



September 13, 2016

Mr. Erik Mickelson  
Senior HSE Representative  
Kerr-McGee Oil & Gas Onshore LP  
1099 18<sup>th</sup> Street, Suite 1800  
Denver, Colorado 80202

**Re: Sump Closure Summary Letter Report  
GREEN XX-61N65W/8NENW (Green XX 8-3)  
API: 05-123-23717  
Facility ID: 305938  
Legal: NENW Sec 8-T1N-R65W  
Remediation Project #8961**

Dear Mr. Mickelson:

On behalf of Kerr-McGee Oil & Gas Onshore LP (Kerr-McGee), Tasman Geosciences, Inc. (Tasman) has prepared this Sump Closure Summary Letter Report (Report) to document sampling activities and the results of environmental testing at the above-referenced site. This Report is being submitted under the Form 27 Management Plan for Closure of Produced Water Vessels, which has been assigned Remediation #8961 by the COGCC. Tasman provided environmental services at the site that included collection of confirmation soil samples from the excavation and documentation of field activities, as described below.

### **Site Assessment Activities**

The field activities described herein were performed with the purpose of assessing potential hydrocarbon impacts at the site related to the closure of the two produced water sumps on June 10-14, 2016. Soil sampling activities, laboratory analytical results, and conclusions are presented below. The general site layout and sample locations are provided in the attached site map (Figure 1).

The final extent of the excavation measured approximately 17 feet by 17 feet with an approximate depth of 8 feet below ground surface (bgs). Approximately 70 cubic yards of impacted material were excavated and transported to the Buffalo Ridge Landfill in Keenesburg, Colorado for disposal. A liner was not present at the location, and groundwater was not encountered in the excavation.

Five confirmation soil samples were collected from the base and sidewalls of the excavation area at depths ranging between 5 feet and 8 feet bgs. The soil samples were field screened for volatile organic compound (VOC) concentrations using a photoionization detector (PID). The confirmation soil samples collected from the base and sidewalls of the excavation area were submitted to Origins Laboratory in Denver, Colorado, for analysis of benzene, toluene,

ethylbenzene, total xylenes (BTEX), total petroleum hydrocarbons (TPH) – gasoline range organics (GRO) by United States Environmental Protection Agency (USEPA) Method 8260C, TPH – diesel range and oil range organics (DRO and ORO) by USEPA Method 8015, electrical conductivity (EC), and pH. Soil analytical data is summarized in Table 1 and the laboratory analytical reports are provided in Attachment A.

## **Results**

Soil analytical results from the samples collected from the base and sidewalls of the final extent of the excavation area indicated that BTEX and TPH concentrations were below the applicable COGCC Table 910-1 standards. The soil sample B03@8' collected from the base of the final extent of the eastern half of the excavation exhibited a pH level above the applicable regulatory standard but was collected from below the designated root zone.

## **Conclusions**

Analytical results described herein confirm BTEX and TPH impacts are not present at concentrations above applicable regulatory standards in the former sump locations. Consequently, no further site assessment or remedial activity is recommended at this time. Following site assessment activities, the two produced water sumps were removed and the excavation area was backfilled and contoured to match pre-existing site conditions.

Please contact me at (303) 487-1228 if you have any questions regarding this report or require additional information.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Brock Nelson', is written over a light blue horizontal line.

Brock Nelson  
Project Geologist

## **Attachments:**

Table 1 – Soil Sample Results Summary Table  
Figure 1 – Site Map  
Attachment A – Laboratory Analytical Reports

**Table**

**TABLE 1**  
**GREEN XX-61N65W/8NENW (GREEN XX 8-3)**  
**SOIL SAMPLE RESULTS SUMMARY TABLE**  
**KERR-McGEE OIL AND GAS ONSHORE LP**

Sample Location	Date	Depth (ft. bgs)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	TVPH-GRO (mg/kg)	TEPH-DRO (mg/kg)	TEPH-ORO (mg/kg)	EC (mmhos/cm)	pH (units)
COGCC standards for soil (mg/kg) <sup>(1)</sup>			0.17	85	100	175	500			4 mmhos/cm or 2x BG	6-9
N02@5'	6/10/2016	5	<0.002	<0.002	<0.002	<0.002	<0.200	<25.0	<100	0.0315	8.49
S02@5'	6/10/2016	5	<0.050	<0.050	<0.050	<0.050	<5.0	<25.0	<100	0.0108	8.37
E01@5'	6/10/2016	5	<0.050	<0.050	<0.050	<0.050	<5.0	<25.0	<100	0.00820	7.67
B01@6'	6/10/2016	6	<0.002	<0.002	<0.002	<0.002	<0.200	<25.0	<100	0.0118	7.57
B02@6'	6/10/2016	6	0.004	0.026	0.002	0.047	<b>0.606</b>	<b>149</b>	<b>812</b>	0.113	<b>9.09*</b>
B03@8'	6/14/2016	8	<0.050	<0.050	<0.050	<0.050	<5.0	45.4	<100	0.142	<b>9.43*</b>

