

EXCAVATION REPORT AND NO FURTHER ACTION REQUEST

BERNHARDT 1-11, 12

COGCC SPILL TRACKING #461011

Prepared for:



2115 117th Avenue
Greeley, CO 80631

Prepared by:



6899 North Pecos Street, Unit C
Denver, CO 80221

March 4, 2019

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

Subject: **Excavation Report and No Further Action Request**
 Bernhardt 1-11,12
 API #: 05-123-17367
 Spill/Release Point ID #: 461011
 Remediation Project #: Not Assigned
 NENE S1 T4N R67W
 Weld County, Colorado

Dear Mr. Evans:

Below please find a copy of the above referenced Excavation Report and No Further Action Request (Report) for the Bernhardt 1-11,12 site (Site) in Weld County, Colorado. The text below describes excavation and environmental sampling conducted at the Site between November 7, 2018 (Vault Removal Excavation) and January 23, 2019 (Remedial Excavation) by Tasman Geosciences, Inc. (Tasman), on behalf of Noble Energy, Inc. (Noble).

Introduction

The purpose of this document is to describe the excavation and removal of impacted soil and subsequent soil sampling activities conducted as part of the Excavation. The activities described below were performed in response to the discovery of impacted soil during produced water vault removal and remedial activities at the former Bernhardt 1-11,12 tank battery pad.

Facility Background

The Site is located approximately 1.5 miles northeast of the Town of Miliken in Weld County, Colorado, as shown on Figure 1. The Site is surrounded by pasture land, and the legal description is the northeast ¼ of the northeast ¼ of Section 1, Township 4 North, Range 67 West, of the 6th Principal Meridian. The Site is located on terrain that slopes gradually to the northeast. The Site is approximately 650 feet west of Weld County Road 25 and has coordinates of 40.346454°, -104.833290°.

Tasman was retained by Noble energy, Inc. on November 7, 2018 to perform excavation sampling during the removal of the produced water vault at the Bernhardt 1-11, 12 tank battery. Following the decommissioning of the tank battery, Tasman returned to the Site January 22 and 23, 2019 to sample soil from an excavation to remove petroleum hydrocarbon impacts in soil as a result of discovered impacted soil during reclamation activities. A Form 19 was submitted to the Colorado Oil and Gas Conservation Commission (COGCC) on January 24, 2019. The COGCC subsequently issued Spill/Release Point ID Number 461011 for this event.

Field Activities – Vault Removal

On November 7, 2018, Tasman was retained by Noble to complete necessary produced water vault removal confirmation sampling. Soil exhibiting hydrocarbon staining and odor were observed at the base and along the eastern sidewall of the vault removal excavation. Soil samples were collected from the base and along the sidewalls of the excavation and field screened for volatile organic compounds (VOC) with a photo-ionization detector (PID) and standard headspace soil screening techniques. A total of three soil samples were collected from the base of the excavation at approximately four, five, and six feet below ground surface (bgs). A total of 11 soil samples were collected from along the sidewalls of the excavation at approximately three, and five feet bgs. Of the 14 samples collected, ten soil samples were submitted to Summit Scientific Laboratory (Summit) in Golden, Colorado for laboratory analyses of benzene, toluene, ethylbenzene, total xylenes (BTEX), naphthalene, and total petroleum hydrocarbons-gasoline range organics (TPH-GRO) using United States Environmental Protection Agency (USEPA) Method 8260B, and total petroleum hydrocarbons-diesel range organics (TPH-DRO) using USEPA Method 8015. Sample SS04@3' was also analyzed for sodium adsorption ratio (SAR) by USEPA Method 6020 / United States Department of Agriculture (USDA) Method 606 (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 data is summarized in Table 1 and the final excavation extent and excavation soil sample locations are illustrated in Figure 2. The laboratory analytical report is included in Attachment A.

Based on soil sample analytical results, an excavation with final dimensions of approximately 15.5 ft. by 25 ft. by 6 ft. bgs. was completed. Groundwater was not encountered within the excavation. Approximately 40 cubic yards of soil were removed and transported off-site for disposal at the Buffalo Ridge Landfill in Keenesburg, Colorado under signed Noble waste manifests. Following the completion of the excavation and backfilling activities, the area was regraded to existing grade.

Field Activities – Remedial Excavation

On January 22, 2019 Tasman returned to the site by request of Noble due to the discovery of impacted material during reclamation activities. Excavation and removal of impacted soil from Site was completed on January 22 and 23, 2019. The extent of the Reclamation Excavation was determined by collecting soil samples and field screening for VOCs using a PID and standard headspace sampling techniques. A total of 17 samples were collected at approximately two and four feet (bgs) along the sidewalls and three and five feet bgs from the base of the excavation. Of the 17 samples collected 13 soil samples were submitted to Summit for laboratory analyses of BTEX, naphthalene, and TPH-GRO and TPH-DRO. Soil analytical data is summarized in Table 1 and the final excavation extent and excavation soil sample locations are illustrated in Figure 3. The laboratory analytical reports are included in Attachment A. After sampling activities were completed, the excavation was backfilled with imported clean fill.

Based on soil sample analytical results, an excavation with final dimensions of approximately 21.5 ft. by 35 ft. by 5 ft. bgs. was completed. Groundwater was not encountered within the excavation. Approximately 136 cubic yards of soil were removed and transported off-site for disposal at the Waste Management Landfill in Ault, Colorado under signed Noble waste manifests. Following the completion of the excavation and backfilling activities, the area was regraded to existing grade.

Results

Laboratory analytical results for the confirmation soil samples collected from the sidewalls and base of the Vault Removal Excavation indicate that petroleum hydrocarbon soil impacts above applicable COGCC Table 910-1 soil standards were successfully removed in the former produced water vault area.

Laboratory analytical results for the confirmation soil samples collected from the sidewalls and base of the Remedial Excavation indicate petroleum hydrocarbon soil impacts above applicable COGCC Table 910-1 soil standards were successfully removed in the tank battery area.

Conclusions

Based upon excavation activities completed at the Site and laboratory analytical results, petroleum hydrocarbon impacts to soil have been successfully removed. Groundwater was not encountered at the Site during excavation activities. Noble is requesting a No Further Action (NFA) designation from the COGCC 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 (720) 431-1190 if you require additional information.

Sincerely,
Tasman Geosciences, Inc.



