



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 5-5,6,19

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 5-5,6,19

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
08/17/17 18:53

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS02@3'	1708124-01	Soil	08/14/17 14:16	08/14/17 16:45
SS05@7'	1708124-02	Soil	08/14/17 14:26	08/14/17 16:45

Summit Scientific

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Tasman Geosciences
6899 Pecos Street
Denver CO, 80221

Project: Foss USX AA 5-5,6,19

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
08/17/17 18:53

Summit Scientific 1708124

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

Page | of |

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: FOSS USX AA 5-5, 6, 19

Project Number:

[illegible]

www.s2scientific.com

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Project: Foss USX AA 5-5,6,19

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
08/17/17 18:53

Sample Receipt Checklist

S2 Work Order: 1708124

Client: Noble/Tasman

Client Project ID: Foss USX AA 5-5,6,19

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)	4.0				

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"/>			
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"/>			
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
If custody seals are present, are they intact ⁽¹⁾ ?			<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 ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	<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) ⁽¹⁾ ?			<input checked="" type="checkbox"/>	
Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect				
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ?			<input checked="" type="checkbox"/>	
Record the pH in Comments.				
If dissolved metals are requested, were samples field filtered?			<input checked="" type="checkbox"/>	
Additional Comments (if any):				

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

Nakita
Custodian Printed Name

[Signature]
Signature or Initials of Custodian

8/14/17 1730
Date/Time

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Project: Foss USX AA 5-5,6,19
Project Number: [none]
Project Manager: Brandon Bruns

Reported:
08/17/17 18:53

SS02@3'
1708124-01 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **08/14/17 14:16**

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 14:16**

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 14:16**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1708135	08/15/17	08/16/17	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 14:16**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		102 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		100 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		96.2 %	21-167		"	"	"	"	

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

Date Sampled: **08/14/17 14:16**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	2220	11.8	mg/kg dry	1	1708148	08/16/17	08/16/17	EPA 6020/Mod. USDA60 6(2, 3A)	

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Project: Foss USX AA 5-5,6,19
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SS02@3'
1708124-01 (Soil)

Summit Scientific

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

Magnesium	267	5.90	mg/kg dry	1	1708148	08/16/17	08/16/17	EPA 6020/Mod. USDA60 6(2, 3A)
Sodium	844	5.90	"	"	"	"	"	"
Sodium Adsorption Ratio	4.51		units	"	1708164	08/17/17	08/17/17	"

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **08/14/17 14:16**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
pH	9.28	0.100	pH Units	1	1708146	08/16/17	08/16/17	EPA 9045	
Specific Conductance (EC)	1.58	0.0100	mmhos/cm	"	1708147	08/16/17	08/17/17	SM 2510B	
% Solids	84.7		%	"	1708149	08/16/17	08/17/17	% calculation	

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Project: Foss USX AA 5-5,6,19
Project Number: [none]
Project Manager: Brandon Bruns

Reported:
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SS05@7'
1708124-02 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **08/14/17 14:26**

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 14:26**

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

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **08/14/17 14:26**

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 14:26**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		98.8 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		100 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		96.2 %	21-167		"	"	"	"	

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Project: Foss USX AA 5-5,6,19

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
08/17/17 18:53

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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Project: Foss USX AA 5-5,6,19
Project Number: [none]
Project Manager: Brandon Bruns

Reported:
08/17/17 18:53

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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Project: Foss USX AA 5-5,6,19

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
08/17/17 18:53

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			

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Project Number: [none]
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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

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Project Number: [none]
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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 1708146 - General Preparation

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

Batch 1708147 - General Preparation

Blank (1708147-BLK1)					Prepared: 08/16/17 Analyzed: 08/17/17					
Specific Conductance (EC)	ND	0.0100	mmhos/cm							
LCS (1708147-BS1)					Prepared: 08/16/17 Analyzed: 08/17/17					
Specific Conductance (EC)	0.751	0.0100	mmhos/cm	0.750	100	90-110				
Duplicate (1708147-DUP1)					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

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

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Project: Foss USX AA 5-5,6,19

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
08/17/17 18:53

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