**Notes:**

1. Standards for soil are taken from 2 CCR 404-1, Table 910-1, effective January 30, 2015.

COGCC = Colorado Oil and Gas Conservation Commission

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

TVPH - GRO = Total volatile petroleum hydrocarbons - gasoline range organics

TEPH - DRO = Total extractable petroleum hydrocarbons - diesel range organics

TEPH - ORO = Total extractable petroleum hydrocarbons - oil range organics

EC = Electrical conductivity

BG = Background

mmhos/cm = Millimhos per centimeter

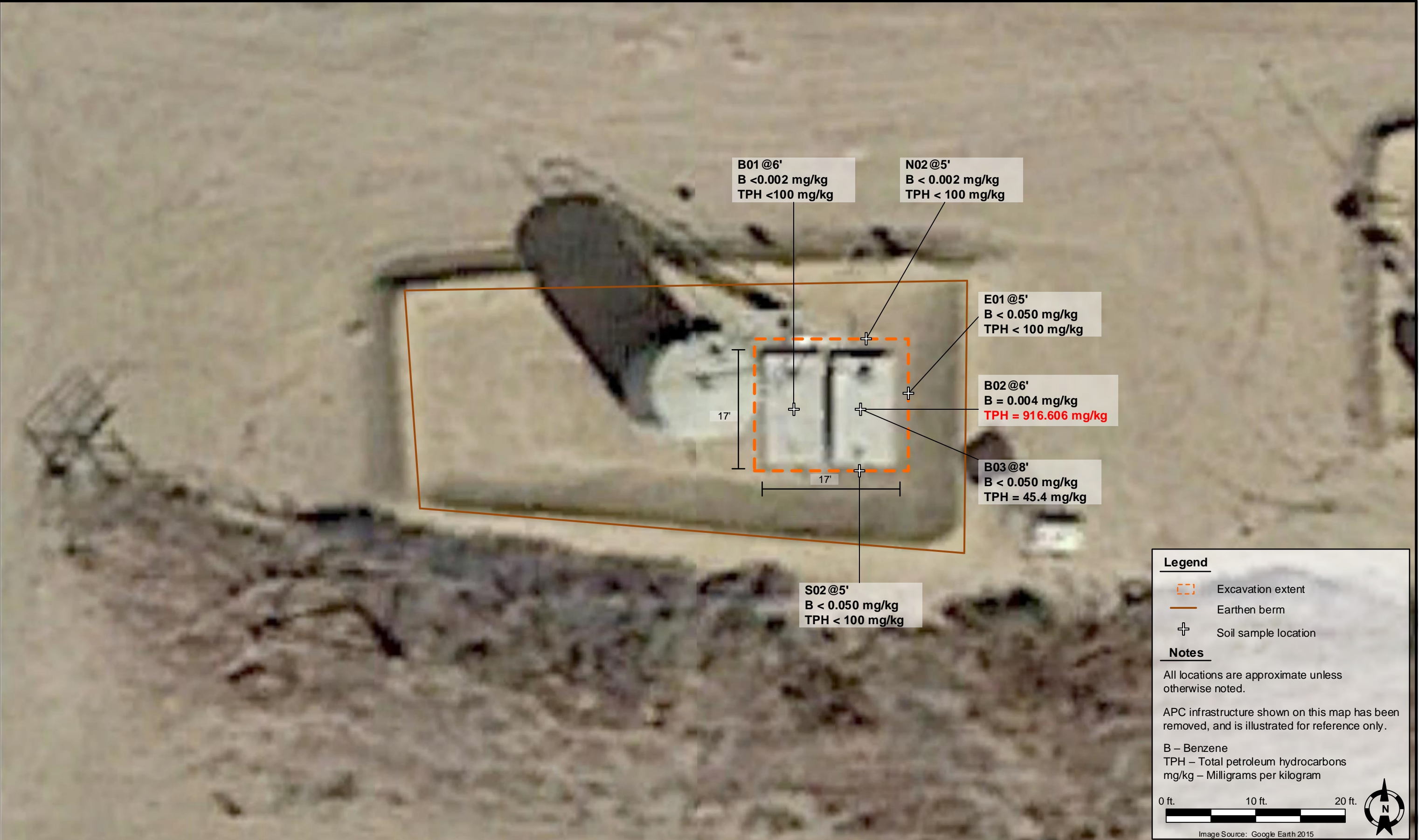
mg/kg = Milligrams per kilogram.

\* = Soil sample was collected from below the designated root zone.

ft. bgs = Feet below ground surface.

**BOLD** = Analytical result is in exceedance of COGCC Table 910-1 soil standards.

**Figure**



DATE:	July 13, 2016
DESIGNED BY:	K. Forsmark
DRAWN BY:	M. Petersen



**Kerr-McGee Oil and Gas Onshore, LP**  
**GREEN XX-61N65W/8NENW (GREEN XX 8-3)**  
NENW, Section 8, Township 61 North, Range 65 West  
Weld County, Colorado

Sample Location  
Map

FIGURE  
1

## **Attachment A**



June 13, 2016

Tasman Geosciences

Bob Cornez

6899 Pecos Street, Unit C

Denver

CO 80211

**Project Name - KMG - Green XX 8-3**

**Project Number - [none]**

Attached are your analytical results for KMG - Green XX 8-3 received by Origins Laboratory, Inc. June 10, 2016. This project is associated with Origins project number X606138-02.

The analytical results in the following report were analyzed under the guidelines of EPA Methods. These methods are identified as follows; "SW" are defined in SW-846, "EPA" are defined in 40CFR part 136 and "SM" are defined in the most current revision of Standard Methods For the Examination of Water and Wastewater.

The analytical results apply specifically to the samples and analyses specified per the attached Chain of Custody. As such, this report shall not be reproduced except in full, without the written approval of Origin's laboratory.

Unless otherwise noted, the analytical results for all soil samples are reported on a wet weight basis. All analytical analyses were performed under NELAP guidelines unless noted by a data qualifier.

Any holding time exceedances, deviations from the method specifications or deviations from Origins Laboratory's Standard Operating Procedures are outlined in the case narrative.

Thank you for selecting Origins for your analytical needs. Please contact us with any questions concerning this report, or if we can help with anything at all.