Brandon Bruns, PE
Project Manager

Attachments:

Table 1 – Soil Analytical Data

Figure 1 – Site Location Map

Figure 2 – Vault Removal Excavation Soil Analytical Results Map (11/07/18)

Figure 3 – Remedial Excavation Soil Analytical Results Map (01/22/19, 01/23/19)

Attachment A – Laboratory Analytical Data Reports

TABLES

TABLE 1
SOIL ANALYTICAL DATA
NOBLE ENERGY, INC. - BERNHARDT 1-11, 12

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
SS01@5'	11/7/2018	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010
SS02@5'	11/7/2018	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010
SS03@5'	11/7/2018	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010
SS04@3'	11/7/2018	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010
SS04@5'	11/7/2018	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010
SS05@6'	11/7/2018	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010
SS06@3'	11/7/2018	<0.0020	<0.0050	<0.0050	<0.010	<50	230	<0.010
SS07@4'	11/7/2018	<0.0020	<0.0050	<0.0050	<0.010	<50	140	<0.010
SS08@3'	11/7/2018	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010
SS09@3'	11/7/2018	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010
SS11@2'	1/22/2019	<0.0020	<0.0050	0.054	0.16	<50	560	0.11
SS12@2'	1/22/2019	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010
SS13@2'	1/22/2019	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010
SS14@3'	1/22/2019	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010
SS10@4'	1/23/2019	<0.0020	<0.0050	<0.0050	<0.010	<50	270	<0.010
SS15@4'	1/23/2019	<0.0020	<0.0050	<0.0050	<0.010	<50	240	<0.010
SS16@4'	1/23/2019	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010
SS17@2'	1/23/2019	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010
SS18@5'	1/23/2019	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010
SS19@4'	1/23/2019	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010
SS20@4'	1/23/2019	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010
SS21@4'	1/23/2019	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010
SS22@5'	1/23/2019	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010
SS23@5'	1/23/2019	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010
SS24@2'	1/23/2019	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010

Soil Sample ID	Date	EC (mmhos/cm)	pH	SAR
		4 or 2x BG	6-9	<12
SS04@3'	11/7/2018	0.758	8.52	0.810

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

EC = Specific conductance

mmhos/cm = Millimhos per centimeter

BG = Background

SAR = Sodium adsorption ratio

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

TABLE 1
SOIL ANALYTICAL DATA
NOBLE ENERGY, INC. - BERNHARDT 1-11, 12

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

Soil standards referenced from COGCC Table 910-1

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

FIGURES

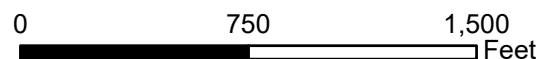
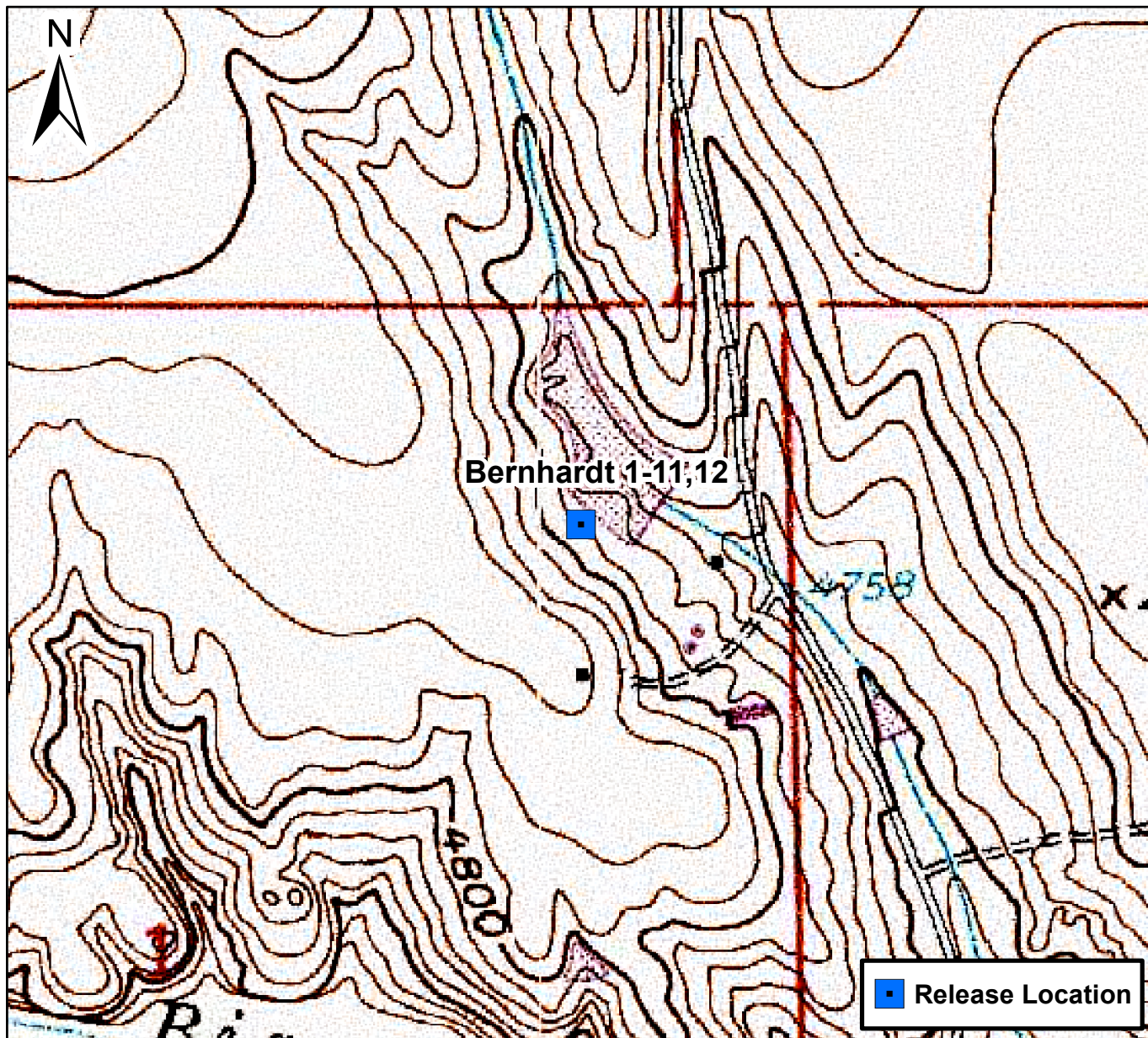


Figure 1

Site Location Map
Bernhardt 1-11,12
NENE S1 T4N R67W
Weld County, Colorado







ATTACHMENT A

LABORATORY ANALYTICAL DATA REPORTS

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

November 08, 2018

Brandon Bruns

Tasman Geosciences

6899 Pecos St, Unit C

Denver, CO 80221

RE: Noble - Bernhardt 1-11,12

Enclosed are the results of analyses for samples received by Summit Scientific on 11/07/18 18:20. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

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

Paul Shrewsbury For Ben Shrewsbury

Laboratory Manager



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

Project: Noble - Bernhardt 1-11,12

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
11/08/18 06:32

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS01@5'	1811076-02	Soil	11/07/18 14:12	11/07/18 18:20
SS02@5'	1811076-04	Soil	11/07/18 14:14	11/07/18 18:20
SS03@5'	1811076-06	Soil	11/07/18 14:16	11/07/18 18:20
SS04@3'	1811076-07	Soil	11/07/18 14:06	11/07/18 18:20
SS04@5'	1811076-08	Soil	11/07/18 14:18	11/07/18 18:20
SS05@6'	1811076-09	Soil	11/07/18 14:10	11/07/18 18:20
SS06@3'	1811076-10	Soil	11/07/18 16:00	11/07/18 18:20
SS07@4'	1811076-11	Soil	11/07/18 16:02	11/07/18 18:20
SS08@3'	1811076-12	Soil	11/07/18 16:06	11/07/18 18:20
SS09@3'	1811076-13	Soil	11/07/18 16:08	11/07/18 18:20

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.

