

SS01 @3'  
B - <0.0020 mg/kg  
T - <0.0050 mg/kg  
E - <0.0050 mg/kg  
X - <0.010 mg/kg  
TPH - <50 mg/kg  
N - <0.010 mg/kg  
SAR - 0.197  
EC - 1.03 mmhos/cm  
pH - 7.14

SS05 @7'  
B - <0.0020 mg/kg  
T - <0.0050 mg/kg  
E - <0.0050 mg/kg  
X - <0.010 mg/kg  
TPH - <50 mg/kg  
N - <0.010 mg/kg

Legend

- + Excavation Sample Location  
+ Excavation Sample Location  
(Not Submitted for Laboratory Analysis)

- - - Excavation Extent

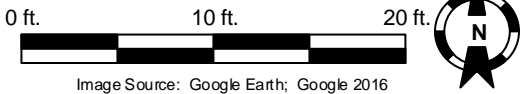
mg/kg Milligrams Per Kilogram

mmhos/cm Millimhos Per Centimeter

Notes

- 1) All locations are approximate unless otherwise noted  
2) RED value indicates concentration greater than COGCC table 910-1 soil standard (see table below).

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 <sup>5</sup>
EC - Electrical Conductivity	<4mmhos/cm or 2x background
pH	6-9



# Summit Scientific

---

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

August 17, 2017

Brandon Bruns  
Tasman Geosciences  
6899 Pecos Street  
Denver, CO 80221  
RE: Foss USX AA 5-3,4

Enclosed are the results of analyses for samples received by Summit Scientific on 08/14/17 16:45. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to be 'Ben Shrewsbury', with a long, sweeping horizontal line extending to the right.

Ben Shrewsbury  
Laboratory Manager



Tasman Geosciences  
6899 Pecos Street  
Denver CO, 80221

Project: Foss USX AA 5-3,4

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
08/17/17 18:56

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS01@3'	1708125-01	Soil	08/14/17 14:36	08/14/17 16:45
SS05@7'	1708125-02	Soil	08/14/17 14:48	08/14/17 16:45

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Tasman Geosciences  
6899 Pecos Street  
Denver CO, 80221

Project: Foss USX AA 5-3,4

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
08/17/17 18:56

## Summit Scientific 1708125

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

Page 1 of 1

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](mailto:Bbruns@tasman-geo.com)

Project Name: FOSS USX AA 5-3.4

Project Number:

[illegible]

[www.s2scientific.com](http://www.s2scientific.com)

Summit Scientific

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Tasman Geosciences  
6899 Pecos Street  
Denver CO, 80221

Project: Foss USX AA 5-3,4

Project Number: [none]  
Project Manager: Brandon Bruns

Reported:  
08/17/17 18:56

#### Sample Receipt Checklist

S2 Work Order: 1748125  
Client: Noble/Tasman Client Project ID: Foss USX AA 5-3,4  
Shipped Via: P/U (UPS, FedEx, Hand Delivered, Pick-up, etc.) Airbill #: \_\_\_\_\_  
Matrix (check all that apply):    Air    ☒ Soil/Solid    Water    Other: \_\_\_\_\_ (Describe)

Cooler ID					
Temp (°C)	<u>4.0</u>				

Thermometer ID: 61857155-K

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

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

Nakia  
Custodian Printed Name

[Signature]  
Signature or Initials of Custodian

8/14/17 1730  
Date/Time



Tasman Geosciences  
6899 Pecos Street  
Denver CO, 80221

Project: Foss USX AA 5-3,4  
Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
08/17/17 18:56

**SS01@3'**  
**1708125-01 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **08/14/17 14:36**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1708134	08/15/17	08/16/17	8015M	

Date Sampled: **08/14/17 14:36**

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

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **08/14/17 14:36**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1708135	08/15/17	08/17/17	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **08/14/17 14:36**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		104 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.2 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		94.9 %	21-167		"	"	"	"	

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

Date Sampled: **08/14/17 14:36**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	<b>630</b>	11.5	mg/kg dry	1	1708148	08/16/17	08/16/17	EPA 6020/Mod. USDA60 6(2, 3A)	

Summit Scientific

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Tasman Geosciences  
6899 Pecos Street  
Denver CO, 80221

Project: Foss USX AA 5-3,4  
Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
08/17/17 18:56

**SS01@3'**  
**1708125-01 (Soil)**

**Summit Scientific**

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

<b>Magnesium</b>	<b>213</b>	5.75	mg/kg dry	1	1708148	08/16/17	08/16/17	EPA 6020/Mod. USDA60 6(2, 3A)
<b>Sodium</b>	<b>22.4</b>	5.75	"	"	"	"	"	"
<b>Sodium Adsorption Ratio</b>	<b>0.197</b>		units	"	1708164	08/17/17	08/17/17	"

