

EXCAVATION REPORT AND NO FURTHER ACTION REQUEST

OCOMA G35-16

Spill/Release Point ID #:453293
Remediation Project #: 12000

Prepared for:



2115 117th Avenue
Greeley, CO 80631

Prepared by:



6899 North Pecos Street, Unit C
Denver, CO 80221

December 19, 2018

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

Subject: **Excavation Report**
 Ocoma G35-16
 Facility ID: 453293
 Spill/Release Point ID #: 453293
 Remediation Project #: 12000
 SESE S35 T4N R65W
 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 Ocoma G35-16 site (Site) in Weld County, Colorado. The text below describes environmental sampling conducted at the Site on December 7 and 11, 2018 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. Excavation and assessment activities completed in April 2018 were in response to the discovery of impacted media beneath the Ocoma G35-16 tank battery during plug and abandonment procedures on December 1, 2017. Site assessment soil boring locations are illustrated on Figure 2. Excavation and removal of impacted soil was the selected remedial approach.

Facility Background

The Site is located within the city limits of Evans in Weld County, Colorado, as shown on Figure 1. The Site is surrounded by crop land, and the legal description is the southeast ¼ of the southeast ¼ of Section 35, Township 4 North, Range 65 West, of the 6th Principal Meridian. The Site is located on relatively flat terrain. The Site has coordinates of 40.262267°, -104.621272°.

A Form 19 was submitted to the Colorado Oil and Gas Conservation Commission (COGCC) on December 1, 2017. The COGCC subsequently issued Spill/Release Point ID Number 453293 for this event. Activities and results of the initial investigation were reported in the document *Excavation Summary Report DRAFT* submitted to Noble on July 19, 2018.

Field Activities – Excavation

Based on the results of the site assessment activities, Tasman returned to the Site on December 7 and 11, 2018 to excavate and remove impacted soil from the Site. The extent of the excavation was determined by collecting soil samples and field screening them for volatile organic compounds (VOC) using a photoionization detector (PID) and standard headspace sampling techniques. A total of seven samples (SS01 through SS07) were collected at approximately 9 ft. to 10 ft. below ground surface (bgs) along the sidewalls and base of the excavation. Of the samples collected, six were submitted to Summit Scientific Laboratory in Golden, Colorado (Summit) for laboratory analysis of benzene, toluene, ethylbenzene, and total xylenes (BTEX), naphthalene, and total petroleum hydrocarbons-gasoline range organics (TPH-GRO) using United States Environmental Protection Agency (USEPA) Method 8260B, as well as total petroleum hydrocarbons-diesel range organics (TPH-DRO) using USEPA Method 8015. 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. At the request of Noble, a backfill sample was collected and screened from the imported clean fill. Representative sample BS01 was collected from the backfill but not submitted for laboratory analysis due to low PID reading. Groundwater was not encountered within the excavation.

Based on the PID screening and soil sample analytical results, an excavation with final dimensions of approximately 29 ft. by 27 ft. by an average of 10 ft. bgs. was completed. Approximately 112 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.

Laboratory analytical results for soil sample SS03@9' collected on December 7, 2018 indicated that petroleum hydrocarbon impacts existed at the site above applicable COGCC Table 910-1 soil standards. As a result, an area surrounding sample SS03@9' and further east, was over excavated on December 11, 2018. The laboratory results from sample SS07@10' indicate that petroleum hydrocarbon impacts in the area of SS03 had been removed. Samples collected from the final excavation extent at the Site indicate petroleum hydrocarbon soil impacts above applicable COGCC Table 910-1 soil standards have been successfully removed.

Conclusions

Based upon excavation activities completed at the Site and laboratory analytical results of the soil samples collected, petroleum hydrocarbon impacts to soil have been successfully removed. Noble is requesting a No Further Action designation from the COGCC for the 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 – Site Assessment Overview Map

Figure 3 – Excavation Soil Analytical Results Map (12/7/18, 12/11/18)

Attachment A – Laboratory Analytical Data Reports

TABLES

TABLE 1
SOIL ANALYTICAL DATA
NOBLE ENERGY, INC. - OCOMA G35-16

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@11.5-13'	04/11/18	0.058	<0.0050	0.19	2.1	24	<50	0.083
BH01@17.5-18'	04/11/18	<0.0020	<0.0050	<0.0050	<0.0050	<0.50	<50	<0.0010
BH02@14-15'	04/11/18	<0.0020	<0.0050	<0.0050	<0.0050	<0.50	<50	<0.0010
BH02@15-15.5'	04/11/18	<0.0020	<0.0050	<0.0050	<0.0050	<0.50	<50	<0.0010
BH02@17-18'	04/11/18	<0.0020	<0.0050	<0.0050	<0.0050	<0.50	<50	<0.0010
BH03@2-4'	04/11/18	<0.0020	<0.0050	0.0072	0.7	61	470	<0.0010
BH03@13.5-14.5'	04/11/18	0.099	<0.0050	0.068	0.27	14	<50	0.016
BH04@0-4'	04/11/18	<0.0020	<0.0050	<0.0050	<0.0050	<0.50	<50	<0.0010
BH04@16-18''	04/11/18	<0.0020	<0.0050	<0.0050	<0.0050	0.52	<50	<0.0010
BH05@0-4'	04/11/18	<0.0020	<0.0050	<0.0050	<0.0050	<0.50	<50	<0.0010
BH05@8-10'	04/11/18	<0.0020	<0.0050	<0.0050	<0.0050	<0.50	<50	<0.0010
BH06@8-10'	04/11/18	<0.0020	<0.0050	<0.0050	<0.0050	<0.50	<50	<0.0010
BH06@14-15.5'	04/11/18	<0.0020	<0.0050	0.018	0.041	<0.50	<50	<0.0010
BH06@18-19'	04/11/18	<0.0020	<0.0050	<0.0050	<0.0050	<0.50	<50	<0.0010
SS01@10'	12/07/18	0.0038	<0.0050	0.028	<0.010	<50	69	0.032
SS02@9'	12/07/18	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010
SS03@9' ¹	12/07/18	0.019	<0.0050	0.64	6.2	600	880	0.33
SS04@9' ¹	12/07/18	0.012	<0.0050	0.14	0.81	<50	140	0.11
SS05@9' ¹	12/07/18	<0.0020	<0.0050	<0.0050	<0.010	<50	380	0.012
SS07@10'	12/11/18	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	0.033

Soil Sample ID	Date	EC (mmhos/cm)	pH	SAR
		4 or 2x BG	6-9	<12
BH04@0-4'	04/11/18	0.371	8.4	1.12

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

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

1 = The surrogate recovery for this sample cannot be accurately quantified due to interference from coeluting organic compounds present in the sample extract.