Origins Laboratory, Inc.  
303.433.1322  
o-squad@oelabinc.com





Tasman Geosciences

6899 Pecos Street, Unit C

Denver CO 80211

Bob Cornez

Project Number: [none]

Project: KMG - Green XX 8-3

## CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
N02 @ 5'	X606138-02	Soil	June 10, 2016 13:23	06/10/2016 16:30
S02 @ 5'	X606138-04	Soil	June 10, 2016 13:29	06/10/2016 16:30
E01 @ 5'	X606138-05	Soil	June 10, 2016 13:32	06/10/2016 16:30
B01 @ 6'	X606138-07	Soil	June 10, 2016 13:38	06/10/2016 16:30
B02 @ 6'	X606138-08	Soil	June 10, 2016 13:40	06/10/2016 16:30

Per the email from Brock on 06/13/16, samples 02, 04, and 05 were taken off hold. Same Day TAT.

Origins Laboratory, Inc.



*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.*

Bob Cornez  
Project Number: [none]  
Project: KMG - Green XX 8-3

# **ORIGINS**

LABORATORY, INC.

## X606138

www.originslaboratory.com

page 1 of 1

Client: Tasman Geo

Project Manager: Bob Carner

Address:

Project Name: Green XX8-3

Project Number: Zindus

Telephone Number: 912 230 2807

Samples Collected By: Derek Nelson

Email Address: carner@tasman-geo.com

APC Invoice: Sam LeRue

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative				Matrix				Analysis	Sample Instructions	
				HCl	HNO <sub>3</sub>	Other	Unpreserved	Groundwater	Soil	Air Summ #	Other			
N010S'	6/10/16	1320	2 Y							X		GC/MS TAN Diox/mo/ EC/P/H		1
N020S'	✓	1323	2 X							X				2
S010S'	↓	1326	2 X							X				3
S020S'		1329	2 X							X				4
E010S'		1332	2 Y							X				5
W010S'	1335	2 X							X					6
B010G'	1338	2 X							X		X	X		7
B020G'	✓	1340	2 X						X		X	X		8
													9	
													10	
													Turnaround Time: Same Day <input checked="" type="checkbox"/> 24 Hr <input type="checkbox"/> 48 Hr <input type="checkbox"/> Standard <input type="checkbox"/>	

Analytician Initialed By: \_\_\_\_\_ Date: 6/10/16

Relinquished By: \_\_\_\_\_ Date: 6/10/16

Date Received: 6/10/16 Time: 1630

Date: 6/10/16 Time:

Temp Received: 3.5

Date Results Needed

Origins Laboratory, Inc.

Jeff Pelligrini

*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 Street, Unit C  
Denver CO 80211

Bob Cornez  
Project Number: [none]  
Project: KMG - Green XX 8-3

Origins Laboratory

F-012207-01-R1  
Effective Date: 01/09/12

## Sample Receipt Checklist

Origins Work Order: X606138

Client: Tasman

Client Project ID: Green XX 8-3

Checklist Completed by: Jef Sm

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

Date/time completed: 6/10/12

Airbill #: N/A

Matrix(s) Received: (Check all that apply): X Soil/Solid      Water      Other:     

Cooler Number/Temperature: 1 13.3 °C 1 °C 1 °C (Describe) 1 °C

Thermometer ID: T003

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C <sup>(1)</sup> ?	<u>X</u>			
Is there ice present (document if blue ice is used)	<u>X</u>			
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)		<u>X</u>		
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)		<u>1</u>		
Were all samples received intact <sup>(1)</sup> ?	<u>1</u>			
Was adequate sample volume provided <sup>(1)</sup> ?	<u>1</u>			
Are short holding time analytes or samples with HTs due within 48 hours present <sup>(1)</sup> ?	<u>X</u>			<u>PH</u>
Is a chain-of-custody (COC) present and filled out completely <sup>(1)</sup> ?	<u>X</u>			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	<u>1</u>			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	<u>1</u>			
Is the COC properly relinquished by the client with date and time recorded <sup>(1)</sup> ?	<u>1</u>			
For volatiles in water — is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.			<u>1</u>	
Are samples preserved that require preservation and was it checked <sup>(1)</sup> ? (note ID of confirmation instrument used in comments) / (preservation is not confirmed for subcontracted analyses in order to insure sample integrity)/(pH <2 for samples preserved with HNO <sub>3</sub> , HCL, H <sub>2</sub> SO <sub>4</sub> ) / (pH >10 for samples preserved with NaAsO <sub>2</sub> +NaOH, ZnAc+NaOH)			<u>1</u>	
Additional Comments (if any):				

<sup>(1)</sup> If NO, then contact the client before proceeding with analysis and note date/time and person contacted as well as the corrective action to in the additional comments (above) and the case narrative.

Jef Sm  
Reviewed by (Project Manager)

6/10/12  
Date/Time Reviewed

Origins Laboratory, Inc.

Jef Pellegrini

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 Street, Unit C  
Denver CO 80211

Bob Cornez  
Project Number: [none]  
Project: KMG - Green XX 8-3

N02 @ 5'  
6/10/2016 1:23:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X606138-02 (Soil)**

**DRO/RRO by EPA8015C**

Diesel (C10-C28)	ND	25.0	mg/kg	1	B6F1302	06/13/2016	06/13/2016	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	"	"	U

Surrogate: o-Terphenyl 87.3 % 59-131 " " "

**GBTEX by EPA 8260C**

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B6F1301	06/13/2016	06/13/2016	U
Benzene	ND	0.002	"	"	"	"	"	U
Toluene	ND	0.002	"	"	"	"	"	U
Ethylbenzene	ND	0.002	"	"	"	"	"	U
Xylenes, total	ND	0.002	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4 103 % 70-130 " " "  
Surrogate: Toluene-d8 98.8 % 70-130 " " "  
Surrogate: 4-Bromofluorobenzene 101 % 70-130 " " "

**pH in Soil by EPA 9045D**

pH	8.49		pH Units	1	B6F1303	06/13/2016	06/13/2016	I-02
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**Specific Conductance by Modified 9050A**

Specific Conductance (EC)	0.0315		mmhos/cm	"	B6F1304	06/13/2016	"	
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Origins Laboratory, Inc.