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **08/14/17 14:36**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
<b>pH</b>	<b>7.14</b>	0.100	pH Units	1	1708146	08/16/17	08/16/17	EPA 9045	
<b>Specific Conductance (EC)</b>	<b>1.03</b>	0.0100	mmhos/cm	"	1708147	08/16/17	08/17/17	SM 2510B	
<b>% Solids</b>	<b>86.9</b>		%	"	1708149	08/16/17	08/17/17	% calculation	

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Tasman Geosciences  
6899 Pecos Street  
Denver CO, 80221

Project: Foss USX AA 5-3,4  
Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
08/17/17 18:56

**SS05@7'**  
**1708125-02 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **08/14/17 14:48**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1708134	08/15/17	08/16/17	8015M	

Date Sampled: **08/14/17 14:48**

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

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **08/14/17 14:48**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1708135	08/15/17	08/17/17	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **08/14/17 14:48**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		105 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		94.6 %	21-167		"	"	"	"	

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Tasman Geosciences  
6899 Pecos Street  
Denver CO, 80221

Project: Foss USX AA 5-3,4

Project Number: [none]  
Project Manager: Brandon Brunns

**Reported:**  
08/17/17 18:56

**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 1708134 - EPA 3550A**

**Blank (1708134-BLK1)**

Prepared & Analyzed: 08/15/17

C10-C28 (DRO)	ND	50	mg/kg							
Surrogate: o-Terphenyl	13.2		"	12.5		106	30-150			

**LCS (1708134-BS1)**

Prepared & Analyzed: 08/15/17

C10-C28 (DRO)	543	50	mg/kg	499		109	73-134			
Surrogate: o-Terphenyl	14.1		"	12.5		113	30-150			

**Matrix Spike (1708134-MS1)**

Source: 1708114-01

Prepared & Analyzed: 08/15/17

C10-C28 (DRO)	552	50	mg/kg	499	26.6	105	50-148			
Surrogate: o-Terphenyl	15.3		"	12.5		123	30-150			

**Matrix Spike Dup (1708134-MSD1)**

Source: 1708114-01

Prepared & Analyzed: 08/15/17

C10-C28 (DRO)	529	50	mg/kg	499	26.6	101	50-148	4.21	20	
Surrogate: o-Terphenyl	13.1		"	12.5		105	30-150			

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Tasman Geosciences  
6899 Pecos Street  
Denver CO, 80221

Project: Foss USX AA 5-3,4  
Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
08/17/17 18:56

**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 1708135 - EPA 5030 Soil MS**

**Blank (1708135-BLK1)**

Prepared: 08/15/17 Analyzed: 08/16/17

Naphthalene	ND	0.010	mg/kg							
Benzene	ND	0.0020	"							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
Gasoline Range Hydrocarbons	ND	50	"							
Surrogate: 1,2-Dichloroethane-d4	0.0401		"	0.0400		100	23-173			
Surrogate: Toluene-d8	0.0400		"	0.0400		100	20-170			
Surrogate: 4-Bromofluorobenzene	0.0388		"	0.0400		97.1	21-167			

**LCS (1708135-BS1)**

Prepared: 08/15/17 Analyzed: 08/16/17

Naphthalene	ND	0.010	mg/kg				66-138			
Benzene	0.0926	0.0020	"	0.100		92.6	58-130			
Toluene	0.0997	0.0050	"	0.100		99.7	61-134			
Ethylbenzene	0.102	0.0050	"	0.0992		103	74-139			
m,p-Xylene	0.198	0.010	"	0.200		99.1	73-137			
o-Xylene	0.100	0.0050	"	0.0980		102	73-141			
Surrogate: 1,2-Dichloroethane-d4	0.0404		"	0.0400		101	23-173			
Surrogate: Toluene-d8	0.0406		"	0.0400		101	20-170			
Surrogate: 4-Bromofluorobenzene	0.0383		"	0.0400		95.7	21-167			

**Matrix Spike (1708135-MS1)**

Source: 1708114-01

Prepared: 08/15/17 Analyzed: 08/16/17

Naphthalene	ND	0.010	mg/kg		ND		10-158			
Benzene	0.0814	0.0020	"	0.100	ND	81.4	30-131			
Toluene	0.0856	0.0050	"	0.100	ND	85.6	30-134			
Ethylbenzene	0.0825	0.0050	"	0.0992	ND	83.2	22-153			
m,p-Xylene	0.161	0.010	"	0.200	ND	80.5	10-159			
o-Xylene	0.0805	0.0050	"	0.0980	ND	82.1	31-151			
Surrogate: 1,2-Dichloroethane-d4	0.0404		"	0.0400		101	23-173			
Surrogate: Toluene-d8	0.0405		"	0.0400		101	20-170			
Surrogate: 4-Bromofluorobenzene	0.0377		"	0.0400		94.3	21-167			