EC = Specific conductance

mmhos/cm = Millimhos per centimeter

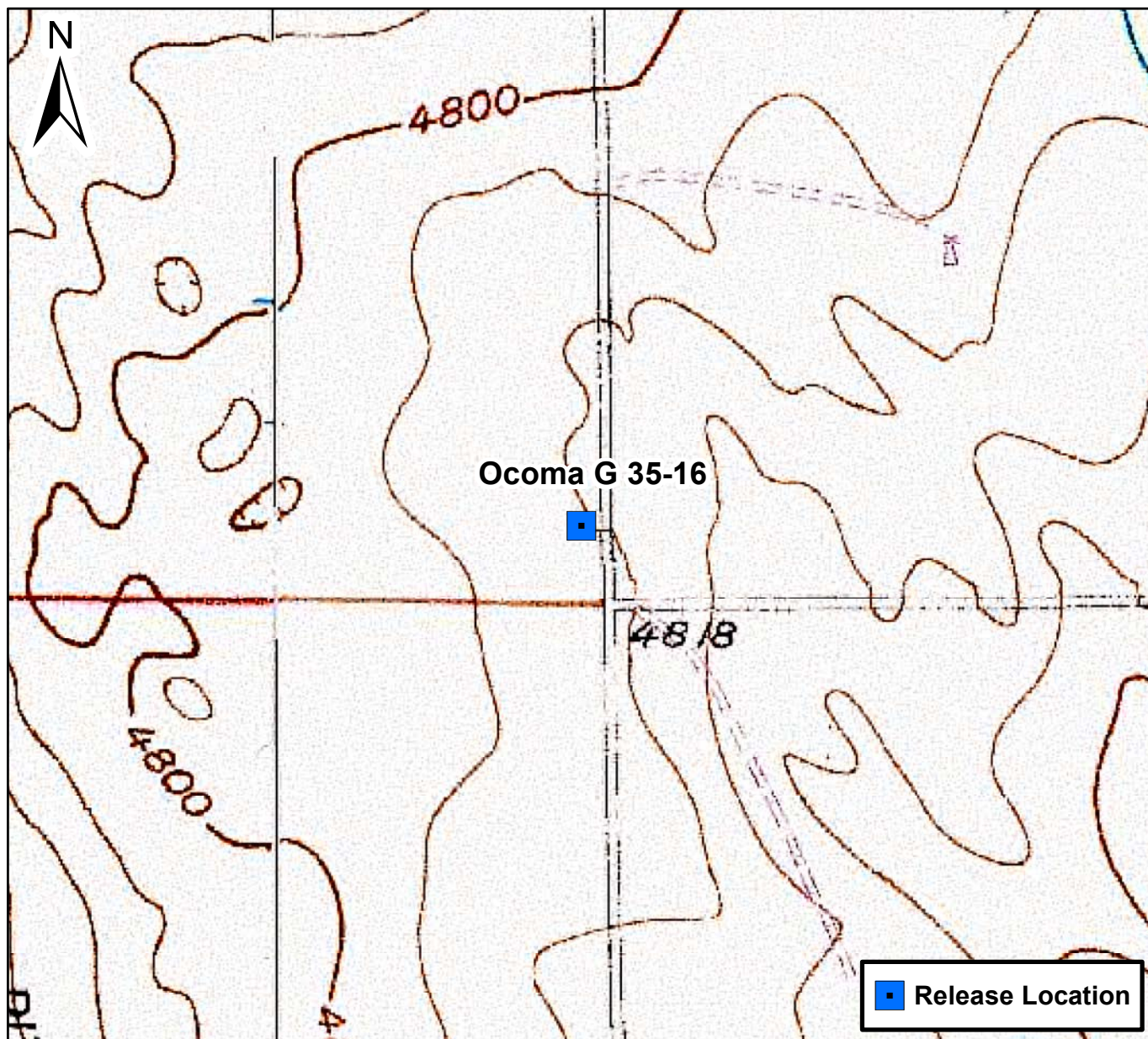
BG = Background

SAR = Sodium adsorption ratio

Soil standards referenced from COGCC Table 910-1

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

FIGURES




0 750 1,500 Feet

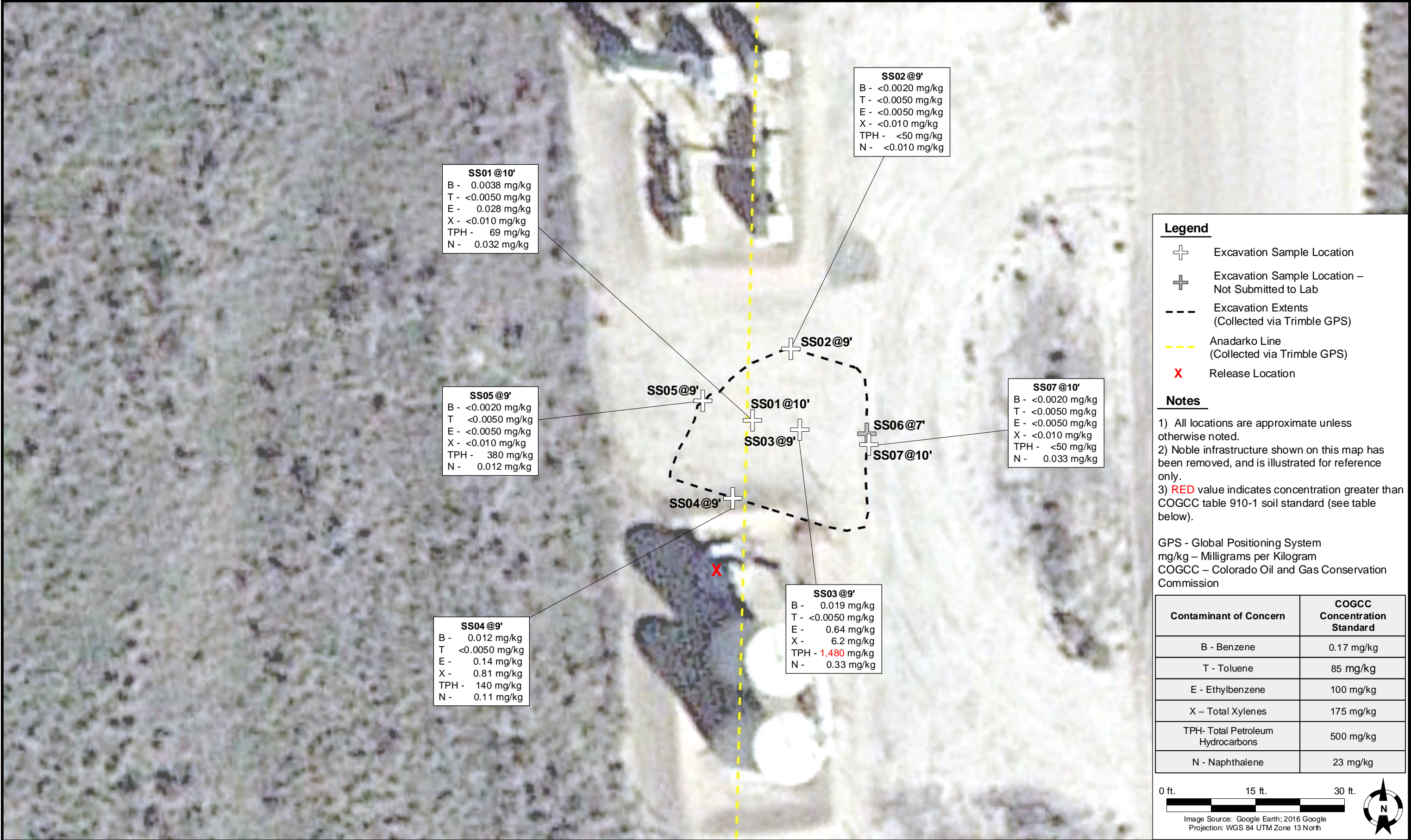
Figure 1

Site Location Map
Ocoma G 35-16
SESE S35 T4N R65W
Weld County, Colorado





DATE:	12/19/2018	 <div>TASMAN GEOSCIENCES</div> <div>Tasman Geosciences, Inc. 6899 Pecos Street – Unit C Denver, CO 80221</div>	Noble Energy, Inc. – DJ Basin Ocoma G35-16 NESE, Section 35, Township 4 North, Range 65 West Weld County, Colorado	Site Assessment Overview Map	FIGURE 2
DESIGNED BY:	DA				
DRAWN BY:	JW				



ATTACHMENT A

LABORATORY ANALYTICAL DATA REPORTS

Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

April 20, 2018

Brandon Bruns
Tasman Geosciences
6899 Pecos St, Unit C
Denver, CO 80221
RE: Noble - Ocoma G35-16

Enclosed are the results of analyses for samples received by Summit Scientific on 04/12/18 10:00. 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 For Ben Shrewsbury
President / Laboratory Director



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

Project: Noble - Ocoma G35-16

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
