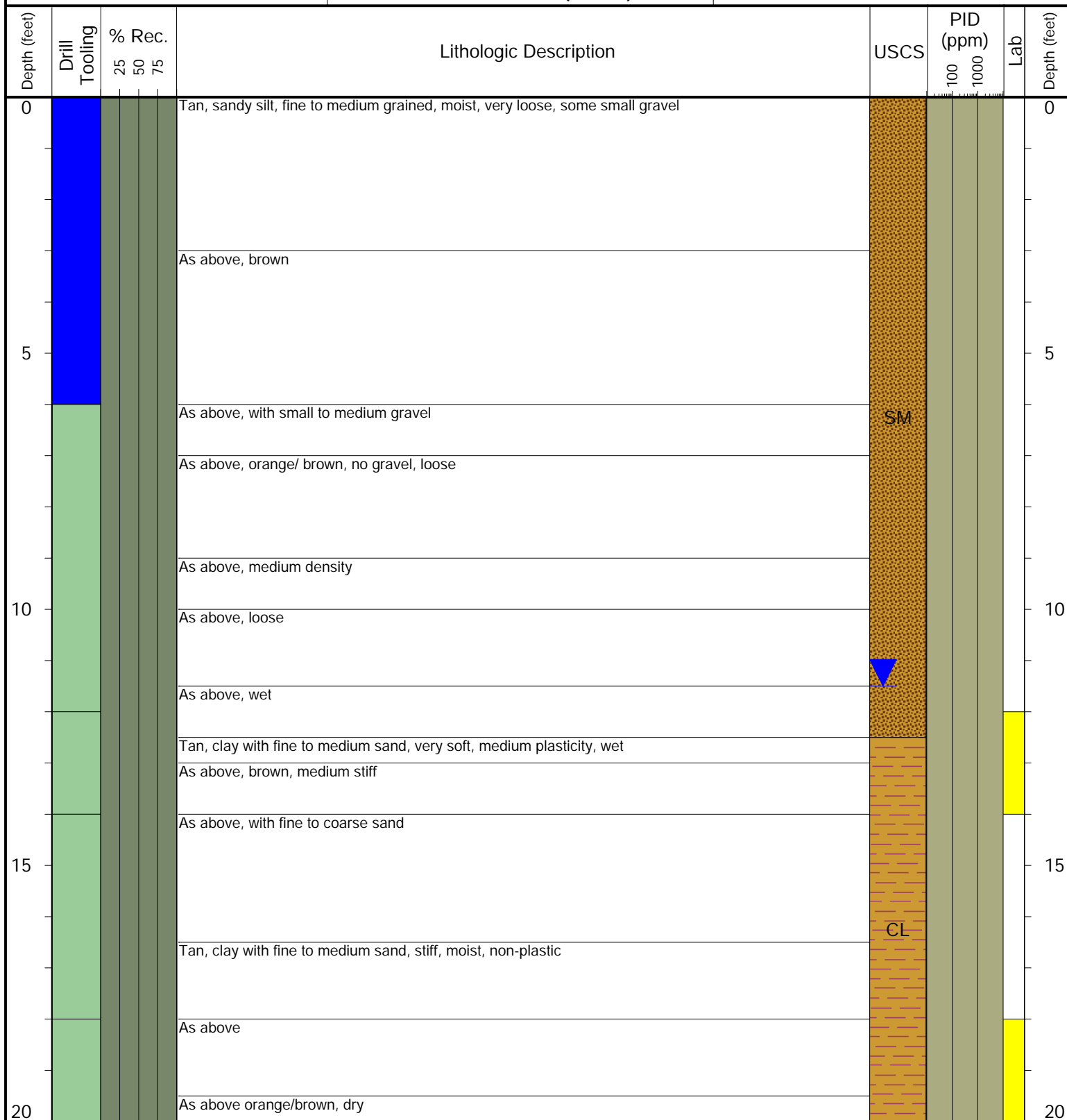
LOCATION: Weld County, Colorado

NORTHING (CO STATE PLANE): -104.636167

EASTING (CO STATE PLANE): 40.188806

GROUND ELEVATION (FT. AMSL):

ABANDONMENT METHOD: Native Soil



Drilling / Sample Method:

Macro-Core

Expendable Well Tip

Perforated Injection Tool

Hand Auger

Laboratory Sample Types:

Geotechnical Lab

Analytical Chemistry Lab

Geotechnical & Analytical Chemistry Lab



6855 W. 119th Avenue
Broomfield, Colorado 80020

CLIENT: Noble Energy

LOGGED BY: Tanner Cook

PROJECT MANAGER: Brandon Bruns, P.E.

DRILLING CONTRACTOR: Tasman Geosciences Inc.