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Tasman Geosciences  
6899 Pecos Street, Unit C  
Denver CO 80211

Bob Cornez  
Project Number: [none]  
Project: KMG - Green XX 8-3

**S02 @ 5'**  
**6/10/2016 1:29:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X606138-04 (Soil)**

**DRO/RRO by EPA8015C**

Diesel (C10-C28)	ND	25.0	mg/kg	1	B6F1302	06/13/2016	06/13/2016	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	"	"	U

Surrogate: o-Terphenyl 77.4 % 59-131 " " "

**GBTEX by EPA 8260C**

Gasoline Range Hydrocarbons	ND	5.00	mg/kg	25	B6F1301	06/13/2016	06/13/2016	U
Benzene	ND	0.050	"	"	"	"	"	U
Toluene	ND	0.050	"	"	"	"	"	U
Ethylbenzene	ND	0.050	"	"	"	"	"	U
Xylenes, total	ND	0.050	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4 99.8 % 70-130 " " "  
Surrogate: Toluene-d8 99.5 % 70-130 " " "  
Surrogate: 4-Bromofluorobenzene 99.1 % 70-130 " " "

**pH in Soil by EPA 9045D**

pH	8.37		pH Units	1	B6F1303	06/13/2016	06/13/2016	I-02
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**Specific Conductance by Modified 9050A**

Specific Conductance (EC)	0.0108		mmhos/cm	"	B6F1304	06/13/2016	"	
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Origins Laboratory, Inc.



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Tasman Geosciences  
6899 Pecos Street, Unit C  
Denver CO 80211

Bob Cornez  
Project Number: [none]  
Project: KMG - Green XX 8-3

E01 @ 5'  
6/10/2016 1:32:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X606138-05 (Soil)**

**DRO/RRO by EPA8015C**

Diesel (C10-C28)	ND	25.0	mg/kg	1	B6F1302	06/13/2016	06/13/2016	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	"	"	U

Surrogate: o-Terphenyl 77.9 % 59-131 " " "

**GBTEX by EPA 8260C**

Gasoline Range Hydrocarbons	ND	5.00	mg/kg	25	B6F1301	06/13/2016	06/13/2016	U
Benzene	ND	0.050	"	"	"	"	"	U
Toluene	ND	0.050	"	"	"	"	"	U
Ethylbenzene	ND	0.050	"	"	"	"	"	U
Xylenes, total	ND	0.050	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4 100 % 70-130 " " "  
Surrogate: Toluene-d8 101 % 70-130 " " "  
Surrogate: 4-Bromofluorobenzene 99.9 % 70-130 " " "

**pH in Soil by EPA 9045D**

pH	7.67		pH Units	1	B6F1303	06/13/2016	06/13/2016	I-02
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**Specific Conductance by Modified 9050A**

Specific Conductance (EC)	0.00820		mmhos/cm	"	B6F1304	06/13/2016	"	
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Origins Laboratory, Inc.



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Tasman Geosciences  
6899 Pecos Street, Unit C  
Denver CO 80211

Bob Cornez  
Project Number: [none]  
Project: KMG - Green XX 8-3

**B01 @ 6'**  
**6/10/2016 1:38:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X606138-07 (Soil)**

**DRO/RRO by EPA8015C**

Diesel (C10-C28)	ND	25.0	mg/kg	1	B6F0908	06/10/2016	06/10/2016	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	"	"	U

*Surrogate: o-Terphenyl* 88.8 % 59-131 " " "

**GBTEX by EPA 8260C**

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B6F0909	06/10/2016	06/10/2016	U
Benzene	ND	0.002	"	"	"	"	"	U
Toluene	ND	0.002	"	"	"	"	"	U
Ethylbenzene	ND	0.002	"	"	"	"	"	U
Xylenes, total	ND	0.002	"	"	"	"	"	U

*Surrogate: 1,2-Dichloroethane-d4* 102 % 70-130 " " "  
*Surrogate: Toluene-d8* 102 % 70-130 " " "  
*Surrogate: 4-Bromofluorobenzene* 106 % 70-130 " " "

**pH in Soil by EPA 9045D**

pH	7.57		pH Units	1	B6F1004	06/10/2016	06/10/2016	
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**Specific Conductance by Modified 9050A**

Specific Conductance (EC)	0.0118		mmhos/cm	"	B6F1005	06/10/2016	06/10/2016	
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Origins Laboratory, Inc.



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 Street, Unit C  
Denver CO 80211

Bob Cornez  
Project Number: [none]  
Project: KMG - Green XX 8-3

**B02 @ 6'**  
**6/10/2016 1:40:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X606138-08 (Soil)**

**DRO/RRO by EPA8015C**

Diesel (C10-C28)	<b>149</b>	25.0	mg/kg	1	B6F0908	06/10/2016	06/10/2016
Residual Range Organics (C28-C40)	<b>812</b>	100	"	"	"	"	"

Surrogate: o-Terphenyl	76.7 %	59-131			"	"	"
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**GBTEX by EPA 8260C**

Gasoline Range Hydrocarbons	<b>0.606</b>	0.200	mg/kg	1	B6F0909	06/10/2016	06/10/2016
Benzene	<b>0.004</b>	0.002	"	"	"	"	"
Toluene	<b>0.026</b>	0.002	"	"	"	"	"
Ethylbenzene	<b>0.002</b>	0.002	"	"	"	"	"
Xylenes, total	<b>0.047</b>	0.002	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	102 %	70-130			"	"	"
Surrogate: Toluene-d8	101 %	70-130			"	"	"
Surrogate: 4-Bromofluorobenzene	105 %	70-130			"	"	"

**pH in Soil by EPA 9045D**

pH	<b>9.09</b>		pH Units	1	B6F1004	06/10/2016	06/10/2016
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**Specific Conductance by Modified 9050A**

Specific Conductance (EC)	<b>0.113</b>		mmhos/cm	"	B6F1005	06/10/2016	06/10/2016
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Origins Laboratory, Inc.



