



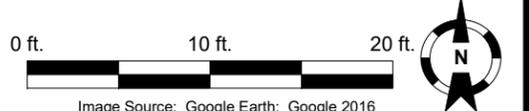
Legend

- Excavation Sample Location
- Excavation Sample Location (Not Submitted for Laboratory Analysis)
- Excavation Extent (Collected via Trimble GPS)

Notes

- 1) Site Coordinates: 40.482499, -104.389093
 - 2) All locations are approximate unless otherwise noted
 - 3) **RED** value indicates concentration greater than COGCC table 910-1 soil standard (see table below).
- GPS – Global Positioning System
 mg/kg – Milligrams Per Kilogram
 mmhos/cm – Millimhos Per Centimeter

Contaminant of Concern	COGCC Concentration Standard
B - Benzene	0.17 mg/kg
T - Toluene	85 mg/kg
E - Ethylbenzene	100 mg/kg
X – Total Xylenes	175 mg/kg
TPH- Total Petroleum Hydrocarbons	500 mg/kg
N - Naphthalene	23 mg/kg
SAR – Sodium Absorption Ratio	<12 ⁵
EC – Electrical Conductivity	<4mmhos/cm or 2x background
pH	6-9



DATE: 08/01/2018
 DESIGNED BY: DA
 DRAWN BY: GB



Noble Energy, Inc. – DJ Basin
Wells Ranch USX AA13-11, 12, 13, 14, 25 Vault Removal –
Location ID: 302544
 NESW, Section 13, Township 6 North, Range 63 West
 Weld County, Colorado

Excavation Soil Analytical
 Results Map
 (07/16/2018)

Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

August 06, 2018

Brandon Bruns

Tasman Geosciences

6899 Pecos St, Unit C

Denver, CO 80221

RE: Noble - Wells Ranch USX AA13-11,12,13,14,25

Enclosed are the results of analyses for samples received by Summit Scientific on 07/17/18 10:10. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

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

Paul Shrewsbury For Ben Shrewsbury

Laboratory Manager



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

Project: Noble - Wells Ranch USX AA13-11,12,13,14,25

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
08/06/18 16:17

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS01@3'	1807187-01	Soil	07/16/18 13:40	07/17/18 10:10
SS05@6'	1807187-05	Soil	07/16/18 13:48	07/17/18 10:10

Summit Scientific

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

Sample Receipt Checklist

S2 Work Order 1807187

Client: Noble Tasman Client Project ID: Wells Ranch USX AA13-11,12,13,14,25

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

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

Temp (°C)	<u>5.6</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"/>	
<small>NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun.</small>				
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"/>	
<small>Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect</small>				
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<small>Record the pH in Comments.</small>				
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.

OP
Custodian Printed Name or Initials

[Signature]
Signature of Custodian

7.17.18 1010
Date/Time



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

Project: Noble - Wells Ranch USX AA13-11,12,13,14,25

Project Number: [none]
Project Manager: Brandon Brun

Reported:
08/06/18 16:17

SS01@3'
1807187-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **07/16/18 13:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1807191	07/18/18	07/18/18	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: **07/16/18 13:40**

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		101 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **07/16/18 13:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1807192	07/18/18	07/20/18	EPA 8015M	

Date Sampled: **07/16/18 13:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		103 %	30-150		"	"	"	"	

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

Date Sampled: **07/16/18 13:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	1300	11.0	mg/kg dry	1	1807228	07/19/18	07/20/18	EPA 6020B	

Summit Scientific

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

Project: Noble - Wells Ranch USX AA13-11,12,13,14,25

Project Number: [none]
Project Manager: Brandon Brun

Reported:
08/06/18 16:17

SS01@3'
1807187-01 (Soil)

Summit Scientific

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Magnesium	120	5.51	mg/kg dry	1	1807228	07/19/18	07/20/18	EPA 6020B	
Sodium	224	5.51	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **07/16/18 13:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	1.59	0.100	units	1	1807273	07/23/18	07/23/18	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **07/16/18 13:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	90.8		%	1	1807206	07/18/18	07/19/18	Calculation	
pH	8.90		pH Units	"	1807210	07/18/18	07/18/18	EPA 9045D	