DRILLING EQUIPMENT: Geoprobe

DRILL BIT SIZE (INCHES): 2"

DATE STARTED - COMPLETED: 43749

TOTAL WELL DEPTH (FT. BGS): 20

DEPTH WATER ENCOUNTERED (FT. BGS): 11

Foster 3-35, 6-35, UPRR 53, Pan Am 2

BORING ID: BH12

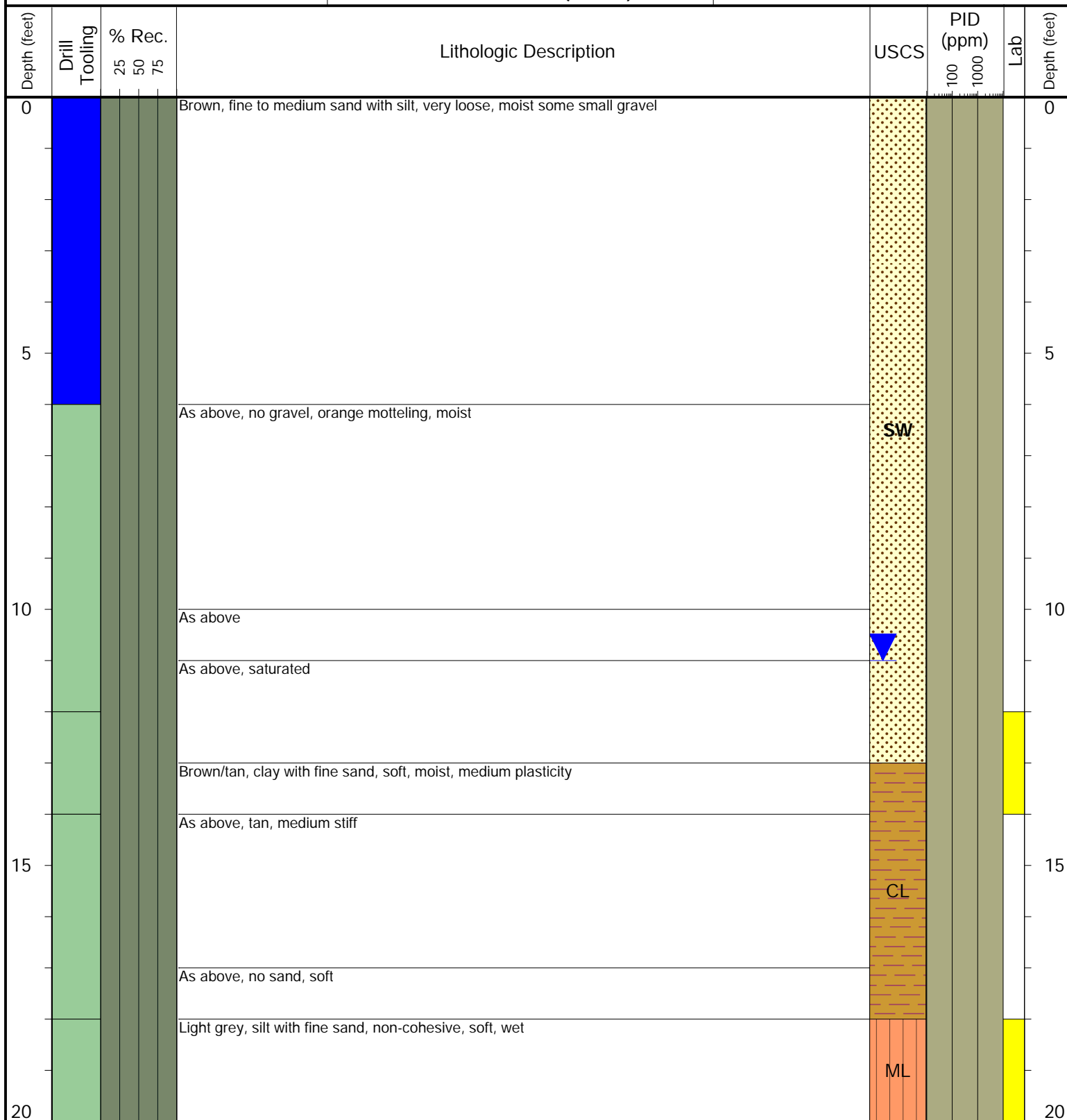
LOCATION: Weld County, Colorado

NORTHING (CO STATE PLANE): -104.636095

EASTING (CO STATE PLANE): 40.188768

GROUND ELEVATION (FT. AMSL):

ABANDONMENT METHOD: Native Soil



Drilling / Sample Method:

Macro-Core

Expendable Well Tip

Perforated Injection Tool

Hand Auger

Laboratory Sample Types:

Geotechnical Lab

Analytical Chemistry Lab

Geotechnical & Analytical Chemistry Lab

ATTACHMENT B

LABORATORY ANALYTICAL DATA REPORT

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

July 17, 2019

Brandon Bruns

Tasman Geosciences

6899 Pecos St, Unit C

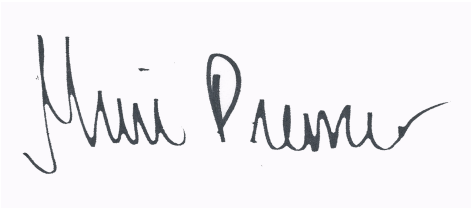
Denver, CO 80221

RE: Noble - Foster 3-35,6-35,UPRR 53, Pan Am 2

Work Order # 1906239

Enclosed are the results of analyses for samples received by Summit Scientific on 06/18/19 17:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink on a light purple background. The signature is written in a cursive style and reads "Muri Premier".