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Tasman Geosciences  
6899 Pecos Street, Unit C  
Denver CO 80211

Bob Cornez  
Project Number: [none]  
Project: KMG - Green XX 8-3

**Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B6F0909 - EPA 5030 (soil)</b>										
<b>Blank (B6F0909-BLK1)</b>					Prepared: 06/09/2016 Analyzed: 06/10/2016					
Gasoline Range Hydrocarbons	ND	0.200	mg/kg							U
Benzene	ND	0.002	"							U
Toluene	ND	0.002	"							U
Ethylbenzene	ND	0.002	"							U
Xylenes, total	ND	0.002	"							U
Surrogate: 1,2-Dichloroethane-d4	68		ug/kg	62.5		108	70-130			
Surrogate: Toluene-d8	61		"	62.5		97.6	70-130			
Surrogate: 4-Bromofluorobenzene	64		"	62.5		102	70-130			

Origins Laboratory, Inc.



*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 Street, Unit C  
Denver CO 80211

Bob Cornez  
Project Number: [none]  
Project: KMG - Green XX 8-3

**Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B6F0909 - EPA 5030 (soil)</b>										
<b>Blank (B6F0909-BLK2)</b>					Prepared: 06/09/2016 Analyzed: 06/10/2016					
Gasoline Range Hydrocarbons	ND	0.200	mg/kg							U
Benzene	ND	0.002	"							U
Toluene	ND	0.002	"							U
Ethylbenzene	ND	0.002	"							U
Xylenes, total	ND	0.002	"							U
Surrogate: 1,2-Dichloroethane-d4	65		ug/kg	62.5		105	70-130			
Surrogate: Toluene-d8	64		"	62.5		103	70-130			
Surrogate: 4-Bromofluorobenzene	64		"	62.5		102	70-130			

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Tasman Geosciences  
6899 Pecos Street, Unit C  
Denver CO 80211

Bob Cornez  
Project Number: [none]  
Project: KMG - Green XX 8-3

**Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B6F0909 - EPA 5030 (soil)										
LCS (B6F0909-BS1)					Prepared: 06/09/2016 Analyzed: 06/10/2016					
Benzene	0.104	0.002	mg/kg	0.100		104	77.1-124			
Toluene	0.112	0.002	"	0.100		112	74.5-128			
Ethylbenzene	0.103	0.002	"	0.100		103	66.4-127			
m,p-Xylene	0.212	0.004	"	0.200		106	76.6-124			
o-Xylene	0.105	0.002	"	0.100		105	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	67		ug/kg	62.5		108	70-130			
Surrogate: Toluene-d8	64		"	62.5		103	70-130			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		99.9	70-130			

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Denver CO 80211

Bob Cornez  
Project Number: [none]  
Project: KMG - Green XX 8-3

**Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B6F0909 - EPA 5030 (soil)

**LCS (B6F0909-BS2)**

Prepared: 06/09/2016 Analyzed: 06/10/2016

Benzene	0.089	0.002	mg/kg	0.100		89.4	77.1-124			
Toluene	0.088	0.002	"	0.100		87.7	74.5-128			
Ethylbenzene	0.087	0.002	"	0.100		87.2	66.4-127			
m,p-Xylene	0.174	0.004	"	0.200		87.2	76.6-124			
o-Xylene	0.087	0.002	"	0.100		87.4	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	68		ug/kg	62.5		108	70-130			
Surrogate: Toluene-d8	62		"	62.5		100	70-130			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		101	70-130			

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Denver CO 80211

Bob Cornez  
Project Number: [none]  
Project: KMG - Green XX 8-3

**Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B6F0909 - EPA 5030 (soil)**

Matrix Spike (B6F0909-MS1)		Source: X606086-01			Prepared: 06/09/2016 Analyzed: 06/10/2016					
Benzene	0.110	0.002	mg/kg	0.100	ND	110	71.8-126			
Toluene	0.111	0.002	"	0.100	ND	111	65.1-130			
Ethylbenzene	0.108	0.002	"	0.100	ND	108	62.2-130			
m,p-Xylene	0.214	0.004	"	0.200	ND	107	46.5-137			
o-Xylene	0.106	0.002	"	0.100	ND	106	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	61		ug/kg	62.5		98.0	70-130			
Surrogate: Toluene-d8	62		"	62.5		99.8	70-130			
Surrogate: 4-Bromofluorobenzene	60		"	62.5		95.4	70-130			

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Bob Cornez  
Project Number: [none]  
Project: KMG - Green XX 8-3

**Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B6F0909 - EPA 5030 (soil)**

Matrix Spike (B6F0909-MS2)		Source: X606086-02			Prepared: 06/09/2016 Analyzed: 06/10/2016					
Benzene	0.100	0.002	mg/kg	0.100	ND	100	71.8-126			
Toluene	0.103	0.002	"	0.100	ND	103	65.1-130			
Ethylbenzene	0.093	0.002	"	0.100	ND	93.4	62.2-130			
m,p-Xylene	0.191	0.004	"	0.200	ND	95.5	46.5-137			
o-Xylene	0.094	0.002	"	0.100	ND	94.3	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	68		ug/kg	62.5		108	70-130			
Surrogate: Toluene-d8	63		"	62.5		101	70-130			
Surrogate: 4-Bromofluorobenzene	61		"	62.5		98.0	70-130			