1811076.1

Summit Scientific

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

Page 1 of 2

Client: Noble/Tasman
Address: -
City/State/Zip: -
Phone: 979-255-4235 Fax: -
Sampler Name: Max Garza

Project Manager: Brandon Bruns, Invoice: Jacob Evans
E-Mail: Bbruns@tasman-geo.com
Project Name: Bernhardt 1-11,12
Project Number: N/A

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative				Matrix			Analyze For:							Special Instructions		
				HCl	HNO ₃	None	Other (Specify)	Groundwater	Soil	Air - Canister Serial #	Other (Specify)	8260 BTEX	8260B GBTEXN	8015 DRO	pH, EC, SAR					
SS01@3'	11/7/18	14 00	1			X			X					X	X					Hold: SS01@3' SS02@3' SS03@3'
SS01@5'		14 12																		
SS02@3'		14 02																		
SS02@5'		14 14																		
SS03@3'		14 04																		
SS03@5'		14 16																		
SS04@3'		14 06														X				
SS04@5'		14 18																		
SS05@6		14 10																		
SS06@3'	↓	16 00	↓																	
Relinquished by: <u>Max</u>				Date/Time: <u>11/7/18 1820</u>		Received by: <u>[Signature]</u>				Date/Time: <u>11-7-18 1820</u>		Turn Around Time (Check)							Notes:	
Relinquished by:				Date/Time:		Received by:				Date/Time:		Same Day <input checked="" type="checkbox"/> 72 Hours <input type="checkbox"/> 24 Hours <input type="checkbox"/> Standard <input type="checkbox"/> 48 Hours <input type="checkbox"/>								
Relinquished by:				Date/Time:		Received in Lab by:				Date/Time:		Sample Integrity: Temperature Upon Receipt: <u>7.6</u> Intact: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>								

Summit Scientific

Page 2 of 2

Project Manager:	Brandon Bruns, Invoice: Jacob Evans
E-Mail:	Bbruns@tasman-geo.com
Project Name:	Bernhardt 1-11, 12
Project Number:	N/A

				Preservative				Matrix			Analyze For:									
Sample Description	Date Sampled	Time Sampled	Number of Containers	HCl	HNO ₃	None	Other (Specify)	Groundwater	Soil	Air - Canister Serial #	Other (Specify)	8260 BTEX	8260B GBTEXN	8015 DRO	pH, EC, SAR					Special Instructions
SS07@4'	11/7/18	1602	1			X			X				X	X						
SS07@3'	↓	1606	↓			↓			↓				↓	↓						
SS09@3'	↓	1608	↓																	

Relinquished by:

1820

11/7/18

Received by:

4-7-18

1820

Turn Around Time (Check)

Same Day

24 Hours

48 Hours

72 Hours

Standard

Sample Integrity:

Temperature Upon Receipt:

Intact:

Yes

No

Notes:

7.6

Sample Receipt Checklist

S2 Work Order 1811076

Client: Noble/Tasman Client Project ID: Bernhardt 1-11,12

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

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

Temp (°C)	<u>7.6</u>
-----------	------------

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C ⁽¹⁾ ?	<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 type="checkbox"/>	<input checked="" type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
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⁾ ?	<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.

UP
Custodian Printed Name or Initials

[Signature]
Signature of Custodian

11.7.18 1820
Date/Time



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

Project: Noble - Bernhardt 1-11,12

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
11/08/18 06:32

SS01@5'
1811076-02 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/07/18 14:12**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	0.0020	mg/kg	1	1811105	11/07/18	11/07/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **11/07/18 14:12**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		119 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		94.7 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		109 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/07/18 14:12**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
C10-C28 (DRO)	ND	50	mg/kg	1	1811106	11/07/18	11/07/18	EPA 8015M	

Date Sampled: **11/07/18 14:12**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: o-Terphenyl		109 %	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 - Bernhardt 1-11,12

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
11/08/18 06:32

SS02@5'
1811076-04 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/07/18 14:14**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1811105	11/07/18	11/07/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **11/07/18 14:14**

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		122 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/07/18 14:14**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	1811106	11/07/18	11/07/18	EPA 8015M	

Date Sampled: **11/07/18 14:14**

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

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

Project: Noble - Bernhardt 1-11,12

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
11/08/18 06:32

SS03@5'
1811076-06 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/07/18 14:16**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1811105	11/07/18	11/07/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **11/07/18 14:16**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		132 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		105 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		125 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/07/18 14:16**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	1811106	11/07/18	11/07/18	EPA 8015M	

Date Sampled: **11/07/18 14:16**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		110 %	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 - Bernhardt 1-11,12

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
11/08/18 06:32

SS04@3'
1811076-07 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/07/18 14:06**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1811105	11/07/18	11/07/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **11/07/18 14:06**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		136 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		110 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		119 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/07/18 14:06**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	1811106	11/07/18	11/07/18	EPA 8015M	

Date Sampled: **11/07/18 14:06**

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

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

Date Sampled: **11/07/18 14:06**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Calcium	2340	12.4	mg/kg dry	1	1811099	11/07/18	11/07/18	EPA 6020B	
Magnesium	904	6.20	"	"	"	"	"	"	

Summit Scientific

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

Project: Noble - Bernhardt 1-11,12

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
11/08/18 06:32

SS04@3'
1811076-07 (Soil)

Summit Scientific

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

Sodium	183	6.20	mg/kg dry	1	1811099	11/07/18	11/07/18	EPA 6020B
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Calculated Analysis

Date Sampled: **11/07/18 14:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.810	0.100	units	1	1811109	11/08/18	11/08/18	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **11/07/18 14:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	80.7		%	1	1811110	11/07/18	11/08/18	Calculation	
pH	8.52		pH Units	"	1811108	11/07/18	11/07/18	EPA 9045D	

Specific Conductance by EPA Method 120.1

Date Sampled: **11/07/18 14:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.758	0.0100	mmhos/cm	1	1811107	11/07/18	11/07/18	EPA 120.1	

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

Project: Noble - Bernhardt 1-11,12

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
11/08/18 06:32

SS04@5'
1811076-08 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/07/18 14:18**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1811105	11/07/18	11/07/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **11/07/18 14:18**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		123 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		104 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		118 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/07/18 14:18**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	1811106	11/07/18	11/07/18	EPA 8015M	

Date Sampled: **11/07/18 14:18**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		106 %	30-150		"	"	"	"	

Summit Scientific

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

Project: Noble - Bernhardt 1-11,12

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
11/08/18 06:32

SS05@6'
1811076-09 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/07/18 14:10**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1811105	11/07/18	11/07/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **11/07/18 14:10**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		119 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		115 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/07/18 14:10**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	1811106	11/07/18	11/07/18	EPA 8015M	

