

WELD 2 FLOWLINE

SITE ASSESSMENT REPORT & NO FURTHER ACTION REQUEST

July 14, 2016



Image: Google

PREPARED ON BEHALF OF

Noble Energy, Inc.
1600 Broadway
Denver, CO 80202



PREPARED BY

Tasman Geosciences, Inc.
6899 Pecos Street, Unit C
Denver, CO 80221



July 14, 2016

Mr. Jacob Evans
Noble Energy Inc.
1600 Broadway
Denver, CO 80202

Subject: **Site Assessment Report and No Further Action Request**
 Weld 2 Flowline
 API # 05-123-10897
 Spill/Release Point ID # 446310
 Weld County, Colorado

Dear Mr. Evans:

Below please find a copy of the above referenced Site Assessment Report and Request for No Further Action for the Weld 2 Flowline Release Site (Site) in Weld County, Colorado. The text below describes environmental sampling and remediation activities conducted between June 21 and 29, 2016.

On June 21, 2016, an abandoned flow line and historic release was discovered near the Weld 2 wellhead during plug and abandonment (P&A) activities, as described in the Initial Form 19 submitted to the Colorado Oil and Gas Conservation Commission (COGCC) on June 22, 2016 (Doc# 401066517). The COGCC issued Spill/Release Point ID 446310 to the incident.

Introduction

The purpose of this document is to describe the removal of impacted soil and subsequent site assessment and confirmation sampling activities at the Site. The activities described below were performed in response to a release discovered during P&A activities at the Weld 2 wellhead.

Facility Background

The Site is located approximately 3.5 miles south-southeast of the town of Kersey in Weld County, Colorado, as illustrated on Figure 1. Surrounded by non-crop land, the facility legal description is the NE ¼ of the SW ¼ of Section 3, Township 4N, Range 64W, and the approximate release point has coordinates of 40.3397667°, -104.5388278°. The approximate release location is 2,015 feet (ft.) north of Weld Country Road 48. According to Colorado Division of Water Resources data, the nearest water well is 875 ft. southwest.

Field Activities

Site remediation activities began on June 21, 2016, following the discovery of the release, at which time approximately 40 cubic yards of material were removed and transported under signed waste manifests to North Weld County Landfill in Ault, Colorado. Soil samples were not collected from

the open excavation, and the excavation area was backfilled with clean material following soil removal, in order to protect livestock in the area from the open hole.

Following the completion of excavation and P&A activities, site assessment activities were conducted on June 29, 2016, in order to further assess potential subsurface impacts at the Site from the historic release. Site assessment activities consisted of the installation of six soil borings (BH01 – BH06) within and around the excavation area, for the purpose of collecting soil and groundwater samples. Site assessment boring locations and the approximate excavation extent are illustrated on Figure 2.

Soil borings BH01 through BH06 were completed to a total depth of 16 ft. below ground surface (bgs), and groundwater was encountered in each boring at approximately 7 to 8 ft. bgs. Samples were recovered from each soil boring using acetate core liners, and soil samples were screened for volatile organic compound (VOC) concentrations using a photoionization detector (PID) and standard headspace sampling techniques. The soil sample from each boring with the highest PID reading, or from directly above the water table, was submitted to Summit Scientific Laboratories (Summit) in Golden, Colorado for laboratory analysis of benzene, toluene, ethylbenzene, and total xylenes (BTEX), naphthalene, and total petroleum hydrocarbons (TPH) – gasoline range organics (GRO) by United States Environmental Protection Agency (USEPA) Method 8260B, and TPH – diesel range organics (DRO) by USEPA Method 8015. Boring logs for BH01 through BH06 are presented in Appendix B.

Soil borings were converted to temporary monitoring wells with a screened interval of 6 to 16 ft. bgs, for the collection of grab groundwater samples. Groundwater samples were collected from each of the six temporary wells using dedicated polyethylene bailers, and submitted to Summit for laboratory analysis of BTEX by USEPA Method 8260B.

Results

Laboratory analytical results indicate that BTEX, naphthalene, TPH – GRO and TPH – DRO concentrations were below applicable COGCC Table 910-1 standards in all six of the soil samples collected from the site assessment borings. Soil analytical data is presented in Table 1. Laboratory analytical results also indicate that BTEX concentrations were below applicable COGCC Table 910-1 standards in all six groundwater samples collected from the temporary monitoring wells. Groundwater analytical data is presented in Table 2. The excavation extent and soil and groundwater analytical results are illustrated on Figure 2.

Conclusions

Based on excavation activities completed at the Site and laboratory analytical data from soil and groundwater samples collected, a no further action (NFA) designation is being requested for this Site.

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 (303) 487-1228 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 – Excavation Extent & Sample Location Map

Appendix A – Laboratory Analytical Report

Appendix B – Boring Logs

Tables

TABLE 1
SOIL ANALYTICAL DATA
NOBLE ENERGY, INC. - WELD 2 WELLHEAD

Soil Sample ID	Date	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	TPH-GRO (mg/kg)	TPH-DRO (mg/kg)	Naphthalene (mg/kg)
COGCC Standard		0.17	85	100	175	500		23
BH01@6-7	06/29/16	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010
BH02@6-7	06/29/16	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010
BH03@6-7	06/29/16	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010
BH04@5-6	06/29/16	<0.0020	<0.0050	<0.0050	<0.010	<50	140	<0.010
BH05@6-7	06/29/16	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010
BH06@6-7	06/29/16	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010

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

< = 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. - WELD 2 WELLHEAD

Monitoring Well ID	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
COGCC Standard		5	560	700	1,400
BH01	06/29/16	<1.0	<1.0	<1.0	<1.0
BH02	06/29/16	<1.0	<1.0	<1.0	<1.0
BH03	06/29/16	<1.0	<1.0	<1.0	<1.0
BH04	06/29/16	<1.0	<1.0	<1.0	<1.0
BH05	06/29/16	2.2	<1.0	<1.0	28
BH06	06/29/16	<1.0	<1.0	<1.0	<1.0