04/20/18 13:49

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH01@11.5-13'	1804229-01	Soil	04/11/18 10:00	04/12/18 10:00
BH01@17.5-18'	1804229-02	Soil	04/11/18 11:00	04/12/18 10:00
BH02@14-15'	1804229-03	Soil	04/11/18 11:30	04/12/18 10:00
BH02@15-15.5'	1804229-04	Soil	04/11/18 11:50	04/12/18 10:00
BH02@17-18'	1804229-05	Soil	04/11/18 12:05	04/12/18 10:00
BH03@2-4'	1804229-06	Soil	04/11/18 12:45	04/12/18 10:00
BH03@13.5-14.5'	1804229-07	Soil	04/11/18 13:05	04/12/18 10:00
BH04@0-4'	1804229-08	Soil	04/11/18 14:00	04/12/18 10:00
BH04@16-18'	1804229-09	Soil	04/11/18 14:25	04/12/18 10:00
BH05@0-4'	1804229-10	Soil	04/11/18 15:00	04/12/18 10:00
BH05@8-10'	1804229-11	Soil	04/11/18 15:15	04/12/18 10:00
BH06@8-10'	1804229-12	Soil	04/11/18 16:00	04/12/18 10:00
BH06@14-15.5'	1804229-13	Soil	04/11/18 16:10	04/12/18 10:00
BH06@18-19'	1804229-14	Soil	04/11/18 16:15	04/12/18 10:00

Summit Scientific

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

2291

Page 1 of 2

Project Name: Ocoma G-35-16
Project Number: _____

www.s2scientific.com

on ice

1804229.2

Page 2 of 2

Project Number:

www.s2scientific.com

on. cl

Sample Receipt Checklist

S2 Work Order: _____

Client: Noble Tasman

Client Project ID: Ocoma G35-16

Shipped Via: P.U.