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Denver CO 80211

Bob Cornez  
Project Number: [none]  
Project: KMG - Green XX 8-3

**Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B6F0909 - EPA 5030 (soil)**

Matrix Spike Dup (B6F0909-MSD1)		Source: X606086-01			Prepared: 06/09/2016 Analyzed: 06/10/2016					
Benzene	0.101	0.002	mg/kg	0.100	ND	101	71.8-126	9.38	11.3	
Toluene	0.105	0.002	"	0.100	ND	105	65.1-130	5.70	15.4	
Ethylbenzene	0.095	0.002	"	0.100	ND	94.8	62.2-130	13.4	19.6	
m,p-Xylene	0.193	0.004	"	0.200	ND	96.7	46.5-137	10.3	19.2	
o-Xylene	0.096	0.002	"	0.100	ND	96.0	54.2-134	10.2	17.9	
Surrogate: 1,2-Dichloroethane-d4	68		ug/kg	62.5		110	70-130			
Surrogate: Toluene-d8	63		"	62.5		100	70-130			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		98.6	70-130			

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Denver CO 80211

Bob Cornez  
Project Number: [none]  
Project: KMG - Green XX 8-3

**Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B6F0909 - EPA 5030 (soil)</b>										
<b>Matrix Spike Dup (B6F0909-MSD2)</b>		<b>Source: X606086-02</b>			Prepared: 06/09/2016 Analyzed: 06/10/2016					
Benzene	0.091	0.002	mg/kg	0.100	ND	91.1	71.8-126	9.40	11.3	
Toluene	0.090	0.002	"	0.100	ND	89.7	65.1-130	13.9	15.4	
Ethylbenzene	0.076	0.002	"	0.100	ND	76.0	62.2-130	20.5	19.6	QM-07
m,p-Xylene	0.155	0.004	"	0.200	ND	77.7	46.5-137	20.5	19.2	QM-07
o-Xylene	0.077	0.002	"	0.100	ND	77.0	54.2-134	20.2	17.9	QM-07
Surrogate: 1,2-Dichloroethane-d4	71		ug/kg	62.5		113	70-130			
Surrogate: Toluene-d8	62		"	62.5		99.4	70-130			
Surrogate: 4-Bromofluorobenzene	61		"	62.5		97.5	70-130			

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Tasman Geosciences  
6899 Pecos Street, Unit C  
Denver CO 80211

Bob Cornez  
Project Number: [none]  
Project: KMG - Green XX 8-3

**Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B6F1301 - EPA 5030 (soil)**

Matrix Spike (B6F1301-MS1)		Source: X606138-02			Prepared: 06/13/2016 Analyzed: 06/13/2016					
Benzene	0.111	0.002	mg/kg	0.100	ND	111	71.8-126			
Toluene	0.120	0.002	"	0.100	ND	120	65.1-130			
Ethylbenzene	0.114	0.002	"	0.100	ND	114	62.2-130			
m,p-Xylene	0.228	0.004	"	0.200	ND	114	46.5-137			
o-Xylene	0.109	0.002	"	0.100	ND	109	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	63		ug/kg	62.5		101	70-130			
Surrogate: Toluene-d8	64		"	62.5		103	70-130			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		101	70-130			

Origins Laboratory, Inc.



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Tasman Geosciences  
6899 Pecos Street, Unit C  
Denver CO 80211

Bob Cornez  
Project Number: [none]  
Project: KMG - Green XX 8-3

**Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B6F1301 - EPA 5030 (soil)</b>										
<b>Matrix Spike Dup (B6F1301-MSD1)</b>										
					<b>Source: X606138-02</b>					
										Prepared: 06/13/2016 Analyzed: 06/13/2016
Benzene	0.110	0.002	mg/kg	0.100	ND	110	71.8-126	1.16	11.3	
Toluene	0.115	0.002	"	0.100	ND	115	65.1-130	3.84	15.4	
Ethylbenzene	0.112	0.002	"	0.100	ND	112	62.2-130	2.11	19.6	
m,p-Xylene	0.222	0.004	"	0.200	ND	111	46.5-137	2.72	19.2	
o-Xylene	0.108	0.002	"	0.100	ND	108	54.2-134	0.958	17.9	
Surrogate: 1,2-Dichloroethane-d4	62		ug/kg	62.5		100	70-130			
Surrogate: Toluene-d8	65		"	62.5		103	70-130			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		98.4	70-130			

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Tasman Geosciences  
6899 Pecos Street, Unit C  
Denver CO 80211

Bob Cornez  
Project Number: [none]  
Project: KMG - Green XX 8-3

## Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control

### Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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## Extractable Petroleum Hydrocarbons by 8015C - Quality Control

### Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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#### Batch B6F0908 - EPA 3580

#### Blank (B6F0908-BLK1)

Prepared: 06/09/2016 Analyzed: 06/10/2016

Diesel (C10-C28)	ND	50.0	mg/kg							U
Residual Range Organics (C28-C40)	ND	200	"							U
Surrogate: o-Terphenyl	31		"	50.0		62.3	59-131			

#### Blank (B6F0908-BLK2)

Prepared: 06/09/2016 Analyzed: 06/10/2016

Diesel (C10-C28)	ND	50.0	mg/kg							U
Residual Range Organics (C28-C40)	ND	200	"							U
Surrogate: o-Terphenyl	41		"	50.0		81.2	59-131			

#### LCS (B6F0908-BS1)

Prepared: 06/09/2016 Analyzed: 06/10/2016

Diesel (C10-C28)	996	50.0	mg/kg	1000		99.6	64-121			
Residual Range Organics (C28-C40)	988	200	"	1000		98.8	58-124			
Surrogate: o-Terphenyl	49		"	50.0		98.0	59-131			

#### LCS (B6F0908-BS2)

Prepared: 06/09/2016 Analyzed: 06/10/2016

Diesel (C10-C28)	822	50.0	mg/kg	1000		82.2	64-121			
Residual Range Organics (C28-C40)	742	200	"	1000		74.2	58-124			
Surrogate: o-Terphenyl	40		"	50.0		80.6	59-131			