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

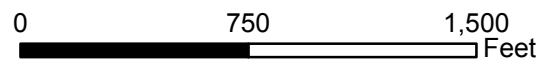
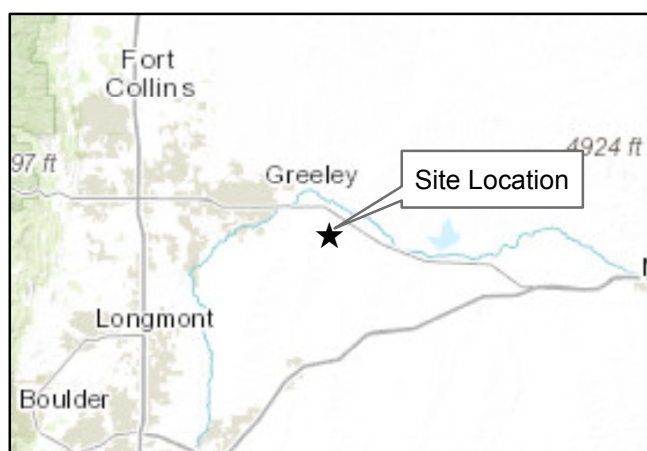
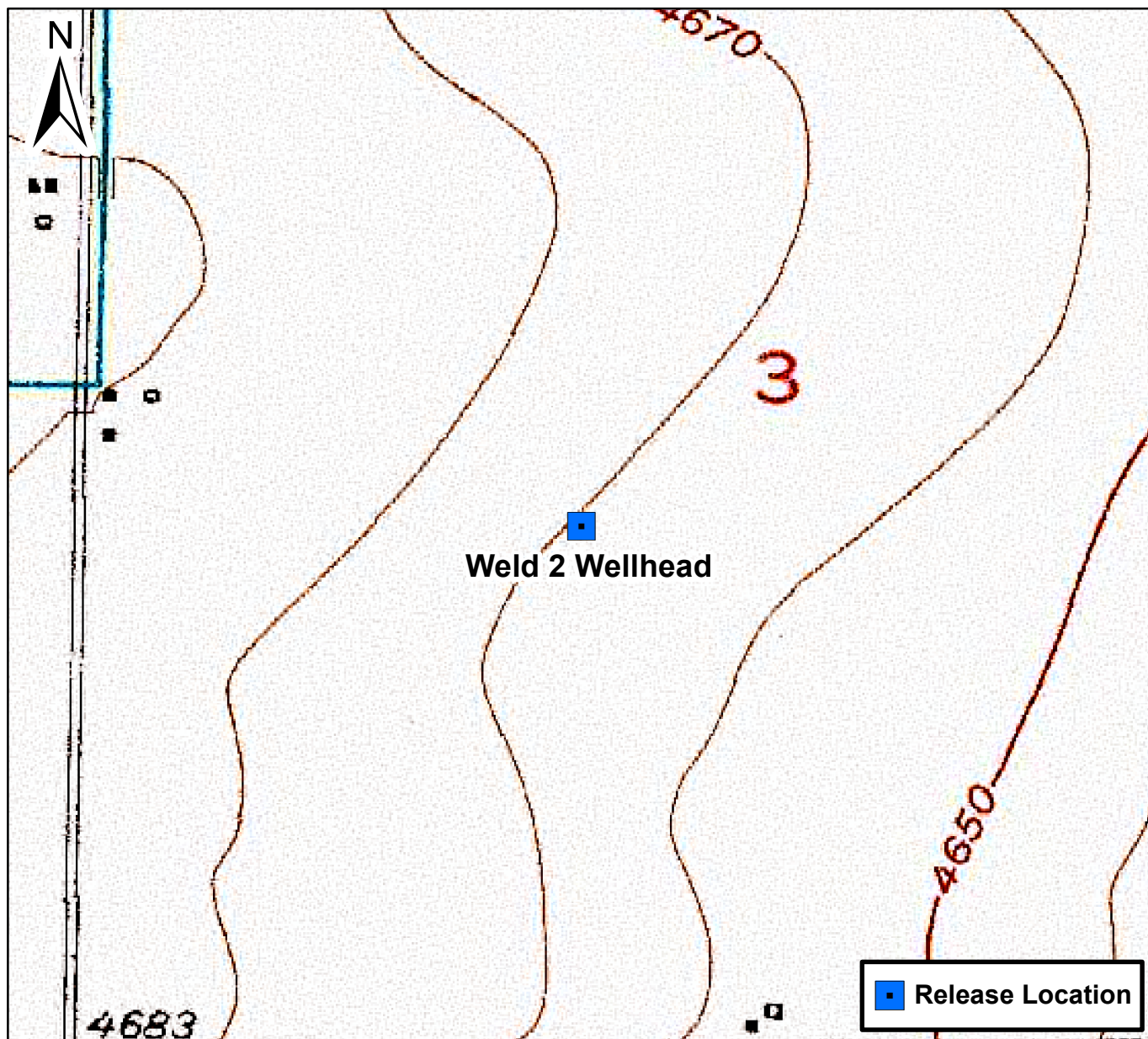
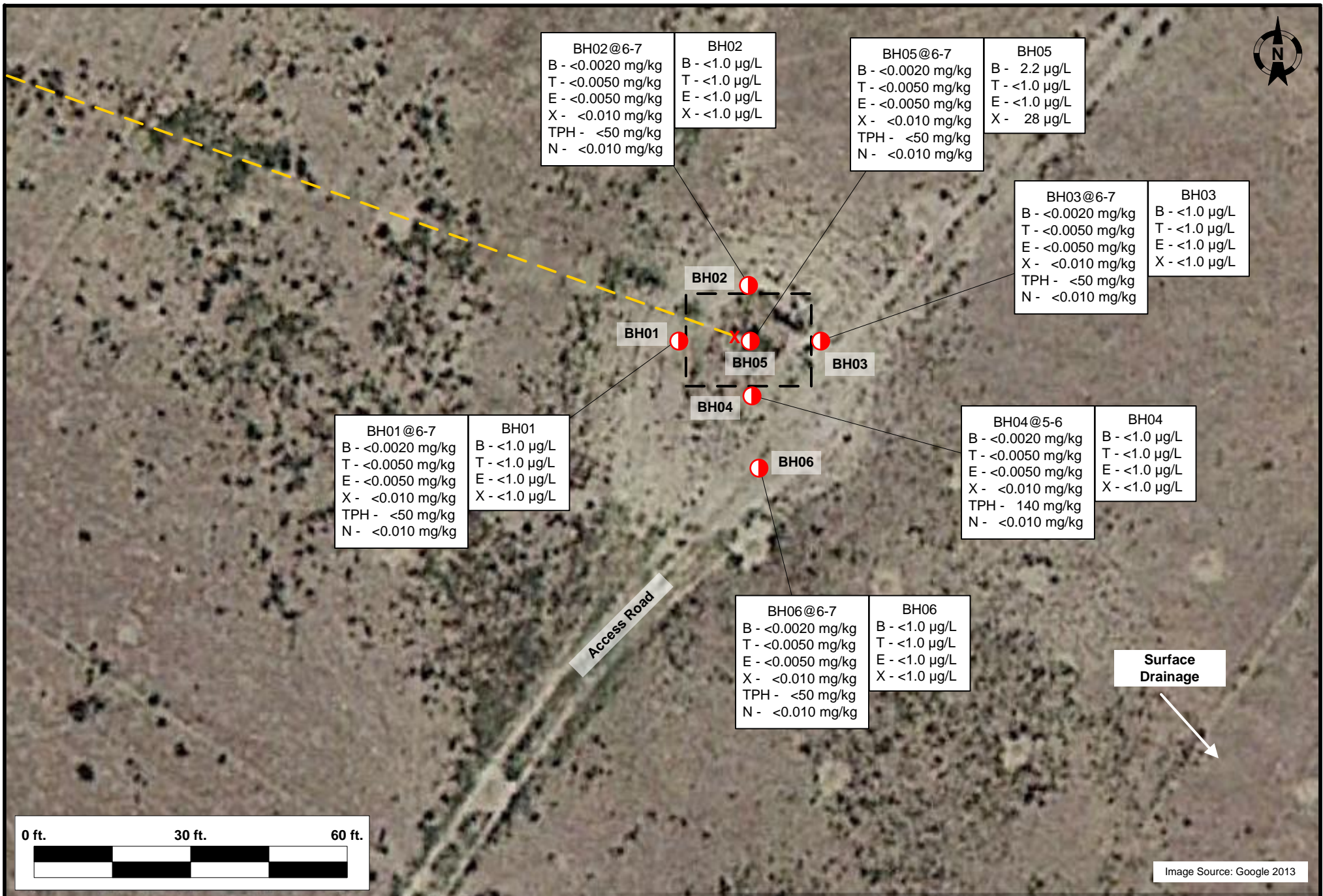


Figure 1

Site Location Map
Weld 2 Wellhead
NESW S3 T4N R64W
Weld County, Colorado





PROJECT NO:

DRAWN BY: ESS

DATE: 07/11/16



Facility Diagram

Weld 2 Wellhead
Weld County, CO

LEGEND:

- X Approximate Release Location
- Former Noble Flow Line
- Approximate Excavation Extent
- Approximate Soil Boring Location (Soil & Grab Groundwater Samples)
- µg/L Micrograms per Liter
- mg/kg Milligrams per Kilogram

B - Benzene
T - Toluene
E - Ethylbenzene
X - Total Xylenes
TPH - Total Petroleum Hydrocarbons
N - Naphthalene

Borehole Soil and
Groundwater Sample
Location Map

Figure 2

Appendix A

Laboratory Analytical Report

Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

July 07, 2016

Brandon Bruns
Tasman Geosciences
6899 Pecos Street
Denver, CO 80221
RE: Weld 2

Enclosed are the results of analyses for samples received by Summit Scientific on 06/29/16 17:10. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'P. Shrewsbury', with a stylized, cursive script.