Muri Premier For Ben Shrewsbury

Laboratory Manager



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

Project: Noble - Foster 3-35,6-35,UPRR 53, Pan Am 2

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
07/17/19 09:46

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH01@6-7'	1906239-01	Soil	06/18/19 09:15	06/18/19 17:30
BH02@6-8'	1906239-02	Soil	06/18/19 09:52	06/18/19 17:30
BH03@6-8'	1906239-03	Soil	06/18/19 10:20	06/18/19 17:30
BH04@10-12'	1906239-04	Soil	06/18/19 10:52	06/18/19 17:30
BH05@0-2'	1906239-05	Soil	06/18/19 12:15	06/18/19 17:30
BH06@0-2'	1906239-06	Soil	06/18/19 12:30	06/18/19 17:30
BH07@10-12'	1906239-07	Soil	06/18/19 13:00	06/18/19 17:30
BH04	1906239-08	Water	06/18/19 13:00	06/18/19 17:30

This report includes additional analysis, SAR,EC and pH on two samples, requested by JW 6/28/19

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

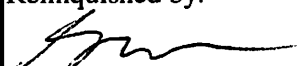
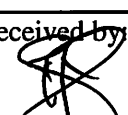
1906239

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

Page 1 of 1

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:	303-487-1228	Project Name:	Foster 3-35, G-35, UPRR 53, Pan Am 2
Sampler Name:	GB & KC	Project Number:	-

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested						Special Instructions
					HCl	HNO ₃	None	Other	Water	Soil	Air-Canister #	Other	8260 BTEX	8260B GBTEXN	8015 DRO	pH, EC, SAR			
1	BH01 @ G-7-	6/18/19	0915	1			X			X				X	X				
2	BH02 @ G-8-		0952	1			X			X				X	X				
3	BH03 @ G-8-		1020	1			X			X				X	X				
4	BH04 @ 10-12-		1052	1			X			X				X	X				
5	BH05 @ 0-2-		1215	1			X			X				X	X				
6	BH06 @ 0-2-		1230	1			X			X				X	X				
7	BH07 @ 10-12-		1300	1			X			X				X	X				
8	BH04		1300	3			X		X				X						
9																			
10																			

Relinquished by:	Date/Time:	Received by:	Date/Time:	Turn Around Time	(Check)	Notes:
	6/18/19 1600	Tasman's Lock Box	6/18/19 1600	Same Day	72 hours	
				24 hours	Standard	
				48 hours		
Relinquished by:	Date/Time:	Received by:	Date/Time:	Sample Integrity:		
Tasman's Lock Box	06/18/19 1730		06/18/19 1730	Temperature Upon Receipt:	3.2	
Relinquished by:	Date/Time:	Received by:	Date/Time:	Samples Intact:	Yes	No

1906239

Sample Receipt Checklist

S2 Work Order _____

Client: Noble / Tasman

Client Project ID:

FOSTER 3-35, 6-35, PAN Am₂Shipped Via: H.D./P.U./FedEx/UPS/USPS/Other _____

Airbill #: _____

Matrix (check all that apply): _____ Air

☒ Soil/Solid☒ Water

Other: _____

(Describe)

Temp (°C)

3.2

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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⁾ ?	<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 checked="" type="checkbox"/>	<input type="checkbox"/>	Standard TAT
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 checked="" type="checkbox"/>	<input type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Note the type of preservative in the Comments column – HCl, H ₂ SO ₄ , NaOH, HNO ₃ , ect				
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Record the pH in Comments.				
If dissolved metals are requested, were samples field filtered?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

Additional Comments (if any):

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

Custodian Printed Name or Initials

Signature of Custodian

Date/Time 06/18/19 1800



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

Project: Noble - Foster 3-35,6-35,UPRR 53, Pan Am 2

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
07/17/19 09:46

BH01@6-7'
1906239-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/18/19 09:15**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	0.0020	mg/kg	1	1906256	06/19/19	06/23/19	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: **06/18/19 09:15**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		117 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.1 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		102 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **06/18/19 09:15**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
C10-C28 (DRO)	ND	50	mg/kg	1	1906257	06/19/19	06/20/19	EPA 8015M	

Date Sampled: **06/18/19 09:15**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: o-Terphenyl		85.7 %	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 - Foster 3-35,6-35,UPRR 53, Pan Am 2

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
07/17/19 09:46

BH02@6-8'
1906239-02 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/18/19 09:52**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1906256	06/19/19	06/23/19	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: **06/18/19 09:52**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		115 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		102 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.4 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **06/18/19 09:52**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	1906257	06/19/19	06/20/19	EPA 8015M	

Date Sampled: **06/18/19 09:52**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		39.9 %	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 - Foster 3-35,6-35,UPRR 53, Pan Am 2

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
07/17/19 09:46

BH03@6-8'
1906239-03 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/18/19 10:20**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1906256	06/19/19	06/23/19	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: **06/18/19 10:20**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		112 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.4 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		94.1 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **06/18/19 10:20**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	1906257	06/19/19	06/20/19	EPA 8015M	

Date Sampled: **06/18/19 10:20**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		66.0 %	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 - Foster 3-35,6-35,UPRR 53, Pan Am 2

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
07/17/19 09:46

BH04@10-12'
1906239-04 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/18/19 10:52**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1906256	06/19/19	06/23/19	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: **06/18/19 10:52**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		114 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		96.4 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **06/18/19 10:52**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	1906257	06/19/19	06/20/19	EPA 8015M	

Date Sampled: **06/18/19 10:52**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		74.8 %	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 - Foster 3-35,6-35,UPRR 53, Pan Am 2

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
07/17/19 09:46

BH05@0-2'
1906239-05 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/18/19 12:15**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	0.0020	mg/kg	1	1906256	06/19/19	06/23/19	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: **06/18/19 12:15**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		126 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		102 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		101 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **06/18/19 12:15**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
C10-C28 (DRO)	ND	50	mg/kg	1	1906257	06/19/19	06/20/19	EPA 8015M	

Date Sampled: **06/18/19 12:15**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: o-Terphenyl		61.0 %	30-150		"	"	"	"	