Date Sampled: **11/07/18 14:10**

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

Summit Scientific

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

Project: Noble - Bernhardt 1-11,12

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
11/08/18 06:32

SS06@3'
1811076-10 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/07/18 16:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1811105	11/07/18	11/08/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **11/07/18 16:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		119 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		104 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		159 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/07/18 16:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	230	50	mg/kg	1	1811106	11/07/18	11/07/18	EPA 8015M	

Date Sampled: **11/07/18 16:00**

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
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Bernhardt 1-11,12

Project Number: [none]
Project Manager: Brandon Brun

Reported:
11/08/18 06:32

SS07@4'
1811076-11 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/07/18 16:02**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1811105	11/07/18	11/08/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **11/07/18 16:02**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		125 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		140 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/07/18 16:02**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	140	50	mg/kg	1	1811106	11/07/18	11/07/18	EPA 8015M	

Date Sampled: **11/07/18 16:02**

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

Summit Scientific

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

Project: Noble - Bernhardt 1-11,12

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
11/08/18 06:32

SS08@3'
1811076-12 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/07/18 16:06**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1811105	11/07/18	11/07/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **11/07/18 16:06**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		124 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.5 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		111 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/07/18 16:06**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	1811106	11/07/18	11/07/18	EPA 8015M	

Date Sampled: **11/07/18 16:06**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		112 %	30-150		"	"	"	"	

Summit Scientific

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

Project: Noble - Bernhardt 1-11,12

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
11/08/18 06:32

SS09@3'
1811076-13 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/07/18 16:08**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1811105	11/07/18	11/07/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **11/07/18 16:08**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		130 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		123 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/07/18 16:08**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	1811106	11/07/18	11/07/18	EPA 8015M	

Date Sampled: **11/07/18 16:08**

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
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Bernhardt 1-11,12

Project Number: [none]
Project Manager: Brandon Brun

Reported:
11/08/18 06:32

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 1811105 - EPA 5030 Soil MS

Blank (1811105-BLK1)

Prepared & Analyzed: 11/07/18

Benzene	ND	0.0020	mg/kg							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
Naphthalene	ND	0.010	"							
Gasoline Range Hydrocarbons	ND	50	"							
Surrogate: 1,2-Dichloroethane-d4	0.0356		"	0.0396		89.8	23-173			
Surrogate: Toluene-d8	0.0392		"	0.0400		98.0	20-170			
Surrogate: 4-Bromofluorobenzene	0.0396		"	0.0400		98.9	21-167			

LCS (1811105-BS1)

Prepared: 11/07/18 Analyzed: 11/08/18

Benzene	0.108	0.0020	mg/kg	0.100		108	70-130			
Toluene	0.109	0.0050	"	0.100		109	70-130			
Ethylbenzene	0.118	0.0050	"	0.100		118	70-130			
m,p-Xylene	0.259	0.010	"	0.200		129	70-130			
o-Xylene	0.112	0.0050	"	0.100		112	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0342		"	0.0396		86.4	23-173			
Surrogate: Toluene-d8	0.0393		"	0.0400		98.2	20-170			
Surrogate: 4-Bromofluorobenzene	0.0400		"	0.0400		100	21-167			

Matrix Spike (1811105-MS1)

Source: 1811069-01

Prepared: 11/07/18 Analyzed: 11/08/18

Benzene	0.0907	0.0020	mg/kg	0.100	ND	90.7	70-130			
Toluene	0.0825	0.0050	"	0.100	ND	82.5	70-130			
Ethylbenzene	0.0962	0.0050	"	0.100	ND	96.2	70-130			
m,p-Xylene	0.234	0.010	"	0.200	ND	117	70-130			
o-Xylene	0.0931	0.0050	"	0.100	ND	93.1	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0356		"	0.0396		90.0	23-173			
Surrogate: Toluene-d8	0.0386		"	0.0400		96.6	20-170			
Surrogate: 4-Bromofluorobenzene	0.0448		"	0.0400		112	21-167			

Summit Scientific

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

Project: Noble - Bernhardt 1-11,12

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
11/08/18 06:32

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 1811105 - EPA 5030 Soil MS

Matrix Spike Dup (1811105-MSD1)		Source: 1811069-01			Prepared: 11/07/18 Analyzed: 11/08/18					
Benzene	0.0842	0.0020	mg/kg	0.100	ND	84.2	70-130	7.38	30	
Toluene	0.0784	0.0050	"	0.100	ND	78.4	70-130	5.03	30	
Ethylbenzene	0.0860	0.0050	"	0.100	ND	86.0	70-130	11.1	30	
m,p-Xylene	0.187	0.010	"	0.200	ND	93.6	70-130	22.2	30	
o-Xylene	0.0872	0.0050	"	0.100	ND	87.2	70-130	6.56	30	
Surrogate: 1,2-Dichloroethane-d4	0.0366		"	0.0396		92.5	23-173			
Surrogate: Toluene-d8	0.0398		"	0.0400		99.6	20-170			
Surrogate: 4-Bromofluorobenzene	0.0408		"	0.0400		102	21-167			

Summit Scientific

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

Project: Noble - Bernhardt 1-11,12

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
11/08/18 06:32

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch 1811106 - EPA 3550A

Blank (1811106-BLK1)

Prepared & Analyzed: 11/07/18

C10-C28 (DRO) ND 50 mg/kg

LCS (1811106-BS1)

Prepared & Analyzed: 11/07/18

C10-C28 (DRO) 618 50 mg/kg 500 124 70-130

Matrix Spike (1811106-MS1)

Source: 1811069-01

Prepared: 11/07/18 Analyzed: 11/08/18

C10-C28 (DRO) 576 50 mg/kg 500 18.3 112 70-130

Matrix Spike Dup (1811106-MSD1)

Source: 1811069-01

Prepared: 11/07/18 Analyzed: 11/08/18

C10-C28 (DRO) 579 50 mg/kg 500 18.3 112 70-130 0.443 20

Summit Scientific

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

Project: Noble - Bernhardt 1-11,12

Project Number: [none]
Project Manager: Brandon Brun

Reported:
11/08/18 06:32

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

Summit Scientific

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

Batch 1811099 - General Preparation

Blank (1811099-BLK1)

Prepared & Analyzed: 11/07/18

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

LCS (1811099-BS1)

Prepared & Analyzed: 11/07/18

Calcium	498	10.0	mg/kg wet	500	99.5	70-130
Magnesium	477	5.00	"	500	95.4	70-130
Sodium	528	5.00	"	500	106	70-130

Duplicate (1811099-DUP1)

Source: 1811059-06

Prepared & Analyzed: 11/07/18

Calcium	3320	10.3	mg/kg dry	2980	10.8	20
Magnesium	179	5.17	"	159	11.9	20
Sodium	385	5.17	"	396	2.80	20

Matrix Spike (1811099-MS1)