Specific Conductance by EPA Method 120.1

Date Sampled: **07/16/18 13:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.377	0.0100	mmhos/cm	1	1807211	07/18/18	07/18/18	EPA 120.1	

Summit Scientific

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

Project: Noble - Wells Ranch USX AA13-11,12,13,14,25

Project Number: [none]
Project Manager: Brandon Brun

Reported:
08/06/18 16:17

SS05@6'
1807187-05 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **07/16/18 13:48**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	0.0020	mg/kg	1	1807191	07/18/18	07/18/18	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: **07/16/18 13:48**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		113 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.6 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		104 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **07/16/18 13:48**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
C10-C28 (DRO)	ND	50	mg/kg	1	1807192	07/18/18	07/20/18	EPA 8015M	

Date Sampled: **07/16/18 13:48**

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

Summit Scientific

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

Project: Noble - Wells Ranch USX AA13-11,12,13,14,25

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
08/06/18 16:17

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch 1807191 - EPA 5030 Soil MS

Blank (1807191-BLK1)

Prepared & Analyzed: 07/18/18

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	0.0431		"	0.0396		109		23-173			
Surrogate: Toluene-d8	0.0394		"	0.0400		98.4		20-170			
Surrogate: 4-Bromofluorobenzene	0.0418		"	0.0400		105		21-167			

LCS (1807191-BS1)

Prepared & Analyzed: 07/18/18

Benzene	0.0833	0.0020	mg/kg	0.100		83.3		70-130			
Toluene	0.0869	0.0050	"	0.100		86.9		70-130			
Ethylbenzene	0.0873	0.0050	"	0.100		87.3		70-130			
m,p-Xylene	0.168	0.010	"	0.200		83.9		70-130			
o-Xylene	0.0860	0.0050	"	0.100		86.0		70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0421		"	0.0396		106		23-173			
Surrogate: Toluene-d8	0.0415		"	0.0400		104		20-170			
Surrogate: 4-Bromofluorobenzene	0.0393		"	0.0400		98.2		21-167			

Matrix Spike (1807191-MS1)

Source: 1807187-01

Prepared & Analyzed: 07/18/18

Benzene	0.0817	0.0020	mg/kg	0.100	ND	81.7		70-130			
Toluene	0.0849	0.0050	"	0.100	ND	84.9		70-130			
Ethylbenzene	0.0875	0.0050	"	0.100	ND	87.5		70-130			
m,p-Xylene	0.167	0.010	"	0.200	ND	83.7		70-130			
o-Xylene	0.0852	0.0050	"	0.100	ND	85.2		70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0421		"	0.0396		106		23-173			
Surrogate: Toluene-d8	0.0406		"	0.0400		102		20-170			
Surrogate: 4-Bromofluorobenzene	0.0394		"	0.0400		98.6		21-167			

Summit Scientific

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

Project: Noble - Wells Ranch USX AA13-11,12,13,14,25

Project Number: [none]
Project Manager: Brandon Brun

Reported:
08/06/18 16:17

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 1807191 - EPA 5030 Soil MS

Matrix Spike Dup (1807191-MSD1)	Source: 1807187-01			Prepared & Analyzed: 07/18/18						
Benzene	0.0790	0.0020	mg/kg	0.100	ND	79.0	70-130	3.36	30	
Toluene	0.0822	0.0050	"	0.100	ND	82.2	70-130	3.23	30	
Ethylbenzene	0.0848	0.0050	"	0.100	ND	84.8	70-130	3.17	30	
m,p-Xylene	0.162	0.010	"	0.200	ND	81.1	70-130	3.09	30	
o-Xylene	0.0835	0.0050	"	0.100	ND	83.5	70-130	2.06	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0415</i>		<i>"</i>	<i>0.0396</i>		<i>105</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0409</i>		<i>"</i>	<i>0.0400</i>		<i>102</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0394</i>		<i>"</i>	<i>0.0400</i>		<i>98.6</i>	<i>21-167</i>			