Airbill #:

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

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

Temp (°C)	21
-----------	----

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C ⁽¹⁾ ?	✓			
NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun.				
Were all samples received intact ⁽¹⁾ ?	✓			
Was adequate sample volume provided ⁽¹⁾ ?	✓			
If custody seals are present, are they intact ⁽¹⁾ ?			✓	
Are short holding time analytes or samples 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 with 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, etc.			✓	
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.

Muri
Custodian Printed Name or Initials

~~14~~ 4-12-18
Signature of Custodian

11:00

Date/Time



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

Project: Noble - Ocoma G35-16

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
04/20/18 13:49

BH01@11.5-13'
1804229-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/11/18 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	0.0058	0.0020	mg/kg	1	1804098	04/16/18	04/17/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.19	0.0050	"	"	"	"	"	"	
Xylenes (total)	2.1	0.0050	"	"	"	"	"	"	
Naphthalene	0.083	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	24	0.50	"	"	"	"	"	"	

Date Sampled: **04/11/18 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		121 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.8 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		122 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **04/11/18 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1804096	04/16/18	04/18/18	EPA 8015M	

Date Sampled: **04/11/18 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		96.7 %	30-150		"	"	"	"	

Summit Scientific

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

Project: Noble - Ocoma G35-16

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
04/20/18 13:49

BH01@17.5-18'
1804229-02 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/11/18 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1804098	04/16/18	04/17/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **04/11/18 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		114 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		95.3 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		103 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **04/11/18 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1804096	04/16/18	04/18/18	EPA 8015M	

Date Sampled: **04/11/18 11:00**

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

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

Project: Noble - Ocoma G35-16

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
04/20/18 13:49

BH02@14-15'
1804229-03 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/11/18 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1804098	04/16/18	04/17/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **04/11/18 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		110 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		95.5 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		102 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **04/11/18 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1804096	04/16/18	04/18/18	EPA 8015M	

Date Sampled: **04/11/18 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		90.9 %	30-150		"	"	"	"	

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

Project: Noble - Ocoma G35-16

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
04/20/18 13:49

BH02@15-15.5'
1804229-04 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/11/18 11:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1804098	04/16/18	04/17/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **04/11/18 11:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		112 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		95.6 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		103 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **04/11/18 11:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1804096	04/16/18	04/18/18	EPA 8015M	

Date Sampled: **04/11/18 11:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		91.0 %	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 - Ocoma G35-16

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
04/20/18 13:49

BH02@17-18'
1804229-05 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/11/18 12:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1804098	04/16/18	04/17/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **04/11/18 12:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		114 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		95.9 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		99.0 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **04/11/18 12:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1804096	04/16/18	04/18/18	EPA 8015M	

Date Sampled: **04/11/18 12:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		94.9 %	30-150		"	"	"	"	

Summit Scientific

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



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

Project: Noble - Ocoma G35-16

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
04/20/18 13:49

BH03@2-4'
1804229-06 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/11/18 12:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1804098	04/16/18	04/17/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.0072	0.0050	"	"	"	"	"	"	
Xylenes (total)	0.70	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	61	0.50	"	"	"	"	"	"	

Date Sampled: **04/11/18 12:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		122 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		93.2 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		176 %	21-167		"	"	"	"	S-02

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **04/11/18 12:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	470	50	mg/kg	1	1804096	04/16/18	04/18/18	EPA 8015M	

Date Sampled: **04/11/18 12:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		105 %	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 - Ocoma G35-16

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
04/20/18 13:49

BH03@13.5-14.5'
1804229-07 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/11/18 13:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	0.099	0.0020	mg/kg	1	1804098	04/16/18	04/17/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.068	0.0050	"	"	"	"	"	"	
Xylenes (total)	0.27	0.0050	"	"	"	"	"	"	
Naphthalene	0.016	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	14	0.50	"	"	"	"	"	"	

Date Sampled: **04/11/18 13:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		113 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.9 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		112 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **04/11/18 13:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1804096	04/16/18	04/18/18	EPA 8015M	

Date Sampled: **04/11/18 13:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		92.6 %	30-150		"	"	"	"	

Summit Scientific

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



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

Project: Noble - Ocoma G35-16

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
04/20/18 13:49

BH04@0-4'
1804229-08 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/11/18 14:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1804098	04/16/18	04/17/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **04/11/18 14:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		113 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		95.9 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		104 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **04/11/18 14:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1804096	04/16/18	04/18/18	EPA 8015M	

Date Sampled: **04/11/18 14:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		90.1 %	30-150		"	"	"	"	

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

Date Sampled: **04/11/18 14:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	2250	2.50	mg/kg dry	1	1804057	04/18/18	04/20/18	EPA 6020B	
Magnesium	280	1.00	"	"	"	"	"	"	

Summit Scientific

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



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

Project: Noble - Ocoma G35-16

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
04/20/18 13:49

BH04@0-4'
1804229-08 (Soil)

Summit Scientific

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

Sodium	211	5.00	mg/kg dry	1	1804057	04/18/18	04/20/18	EPA 6020B
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Calculated Analysis

Date Sampled: **04/11/18 14:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	1.12	0.100	units	1	1804077	04/14/18	04/14/18	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **04/11/18 14:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.371	0.0100	mmhos/cm	1	1804177	04/19/18	04/19/18	EPA 120.1	
% Solids	82.0		%	"	1804155	04/18/18	04/20/18	Calculation	
pH	8.4		pH Units	"	1804176	04/18/18	04/18/18	EPA 9045D	

Summit Scientific

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



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

Project: Noble - Ocoma G35-16

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
04/20/18 13:49

BH04@16-18'
1804229-09 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/11/18 14:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1804098	04/16/18	04/17/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	0.52	0.50	"	"	"	"	"	"	

Date Sampled: **04/11/18 14:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		112 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		93.3 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		108 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **04/11/18 14:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1804096	04/16/18	04/18/18	EPA 8015M	