Source: 1811059-06

Prepared & Analyzed: 11/07/18

Calcium	3610	10.3	mg/kg dry	517	2980	122	70-130
Magnesium	666	5.17	"	517	159	97.9	70-130
Sodium	882	5.17	"	517	396	93.8	70-130

Matrix Spike Dup (1811099-MSD1)

Source: 1811059-06

Prepared & Analyzed: 11/07/18

Calcium	3620	10.3	mg/kg dry	517	2980	124	70-130	0.337	25
Magnesium	688	5.17	"	517	159	102	70-130	3.22	25
Sodium	892	5.17	"	517	396	95.9	70-130	1.23	25

Summit Scientific

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

Project: Noble - Bernhardt 1-11,12

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
11/08/18 06:32

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 1811108 - General Preparation

LCS (1811108-BS1)

Prepared & Analyzed: 11/07/18

pH	9.1		pH Units	9.18	99.2	95-105
----	-----	--	----------	------	------	--------

Duplicate (1811108-DUP1)

Source: 1811070-02

Prepared & Analyzed: 11/07/18

pH	8.3		pH Units	8.3	0.603	20
----	-----	--	----------	-----	-------	----

Batch 1811110 - General Preparation

Duplicate (1811110-DUP1)

Source: 1811070-02

Prepared: 11/07/18 Analyzed: 11/08/18

% Solids	96.9		%	97.5	0.617	20
----------	------	--	---	------	-------	----

Summit Scientific

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

Project: Noble - Bernhardt 1-11,12

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
11/08/18 06:32

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 1811107 - General Preparation

Blank (1811107-BLK1)

Prepared & Analyzed: 11/07/18

Specific Conductance (EC) ND 0.0100 mmhos/cm

LCS (1811107-BS1)

Prepared & Analyzed: 11/07/18

Specific Conductance (EC) 0.749 0.0100 mmhos/cm 0.750 99.9 90-110

Duplicate (1811107-DUP1)

Source: 1811070-02

Prepared & Analyzed: 11/07/18

Specific Conductance (EC) 0.120 0.0100 mmhos/cm 0.120 0.625 20

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

Project: Noble - Bernhardt 1-11,12

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
11/08/18 06:32

Notes and Definitions

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

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

January 29, 2019

Brandon Bruns

Tasman Geosciences

6899 Pecos St, Unit C

Denver, CO 80221

RE: Noble - Bernhardt 1-11,12

Enclosed are the results of analyses for samples received by Summit Scientific on 01/22/19 17:45. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

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

Paul Shrewsbury For Ben Shrewsbury

Laboratory Manager



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

Project: Noble - Bernhardt 1-11,12

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
01/29/19 06:08

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS11@2'	1901264-02	Soil	01/22/19 16:32	01/22/19 17:45
SS12@2'	1901264-03	Soil	01/22/19 16:34	01/22/19 17:45
SS13@2'	1901264-04	Soil	01/22/19 16:36	01/22/19 17:45
SS14@3'	1901264-05	Soil	01/22/19 16:38	01/22/19 17:45

CASE NARRATIVE

The COC was revised to reflect full sample names that were submitted on hold. This report contains that revision.

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

1701264

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: 979-255-4235 Project Name: Bernhardt 1-11, 12
Sampler Name: Max Garza Project Number: N/A

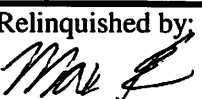

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested					Special Instructions
					HCl	HNO ₃	None	Other	Water	Soil	Air-Canister #	Other	8260 BTEX	8260B GBTEXN	8015 DRO	pH, EC, SAR		
1	SS10 @ 2'	1/22/19	1630	1			X			X				X	X			
2	SS11 @ 2'		1632															
3	SS12 @ 2'		1634															
4	SS13 @ 2'		1636															
5	SS14 @ 3'	✓	1638	✓										✓	✓			
6																		
7																		
8																		
9																		
10																		

Hold:

SS10 @ 2' L. Spry

SS12 @ 2' O'Rourke

SS13 @ 2' 1/23/2019

Relinquished by: 	Date/Time: 1745 1/22/19	Received by: Tasman's Lock Box	Date/Time: 1745 1/22/19	Turn Around Time (Check) Same Day <input checked="" type="checkbox"/> 72 hours ___ 24 hours ___ Standard ___ 48 hours ___ Sample Integrity: Temperature Upon Receipt: 2.5 Samples Intact: <input checked="" type="radio"/> Yes No	Notes:
Relinquished by: Tasman's Lock Box	Date/Time: 1-22-19 1800	Received by: 	Date/Time: 1-22-19 1800		
Relinquished by:	Date/Time:	Received by:	Date/Time:		

Sample Receipt Checklist

S2 Work Order 1901264

Client: Noble/Tanner Client Project ID: _____

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

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

Temp (°C)	<u>2.5</u>
-----------	------------

Thermometer ID: 61857155-K

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

GP
Custodian Printed Name or Initials

[Signature]
Signature of Custodian

1.22.19 1820
Date/Time



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

Project: Noble - Bernhardt 1-11,12

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
01/29/19 06:08

SS11@2'
1901264-02 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/22/19 16:32**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1901253	01/22/19	01/23/19	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.054	0.0050	"	"	"	"	"	"	
Xylenes (total)	0.16	0.010	"	"	"	"	"	"	
Naphthalene	0.11	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **01/22/19 16:32**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		103 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.9 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		137 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/22/19 16:32**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	560	50	mg/kg	1	1901252	01/22/19	01/22/19	EPA 8015M	

Date Sampled: **01/22/19 16:32**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		96.0 %	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 - Bernhardt 1-11,12

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
01/29/19 06:08

SS12@2'
1901264-03 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/22/19 16:34**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1901329	01/28/19	01/29/19	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: **01/22/19 16:34**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		102 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.3 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		93.7 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/22/19 16:34**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	1901330	01/28/19	01/29/19	EPA 8015M	

Date Sampled: **01/22/19 16:34**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		114 %	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 - Bernhardt 1-11,12

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
01/29/19 06:08

SS13@2'
1901264-04 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/22/19 16:36**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1901329	01/28/19	01/29/19	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: **01/22/19 16:36**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		102 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.6 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		96.9 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/22/19 16:36**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	1901330	01/28/19	01/29/19	EPA 8015M	

Date Sampled: **01/22/19 16:36**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		113 %	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 - Bernhardt 1-11,12

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
01/29/19 06:08

SS14@3'
1901264-05 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/22/19 16:38**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1901253	01/22/19	01/22/19	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: **01/22/19 16:38**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		109 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.2 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		101 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/22/19 16:38**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	1901252	01/22/19	01/22/19	EPA 8015M	

Date Sampled: **01/22/19 16:38**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		104 %	30-150		"	"	"	"	

Summit Scientific

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

Project: Noble - Bernhardt 1-11,12

Project Number: [none]
Project Manager: Brandon Brun

Reported:
01/29/19 06:08

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 1901253 - EPA 5030 Soil MS

Blank (1901253-BLK1)