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

Date Sampled: **06/18/19 12:15**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Calcium	228	10.6	mg/kg dry	1	1907129	07/10/19	07/10/19	EPA 6020B	
Magnesium	155	5.28	"	"	"	"	"	"	

Summit Scientific

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



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

Project: Noble - Foster 3-35,6-35,UPRR 53, Pan Am 2

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
07/17/19 09:46

BH05@0-2'
1906239-05 (Soil)

Summit Scientific

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

Sodium	45.8	5.28	mg/kg dry	1	1907129	07/10/19	07/10/19	EPA 6020B
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Calculated Analysis

Date Sampled: **06/18/19 12:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.574	0.100	units	1	1907199	07/15/19	07/15/19	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **06/18/19 12:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	94.7		%	1	1907123	07/10/19	07/10/19	Calculation	
pH	8.79		pH Units	"	1907120	07/10/19	07/10/19	EPA 9045D	I-02

Specific Conductance by EPA Method 120.1

Date Sampled: **06/18/19 12:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.229	0.0100	mmhos/cm	1	1907121	07/10/19	07/10/19	EPA 120.1	

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 - Foster 3-35,6-35,UPRR 53, Pan Am 2

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
07/17/19 09:46

BH06@0-2'
1906239-06 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/18/19 12:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1906256	06/19/19	06/23/19	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: **06/18/19 12:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		128 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		102 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		102 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **06/18/19 12:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1906257	06/19/19	06/20/19	EPA 8015M	

Date Sampled: **06/18/19 12:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		95.1 %	30-150		"	"	"	"	

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

Date Sampled: **06/18/19 12:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	311	10.6	mg/kg dry	1	1907129	07/10/19	07/10/19	EPA 6020B	
Magnesium	165	5.32	"	"	"	"	"	"	

Summit Scientific

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



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

Project: Noble - Foster 3-35,6-35,UPRR 53, Pan Am 2

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
07/17/19 09:46

BH06@0-2'
1906239-06 (Soil)

Summit Scientific

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

Sodium	48.6	5.32	mg/kg dry	1	1907129	07/10/19	07/10/19	EPA 6020B
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Calculated Analysis

Date Sampled: **06/18/19 12:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.553	0.100	units	1	1907199	07/15/19	07/15/19	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **06/18/19 12:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	94.0		%	1	1907123	07/10/19	07/10/19	Calculation	
pH	8.73		pH Units	"	1907120	07/10/19	07/10/19	EPA 9045D	I-02

Specific Conductance by EPA Method 120.1

Date Sampled: **06/18/19 12:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.250	0.0100	mmhos/cm	1	1907121	07/10/19	07/10/19	EPA 120.1	

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 - Foster 3-35,6-35,UPRR 53, Pan Am 2

Project Number: [none]
Project Manager: Brandon Brun

Reported:
07/17/19 09:46

BH07@10-12'
1906239-07 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/18/19 13:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1906256	06/19/19	06/23/19	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: **06/18/19 13:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		109 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.3 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		102 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **06/18/19 13:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	1906257	06/19/19	06/20/19	EPA 8015M	

Date Sampled: **06/18/19 13:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		41.0 %	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 - Foster 3-35,6-35,UPRR 53, Pan Am 2

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
07/17/19 09:46

BH04
1906239-08 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/18/19 13:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	3.9	1.0		ug/l	1	1906259	06/19/19	06/25/19	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	350	2.0		"	"	"	"	"	"	

Date Sampled: **06/18/19 13:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		88.3 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		91.6 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		97.7 %		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 - Foster 3-35,6-35,UPRR 53, Pan Am 2

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
07/17/19 09:46

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch 1906256 - EPA 5030 Soil MS

Blank (1906256-BLK1)

Prepared: 06/19/19 Analyzed: 06/23/19

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	0.0444		"	0.0400		111	23-173			
Surrogate: Toluene-d8	0.0397		"	0.0400		99.3	20-170			
Surrogate: 4-Bromofluorobenzene	0.0435		"	0.0400		109	21-167			

LCS (1906256-BS1)

Prepared: 06/19/19 Analyzed: 06/23/19

Benzene	0.102	0.0020	mg/kg	0.100		102	70-130			
Toluene	0.127	0.0050	"	0.100		127	70-130			
Ethylbenzene	0.113	0.0050	"	0.100		113	70-130			
m,p-Xylene	0.240	0.010	"	0.200		120	70-130			
o-Xylene	0.104	0.0050	"	0.100		104	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0530		"	0.0400		133	23-173			
Surrogate: Toluene-d8	0.0391		"	0.0400		97.8	20-170			
Surrogate: 4-Bromofluorobenzene	0.0409		"	0.0400		102	21-167			

Matrix Spike (1906256-MS1)

Source: 1906233-01

Prepared: 06/19/19 Analyzed: 06/23/19

Benzene	0.0945	0.0020	mg/kg	0.100	ND	94.5	70-130			
Toluene	0.108	0.0050	"	0.100	0.00336	105	70-130			
Ethylbenzene	0.115	0.0050	"	0.100	ND	115	70-130			
m,p-Xylene	0.234	0.010	"	0.200	0.00720	113	70-130			
o-Xylene	0.107	0.0050	"	0.100	ND	107	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0453		"	0.0400		113	23-173			
Surrogate: Toluene-d8	0.0403		"	0.0400		101	20-170			
Surrogate: 4-Bromofluorobenzene	0.0401		"	0.0400		100	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 - Foster 3-35,6-35,UPRR 53, Pan Am 2