Date Sampled: **04/11/18 14:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		92.0 %	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 - Ocoma G35-16

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
04/20/18 13:49

BH05@0-4'
1804229-10 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/11/18 15:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1804098	04/16/18	04/17/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **04/11/18 15:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		112 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		94.7 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		97.5 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **04/11/18 15:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1804096	04/16/18	04/18/18	EPA 8015M	

Date Sampled: **04/11/18 15:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		94.7 %	30-150		"	"	"	"	

Summit Scientific

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

Project: Noble - Ocoma G35-16

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
04/20/18 13:49

BH05@8-10'
1804229-11 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1804098	04/16/18	04/17/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		113 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		94.2 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		96.9 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1804096	04/16/18	04/18/18	EPA 8015M	

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		87.5 %	30-150		"	"	"	"	

Summit Scientific

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

Project: Noble - Ocoma G35-16

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
04/20/18 13:49

BH06@8-10'
1804229-12 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/11/18 16:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1804098	04/16/18	04/17/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **04/11/18 16:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		113 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		94.0 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		100 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **04/11/18 16:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1804096	04/16/18	04/18/18	EPA 8015M	

Date Sampled: **04/11/18 16:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		94.7 %	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 - Ocoma G35-16

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
04/20/18 13:49

BH06@14-15.5'
1804229-13 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/11/18 16:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1804098	04/16/18	04/17/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.018	0.0050	"	"	"	"	"	"	
Xylenes (total)	0.041	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **04/11/18 16:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		116 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.5 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		113 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **04/11/18 16:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1804096	04/16/18	04/18/18	EPA 8015M	

Date Sampled: **04/11/18 16:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		91.6 %	30-150		"	"	"	"	

Summit Scientific

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

Project: Noble - Ocoma G35-16

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
04/20/18 13:49

BH06@18-19'
1804229-14 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/11/18 16:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1804098	04/16/18	04/17/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **04/11/18 16:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		113 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.2 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		94.2 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **04/11/18 16:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1804096	04/16/18	04/18/18	EPA 8015M	

Date Sampled: **04/11/18 16:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		92.7 %	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 - Ocoma G35-16

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
04/20/18 13:49

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 1804098 - EPA 5030 Soil MS

Blank (1804098-BLK1)

Prepared: 04/16/18 Analyzed: 04/17/18

Benzene	ND	0.0020	mg/kg							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.0050	"							
Naphthalene	ND	0.010	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
Surrogate: 1,2-Dichloroethane-d4	0.0433		"	0.0396	109	23-173				
Surrogate: Toluene-d8	0.0386		"	0.0400	96.6	20-170				
Surrogate: 4-Bromofluorobenzene	0.0411		"	0.0400	103	21-167				

LCS (1804098-BS1)

Prepared: 04/16/18 Analyzed: 04/17/18

Benzene	0.0758	0.0020	mg/kg	0.100	75.8	61-139				
Toluene	0.0898	0.0050	"	0.100	89.8	64-132				
Ethylbenzene	0.105	0.0050	"	0.100	105	68.7-135				
m,p-Xylene	0.204	0.010	"	0.200	102	70.4-129				
o-Xylene	0.101	0.0050	"	0.100	101	66.9-126				
Naphthalene	ND	0.010	"			67.8-151				
Surrogate: 1,2-Dichloroethane-d4	0.0428		"	0.0396	108	23-173				
Surrogate: Toluene-d8	0.0386		"	0.0400	96.4	20-170				
Surrogate: 4-Bromofluorobenzene	0.0388		"	0.0400	96.9	21-167				

Matrix Spike (1804098-MS1)

Source: 1804042-01

Prepared: 04/16/18 Analyzed: 04/17/18

Benzene	0.136	0.0020	mg/kg	0.100	0.0486	87.5	42.9-137			
Toluene	0.433	0.0050	"	0.100	0.301	132	42.6-130			QM-07
Ethylbenzene	0.338	0.0050	"	0.100	0.213	124	39-133			
m,p-Xylene	0.396	0.010	"	0.200	0.165	115	34.7-134			
o-Xylene	0.239	0.0050	"	0.100	0.126	113	41.3-126			
Naphthalene	0.0482	0.010	"		0.0540		26.4-144			
Surrogate: 1,2-Dichloroethane-d4	0.0521		"	0.0396	132	23-173				
Surrogate: Toluene-d8	0.0379		"	0.0400	94.7	20-170				
Surrogate: 4-Bromofluorobenzene	0.0431		"	0.0400	108	21-167				

Summit Scientific

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

Project: Noble - Ocoma G35-16

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
04/20/18 13:49

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 1804098 - EPA 5030 Soil MS

Matrix Spike Dup (1804098-MSD1)		Source: 1804042-01			Prepared: 04/16/18		Analyzed: 04/17/18			
Benzene	0.117	0.0020	mg/kg	0.100	0.0486	68.2	42.9-137	15.3	17.9	
Toluene	0.359	0.0050	"	0.100	0.301	58.4	42.6-130	18.6	11.9	QM-07
Ethylbenzene	0.316	0.0050	"	0.100	0.213	103	39-133	6.52	30	
m,p-Xylene	0.370	0.010	"	0.200	0.165	102	34.7-134	6.76	30	
o-Xylene	0.232	0.0050	"	0.100	0.126	106	41.3-126	3.17	30	
Naphthalene	0.0603	0.010	"		0.0540		26.4-144	22.3	30	
Surrogate: 1,2-Dichloroethane-d4	0.0519		"	0.0396		131	23-173			
Surrogate: Toluene-d8	0.0383		"	0.0400		95.7	20-170			
Surrogate: 4-Bromofluorobenzene	0.0471		"	0.0400		118	21-167			

Summit Scientific

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

Project: Noble - Ocoma G35-16

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
04/20/18 13:49

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 1804096 - EPA 3550A

Blank (1804096-BLK1)