Paul Shrewsbury
President



Tasman Geosciences
6899 Pecos Street
Denver CO, 80221

Project: Weld 2
Project Number: [none]
Project Manager: Brandon Bruns

Reported:
07/07/16 09:36

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH01@6-7	1606313-01	Soil	06/29/16 09:00	06/29/16 17:10
BH02@6-7	1606313-02	Soil	06/29/16 10:10	06/29/16 17:10
BH03@6-7	1606313-03	Soil	06/29/16 11:25	06/29/16 17:10
BH04@5-7	1606313-04	Soil	06/29/16 12:45	06/29/16 17:10
BH05@6-7	1606313-05	Soil	06/29/16 14:10	06/29/16 17:10
BH06@6-7	1606313-06	Soil	06/29/16 15:00	06/29/16 17:10
BH01	1606313-07	Water	06/29/16 15:51	06/29/16 17:10
BH02	1606313-08	Water	06/29/16 15:48	06/29/16 17:10
BH03	1606313-09	Water	06/29/16 15:56	06/29/16 17:10
BH04	1606313-10	Water	06/29/16 16:05	06/29/16 17:10
BH05	1606313-11	Water	06/29/16 15:59	06/29/16 17:10
BH06	1606313-12	Water	06/29/16 16:03	06/29/16 17:10

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 Street
Denver CO, 80221

Project: Weld 2

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
07/07/16 09:36

Summit Scientific

741 Corporate Circle Suite 1 • Golden, Colorado 80401
303-277-9310 • 303-374-5933 Fax

1606313.1

Page 1 of 2

Client: Noble/Tasman
Address:
City/State/Zip:
Phone: Fax:
Sampler Name: Eric Siegel

Project Manager: Brandon Bruns, Invoice: Jacob Evans
E-Mail:
Project Name: Weld 2
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	
BH01e 6-7	6/25/16	900	1			X		X								
BH02e 6-7		1010	1													
BH03e 6-7		1125	1													
BH04e 5-6		1245	1													
BH05e 6-7		1410	1													
BH06e 6-7		1500	1													
<div> <div>Relinquished by: E.A. Airl Date/Time: 1710 6/25/16</div> <div>Received by: MKV Date/Time: 6/29/16 1710</div> <div>Turn Around Time (Check)</div> <div> <div>Same Day</div> <div>24 Hours</div> <div>48 Hours</div> <div>72 Hours</div> <div>Standard</div> </div> </div>																
<div> <div>Relinquished by: MKV Date/Time: 6/29/16 1830</div> <div>Received by: Date/Time:</div> <div>Sample Integrity:</div> <div> <div>Temperature Upon Receipt: 8.0°C</div> <div>Intact: Yes No</div> </div> </div>																
Notes: on ice																

www.s2scientific.com

Summit Scientific

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Tasman Geosciences
6899 Pecos Street
Denver CO, 80221

Project: Weld 2

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
07/07/16 09:36

Summit Scientific

1606313.2

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: _____ Fax: _____
Sampler Name: Eric Siegel

Project Manager: Brandon Bruns, Invoice: Jacob Evans
E-Mail:
Project Name: Weld 2
Project Number:

[illegible]

www.s2scientific.com



Tasman Geosciences
6899 Pecos Street
Denver CO, 80221

Project: Weld 2

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
07/07/16 09:36

Sample Receipt Checklist

S2 Work Order: 1606313

Client: Noble/Tasman

Client Project ID: Weld 2

Shipped Via: PIU

(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Airbill #: _____

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

Cooler ID					
Temp (°C)	8.0				

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature just above 0°C to ≤ 6°C ⁽¹⁾ ?		✓		
NOTE: If samples are delivered the same day of sampling, this requirement is waived 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 short holding time analytes or samples with HTs 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.

Nakita
Custodian Printed Name

[Signature]
Signature or Initials of Custodian

6/30/16 1200
Date/Time



Tasman Geosciences
6899 Pecos Street
Denver CO, 80221

Project: Weld 2
Project Number: [none]
Project Manager: Brandon Brunns

Reported:
07/07/16 09:36

BH01@6-7
1606313-01 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: 06/29/16 09:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1606309	06/30/16	07/01/16	8015M	

Date Sampled: 06/29/16 09:00

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

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 06/29/16 09:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1606310	06/30/16	07/01/16	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: 06/29/16 09:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		110 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		100 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		99.9 %	21-167		"	"	"	"	

Summit Scientific

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Tasman Geosciences
6899 Pecos Street
Denver CO, 80221

Project: Weld 2
Project Number: [none]
Project Manager: Brandon Brunns

Reported:
07/07/16 09:36

BH02@6-7
1606313-02 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **06/29/16 10:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1606309	06/30/16	07/01/16	8015M	

Date Sampled: **06/29/16 10:10**

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

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/29/16 10:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1606310	06/30/16	07/01/16	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **06/29/16 10:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		105 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		96.7 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		102 %	21-167		"	"	"	"	

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Tasman Geosciences
6899 Pecos Street
Denver CO, 80221

Project: Weld 2
Project Number: [none]
Project Manager: Brandon Brunns

Reported:
07/07/16 09:36

BH03@6-7
1606313-03 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **06/29/16 11:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1606309	06/30/16	07/01/16	8015M	

Date Sampled: **06/29/16 11:25**

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

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/29/16 11:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1606310	06/30/16	07/01/16	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **06/29/16 11:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		106 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.4 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		99.7 %	21-167		"	"	"	"	

Summit Scientific

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Tasman Geosciences
6899 Pecos Street
Denver CO, 80221

Project: Weld 2
Project Number: [none]
Project Manager: Brandon Bruns

Reported:
07/07/16 09:36

BH04@5-7
1606313-04 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **06/29/16 12:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	140	50	mg/kg	1	1606309	06/30/16	07/01/16	8015M	

Date Sampled: **06/29/16 12:45**

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

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/29/16 12:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1606310	06/30/16	07/02/16	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **06/29/16 12:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		107 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.7 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.3 %	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 Street
Denver CO, 80221

Project: Weld 2
Project Number: [none]
Project Manager: Brandon Brunns

Reported:
07/07/16 09:36

BH05@6-7
1606313-05 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **06/29/16 14:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1606309	06/30/16	07/01/16	8015M	

Date Sampled: **06/29/16 14:10**

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

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/29/16 14:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1606310	06/30/16	07/01/16	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **06/29/16 14:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane- <i>d</i> 4		108 %	23-173		"	"	"	"	
Surrogate: Toluene- <i>d</i> 8		99.5 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		99.1 %	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 Street
Denver CO, 80221

Project: Weld 2
Project Number: [none]
Project Manager: Brandon Brunns

Reported:
07/07/16 09:36

BH06@6-7
1606313-06 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **06/29/16 15:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1606309	06/30/16	07/01/16	8015M	

Date Sampled: **06/29/16 15:00**

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

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/29/16 15:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1606310	06/30/16	07/01/16	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **06/29/16 15:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		106 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.3 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		99.6 %	21-167		"	"	"	"	

Summit Scientific

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Tasman Geosciences
6899 Pecos Street
Denver CO, 80221

Project: Weld 2
Project Number: [none]
Project Manager: Brandon Brunns

Reported:
07/07/16 09:36

BH01
1606313-07 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/29/16 15:51**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1607032	07/05/16	07/05/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **06/29/16 15:51**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		80.1 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		94.9 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		94.1 %	45-146		"	"	"	"	