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
07/17/19 09:46

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

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

Batch 1906256 - EPA 5030 Soil MS

Matrix Spike Dup (1906256-MSD1)

Source: 1906233-01

Prepared: 06/19/19 Analyzed: 06/23/19

Benzene	0.0915	0.0020	mg/kg	0.100	ND	91.5	70-130	3.22	30	
Toluene	0.103	0.0050	"	0.100	0.00336	99.3	70-130	5.04	30	
Ethylbenzene	0.115	0.0050	"	0.100	ND	115	70-130	0.495	30	
m,p-Xylene	0.231	0.010	"	0.200	0.00720	112	70-130	0.955	30	
o-Xylene	0.107	0.0050	"	0.100	ND	107	70-130	0.224	30	
Surrogate: 1,2-Dichloroethane-d4	0.0506		"	0.0400		126	23-173			
Surrogate: Toluene-d8	0.0386		"	0.0400		96.5	20-170			
Surrogate: 4-Bromofluorobenzene	0.0419		"	0.0400		105	21-167			

Batch 1906259 - EPA 5030 Water MS

Blank (1906259-BLK1)

Prepared: 06/19/19 Analyzed: 06/25/19

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	2.0	"							
Surrogate: 1,2-Dichloroethane-d4	12.0		"	13.3		89.9	23-173			
Surrogate: Toluene-d8	12.9		"	13.3		97.0	20-170			
Surrogate: 4-Bromofluorobenzene	12.1		"	13.3		91.1	21-167			

LCS (1906259-BS1)

Prepared: 06/19/19 Analyzed: 06/25/19

Benzene	41.6	1.0	ug/l	33.3		125	51-132			
Toluene	41.3	1.0	"	33.3		124	51-138			
Ethylbenzene	40.0	1.0	"	33.3		120	58-146			
m,p-Xylene	81.1	2.0	"	66.7		122	57-144			
o-Xylene	41.1	1.0	"	33.3		123	53-146			
Surrogate: 1,2-Dichloroethane-d4	12.0		"	13.3		89.8	23-173			
Surrogate: Toluene-d8	13.2		"	13.3		98.7	20-170			
Surrogate: 4-Bromofluorobenzene	12.0		"	13.3		89.9	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 - Foster 3-35,6-35,UPRR 53, Pan Am 2

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
07/17/19 09:46

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

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

Batch 1906259 - EPA 5030 Water MS

Matrix Spike (1906259-MS1)		Source: 1906220-02			Prepared: 06/19/19 Analyzed: 06/25/19					
Benzene	40.8	1.0	ug/l	33.3	ND	122	34-141			
Toluene	41.1	1.0	"	33.3	ND	123	27-151			
Ethylbenzene	40.0	1.0	"	33.3	ND	120	29-160			
m,p-Xylene	80.9	2.0	"	66.7	1.06	120	20-166			
o-Xylene	40.9	1.0	"	33.3	ND	123	33-159			
<hr/>										
Surrogate: 1,2-Dichloroethane-d4	12.0		"	13.3		89.9	23-173			
Surrogate: Toluene-d8	13.1		"	13.3		98.3	20-170			
Surrogate: 4-Bromofluorobenzene	11.8		"	13.3		88.4	21-167			
<hr/>										
Matrix Spike Dup (1906259-MSD1)		Source: 1906220-02			Prepared: 06/19/19 Analyzed: 06/25/19					
Benzene	39.1	1.0	ug/l	33.3	ND	117	34-141	4.15	30	
Toluene	38.8	1.0	"	33.3	ND	116	27-151	5.78	30	
Ethylbenzene	40.3	1.0	"	33.3	ND	121	29-160	0.847	30	
m,p-Xylene	80.7	2.0	"	66.7	1.06	119	20-166	0.322	30	
o-Xylene	41.3	1.0	"	33.3	ND	124	33-159	0.924	30	
<hr/>										
Surrogate: 1,2-Dichloroethane-d4	11.5		"	13.3		86.0	23-173			
Surrogate: Toluene-d8	12.3		"	13.3		92.4	20-170			
Surrogate: 4-Bromofluorobenzene	11.7		"	13.3		87.8	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 - Foster 3-35,6-35,UPRR 53, Pan Am 2

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
07/17/19 09:46

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch 1906257 - EPA 3550A

Blank (1906257-BLK1)

Prepared: 06/19/19 Analyzed: 06/20/19

C10-C28 (DRO) ND 50 mg/kg

LCS (1906257-BS1)

Prepared: 06/19/19 Analyzed: 06/20/19

C10-C28 (DRO) 495 50 mg/kg 500 98.9 70-130

Matrix Spike (1906257-MS1)

Source: 1906233-01

Prepared: 06/19/19 Analyzed: 06/20/19

C10-C28 (DRO) 631 50 mg/kg 500 884 NR 70-130 QM-07

Matrix Spike Dup (1906257-MSD1)

Source: 1906233-01

Prepared: 06/19/19 Analyzed: 06/20/19

C10-C28 (DRO) 857 50 mg/kg 500 884 NR 70-130 30.3 20 QM-07

Summit Scientific

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

Project: Noble - Foster 3-35,6-35,UPRR 53, Pan Am 2

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
07/17/19 09:46

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

Summit Scientific

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

Batch 1907129 - General Preparation

Blank (1907129-BLK1)

Prepared & Analyzed: 07/10/19

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

LCS (1907129-BS1)

Prepared & Analyzed: 07/10/19

Calcium	535	10.0	mg/kg wet	500	107	70-130
Magnesium	545	5.00	"	500	109	70-130
Sodium	536	5.00	"	500	107	70-130