Prepared & Analyzed: 04/16/18

C10-C28 (DRO) ND 50 mg/kg

LCS (1804096-BS1)

Prepared & Analyzed: 04/16/18

C10-C28 (DRO) 431 50 mg/kg 500 86.2 81.4-129

Matrix Spike (1804096-MS1)

Source: 1804042-01

Prepared & Analyzed: 04/16/18

C10-C28 (DRO) 455 50 mg/kg 500 17.3 87.5 77.8-133

Matrix Spike Dup (1804096-MSD1)

Source: 1804042-01

Prepared & Analyzed: 04/16/18

C10-C28 (DRO) 437 50 mg/kg 500 17.3 83.9 77.8-133 4.06 8.48

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 - Ocoma G35-16

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
04/20/18 13:49

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 1804057 - General Preparation

Blank (1804057-BLK1)

Prepared: 04/18/18 Analyzed: 04/19/18

Calcium	ND	2.50	mg/kg wet
Magnesium	ND	1.00	"
Sodium	ND	5.00	"

LCS (1804057-BS1)

Prepared: 04/18/18 Analyzed: 04/19/18

Calcium	968	2.50	mg/kg wet	1000	96.8	70-130
Magnesium	926	1.00	"	1000	92.6	70-130
Sodium	958	5.00	"	1000	95.8	70-130

Duplicate (1804057-DUP1)

Source: 1804201-01

Prepared: 04/18/18 Analyzed: 04/19/18

Calcium	2090	2.50	mg/kg dry	2090	0.375	20
Magnesium	210	1.00	"	203	3.75	20
Sodium	339	5.00	"	342	0.867	20

Matrix Spike (1804057-MS1)

Source: 1804201-01

Prepared: 04/18/18 Analyzed: 04/19/18

Calcium	3190	2.50	mg/kg dry	1160	2090	94.4	70-130
Magnesium	1420	1.00	"	1160	203	105	70-130
Sodium	1510	5.00	"	1160	342	101	70-130

Matrix Spike Dup (1804057-MSD1)

Source: 1804201-01

Prepared: 04/18/18 Analyzed: 04/19/18

Calcium	3550	2.50	mg/kg dry	1160	2090	126	70-130	10.9	25
Magnesium	1400	1.00	"	1160	203	104	70-130	1.15	25
Sodium	1470	5.00	"	1160	342	97.4	70-130	2.53	25

Summit Scientific

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



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

Project: Noble - Ocoma G35-16

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
04/20/18 13:49

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 1804155 - General Preparation

Duplicate (1804155-DUP1) **Source: 1804201-01** Prepared: 04/18/18 Analyzed: 04/20/18

% Solids	86.3		%		86.4			0.116	20	
----------	------	--	---	--	------	--	--	-------	----	--

Batch 1804176 - General Preparation

Duplicate (1804176-DUP1) **Source: 1804201-01** Prepared & Analyzed: 04/18/18

pH	9.1		pH Units		9.0			0.331	20	
----	-----	--	----------	--	-----	--	--	-------	----	--

Batch 1804177 - General Preparation

Duplicate (1804177-DUP1) **Source: 1804201-01** Prepared & Analyzed: 04/19/18

Specific Conductance (EC)	0.473	0.0100	mmhos/cm		0.473			0.0528	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 - Ocoma G35-16

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
04/20/18 13:49

Notes and Definitions

S-02	The surrogate recovery for this sample cannot be accurately quantified due to interference from coeluting organic compounds present in the sample extract.
QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS/LCSD recovery.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

December 09, 2018

Brandon Bruns

Tasman Geosciences

6899 Pecos St, Unit C

Denver, CO 80221

RE: Noble - Ocoma G35-16

Enclosed are the results of analyses for samples received by Summit Scientific on 12/07/18 18:35. 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 - Ocoma G35-16

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
12/09/18 13:09

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS01@10'	1812094-01	Soil	12/07/18 10:00	12/07/18 18:35
SS02@9'	1812094-02	Soil	12/07/18 11:06	12/07/18 18:35
SS03@9'	1812094-03	Soil	12/07/18 11:10	12/07/18 18:35
SS04@9'	1812094-04	Soil	12/07/18 11:15	12/07/18 18:35
SS05@9'	1812094-05	Soil	12/07/18 11:18	12/07/18 18:35

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.

1812094

Page 1 of 1

Project Manager: Brandon Bruns, Invoice: Jacob Evans
E-Mail: Bbruns@tasman-geo.com
Project Name: OCOMA G35-16
Project Number: _____

www.s2scientific.com

Sample Receipt Checklist

S2 Work Order 1812094

Client: Noble/Tarman Client Project ID: Ocoma G35-16

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>4.2</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.				

Custodian Printed Name or Initials CP

Signature of Custodian [Signature]

12-7-18 1835
Date/Time



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

Project: Noble - Ocoma G35-16

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
12/09/18 13:09

SS01@10'
1812094-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **12/07/18 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	0.0038	0.0020	mg/kg	1	1812119	12/07/18	12/08/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.028	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	0.032	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **12/07/18 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		112 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		114 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **12/07/18 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	69	50	mg/kg	1	1812120	"	12/08/18	EPA 8015M	

Date Sampled: **12/07/18 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		123 %	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 - Ocoma G35-16

Project Number: [none]
Project Manager: Brandon Brun

Reported:
12/09/18 13:09

SS02@9'
1812094-02 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **12/07/18 11:06**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1812119	12/07/18	12/07/18	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: **12/07/18 11:06**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		112 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		102 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		109 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **12/07/18 11:06**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	1812120	"	12/08/18	EPA 8015M	

Date Sampled: **12/07/18 11:06**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		120 %	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 - Ocoma G35-16