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 Street
Denver CO, 80221

Project: Weld 2
Project Number: [none]
Project Manager: Brandon Brunns

Reported:
07/07/16 09:36

BH02
1606313-08 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/29/16 15:48**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1607032	07/05/16	07/05/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **06/29/16 15:48**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		85.1 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		96.4 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		91.4 %	45-146		"	"	"	"	

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 Street
Denver CO, 80221

Project: Weld 2
Project Number: [none]
Project Manager: Brandon Brunns

Reported:
07/07/16 09:36

BH03
1606313-09 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/29/16 15:56**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1607032	07/05/16	07/05/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **06/29/16 15:56**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		82.7 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		93.2 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.1 %	45-146		"	"	"	"	

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 Street
Denver CO, 80221

Project: Weld 2
Project Number: [none]
Project Manager: Brandon Brunns

Reported:
07/07/16 09:36

BH04
1606313-10 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/29/16 16:05**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	1607032	07/05/16	07/05/16	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	1.0		"	"	"	"	"	"	

Date Sampled: **06/29/16 16:05**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		85.1 %		37-154		"	"	"	"	
Surrogate: Toluene-d8		93.5 %		45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.9 %		45-146		"	"	"	"	

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 Street
Denver CO, 80221

Project: Weld 2
Project Number: [none]
Project Manager: Brandon Brunns

Reported:
07/07/16 09:36

BH05
1606313-11 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/29/16 15:59**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	2.2	1.0	ug/l	1	1607032	07/05/16	07/05/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	28	1.0	"	"	"	"	"	"	

Date Sampled: **06/29/16 15:59**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		85.1 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		94.3 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		95.2 %	45-146		"	"	"	"	

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 Street
Denver CO, 80221

Project: Weld 2
Project Number: [none]
Project Manager: Brandon Brunns

Reported:
07/07/16 09:36

BH06
1606313-12 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/29/16 16:03**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1607032	07/05/16	07/05/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **06/29/16 16:03**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		82.5 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		96.0 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		91.2 %	45-146		"	"	"	"	

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 Street
Denver CO, 80221

Project: Weld 2
Project Number: [none]
Project Manager: Brandon Bruns

Reported:
07/07/16 09:36

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch 1606309 - EPA 3550A

Blank (1606309-BLK1)

Prepared: 06/30/16 Analyzed: 07/01/16

C10-C28 (DRO) ND 50 mg/kg

Surrogate: o-Terphenyl 13.6 " 12.5 109 30-150

LCS (1606309-BS1)

Prepared: 06/30/16 Analyzed: 07/01/16

C10-C28 (DRO) 552 50 mg/kg 499 111 73-134

Surrogate: o-Terphenyl 13.6 " 12.5 108 30-150

Matrix Spike (1606309-MS1)

Source: 1606308-14

Prepared: 06/30/16 Analyzed: 07/01/16

C10-C28 (DRO) 518 50 mg/kg 464 26.0 106 50-148

Surrogate: o-Terphenyl 12.8 " 11.6 110 30-150

Matrix Spike Dup (1606309-MSD1)

Source: 1606308-14

Prepared: 06/30/16 Analyzed: 07/01/16

C10-C28 (DRO) 552 50 mg/kg 494 26.0 107 50-148 6.46 20

Surrogate: o-Terphenyl 13.0 " 12.4 105 30-150

Summit Scientific

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Tasman Geosciences
6899 Pecos Street
Denver CO, 80221

Project: Weld 2
Project Number: [none]
Project Manager: Brandon Bruns

Reported:
07/07/16 09:36

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 1606310 - EPA 5030 Soil MS

Blank (1606310-BLK1)

Prepared: 06/30/16 Analyzed: 07/01/16

Naphthalene	ND	0.010	mg/kg							
Benzene	ND	0.0020	"							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0413</i>		<i>"</i>	<i>0.0400</i>		<i>103</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0392</i>		<i>"</i>	<i>0.0400</i>		<i>97.9</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0400</i>		<i>"</i>	<i>0.0400</i>		<i>99.9</i>	<i>21-167</i>			

LCS (1606310-BS1)

Prepared: 06/30/16 Analyzed: 07/01/16

Naphthalene	ND	0.010	mg/kg				66-138			
Benzene	0.115	0.0020	"	0.150		76.5	58-130			
Toluene	0.132	0.0050	"	0.150		87.7	61-134			
Ethylbenzene	0.150	0.0050	"	0.149		101	74-139			
m,p-Xylene	0.301	0.010	"	0.299		100	73-137			
o-Xylene	0.142	0.0050	"	0.147		96.7	73-141			
Xylenes (total)	0.443	0.010	"				0-200			
Gasoline Range Hydrocarbons	3.36	0.50	"				30-150			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0414</i>		<i>"</i>	<i>0.0400</i>		<i>103</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0397</i>		<i>"</i>	<i>0.0400</i>		<i>99.2</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0399</i>		<i>"</i>	<i>0.0400</i>		<i>99.8</i>	<i>21-167</i>			

Matrix Spike (1606310-MS1)

Source: 1606308-14

Prepared: 06/30/16 Analyzed: 07/01/16

Naphthalene	ND	0.010	mg/kg		ND		10-158			
Benzene	0.117	0.0020	"	0.145	ND	80.7	30-131			
Toluene	0.132	0.0050	"	0.145	ND	91.3	30-134			
Ethylbenzene	0.147	0.0050	"	0.144	ND	102	22-153			
m,p-Xylene	0.294	0.010	"	0.289	ND	102	10-159			
o-Xylene	0.141	0.0050	"	0.142	ND	99.6	31-151			
Xylenes (total)	0.435	0.010	"		ND		30-160			
Gasoline Range Hydrocarbons	3.59	0.50	"		ND		30-160			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0436</i>		<i>"</i>	<i>0.0386</i>		<i>113</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0385</i>		<i>"</i>	<i>0.0386</i>		<i>99.6</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0384</i>		<i>"</i>	<i>0.0386</i>		<i>99.5</i>	<i>21-167</i>			

Summit Scientific

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Tasman Geosciences
6899 Pecos Street
Denver CO, 80221

Project: Weld 2
Project Number: [none]
Project Manager: Brandon Bruns

Reported:
07/07/16 09:36

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 1606310 - EPA 5030 Soil MS

Matrix Spike Dup (1606310-MSD1)				Source: 1606308-14		Prepared: 06/30/16		Analyzed: 07/01/16		
Naphthalene	ND	0.010	mg/kg		ND		10-158		42	
Benzene	0.114	0.0020	"	0.146	ND	77.7	30-131	2.79	34	
Toluene	0.132	0.0050	"	0.146	ND	90.2	30-134	0.264	30	
Ethylbenzene	0.149	0.0050	"	0.145	ND	102	22-153	1.27	24	
m,p-Xylene	0.298	0.010	"	0.292	ND	102	10-159	1.34	68	
o-Xylene	0.144	0.0050	"	0.143	ND	100	31-151	1.64	38	
Xylenes (total)	0.442	0.010	"		ND		30-160	1.44	30	
Gasoline Range Hydrocarbons	3.86	0.50	"		ND		30-160	7.23	30	
Surrogate: 1,2-Dichloroethane-d4	0.0423		"	0.0390		109	23-173			
Surrogate: Toluene-d8	0.0385		"	0.0390		98.6	20-170			
Surrogate: 4-Bromofluorobenzene	0.0376		"	0.0390		96.5	21-167			

Batch 1607032 - EPA 5030 Water MS

Blank (1607032-BLK1)				Prepared & Analyzed: 07/05/16						
Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	9.63		"	13.3		72.2	37-154			
Surrogate: Toluene-d8	13.0		"	13.3		97.2	45-149			
Surrogate: 4-Bromofluorobenzene	13.2		"	13.3		99.1	45-146			
LCS (1607032-BS1)				Prepared & Analyzed: 07/05/16						
Benzene	50.5	1.0	ug/l	50.0		101	51-132			
Toluene	49.5	1.0	"	50.0		99.0	51-138			
Ethylbenzene	51.4	1.0	"	50.0		103	58-146			
m,p-Xylene	102	2.0	"	100		102	57-144			
o-Xylene	52.4	1.0	"	50.0		105	53-146			
Surrogate: 1,2-Dichloroethane-d4	9.59		"	13.3		71.9	37-154			
Surrogate: Toluene-d8	13.3		"	13.3		99.8	45-149			
Surrogate: 4-Bromofluorobenzene	13.5		"	13.3		101	45-146			