#### Matrix Spike (B6F0908-MS1)

Source: X606086-01

Prepared: 06/09/2016 Analyzed: 06/10/2016

Diesel (C10-C28)	951	50.0	mg/kg	1000	202	74.9	53-125			
Residual Range Organics (C28-C40)	796	200	"	1000	105	69.1	47-133			

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6899 Pecos Street, Unit C  
Denver CO 80211

Bob Cornez  
Project Number: [none]  
Project: KMG - Green XX 8-3

## Extractable Petroleum Hydrocarbons by 8015C - Quality Control Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B6F0908 - EPA 3580</b>										
<b>Matrix Spike (B6F0908-MS1)</b>		<b>Source: X606086-01</b>			Prepared: 06/09/2016 Analyzed: 06/10/2016					
Surrogate: o-Terphenyl	44		mg/kg	50.0		88.2	59-131			
<b>Matrix Spike (B6F0908-MS2)</b>		<b>Source: X606086-02</b>			Prepared: 06/09/2016 Analyzed: 06/10/2016					
Diesel (C10-C28)	1540	50.0	mg/kg	1000	479	106	53-125			
Residual Range Organics (C28-C40)	1340	200	"	1000	328	101	47-133			
Surrogate: o-Terphenyl	47		"	50.0		93.5	59-131			
<b>Matrix Spike Dup (B6F0908-MSD1)</b>		<b>Source: X606086-01</b>			Prepared: 06/09/2016 Analyzed: 06/10/2016					
Diesel (C10-C28)	829	50.0	mg/kg	1000	202	62.7	53-125	17.7	20	
Residual Range Organics (C28-C40)	692	200	"	1000	105	58.7	47-133	16.3	20	
Surrogate: o-Terphenyl	43		"	50.0		86.6	59-131			
<b>Matrix Spike Dup (B6F0908-MSD2)</b>		<b>Source: X606086-02</b>			Prepared: 06/09/2016 Analyzed: 06/10/2016					
Diesel (C10-C28)	1280	50.0	mg/kg	1000	479	79.7	53-125	28.6	20	QR-03
Residual Range Organics (C28-C40)	1120	200	"	1000	328	79.1	47-133	24.8	20	QR-02
Surrogate: o-Terphenyl	47		"	50.0		94.0	59-131			
<b>Batch B6F1302 - EPA 3580</b>										
<b>Blank (B6F1302-BLK1)</b>		Prepared: 06/13/2016 Analyzed: 06/13/2016								
Diesel (C10-C28)	ND	50.0	mg/kg							U
Residual Range Organics (C28-C40)	ND	200	"							U
Surrogate: o-Terphenyl	47		"	50.0		94.9	59-131			
<b>LCS (B6F1302-BS1)</b>		Prepared: 06/13/2016 Analyzed: 06/13/2016								
Diesel (C10-C28)	958	50.0	mg/kg	1000		95.8	64-121			
Residual Range Organics (C28-C40)	881	200	"	1000		88.1	58-124			
Surrogate: o-Terphenyl	48		"	50.0		96.8	59-131			

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6899 Pecos Street, Unit C  
Denver CO 80211

Bob Cornez  
Project Number: [none]  
Project: KMG - Green XX 8-3

## Extractable Petroleum Hydrocarbons by 8015C - Quality Control Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B6F1302 - EPA 3580</b>										
<b>Matrix Spike (B6F1302-MS1)</b>		<b>Source: X606138-02</b>			Prepared: 06/13/2016 Analyzed: 06/13/2016					
Diesel (C10-C28)	969	50.0	mg/kg	1000	20.4	94.9	53-125			
Residual Range Organics (C28-C40)	965	200	"	1000	ND	96.5	47-133			
Surrogate: o-Terphenyl	49		"	50.0		98.9	59-131			
<b>Matrix Spike Dup (B6F1302-MSD1)</b>		<b>Source: X606138-02</b>			Prepared: 06/13/2016 Analyzed: 06/13/2016					
Diesel (C10-C28)	824	50.0	mg/kg	1000	20.4	80.3	53-125	16.6	20	
Residual Range Organics (C28-C40)	709	200	"	1000	ND	70.9	47-133	30.6	20	QM-07
Surrogate: o-Terphenyl	42		"	50.0		83.6	59-131			

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6899 Pecos Street, Unit C  
Denver CO 80211

Bob Cornez  
Project Number: [none]  
Project: KMG - Green XX 8-3

## Classical Chemistry Parameters - Quality Control

### Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B6F1004 - NO PREP</b>										
<b>Duplicate (B6F1004-DUP1)</b>		<b>Source: X606138-07</b>			Prepared: 06/10/2016 Analyzed: 06/10/2016					
pH	7.32		pH Units		7.57			3.36	25	
<b>Batch B6F1005 - NO PREP</b>										
<b>Blank (B6F1005-BLK1)</b>		Prepared: 06/10/2016 Analyzed: 06/10/2016								
Specific Conductance (EC)	0.00230		mmhos/cm							
<b>Duplicate (B6F1005-DUP1)</b>		<b>Source: X606138-07</b>			Prepared: 06/10/2016 Analyzed: 06/10/2016					
Specific Conductance (EC)	0.0132		mmhos/cm		0.0118			11.2	25	
<b>Batch B6F1303 - NO PREP</b>										
<b>Duplicate (B6F1303-DUP1)</b>		<b>Source: X606138-02</b>			Prepared: 06/13/2016 Analyzed: 06/13/2016					
pH	8.49		pH Units		8.49			0.00	25	
<b>Batch B6F1304 - NO PREP</b>										
<b>Blank (B6F1304-BLK1)</b>		Prepared: 06/13/2016 Analyzed: 06/13/2016								
Specific Conductance (EC)	0.00210		mmhos/cm							
<b>Duplicate (B6F1304-DUP1)</b>		<b>Source: X606138-02</b>			Prepared: 06/13/2016 Analyzed: 06/13/2016					
Specific Conductance (EC)	0.0337		mmhos/cm		0.0315			6.75	25	

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Tasman Geosciences

6899 Pecos Street, Unit C

Denver CO 80211

Bob Cornez

Project Number: [none]

Project: KMG - Green XX 8-3

## Notes and Definitions

U Sample is Non-Detect.