Project Number: [none]
Project Manager: Brandon Brun

Reported:
12/09/18 13:09

SS03@9'
1812094-03 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **12/07/18 11:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	0.019	0.0020	mg/kg	1	1812119	12/07/18	12/08/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.64	0.0050	"	"	"	"	"	"	
Xylenes (total)	6.2	1.0	"	100	"	"	"	"	
Naphthalene	0.33	0.010	"	1	"	"	"	"	
Gasoline Range Hydrocarbons	600	500	"	10	"	"	"	"	

Date Sampled: **12/07/18 11:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		115 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		94.8 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		375 %	21-167		"	"	"	"	S-02

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **12/07/18 11:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	880	50	mg/kg	1	1812120	"	12/08/18	EPA 8015M	

Date Sampled: **12/07/18 11:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		129 %	30-150		"	"	"	"	

Summit Scientific

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

Project: Noble - Ocoma G35-16

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
12/09/18 13:09

SS04@9'
1812094-04 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **12/07/18 11:15**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	0.012	0.0020	mg/kg	1	1812119	12/07/18	12/08/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.14	0.0050	"	"	"	"	"	"	
Xylenes (total)	0.81	0.010	"	"	"	"	"	"	
Naphthalene	0.11	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **12/07/18 11:15**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		122 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		188 %	21-167		"	"	"	"	S-02

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **12/07/18 11:15**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
C10-C28 (DRO)	140	50	mg/kg	1	1812120	"	12/08/18	EPA 8015M	

Date Sampled: **12/07/18 11:15**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: o-Terphenyl		122 %	30-150		"	"	"	"	

Summit Scientific

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

Project: Noble - Ocoma G35-16

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
12/09/18 13:09

SS05@9'
1812094-05 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

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

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1812119	12/07/18	12/08/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	0.012	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

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

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		101 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.0 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		172 %	21-167		"	"	"	"	S-02

Extractable Petroleum Hydrocarbons by 8015

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

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	380	50	mg/kg	1	1812120	"	12/08/18	EPA 8015M	

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

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		124 %	30-150		"	"	"	"	

Summit Scientific

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

Project: Noble - Ocoma G35-16

Project Number: [none]
Project Manager: Brandon Brun

Reported:
12/09/18 13:09

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 1812119 - EPA 5030 Soil MS

Blank (1812119-BLK1)

Prepared & Analyzed: 12/07/18

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	0.0447		"	0.0396	113	23-173				
Surrogate: Toluene-d8	0.0401		"	0.0400	100	20-170				
Surrogate: 4-Bromofluorobenzene	0.0414		"	0.0400	103	21-167				

LCS (1812119-BS1)

Prepared & Analyzed: 12/07/18

Benzene	0.111	0.0020	mg/kg	0.100	111	70-130				
Toluene	0.111	0.0050	"	0.100	111	70-130				
Ethylbenzene	0.119	0.0050	"	0.100	119	70-130				
m,p-Xylene	0.235	0.010	"	0.200	117	70-130				
o-Xylene	0.107	0.0050	"	0.100	107	70-130				
Surrogate: 1,2-Dichloroethane-d4	0.0453		"	0.0396	114	23-173				
Surrogate: Toluene-d8	0.0420		"	0.0400	105	20-170				
Surrogate: 4-Bromofluorobenzene	0.0434		"	0.0400	108	21-167				

Matrix Spike (1812119-MS1)

Source: 1812092-01

Prepared & Analyzed: 12/07/18

Benzene	0.112	0.0020	mg/kg	0.100	ND	112	70-130			
Toluene	0.113	0.0050	"	0.100	ND	113	70-130			
Ethylbenzene	0.122	0.0050	"	0.100	ND	122	70-130			
m,p-Xylene	0.232	0.010	"	0.200	ND	116	70-130			
o-Xylene	0.110	0.0050	"	0.100	ND	110	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0417		"	0.0396	105	23-173				
Surrogate: Toluene-d8	0.0400		"	0.0400	100	20-170				
Surrogate: 4-Bromofluorobenzene	0.0416		"	0.0400	104	21-167				

Summit Scientific

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

Project: Noble - Ocoma G35-16

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
12/09/18 13:09

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

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

Batch 1812119 - EPA 5030 Soil MS

Matrix Spike Dup (1812119-MSD1)		Source: 1812092-01			Prepared & Analyzed: 12/07/18					
Benzene	0.112	0.0020	mg/kg	0.100	ND	112	70-130	0.0536	30	
Toluene	0.115	0.0050	"	0.100	ND	115	70-130	1.79	30	
Ethylbenzene	0.120	0.0050	"	0.100	ND	120	70-130	1.51	30	
m,p-Xylene	0.232	0.010	"	0.200	ND	116	70-130	0.0129	30	
o-Xylene	0.111	0.0050	"	0.100	ND	111	70-130	0.978	30	
Surrogate: 1,2-Dichloroethane-d4	0.0450		"	0.0396		114	23-173			
Surrogate: Toluene-d8	0.0409		"	0.0400		102	20-170			
Surrogate: 4-Bromofluorobenzene	0.0437		"	0.0400		109	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 - Ocoma G35-16

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
12/09/18 13:09

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 1812120 - EPA 3550A

Blank (1812120-BLK1)

Prepared & Analyzed: 12/07/18

C10-C28 (DRO) ND 50 mg/kg

LCS (1812120-BS1)

Prepared & Analyzed: 12/07/18

C10-C28 (DRO) 558 50 mg/kg 500 112 70-130

Matrix Spike (1812120-MS1)

Source: 1812092-01

Prepared & Analyzed: 12/07/18

C10-C28 (DRO) 557 50 mg/kg 500 19.9 107 70-130

Matrix Spike Dup (1812120-MSD1)

Source: 1812092-01

Prepared & Analyzed: 12/07/18

C10-C28 (DRO) 563 50 mg/kg 500 19.9 109 70-130 0.994 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 - Ocoma G35-16