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 Street
Denver CO, 80221

Project: Weld 2
Project Number: [none]
Project Manager: Brandon Bruns

Reported:
07/07/16 09:36

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 1607032 - EPA 5030 Water MS

Matrix Spike (1607032-MS1)		Source: 1607010-01			Prepared & Analyzed: 07/05/16					
Benzene	49.1	1.0	ug/l	50.0	ND	98.3	34-141			
Toluene	47.8	1.0	"	50.0	ND	95.5	27-151			
Ethylbenzene	48.8	1.0	"	50.0	ND	97.5	29-160			
m,p-Xylene	97.4	2.0	"	100	ND	97.4	20-166			
o-Xylene	49.2	1.0	"	50.0	ND	98.5	33-159			
Surrogate: 1,2-Dichloroethane-d4	9.09		"	13.3		68.2	37-154			
Surrogate: Toluene-d8	13.4		"	13.3		100	45-149			
Surrogate: 4-Bromofluorobenzene	12.6		"	13.3		94.9	45-146			
Matrix Spike Dup (1607032-MSD1)		Source: 1607010-01			Prepared & Analyzed: 07/05/16					
Benzene	49.9	1.0	ug/l	50.0	ND	99.8	34-141	1.51	32	
Toluene	48.4	1.0	"	50.0	ND	96.7	27-151	1.25	25	
Ethylbenzene	49.1	1.0	"	50.0	ND	98.2	29-160	0.695	50	
m,p-Xylene	98.1	2.0	"	100	ND	98.1	20-166	0.685	36	
o-Xylene	49.5	1.0	"	50.0	ND	99.0	33-159	0.506	26	
Surrogate: 1,2-Dichloroethane-d4	9.23		"	13.3		69.2	37-154			
Surrogate: Toluene-d8	13.5		"	13.3		101	45-149			
Surrogate: 4-Bromofluorobenzene	12.9		"	13.3		96.8	45-146			

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 Street
Denver CO, 80221

Project: Weld 2
Project Number: [none]
Project Manager: Brandon Bruns

Reported:
07/07/16 09:36

Notes and Definitions

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

Summit Scientific

A handwritten signature in black ink, appearing to be 'MSM'.

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.

Appendix B

Boring Logs



6899 Pecos Street, Unit C
Denver, Colorado 80221

CLIENT: Noble Energy, Inc.

LOGGED BY: Eric Siegel, P.G.

PROJECT MANAGER: Brandon Bruns, P.E.

DRILLING CONTRACTOR: Tasman Geosciences, Inc.

DRILLING EQUIPMENT: Power Probe

DRILL BIT SIZE (INCHES): 2.375"

DATE STARTED - COMPLETED: 6/29/16

TOTAL BORING DEPTH (FT. BGS): 16

DEPTH TO WATER (FT. BGS): 7.5

Weld 2 Wellhead

BORING / WELL ID: BH01

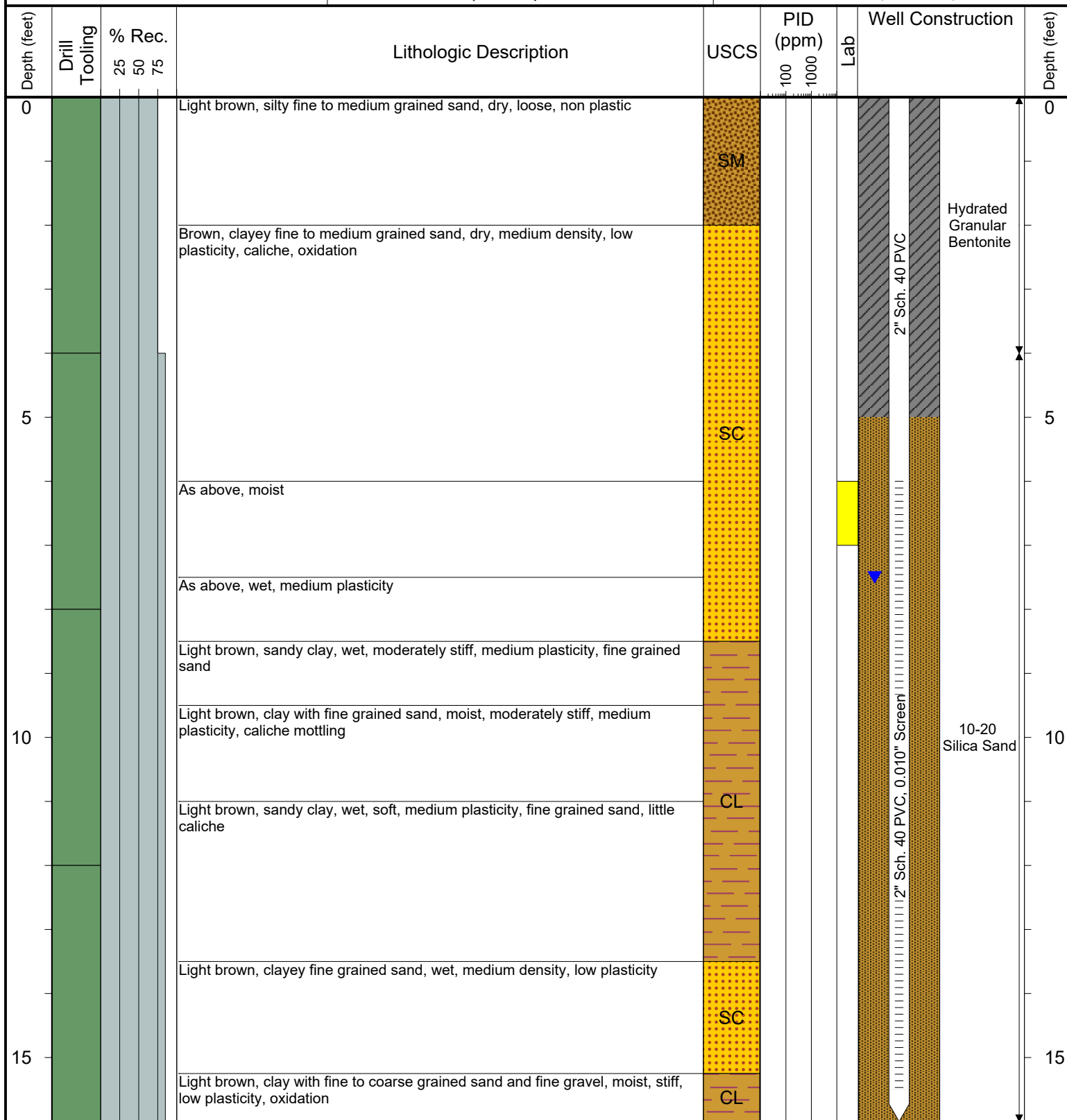
LOCATION: Weld County, CO

NORTHING (CO STATE PLANE): NS

EASTING (CO STATE PLANE): NS

CASING ELEVATION (FT. AMSL): NS

GROUND ELEVATION (FT. AMSL): NS



Drilling / Sample Method:

Macro-Core

CME Continuous Core

Split Spoon

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, Inc.

LOGGED BY: Eric Siegel, P.G.

PROJECT MANAGER: Brandon Bruns, P.E.

DRILLING CONTRACTOR: Tasman Geosciences, Inc.