Prepared: 01/22/19 Analyzed: 01/23/19

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	0.0384		"	0.0400		96.0	23-173			
Surrogate: Toluene-d8	0.0392		"	0.0400		97.9	20-170			
Surrogate: 4-Bromofluorobenzene	0.0425		"	0.0400		106	21-167			

LCS (1901253-BS1)

Prepared: 01/22/19 Analyzed: 01/23/19

Benzene	0.0961	0.0020	mg/kg	0.100		96.1	70-130			
Toluene	0.0922	0.0050	"	0.100		92.2	70-130			
Ethylbenzene	0.107	0.0050	"	0.100		107	70-130			
m,p-Xylene	0.201	0.010	"	0.200		101	70-130			
o-Xylene	0.0997	0.0050	"	0.100		99.7	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0417		"	0.0400		104	23-173			
Surrogate: Toluene-d8	0.0394		"	0.0400		98.6	20-170			
Surrogate: 4-Bromofluorobenzene	0.0409		"	0.0400		102	21-167			

Matrix Spike (1901253-MS1)

Source: 1901260-01

Prepared: 01/22/19 Analyzed: 01/23/19

Benzene	0.0961	0.0020	mg/kg	0.100		96.1	70-130			
Toluene	0.0978	0.0050	"	0.100		97.8	70-130			
Ethylbenzene	0.111	0.0050	"	0.100		111	70-130			
m,p-Xylene	0.204	0.010	"	0.200		102	70-130			
o-Xylene	0.0979	0.0050	"	0.100		97.9	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0431		"	0.0400		108	23-173			
Surrogate: Toluene-d8	0.0397		"	0.0400		99.2	20-170			
Surrogate: 4-Bromofluorobenzene	0.0403		"	0.0400		101	21-167			

Summit Scientific

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

Project: Noble - Bernhardt 1-11,12

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
01/29/19 06:08

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

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

Batch 1901253 - EPA 5030 Soil MS

Matrix Spike Dup (1901253-MSD1)

Source: 1901260-01

Prepared: 01/22/19 Analyzed: 01/23/19

Benzene	0.0915	0.0020	mg/kg	0.100		91.5	70-130	4.86	30	
Toluene	0.0923	0.0050	"	0.100		92.3	70-130	5.78	30	
Ethylbenzene	0.104	0.0050	"	0.100		104	70-130	6.95	30	
m,p-Xylene	0.194	0.010	"	0.200		96.8	70-130	5.37	30	
o-Xylene	0.0922	0.0050	"	0.100		92.2	70-130	6.03	30	
Surrogate: 1,2-Dichloroethane-d4	0.0388		"	0.0400		97.0	23-173			
Surrogate: Toluene-d8	0.0386		"	0.0400		96.4	20-170			
Surrogate: 4-Bromofluorobenzene	0.0386		"	0.0400		96.4	21-167			

Batch 1901329 - Volatiles

Blank (1901329-BLK1)

Prepared & Analyzed: 01/28/19

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	0.0389		"	0.0400		97.4	23-173			
Surrogate: Toluene-d8	0.0396		"	0.0400		99.0	20-170			
Surrogate: 4-Bromofluorobenzene	0.0390		"	0.0400		97.5	21-167			

LCS (1901329-BS1)

Prepared & Analyzed: 01/28/19

Benzene	0.0899	0.0020	mg/kg	0.100		89.9	70-130			
Toluene	0.0908	0.0050	"	0.100		90.8	70-130			
Ethylbenzene	0.0858	0.0050	"	0.100		85.8	70-130			
m,p-Xylene	0.175	0.010	"	0.200		87.5	70-130			
o-Xylene	0.0910	0.0050	"	0.100		91.0	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0390		"	0.0400		97.5	23-173			
Surrogate: Toluene-d8	0.0404		"	0.0400		101	20-170			
Surrogate: 4-Bromofluorobenzene	0.0380		"	0.0400		95.0	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 - Bernhardt 1-11,12

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
01/29/19 06:08

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 1901329 - Volatiles

Matrix Spike (1901329-MS1)		Source: 1901316-01			Prepared & Analyzed: 01/28/19					
Benzene	0.0973	0.0020	mg/kg	0.100	ND	97.3	70-130			
Toluene	0.0932	0.0050	"	0.100	ND	93.2	70-130			
Ethylbenzene	0.0844	0.0050	"	0.100	ND	84.4	70-130			
m,p-Xylene	0.199	0.010	"	0.200	ND	99.6	70-130			
o-Xylene	0.0880	0.0050	"	0.100	ND	88.0	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0404		"	0.0400		101	23-173			
Surrogate: Toluene-d8	0.0404		"	0.0400		101	20-170			
Surrogate: 4-Bromofluorobenzene	0.0374		"	0.0400		93.6	21-167			

Matrix Spike Dup (1901329-MSD1)		Source: 1901316-01			Prepared & Analyzed: 01/28/19					
Benzene	0.100	0.0020	mg/kg	0.100	ND	100	70-130	3.19	30	
Toluene	0.0973	0.0050	"	0.100	ND	97.3	70-130	4.35	30	
Ethylbenzene	0.0920	0.0050	"	0.100	ND	92.0	70-130	8.64	30	
m,p-Xylene	0.214	0.010	"	0.200	ND	107	70-130	7.33	30	
o-Xylene	0.0940	0.0050	"	0.100	ND	94.0	70-130	6.63	30	
Surrogate: 1,2-Dichloroethane-d4	0.0391		"	0.0400		97.8	23-173			
Surrogate: Toluene-d8	0.0396		"	0.0400		99.1	20-170			
Surrogate: 4-Bromofluorobenzene	0.0364		"	0.0400		91.0	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 - Bernhardt 1-11,12

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
01/29/19 06:08

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 1901252 - EPA 3550A

Blank (1901252-BLK1)

Prepared & Analyzed: 01/22/19

C10-C28 (DRO) ND 50 mg/kg

LCS (1901252-BS1)

Prepared: 01/22/19 Analyzed: 01/23/19

C10-C28 (DRO) 500 50 mg/kg 500 99.9 70-130

Matrix Spike (1901252-MS1)

Source: 1901251-07

Prepared: 01/22/19 Analyzed: 01/23/19

C10-C28 (DRO) 507 50 mg/kg 500 21.1 97.3 70-130

Matrix Spike Dup (1901252-MSD1)

Source: 1901251-07

Prepared: 01/22/19 Analyzed: 01/23/19

C10-C28 (DRO) 505 50 mg/kg 500 21.1 96.8 70-130 0.442 20

Batch 1901330 - EPA 5030 Soil GC

Blank (1901330-BLK1)

Prepared & Analyzed: 01/28/19

C10-C28 (DRO) ND 50 mg/kg

LCS (1901330-BS1)

Prepared & Analyzed: 01/28/19

C10-C28 (DRO) 580 50 mg/kg 500 116 70-130

Matrix Spike (1901330-MS1)

Source: 1901316-01

Prepared & Analyzed: 01/28/19

C10-C28 (DRO) 704 50 mg/kg 500 131 115 70-130

Matrix Spike Dup (1901330-MSD1)