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

Project: Noble - Wells Ranch USX AA13-11,12,13,14,25

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
08/06/18 16:17

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch 1807192 - EPA 3550A

Blank (1807192-BLK1)

Prepared: 07/18/18 Analyzed: 07/20/18

C10-C28 (DRO) ND 50 mg/kg

LCS (1807192-BS1)

Prepared: 07/18/18 Analyzed: 07/20/18

C10-C28 (DRO) 503 50 mg/kg 500 101 70-130

Matrix Spike (1807192-MS1)

Source: 1807187-01

Prepared: 07/18/18 Analyzed: 07/20/18

C10-C28 (DRO) 500 50 mg/kg 500 34.1 93.1 70-130

Matrix Spike Dup (1807192-MSD1)

Source: 1807187-01

Prepared: 07/18/18 Analyzed: 07/20/18

C10-C28 (DRO) 505 50 mg/kg 500 34.1 94.1 70-130 1.01 20

Summit Scientific

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

Project: Noble - Wells Ranch USX AA13-11,12,13,14,25

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
08/06/18 16:17

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

Summit Scientific

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

Batch 1807228 - General Preparation

Blank (1807228-BLK1)

Prepared: 07/19/18 Analyzed: 07/20/18

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

LCS (1807228-BS1)

Prepared: 07/19/18 Analyzed: 07/20/18

Calcium	459	10.0	mg/kg wet	500		91.8	70-130			
Magnesium	568	5.00	"	500		114	70-130			
Sodium	592	5.00	"	500		118	70-130			

Duplicate (1807228-DUP1)

Source: 1807186-01

Prepared: 07/19/18 Analyzed: 07/20/18

Calcium	1160	11.3	mg/kg dry		1100			4.64	20	
Magnesium	213	5.63	"		202			5.43	20	
Sodium	137	5.63	"		139			1.25	20	

Matrix Spike (1807228-MS1)

Source: 1807186-01

Prepared: 07/19/18 Analyzed: 07/20/18

Calcium	1570	11.3	mg/kg dry	563	1100	83.8	70-130			
Magnesium	815	5.63	"	563	202	109	70-130			
Sodium	753	5.63	"	563	139	109	70-130			

Matrix Spike Dup (1807228-MSD1)

Source: 1807186-01

Prepared: 07/19/18 Analyzed: 07/20/18

Calcium	1750	11.3	mg/kg dry	563	1100	115	70-130	10.6	25	
Magnesium	823	5.63	"	563	202	110	70-130	0.947	25	
Sodium	783	5.63	"	563	139	115	70-130	3.90	25	

Summit Scientific

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

Project: Noble - Wells Ranch USX AA13-11,12,13,14,25

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
08/06/18 16:17

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

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

Batch 1807206 - General Preparation

Duplicate (1807206-DUP1)		Source: 1807185-01			Prepared: 07/18/18 Analyzed: 07/19/18	
% Solids	95.5		%		95.1	0.339 20

Batch 1807210 - General Preparation

LCS (1807210-BS1)		Prepared & Analyzed: 07/18/18				
pH	9.2		pH Units	9.18	99.7	95-105
Duplicate (1807210-DUP1)		Source: 1807186-01			Prepared & Analyzed: 07/18/18	
pH	8.2		pH Units	8.1	1.11	20

Summit Scientific

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

Project: Noble - Wells Ranch USX AA13-11,12,13,14,25

Project Number: [none]
Project Manager: Brandon Brun

Reported:
08/06/18 16:17

Specific Conductance by EPA Method 120.1 - Quality Control
Summit Scientific

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

Batch 1807211 - General Preparation

LCS (1807211-BS1)

Prepared & Analyzed: 07/18/18

Specific Conductance (EC)	0.750	0.0100	mmhos/cm	0.750	100	90-110
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Duplicate (1807211-DUP1)

Source: 1807186-01

Prepared & Analyzed: 07/18/18

Specific Conductance (EC)	1.66	0.0100	mmhos/cm	1.70	2.23	20
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Summit Scientific

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

Project: Noble - Wells Ranch USX AA13-11,12,13,14,25

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
08/06/18 16:17

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