DRILLING EQUIPMENT: Power Probe

DRILL BIT SIZE (INCHES): 2.375"

DATE STARTED - COMPLETED: 6/29/16

TOTAL BORING DEPTH (FT. BGS): 16

DEPTH TO WATER (FT. BGS): 7.5

Weld 2 Wellhead

BORING / WELL ID: BH02

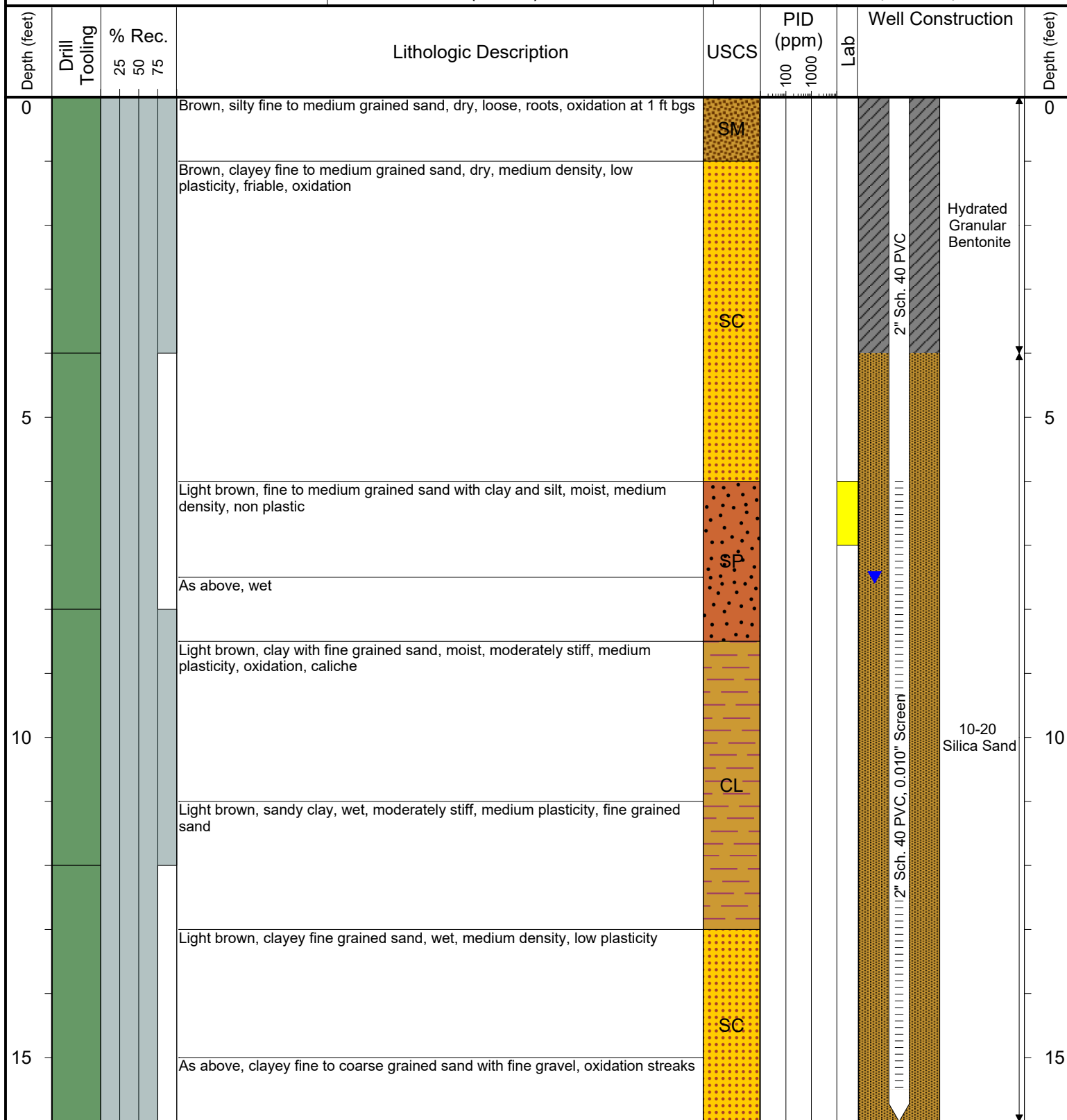
LOCATION: Weld County, CO

NORTHING (CO STATE PLANE): NS

EASTING (CO STATE PLANE): NS

CASING ELEVATION (FT. AMSL): NS

GROUND ELEVATION (FT. AMSL): NS



Drilling / Sample Method:

Macro-Core

CME Continuous Core

Split Spoon

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, Inc.

LOGGED BY: Eric Siegel, P.G.

PROJECT MANAGER: Brandon Bruns, P.E.

DRILLING CONTRACTOR: Tasman Geosciences, Inc.

DRILLING EQUIPMENT: Power Probe

DRILL BIT SIZE (INCHES): 2.375"