Duplicate (1907129-DUP1)

Source: 1906239-05

Prepared & Analyzed: 07/10/19

Calcium	233	10.6	mg/kg dry	228	2.32	20
Magnesium	158	5.28	"	155	1.99	20
Sodium	41.3	5.28	"	45.8	10.4	20

Matrix Spike (1907129-MS1)

Source: 1906239-05

Prepared & Analyzed: 07/10/19

Calcium	752	10.6	mg/kg dry	528	228	99.2	70-130
Magnesium	693	5.28	"	528	155	102	70-130
Sodium	599	5.28	"	528	45.8	105	70-130

Matrix Spike Dup (1907129-MSD1)

Source: 1906239-05

Prepared & Analyzed: 07/10/19

Calcium	738	10.6	mg/kg dry	528	228	96.6	70-130	1.86	25
Magnesium	692	5.28	"	528	155	102	70-130	0.165	25
Sodium	589	5.28	"	528	45.8	103	70-130	1.71	25

Summit Scientific

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



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

Project: Noble - Foster 3-35,6-35,UPRR 53, Pan Am 2

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
07/17/19 09:46

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

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

Batch 1907120 - General Preparation

LCS (1907120-BS1)

Prepared & Analyzed: 07/10/19

pH	9.44	pH Units	9.23	102	95-105
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Duplicate (1907120-DUP1)

Source: 1906239-05

Prepared & Analyzed: 07/10/19

pH	8.84	pH Units	8.79	0.567	20
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Batch 1907123 - General Preparation

Duplicate (1907123-DUP1)

Source: 1906239-05

Prepared: 07/10/19 Analyzed: 07/11/19

% Solids	93.5	%	94.7	1.26	20
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Summit Scientific

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

Project: Noble - Foster 3-35,6-35,UPRR 53, Pan Am 2

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
07/17/19 09:46

Specific Conductance by EPA Method 120.1 - Quality Control
Summit Scientific

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

Batch 1907121 - General Preparation

Blank (1907121-BLK1)

Prepared & Analyzed: 07/10/19

Specific Conductance (EC) ND 0.0100 mmhos/cm

LCS (1907121-BS1)

Prepared & Analyzed: 07/10/19

Specific Conductance (EC) 0.743 0.0100 mmhos/cm 0.750 99.1 90-110

Duplicate (1907121-DUP1)

Source: 1906239-05

Prepared & Analyzed: 07/10/19

Specific Conductance (EC) 0.230 0.0100 mmhos/cm 0.229 0.283 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 - Foster 3-35,6-35,UPRR 53, Pan Am 2

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
07/17/19 09:46

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.
I-02	This sample was analyzed outside of the recommended holding time.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

October 17, 2019

Brandon Bruns

Tasman Geosciences

6855 W. 119th Ave.

Broomfield, CO 80020

RE: Noble - Foster 3-35,6-35,UPRR 53, Pan Am 2

Work Order # 1910137

Enclosed are the results of analyses for samples received by Summit Scientific on 10/11/19 17:30. 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 is written in a cursive style and reads "Muri Premier".

Muri Premier For Ben Shrewsbury

Laboratory Manager



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

Project: Noble - Foster 3-35,6-35,UPRR 53, Pan Am 2

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
10/17/19 16:23

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH12@12-14	1910137-01	Soil	10/11/19 13:00	10/11/19 17:30
BH12@18-20	1910137-02	Soil	10/11/19 13:05	10/11/19 17:30
BH10@12-14	1910137-03	Soil	10/11/19 11:20	10/11/19 17:30
BH10@18-20	1910137-04	Soil	10/11/19 11:25	10/11/19 17:30
BH09@11-12	1910137-05	Soil	10/11/19 11:00	10/11/19 17:30
BH09@18-20	1910137-06	Soil	10/11/19 11:05	10/11/19 17:30
BH11@12-14	1910137-07	Soil	10/11/19 13:30	10/11/19 17:30
BH11@18-20	1910137-08	Soil	10/11/19 13:35	10/11/19 17:30
BH08@16-18	1910137-09	Soil	10/11/19 12:15	10/11/19 17:30
BH08@18-20	1910137-10	Soil	10/11/19 12:20	10/11/19 17:30

This report has been edited from the original.

Sample ID's have been changed.
BH06 samples renamed to BH09
BH05 samples renamed to BH10
BH07 samples renamed to BH11
BH01 samples renamed to BH12

Per request of TC on 10-17-2019

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

19/10/137

4653 Table Mountain Drive ♦ Golden, Colorado 80403

303-277-9310

Page 1 of 1

Client: Noble / Tasman

Project Manager: Brandon Bruns, Invoice: Jacob Evans

Address: 6855 119th St

E-Mail: Bbruns@tasman-geo.com

City/State/Zip: Broomfield / CO/ 80020

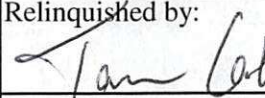
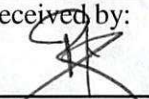
Phone: 303-487-1228

Project Name: Foster 3-35, 6-35, UPR53, PanAm 2

Sampler Name: Tanner Cook

Project Number:

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested				Special Instructions	
					HCl	HNO ₃	None	Other	Water	Soil	Air-Canister #	Other	8260 BTEX	8260B GBTEXN	8015 DRO	pH, EC, SAR		
1	BH01 @ 12-14	10/11/19	1300	1			X			X				X	X			
2	BH01 @ 18-20		1305															
3	BH05 @ 12-14		1120															
4	BH05 @ 18-20		1125															
5	BH06 @ 11-12		1100															
6	BH06 @ 18-20		1105															
7	BH07 @ 12-14		1330															
8	BH07 @ 18-20		1335															
9	BH08 @ 16-18		1215															
10	BH08 @ 18-20	✓	1220	✓										✓	✓			

Relinquished by: 	Date/Time: 10/11/19 1730	Received by: Tasman's Lock Box	Date/Time: 10/11/19 1730	Turn Around Time (Check) Same Day — 72 hours 24 hours — Standard <input checked="" type="checkbox"/> 48 hours — Sample Integrity: Temperature Upon Receipt: 3.0 Samples Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Notes:
Relinquished by: Tasman's Lock Box	Date/Time: 10/11/19 1730	Received by: 	Date/Time: 10/11/19 1730		
Relinquished by:	Date/Time:	Received by:	Date/Time:		

Sample Receipt Checklist

S2 Work Order 1910137

Client: Noble Gasman

Client Project ID: Foster 3-35, 6-35, URS 3, Pan Am 2

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

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

Temp (°C)	
-----------	--

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.	X			
Were all samples received intact ⁽¹⁾ ?	X			
Was adequate sample volume provided ⁽¹⁾ ?	X			
If custody seals are present, are they intact ⁽¹⁾ ?			X	
Are samples with holding times due within 48 hours sample due within 48 hours present?		X		
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	X			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	X			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	X			
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	X			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.			X	
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ?				
Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect			X	
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ?			X	
Record the pH in Comments.			X	
If dissolved metals are requested, were samples field filtered?			X	

Additional Comments (if any):

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

Custodian Printed Name or Initials TG

Signature of Custodian [Signature]

Date/Time 10/11/19

1305



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

Project: Noble - Foster 3-35,6-35,UPRR 53, Pan Am 2

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
10/17/19 16:23

BH12@12-14
1910137-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/11/19 13:00**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	0.0020	mg/kg	1	1910203	10/15/19	10/16/19	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: **10/11/19 13:00**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		124 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		100 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		106 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/11/19 13:00**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
C10-C28 (DRO)	ND	50	mg/kg	1	1910204	10/15/19	10/16/19	EPA 8015M	

Date Sampled: **10/11/19 13:00**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: o-Terphenyl		111 %	30-150		"	"	"	"	

Summit Scientific

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

Project: Noble - Foster 3-35,6-35,UPRR 53, Pan Am 2

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
10/17/19 16:23

BH12@18-20
1910137-02 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/11/19 13:05**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1910203	10/15/19	10/16/19	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: **10/11/19 13:05**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		135 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		110 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/11/19 13:05**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	1910204	10/15/19	10/16/19	EPA 8015M	

Date Sampled: **10/11/19 13:05**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		108 %	30-150		"	"	"	"	

Summit Scientific

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

Project: Noble - Foster 3-35,6-35,UPRR 53, Pan Am 2

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
10/17/19 16:23

BH10@12-14
1910137-03 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/11/19 11:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1910203	10/15/19	10/16/19	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: **10/11/19 11:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		137 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		102 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		109 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/11/19 11:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1910204	10/15/19	10/16/19	EPA 8015M	

Date Sampled: **10/11/19 11:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		108 %	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
6855 W. 119th Ave.
Broomfield CO, 80020

Project: Noble - Foster 3-35,6-35,UPRR 53, Pan Am 2

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
10/17/19 16:23

BH10@18-20
1910137-04 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/11/19 11:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1910203	10/15/19	10/16/19	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: **10/11/19 11:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		129 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		109 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/11/19 11:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1910204	10/15/19	10/16/19	EPA 8015M	

Date Sampled: **10/11/19 11:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		110 %	30-150		"	"	"	"	

Summit Scientific

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

Project: Noble - Foster 3-35,6-35,UPRR 53, Pan Am 2

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
10/17/19 16:23

BH09@11-12
1910137-05 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/11/19 11:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1910203	10/15/19	10/16/19	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: **10/11/19 11:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		132 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		103 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		110 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/11/19 11:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	1910204	10/15/19	10/16/19	EPA 8015M	

Date Sampled: **10/11/19 11:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		107 %	30-150		"	"	"	"	

Summit Scientific

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

Project: Noble - Foster 3-35,6-35,UPRR 53, Pan Am 2

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
10/17/19 16:23

BH09@18-20
1910137-06 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/11/19 11:05**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1910203	10/15/19	10/16/19	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: **10/11/19 11:05**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		125 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.4 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		108 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/11/19 11:05**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	1910204	10/15/19	10/16/19	EPA 8015M	

Date Sampled: **10/11/19 11:05**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		109 %	30-150		"	"	"	"	

Summit Scientific

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

Project: Noble - Foster 3-35,6-35,UPRR 53, Pan Am 2

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
10/17/19 16:23

BH11@12-14
1910137-07 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/11/19 13:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1910203	10/15/19	10/16/19	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: **10/11/19 13:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		128 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		100 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		107 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/11/19 13:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1910204	10/15/19	10/16/19	EPA 8015M	

Date Sampled: **10/11/19 13:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		109 %	30-150		"	"	"	"	

Summit Scientific

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

Project: Noble - Foster 3-35,6-35,UPRR 53, Pan Am 2

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
10/17/19 16:23

BH11@18-20
1910137-08 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/11/19 13:35**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1910203	10/15/19	10/16/19	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: **10/11/19 13:35**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		120 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		105 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/11/19 13:35**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	1910204	10/15/19	10/16/19	EPA 8015M	