Source: 1901316-01

Prepared & Analyzed: 01/28/19

C10-C28 (DRO) 749 50 mg/kg 500 131 124 70-130 6.16 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 - Bernhardt 1-11,12

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
01/29/19 06:08

Notes and Definitions

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

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

January 25, 2019

Brandon Bruns

Tasman Geosciences

6899 Pecos St, Unit C

Denver, CO 80221

RE: Noble - Bernhardt 1-11,12

Enclosed are the results of analyses for samples received by Summit Scientific on 01/23/19 18:27. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

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

Paul Shrewsbury For Ben Shrewsbury

Laboratory Manager



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

Project: Noble - Bernhardt 1-11,12

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
01/25/19 06:47

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS10@4'	1901283-01	Soil	01/23/19 12:12	01/23/19 18:27
SS15@4'	1901283-02	Soil	01/23/19 11:30	01/23/19 18:27
SS16@4'	1901283-03	Soil	01/23/19 12:10	01/23/19 18:27
SS17@2'	1901283-04	Soil	01/23/19 11:34	01/23/19 18:27
SS18@5'	1901283-05	Soil	01/23/19 12:14	01/23/19 18:27
SS19@4'	1901283-06	Soil	01/23/19 13:00	01/23/19 18:27
SS20@4'	1901283-07	Soil	01/23/19 13:05	01/23/19 18:27
SS21@4'	1901283-08	Soil	01/23/19 13:10	01/23/19 18:27
SS22@5'	1901283-09	Soil	01/23/19 13:15	01/23/19 18:27
SS23@5'	1901283-10	Soil	01/23/19 13:20	01/23/19 18:27
SS24@2'	1901283-11	Soil	01/23/19 13:25	01/23/19 18:27

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

1901283

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

Page 1 of 2

Client:	Noble / Tasman	Project Manager:	Brandon Bruns, Invoice: Jacob Evans
Address:	6899 Pecos Street	E-Mail:	Bbruns@tasman-geo.com
City/State/Zip:	Denver / CO/ 80221		
Phone:	979-255-4235	Project Name:	Bernhardt 1-11, 12
Sampler Name:	Max Garza	Project Number:	N/A

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	SS10 @ 4'	1/23/19	12 12	1			x	(2)		X					X	X					
2	SS15 @ 4'		11 30																		
3	SS16 @ 4'		12 10																		
4	SS17 @ 2'		11 34																		
5	SS18 @ 5'		12 14																		
6	SS19 @ 4'		13 00																		
7	SS20 @ 4'		13 05																		
8	SS21 @ 4'		13 10																		
9	SS22 @ 5'		13 15																		
10	SS23 @ 5'	✓	13 20	✓				✓		✓					✓	✓					

Relinquished by:	Date/Time:	Received by:	Date/Time:	Turn Around Time	(Check)	Notes:
<i>Max</i>	17 00 1/23/19	Tasman's Lock Box	17 00 1/23/19	Same Day <input checked="" type="checkbox"/>	72 hours <input type="checkbox"/>	
Relinquished by:	Date/Time:	Received by:	Date/Time:	24 hours <input type="checkbox"/>	Standard <input type="checkbox"/>	
Tasman's Lock Box	1.25.19 1750	<i>[Signature]</i>	1.23.19 1750	48 hours <input type="checkbox"/>		
Relinquished by:	Date/Time:	Received by:	Date/Time:	Sample Integrity:	Temperature Upon Receipt: <u>0.3</u>	
				Samples Intact: <u>Yes</u> No		

Summit Scientific

S₂

1901283

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

Page 2 of 2

Client:	Noble / Tasman	Project Manager:	Brandon Bruns, Invoice: Jacob Evans
Address:	6899 Pecos Street	E-Mail:	Bbruns@tasman-geo.com
City/State/Zip:	Denver / CO/ 80221		
Phone:	979-255-4235	Project Name:	Bernhard 1-11,12
Sampler Name:	Max Garza	Project Number:	N/A

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested					Special Instructions	
					HCl	HNO3	None	Other	Water	Soil	Air-Canister #	Other	8260 BTEX	8260B GBTEXN	8015 DRO	pH, EC, SAR			
1	5524 @ 2'	1/23/19	1325	1			X			X				X	X				
2																			
3																			
4																			
5																			
6																			
7																			
8																			
9																			
10																			

Relinquished by:	Date/Time:	Received by:	Date/Time:	Turn Around Time	(Check)	Notes:
	1700 1/23/19	Tasman's Lock Box	1700 1/23/19	Same Day	72 hours	
Relinquished by:	Date/Time:	Received by:	Date/Time:	24 hours	Standard	
Tasman's Lock Box	1.25.19 1750		1.23.19 1700	48 hours		
Relinquished by:	Date/Time:	Received by:	Date/Time:	Sample Integrity:		
				Temperature Upon Receipt: 0.3		
				Samples Intact: Yes No		

Sample Receipt Checklist

S2 Work Order 1901283

Client: Woble/Tasman Client Project ID: Bernhardt 1-11,12

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

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

Temp (°C)	0.3
-----------	-----

Thermometer ID: 61857155-K

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

CP
Custodian Printed Name or Initials

[Signature]
Signature of Custodian

1.23.19 1830
Date/Time



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

Project: Noble - Bernhardt 1-11,12

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
01/25/19 06:47

SS10@4'
1901283-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/23/19 12:12**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	0.0020	mg/kg	1	1901276	01/23/19	01/24/19	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: **01/23/19 12:12**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		122 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		102 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		150 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/23/19 12:12**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
C10-C28 (DRO)	270	50	mg/kg	1	1901277	01/23/19	01/24/19	EPA 8015M	

Date Sampled: **01/23/19 12:12**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: o-Terphenyl		114 %	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 - Bernhardt 1-11,12

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
01/25/19 06:47

SS15@4'
1901283-02 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/23/19 11:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1901276	01/23/19	01/24/19	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: **01/23/19 11:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		113 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.9 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		114 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/23/19 11:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	240	50	mg/kg	1	1901277	01/23/19	01/24/19	EPA 8015M	

Date Sampled: **01/23/19 11:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		116 %	30-150		"	"	"	"	

Summit Scientific

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

Project: Noble - Bernhardt 1-11,12

Project Number: [none]
Project Manager: Brandon Brun

Reported:
01/25/19 06:47

SS16@4'
1901283-03 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/23/19 12:10**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1901276	01/23/19	01/24/19	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: **01/23/19 12:10**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		122 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		107 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/23/19 12:10**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	1901277	01/23/19	01/24/19	EPA 8015M	

Date Sampled: **01/23/19 12:10**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		126 %	30-150		"	"	"	"	

Summit Scientific

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

Project: Noble - Bernhardt 1-11,12

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
01/25/19 06:47

SS17@2'
1901283-04 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/23/19 11:34**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1901276	01/23/19	01/23/19	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: **01/23/19 11:34**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		117 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		102 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		108 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/23/19 11:34**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	1901277	01/23/19	01/24/19	EPA 8015M	