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
12/09/18 13:09

Notes and Definitions

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

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

December 12, 2018

Brandon Bruns

Tasman Geosciences

6899 Pecos St, Unit C

Denver, CO 80221

RE: Noble - Ocoma G35-16

Enclosed are the results of analyses for samples received by Summit Scientific on 12/11/18 17:50. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

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

Paul Shrewsbury For Ben Shrewsbury

Laboratory Manager



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

Project: Noble - Ocoma G35-16

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
12/12/18 06:19

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS07@10'	1812119-01	Soil	12/11/18 13:30	12/11/18 17:50

Summit Scientific



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Summit Scientific

303-277-9310 ♦ 303-374-5933 Fax

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

Project Manager:	Brandon Bruns, Invoice: Jacob Evans
E-Mail:	Bbruns@tasman-geo.com
Project Name:	Ocoma G 35-16
Project Number:	—

				Preservative				Matrix				Analyze For:										Special Instructions
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							
5507 @ 10'	12/11/18	1330	1			X			X				X	X								
Relinquished by: 				Date/Time: 1810 12/11/18				Received by: 				Date/Time: 121118 1810				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: 7.9 Intact: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>						

Sample Receipt Checklist

S2 Work Order 1812119

Client: Noble/Tasman Client Project ID: Ocema G35-16

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>2.9</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⁾ ? Record the pH in Comments.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If dissolved metals are requested, were samples field filtered?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Additional Comments (if any):				

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

UP
Custodian Printed Name or Initials

[Signature]
Signature of Custodian

12.11.18 1815
Date/Time



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

Project: Noble - Ocoma G35-16

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
12/12/18 06:19

SS07@10'
1812119-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **12/11/18 13:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1812150	12/11/18	12/11/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	0.033	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **12/11/18 13:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		116 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		103 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		103 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **12/11/18 13:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1812151	12/11/18	12/12/18	EPA 8015M	

Date Sampled: **12/11/18 13:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		112 %	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 - Ocoma G35-16

Project Number: [none]
Project Manager: Brandon Brun

Reported:
12/12/18 06:19

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 1812150 - EPA 5030 Soil MS

Blank (1812150-BLK1)

Prepared: 12/11/18 Analyzed: 12/12/18

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	0.0446		"	0.0396	113	23-173				
Surrogate: Toluene-d8	0.0419		"	0.0400	105	20-170				
Surrogate: 4-Bromofluorobenzene	0.0441		"	0.0400	110	21-167				

LCS (1812150-BS1)

Prepared: 12/11/18 Analyzed: 12/12/18

Benzene	0.119	0.0020	mg/kg	0.100	119	70-130				
Toluene	0.116	0.0050	"	0.100	116	70-130				
Ethylbenzene	0.117	0.0050	"	0.100	117	70-130				
m,p-Xylene	0.224	0.010	"	0.200	112	70-130				
o-Xylene	0.106	0.0050	"	0.100	106	70-130				
Surrogate: 1,2-Dichloroethane-d4	0.0444		"	0.0396	112	23-173				
Surrogate: Toluene-d8	0.0421		"	0.0400	105	20-170				
Surrogate: 4-Bromofluorobenzene	0.0423		"	0.0400	106	21-167				

Matrix Spike (1812150-MS1)

Source: 1812116-01

Prepared: 12/11/18 Analyzed: 12/12/18

Benzene	0.118	0.0020	mg/kg	0.100	ND	118	70-130			
Toluene	0.117	0.0050	"	0.100	ND	117	70-130			
Ethylbenzene	0.115	0.0050	"	0.100	ND	115	70-130			
m,p-Xylene	0.226	0.010	"	0.200	ND	113	70-130			
o-Xylene	0.107	0.0050	"	0.100	ND	107	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0470		"	0.0396	119	23-173				
Surrogate: Toluene-d8	0.0417		"	0.0400	104	20-170				
Surrogate: 4-Bromofluorobenzene	0.0444		"	0.0400	111	21-167				

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

Project: Noble - Ocoma G35-16

Project Number: [none]
Project Manager: Brandon Brun

Reported:
12/12/18 06:19

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 1812150 - EPA 5030 Soil MS

Matrix Spike Dup (1812150-MSD1)

Source: 1812116-01

Prepared: 12/11/18 Analyzed: 12/12/18

Benzene	0.117	0.0020	mg/kg	0.100	ND	117	70-130	0.662	30	
Toluene	0.115	0.0050	"	0.100	ND	115	70-130	2.20	30	
Ethylbenzene	0.119	0.0050	"	0.100	ND	119	70-130	3.67	30	
m,p-Xylene	0.230	0.010	"	0.200	ND	115	70-130	1.62	30	
o-Xylene	0.111	0.0050	"	0.100	ND	111	70-130	3.91	30	
Surrogate: 1,2-Dichloroethane-d4	0.0467		"	0.0396		118	23-173			
Surrogate: Toluene-d8	0.0405		"	0.0400		101	20-170			
Surrogate: 4-Bromofluorobenzene	0.0449		"	0.0400		112	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 - Ocoma G35-16

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
12/12/18 06:19

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 1812151 - EPA 3550A

Blank (1812151-BLK1)

Prepared: 12/11/18 Analyzed: 12/12/18

C10-C28 (DRO) ND 50 mg/kg

LCS (1812151-BS1)

Prepared: 12/11/18 Analyzed: 12/12/18

C10-C28 (DRO) 541 50 mg/kg 500 108 70-130

Matrix Spike (1812151-MS1)

Source: 1812116-01

Prepared: 12/11/18 Analyzed: 12/12/18

C10-C28 (DRO) 575 50 mg/kg 500 32.0 109 70-130

Matrix Spike Dup (1812151-MSD1)

Source: 1812116-01

Prepared: 12/11/18 Analyzed: 12/12/18

C10-C28 (DRO) 538 50 mg/kg 500 32.0 101 70-130 6.73 20

Summit Scientific

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

Project: Noble - Ocoma G35-16

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
12/12/18 06:19

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