Date Sampled: **10/11/19 13:35**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		109 %	30-150		"	"	"	"	

Summit Scientific

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

Project: Noble - Foster 3-35,6-35,UPRR 53, Pan Am 2

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
10/17/19 16:23

BH08@16-18
1910137-09 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/11/19 12:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1910203	10/15/19	10/16/19	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: **10/11/19 12:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		138 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		103 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		109 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/11/19 12:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	1910204	10/15/19	10/16/19	EPA 8015M	

Date Sampled: **10/11/19 12:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		105 %	30-150		"	"	"	"	

Summit Scientific

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

Project: Noble - Foster 3-35,6-35,UPRR 53, Pan Am 2

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
10/17/19 16:23

BH08@18-20
1910137-10 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/11/19 12:20**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1910203	10/15/19	10/16/19	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: **10/11/19 12:20**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		126 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		105 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/11/19 12:20**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	1910204	10/15/19	10/16/19	EPA 8015M	

Date Sampled: **10/11/19 12:20**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		108 %	30-150		"	"	"	"	

Summit Scientific

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

Project: Noble - Foster 3-35,6-35,UPRR 53, Pan Am 2

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
10/17/19 16:23

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch 1910203 - EPA 5030 Soil MS

Blank (1910203-BLK1)

Prepared: 10/15/19 Analyzed: 10/16/19

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	0.0483		"	0.0400		121	23-173			
Surrogate: Toluene-d8	0.0404		"	0.0400		101	20-170			
Surrogate: 4-Bromofluorobenzene	0.0425		"	0.0400		106	21-167			

LCS (1910203-BS1)

Prepared: 10/15/19 Analyzed: 10/16/19

Benzene	0.0727	0.0020	mg/kg	0.100		72.7	70-130			
Toluene	0.102	0.0050	"	0.100		102	70-130			
Ethylbenzene	0.0885	0.0050	"	0.100		88.5	70-130			
m,p-Xylene	0.158	0.010	"	0.200		78.8	70-130			
o-Xylene	0.0846	0.0050	"	0.100		84.6	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0374		"	0.0400		93.5	23-173			
Surrogate: Toluene-d8	0.0509		"	0.0400		127	20-170			
Surrogate: 4-Bromofluorobenzene	0.0434		"	0.0400		108	21-167			

Matrix Spike (1910203-MS1)

Source: 1910067-01

Prepared: 10/15/19 Analyzed: 10/16/19

Benzene	0.0746	0.0020	mg/kg	0.100	ND	74.6	70-130			
Toluene	0.102	0.0050	"	0.100	ND	102	70-130			
Ethylbenzene	0.0882	0.0050	"	0.100	ND	88.2	70-130			
m,p-Xylene	0.157	0.010	"	0.200	ND	78.3	70-130			
o-Xylene	0.0858	0.0050	"	0.100	ND	85.8	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0372		"	0.0400		93.0	23-173			
Surrogate: Toluene-d8	0.0490		"	0.0400		122	20-170			
Surrogate: 4-Bromofluorobenzene	0.0408		"	0.0400		102	21-167			

Summit Scientific

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

Project: Noble - Foster 3-35,6-35,UPRR 53, Pan Am 2

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
10/17/19 16:23

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

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

Batch 1910203 - EPA 5030 Soil MS

Matrix Spike Dup (1910203-MSD1)		Source: 1910067-01			Prepared: 10/15/19 Analyzed: 10/16/19					
Benzene	0.0775	0.0020	mg/kg	0.100	ND	77.5	70-130	3.75	30	
Toluene	0.0970	0.0050	"	0.100	ND	97.0	70-130	5.04	30	
Ethylbenzene	0.0928	0.0050	"	0.100	ND	92.8	70-130	5.14	30	
m,p-Xylene	0.159	0.010	"	0.200	ND	79.4	70-130	1.37	30	
o-Xylene	0.0870	0.0050	"	0.100	ND	87.0	70-130	1.46	30	
Surrogate: 1,2-Dichloroethane-d4	0.0391		"	0.0400		97.7	23-173			
Surrogate: Toluene-d8	0.0465		"	0.0400		116	20-170			
Surrogate: 4-Bromofluorobenzene	0.0417		"	0.0400		104	21-167			

Summit Scientific

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

Project: Noble - Foster 3-35,6-35,UPRR 53, Pan Am 2

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
10/17/19 16:23

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch 1910204 - EPA 3550A

Blank (1910204-BLK1)

Prepared: 10/15/19 Analyzed: 10/16/19

C10-C28 (DRO) ND 50 mg/kg

LCS (1910204-BS1)

Prepared: 10/15/19 Analyzed: 10/16/19

C10-C28 (DRO) 433 50 mg/kg 500 86.6 70-130

Matrix Spike (1910204-MS1)

Source: 1910067-01

Prepared: 10/15/19 Analyzed: 10/16/19

C10-C28 (DRO) 474 50 mg/kg 500 40.2 86.8 70-130

Matrix Spike Dup (1910204-MSD1)

Source: 1910067-01

Prepared: 10/15/19 Analyzed: 10/16/19

C10-C28 (DRO) 442 50 mg/kg 500 40.2 80.4 70-130 6.96 20

Summit Scientific

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

Project: Noble - Foster 3-35,6-35,UPRR 53, Pan Am 2

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
10/17/19 16:23

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