DATE STARTED - COMPLETED: 6/29/16

TOTAL BORING DEPTH (FT. BGS): 16

DEPTH TO WATER (FT. BGS): 7

Weld 2 Wellhead

BORING / WELL ID: BH03

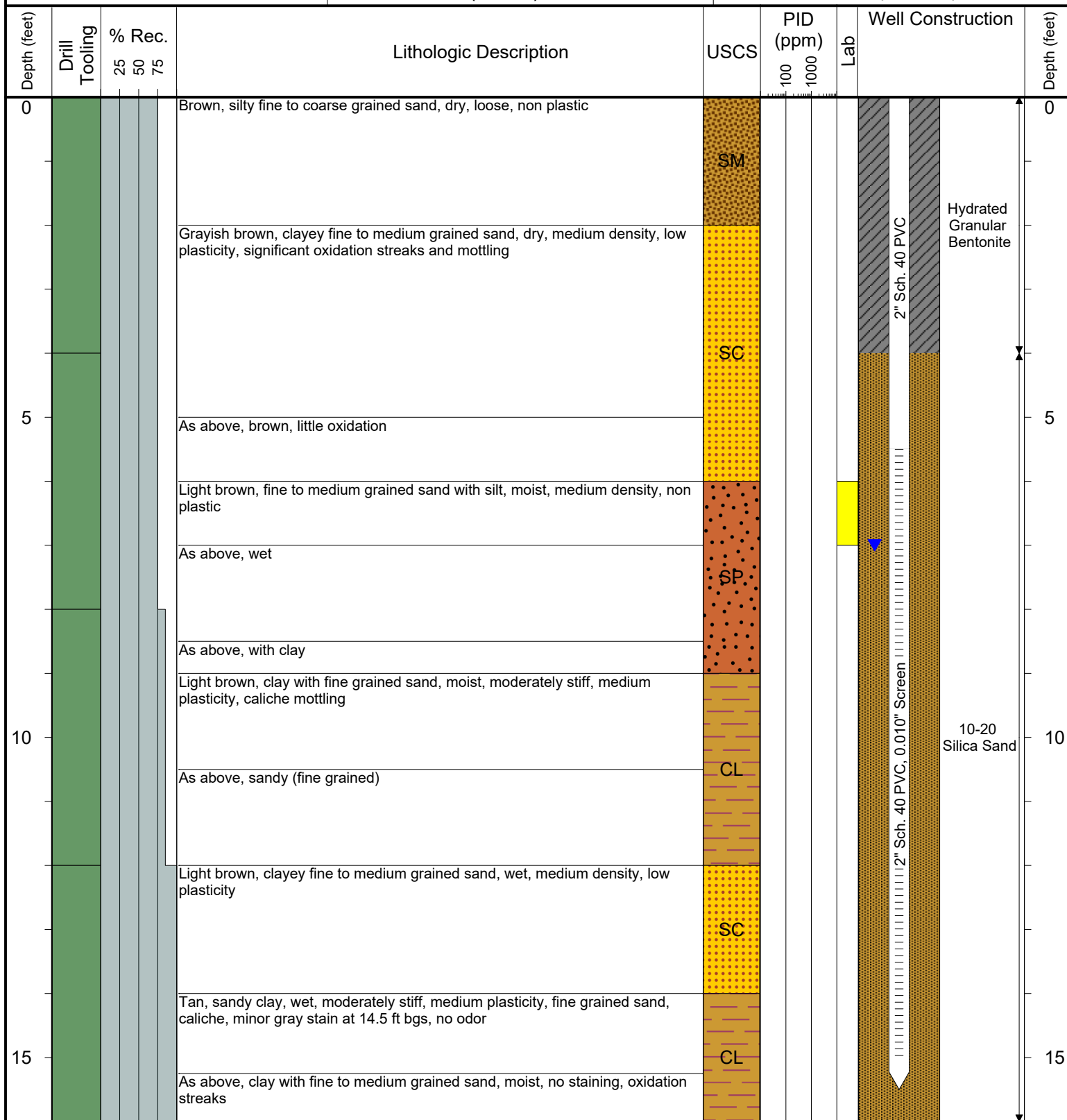
LOCATION: Weld County, CO

NORTHING (CO STATE PLANE): NS

EASTING (CO STATE PLANE): NS

CASING ELEVATION (FT. AMSL): NS

GROUND ELEVATION (FT. AMSL): NS



Drilling / Sample Method:

Macro-Core
CME Continuous Core

Split Spoon
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, Inc.

LOGGED BY: Eric Siegel, P.G.

PROJECT MANAGER: Brandon Bruns, P.E.

DRILLING CONTRACTOR: Tasman Geosciences, Inc.

DRILLING EQUIPMENT: Power Probe

DRILL BIT SIZE (INCHES): 2.375"

DATE STARTED - COMPLETED: 6/29/16

TOTAL BORING DEPTH (FT. BGS): 16

DEPTH TO WATER (FT. BGS): 6

Weld 2 Wellhead

BORING / WELL ID: BH04

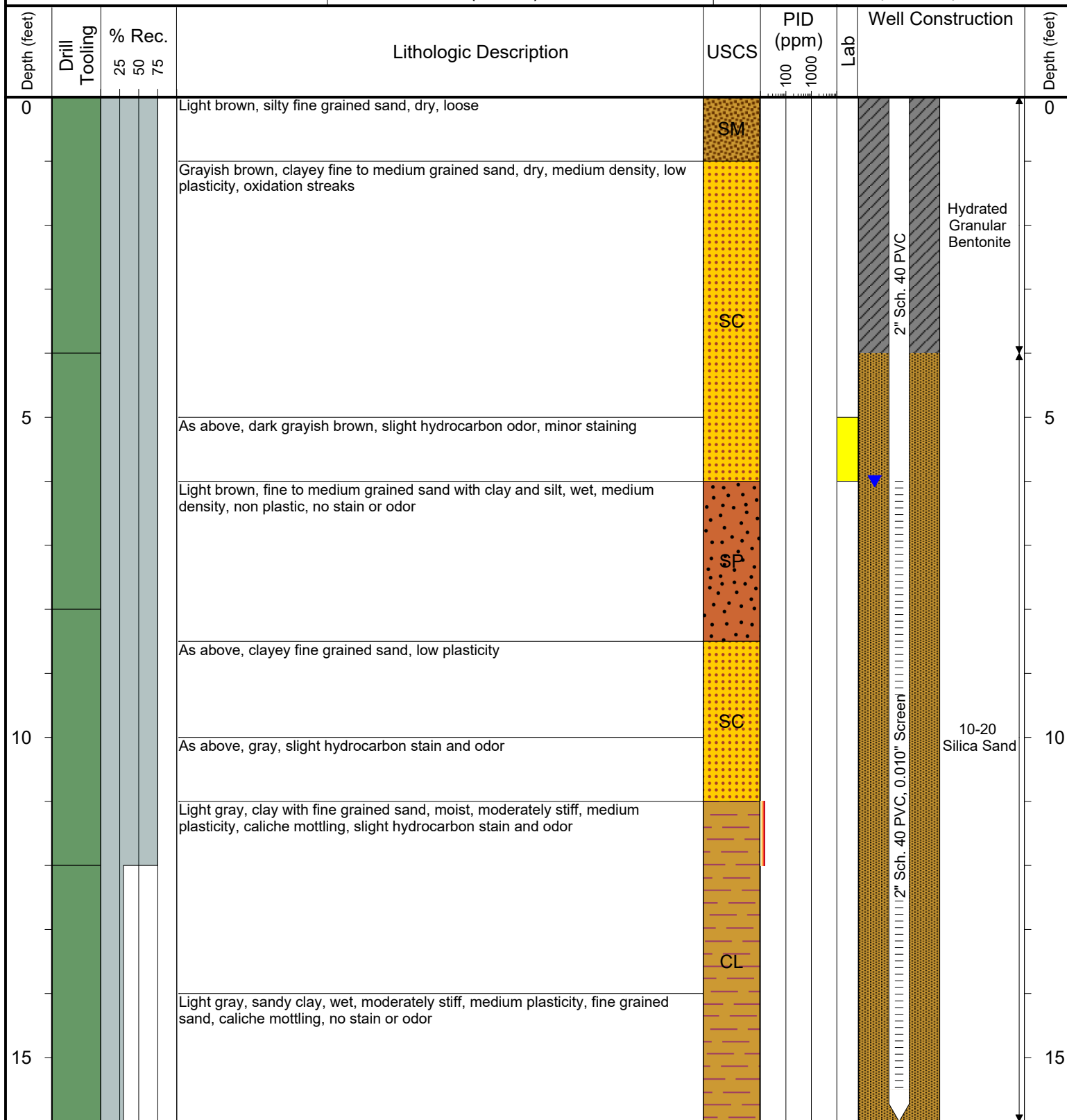
LOCATION: Weld County, CO

NORTHING (CO STATE PLANE): NS

EASTING (CO STATE PLANE): NS

CASING ELEVATION (FT. AMSL): NS

GROUND ELEVATION (FT. AMSL): NS



Drilling / Sample Method:

Macro-Core
CME Continuous Core

Split Spoon
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, Inc.

LOGGED BY: Eric Siegel, P.G.

PROJECT MANAGER: Brandon Bruns, P.E.

DRILLING CONTRACTOR: Tasman Geosciences, Inc.

DRILLING EQUIPMENT: Power Probe

DRILL BIT SIZE (INCHES): 2.375"