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Tasman Geosciences  
6899 Pecos Street  
Denver CO, 80221

Project: Foss USX AA 5-3,4  
Project Number: [none]  
Project Manager: Brandon Brunns

Reported:  
08/17/17 18:56

**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 1708135 - EPA 5030 Soil MS**

Matrix Spike Dup (1708135-MSD1)		Source: 1708114-01			Prepared: 08/15/17		Analyzed: 08/16/17			
Naphthalene	ND	0.010	mg/kg		ND		10-158			42
Benzene	0.0785	0.0020	"	0.100	ND	78.5	30-131	3.60		34
Toluene	0.0820	0.0050	"	0.100	ND	82.0	30-134	4.33		30
Ethylbenzene	0.0767	0.0050	"	0.0992	ND	77.3	22-153	7.31		24
m,p-Xylene	0.149	0.010	"	0.200	ND	74.8	10-159	7.24		68
o-Xylene	0.0769	0.0050	"	0.0980	ND	78.4	31-151	4.58		38
Surrogate: 1,2-Dichloroethane-d4		0.0425	"	0.0400		106	23-173			
Surrogate: Toluene-d8		0.0412	"	0.0400		103	20-170			
Surrogate: 4-Bromofluorobenzene		0.0382	"	0.0400		95.6	21-167			

Summit Scientific

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Tasman Geosciences  
6899 Pecos Street  
Denver CO, 80221

Project: Foss USX AA 5-3,4  
Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
08/17/17 18:56

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

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

**Batch 1708148 - General Preparation**

**Blank (1708148-BLK1)**

Prepared & Analyzed: 08/16/17

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

**LCS (1708148-BS1)**

Prepared & Analyzed: 08/16/17

Calcium	436	10.0	mg/kg wet	500	87.3	82.9-118
Magnesium	483	5.00	"	500	96.5	77.1-123
Sodium	454	5.00	"	500	90.9	71-129

**Duplicate (1708148-DUP1)**

Source: 1708114-01

Prepared & Analyzed: 08/16/17

Calcium	746	11.0	mg/kg dry	668	11.1	200
Magnesium	196	5.48	"	242	21.3	200
Sodium	191	5.48	"	195	2.32	200

**Matrix Spike (1708148-MS1)**

Source: 1708114-01

Prepared & Analyzed: 08/16/17

Calcium	1100	11.0	mg/kg dry	548	668	79.3	75-125
Magnesium	656	5.48	"	548	242	75.6	75-125
Sodium	653	5.48	"	548	195	83.6	75-125

**Matrix Spike Dup (1708148-MSD1)**

Source: 1708114-01

Prepared & Analyzed: 08/16/17

Calcium	1180	11.0	mg/kg dry	548	668	93.1	75-125	6.66	25
Magnesium	654	5.48	"	548	242	75.2	75-125	0.360	25
Sodium	646	5.48	"	548	195	82.3	75-125	1.11	25

Summit Scientific

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Tasman Geosciences  
6899 Pecos Street  
Denver CO, 80221

Project: Foss USX AA 5-3,4  
Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
08/17/17 18:56

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

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

**Batch 1708146 - General Preparation**

<b>LCS (1708146-BS1)</b>					Prepared & Analyzed: 08/16/17						
pH	9.20	0.100	pH Units	9.16	100	95-105					
<b>Duplicate (1708146-DUP1)</b>					Source: 1708104-05 Prepared & Analyzed: 08/16/17						
pH	8.84	0.100	pH Units	8.87				0.339	20		

**Batch 1708147 - General Preparation**

<b>Blank (1708147-BLK1)</b>					Prepared: 08/16/17 Analyzed: 08/17/17						
Specific Conductance (EC)	ND	0.0100	mmhos/cm								
<b>LCS (1708147-BS1)</b>					Prepared: 08/16/17 Analyzed: 08/17/17						
Specific Conductance (EC)	0.751	0.0100	mmhos/cm	0.750	100	90-110					
<b>Duplicate (1708147-DUP1)</b>					Source: 1708104-05 Prepared: 08/16/17 Analyzed: 08/17/17						
Specific Conductance (EC)	1.24	0.0100	mmhos/cm	1.25				0.361	20		

**Batch 1708149 - General Preparation**

<b>Duplicate (1708149-DUP1)</b>					Source: 1708124-01 Prepared: 08/16/17 Analyzed: 08/17/17						
% Solids	86.1		%	84.7				1.64	20		

Summit Scientific

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Tasman Geosciences  
6899 Pecos Street  
Denver CO, 80221

Project: Foss USX AA 5-3,4

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
08/17/17 18:56

### 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