Date Sampled: **01/23/19 11:34**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		124 %	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 - Bernhardt 1-11,12

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
01/25/19 06:47

SS18@5'
1901283-05 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/23/19 12:14**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1901276	01/23/19	01/23/19	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: **01/23/19 12:14**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		124 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		111 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/23/19 12:14**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	1901277	01/23/19	01/24/19	EPA 8015M	

Date Sampled: **01/23/19 12:14**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		115 %	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 - Bernhardt 1-11,12

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
01/25/19 06:47

SS19@4'
1901283-06 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/23/19 13:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1901276	01/23/19	01/23/19	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: **01/23/19 13:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		121 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		109 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/23/19 13:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	1901277	01/23/19	01/24/19	EPA 8015M	

Date Sampled: **01/23/19 13:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		115 %	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 - Bernhardt 1-11,12

Project Number: [none]
Project Manager: Brandon Brun

Reported:
01/25/19 06:47

SS20@4'
1901283-07 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/23/19 13:05**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1901276	01/23/19	01/24/19	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: **01/23/19 13:05**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		119 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		102 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		109 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/23/19 13:05**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	1901277	01/23/19	01/24/19	EPA 8015M	

Date Sampled: **01/23/19 13:05**

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

Summit Scientific

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

Project: Noble - Bernhardt 1-11,12

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
01/25/19 06:47

SS21@4'
1901283-08 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/23/19 13:10**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1901276	01/23/19	01/24/19	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: **01/23/19 13:10**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		121 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		102 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		114 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/23/19 13:10**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	1901277	01/23/19	01/24/19	EPA 8015M	

Date Sampled: **01/23/19 13:10**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		95.7 %	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 - Bernhardt 1-11,12

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
01/25/19 06:47

SS22@5'
1901283-09 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/23/19 13:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1901276	01/23/19	01/24/19	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: **01/23/19 13:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		120 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.6 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		109 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/23/19 13:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	1901277	01/23/19	01/24/19	EPA 8015M	

Date Sampled: **01/23/19 13:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		104 %	30-150		"	"	"	"	

Summit Scientific

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

Project: Noble - Bernhardt 1-11,12

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
01/25/19 06:47

SS23@5'
1901283-10 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/23/19 13:20**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1901276	01/23/19	01/24/19	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: **01/23/19 13:20**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		118 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		105 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		114 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/23/19 13:20**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	1901277	01/23/19	01/24/19	EPA 8015M	

Date Sampled: **01/23/19 13:20**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		100 %	30-150		"	"	"	"	

Summit Scientific

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

Project: Noble - Bernhardt 1-11,12

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
01/25/19 06:47

SS24@2'
1901283-11 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/23/19 13:25**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1901276	01/23/19	01/24/19	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: **01/23/19 13:25**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		130 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		104 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		113 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/23/19 13:25**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	1901277	01/23/19	01/24/19	EPA 8015M	

Date Sampled: **01/23/19 13:25**

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

Summit Scientific

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

Project: Noble - Bernhardt 1-11,12

Project Number: [none]
Project Manager: Brandon Brun

Reported:
01/25/19 06:47

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 1901276 - EPA 5030 Soil MS

Blank (1901276-BLK1)

Prepared: 01/23/19 Analyzed: 01/24/19

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	0.0374		"	0.0400		93.4	23-173			
Surrogate: Toluene-d8	0.0419		"	0.0400		105	20-170			
Surrogate: 4-Bromofluorobenzene	0.0388		"	0.0400		97.0	21-167			

LCS (1901276-BS1)

Prepared: 01/23/19 Analyzed: 01/24/19

Benzene	0.109	0.0020	mg/kg	0.100		109	70-130			
Toluene	0.119	0.0050	"	0.100		119	70-130			
Ethylbenzene	0.119	0.0050	"	0.100		119	70-130			
m,p-Xylene	0.200	0.010	"	0.200		99.9	70-130			
o-Xylene	0.111	0.0050	"	0.100		111	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0368		"	0.0400		92.0	23-173			
Surrogate: Toluene-d8	0.0409		"	0.0400		102	20-170			
Surrogate: 4-Bromofluorobenzene	0.0413		"	0.0400		103	21-167			

Matrix Spike (1901276-MS1)

Source: 1901283-03

Prepared: 01/23/19 Analyzed: 01/24/19

Benzene	0.113	0.0020	mg/kg	0.100	ND	113	70-130			
Toluene	0.122	0.0050	"	0.100	ND	122	70-130			
Ethylbenzene	0.122	0.0050	"	0.100	ND	122	70-130			
m,p-Xylene	0.203	0.010	"	0.200	ND	102	70-130			
o-Xylene	0.115	0.0050	"	0.100	ND	115	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0384		"	0.0400		95.9	23-173			
Surrogate: Toluene-d8	0.0415		"	0.0400		104	20-170			
Surrogate: 4-Bromofluorobenzene	0.0392		"	0.0400		98.0	21-167			

Summit Scientific

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

Project: Noble - Bernhardt 1-11,12

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
01/25/19 06:47

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 1901276 - EPA 5030 Soil MS

Matrix Spike Dup (1901276-MSD1)		Source: 1901283-03			Prepared: 01/23/19 Analyzed: 01/24/19					
Benzene	0.108	0.0020	mg/kg	0.100	ND	108	70-130	4.16	30	
Toluene	0.117	0.0050	"	0.100	ND	117	70-130	4.30	30	
Ethylbenzene	0.120	0.0050	"	0.100	ND	120	70-130	0.893	30	
m,p-Xylene	0.205	0.010	"	0.200	ND	102	70-130	0.515	30	
o-Xylene	0.116	0.0050	"	0.100	ND	116	70-130	0.286	30	
Surrogate: 1,2-Dichloroethane-d4	0.0399		"	0.0400		99.8	23-173			
Surrogate: Toluene-d8	0.0417		"	0.0400		104	20-170			
Surrogate: 4-Bromofluorobenzene	0.0421		"	0.0400		105	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 - Bernhardt 1-11,12

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
01/25/19 06:47

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 1901277 - EPA 3550A

Blank (1901277-BLK1)

Prepared: 01/23/19 Analyzed: 01/24/19

C10-C28 (DRO) ND 50 mg/kg

LCS (1901277-BS1)

Prepared: 01/23/19 Analyzed: 01/24/19

C10-C28 (DRO) 583 50 mg/kg 500 117 70-130

Matrix Spike (1901277-MS1)

Source: 1901281-01

Prepared: 01/23/19 Analyzed: 01/24/19

C10-C28 (DRO) 1150 50 mg/kg 500 684 92.7 70-130

Matrix Spike Dup (1901277-MSD1)

Source: 1901281-01

Prepared: 01/23/19 Analyzed: 01/24/19

C10-C28 (DRO) 1120 50 mg/kg 500 684 87.6 70-130 2.23 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 - Bernhardt 1-11,12

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
01/25/19 06:47

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