DATE STARTED - COMPLETED: 6/29/16

TOTAL BORING DEPTH (FT. BGS): 16

DEPTH TO WATER (FT. BGS): 7

Weld 2 Wellhead

BORING / WELL ID: BH05

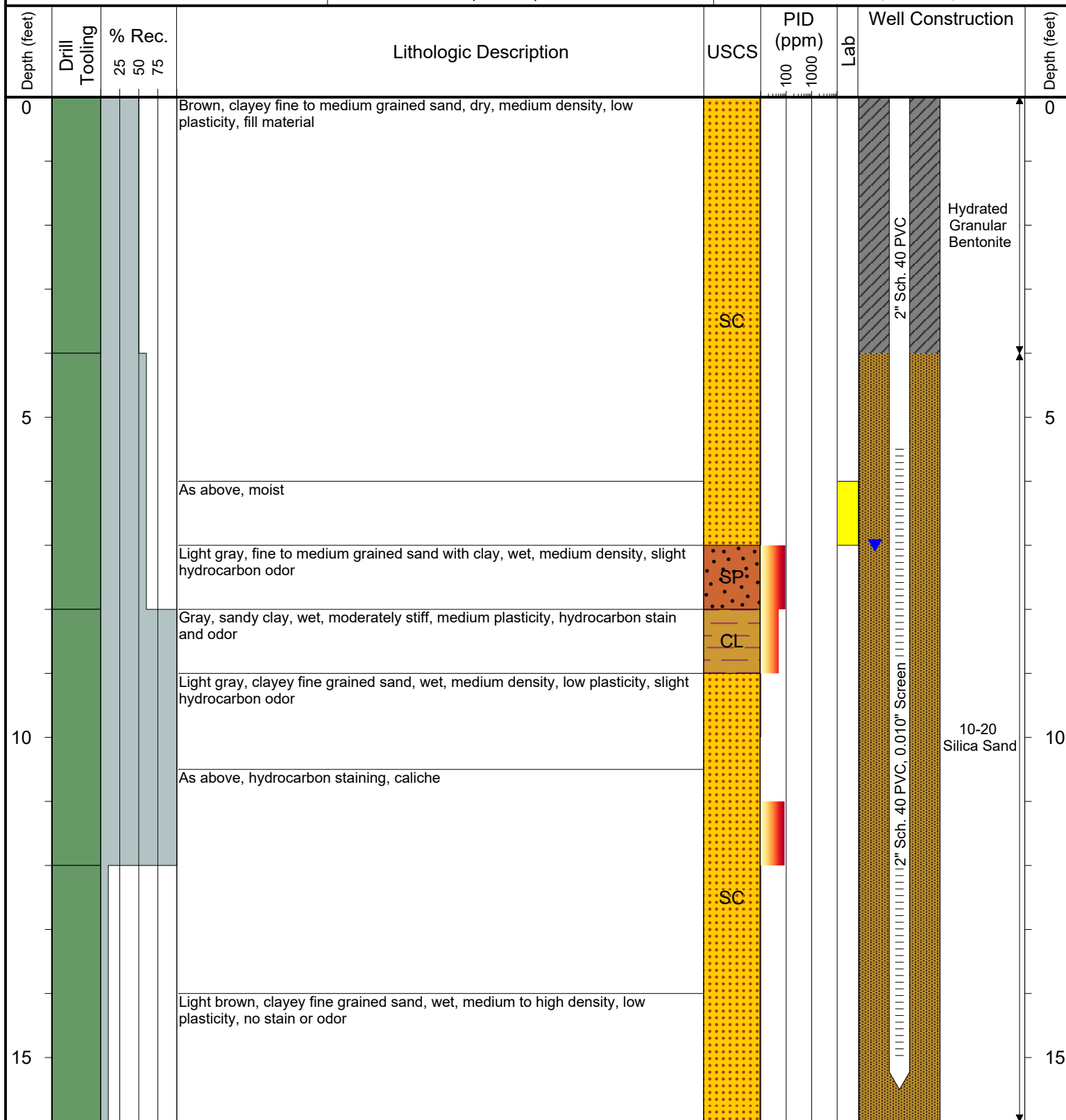
LOCATION: Weld County, CO

NORTHING (CO STATE PLANE): NS

EASTING (CO STATE PLANE): NS

CASING ELEVATION (FT. AMSL): NS

GROUND ELEVATION (FT. AMSL): NS



Drilling / Sample Method:

Macro-Core
CME Continuous Core

Split Spoon
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, Inc.

LOGGED BY: Eric Siegel, P.G.

PROJECT MANAGER: Brandon Bruns, P.E.

DRILLING CONTRACTOR: Tasman Geosciences, Inc.

DRILLING EQUIPMENT: Power Probe

DRILL BIT SIZE (INCHES): 2.375"

DATE STARTED - COMPLETED: 6/29/16

TOTAL BORING DEPTH (FT. BGS): 16

DEPTH TO WATER (FT. BGS): 7

Weld 2 Wellhead

BORING / WELL ID: BH06

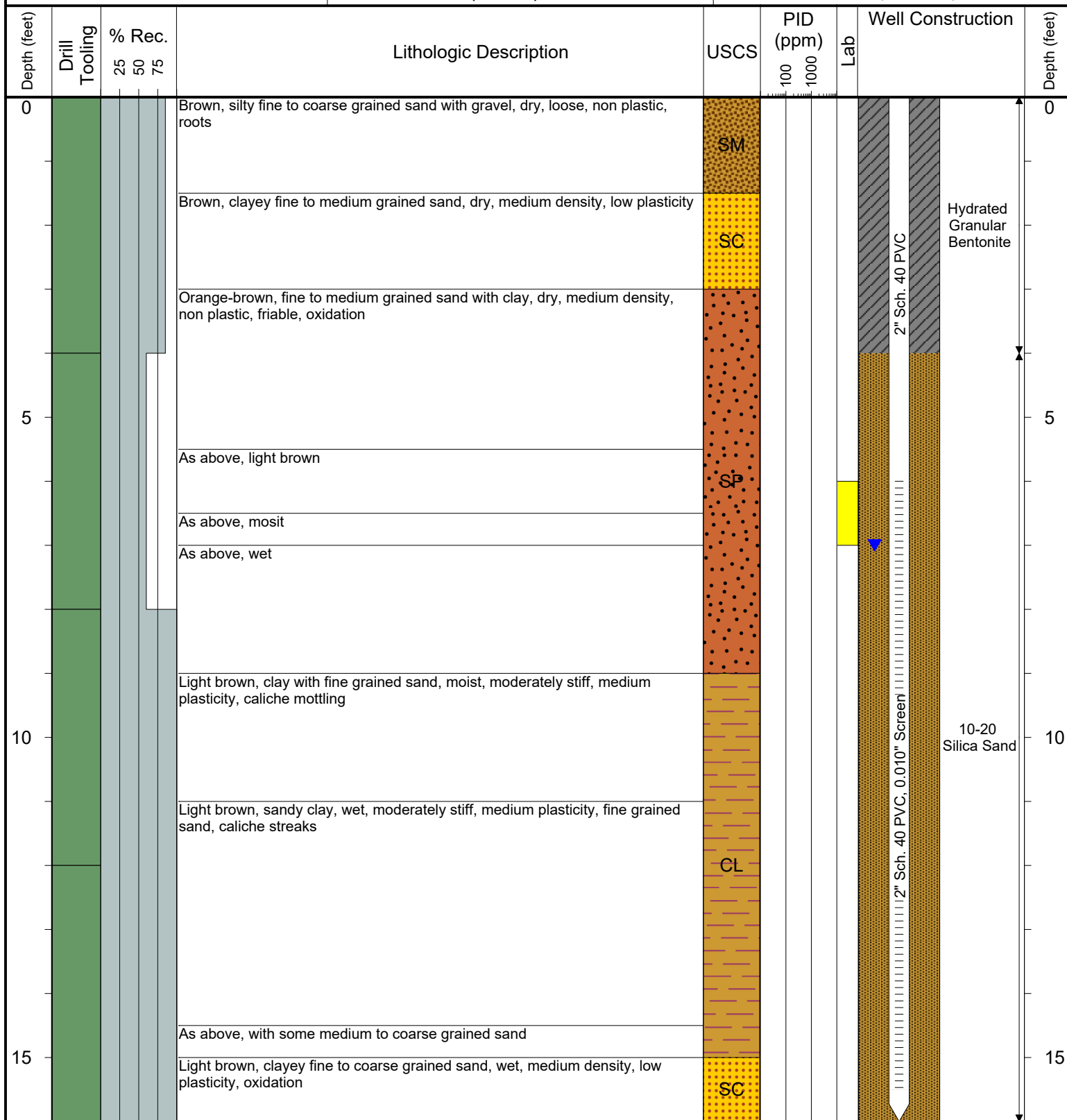
LOCATION: Weld County, CO

NORTHING (CO STATE PLANE): NS

EASTING (CO STATE PLANE): NS

CASING ELEVATION (FT. AMSL): NS

GROUND ELEVATION (FT. AMSL): NS



Drilling / Sample Method:

Macro-Core

CME Continuous Core

Split Spoon

Hollow Stem Auger

Laboratory Sample Types:

Geotechnical Lab

Analytical Chemistry Lab

Geotechnical & Analytical Chemistry Lab