QR-03 The RPD value for the sample duplicate or MS/MSD was outside of QC acceptance limits due to matrix interference. QC batch accepted based on LCS and/or LCSD recovery and/or RPD values.

QR-02 The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data.

QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.

I-02 This result was analyzed outside of the EPA recommended holding time.

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported at a wet weight basis.

Origins Laboratory, Inc.



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June 15, 2016

Tasman Geosciences

Bob Cornez

6899 Pecos Street, Unit C

Denver

CO 80211

**Project Name - KMG - Green XX 8-3**

**Project Number - [none]**

Attached are your analytical results for KMG - Green XX 8-3 received by Origins Laboratory, Inc. June 14, 2016. This project is associated with Origins project number X606170-01.

The analytical results in the following report were analyzed under the guidelines of EPA Methods. These methods are identified as follows; "SW" are defined in SW-846, "EPA" are defined in 40CFR part 136 and "SM" are defined in the most current revision of Standard Methods For the Examination of Water and Wastewater.

The analytical results apply specifically to the samples and analyses specified per the attached Chain of Custody. As such, this report shall not be reproduced except in full, without the written approval of Origin's laboratory.

Unless otherwise noted, the analytical results for all soil samples are reported on a wet weight basis. All analytical analyses were performed under NELAP guidelines unless noted by a data qualifier.

Any holding time exceedances, deviations from the method specifications or deviations from Origins Laboratory's Standard Operating Procedures are outlined in the case narrative.

Thank you for selecting Origins for your analytical needs. Please contact us with any questions concerning this report, or if we can help with anything at all.

Origins Laboratory, Inc.  
303.433.1322  
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Tasman Geosciences

6899 Pecos Street, Unit C

Denver CO 80211

Bob Cornez

Project Number: [none]

Project: KMG - Green XX 8-3

## CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
B03 @ 8'	X606170-01	Soil	June 14, 2016 15:15	06/14/2016 17:00

Origins Laboratory, Inc.



*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.*

Jen Pellegrini For Noelle Doyle Mathis, President

Bob Cornez  
Project Number: [none]  
Project: KMG - Green XX 8-3

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X606176

page 1 of 1

Client: Tasman Geosciences for APC  
Address:   
  
Telephone Number: (352) 262-9910  
Email Address: tcorbett@tgmw.com

Project Manager: Bob Cornez  
Project Name: GREEN XX 8-3  
Project Number:   
Samples Collected By: KAT FISKE

Sample ID Description	Date Sampled	Time Sampled	# of Containers				Preservative				Matrix			Analysis	Sample Instructions
			Unpreserved	HCl	HNO <sub>3</sub>	Other	Groundwater	Soil	Alt Summa #	Other					
B0088	6/14/10	1515	2	X					X				GLUTEX 8260 TIN DROBIO 8015 PH EL, SAR (P E74.0)	1	
														2	
														3	
														4	
														5	
														6	
														7	
														8	
														9	
														10	
Relinquished By: 	Date: 6/14/10	Time: 1625	Received By: 			Date: 6/14/10			Time: 1730			Turnaround Time: Same Day <input checked="" type="checkbox"/> 24 Hr <input type="checkbox"/> 48 Hr <input type="checkbox"/> 72 Hr <input type="checkbox"/> Standard <input checked="" type="checkbox"/>			
Relinquished By: 	Date: 6/14/10	Time: 1625	Received By: 			Date: 6/14/10			Time: 1730			Turnaround Time: Same Day <input checked="" type="checkbox"/> 24 Hr <input type="checkbox"/> 48 Hr <input type="checkbox"/> 72 Hr <input type="checkbox"/> Standard <input checked="" type="checkbox"/>			

Date Results Needed

33°

Origins Laboratory, Inc.

Jeff Pellipini

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Tasman Geosciences  
6899 Pecos Street, Unit C  
Denver CO 80211

Bob Cornez  
Project Number: [none]  
Project: KMG - Green XX 8-3

Origins Laboratory

F-012207-01-R1  
Effective Date: 01/09/12

## Sample Receipt Checklist

Origins Work Order: X606170

Client: Tasman

Client Project ID: Green XX 8-3

Checklist Completed by: Jeff Smith

Shipped Via: OTTT Pick Up

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

Date/time completed: 6/14/12

Airbill #: NA

Matrix(s) Received: (Check all that apply): X Soil/Solid        Water        Other:       

Cooler Number/Temperature: 1 13.3 °C        °C        °C (Describe)        °C

Thermometer ID: T003

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C <sup>(1)</sup> ?	<u>X</u>			
Is there ice present (document if blue ice is used)	<u>X</u>			
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)		<u>X</u>		
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)		<u>X</u>		
Were all samples received intact <sup>(1)</sup> ?	<u>X</u>			
Was adequate sample volume provided <sup>(1)</sup> ?	<u>X</u>			
Are short holding time analytes or samples with HTs due within 48 hours present <sup>(1)</sup> ?	<u>X</u>			<u>pH</u>
Is a chain-of-custody (COC) present and filled out completely <sup>(1)</sup> ?	<u>X</u>			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	<u>X</u>			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	<u>X</u>			
Is the COC properly relinquished by the client with date and time recorded <sup>(1)</sup> ?	<u>X</u>			
For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.			<u>X</u>	
Are samples preserved that require preservation and was it checked <sup>(1)</sup> ? (note ID of confirmation instrument used in comments) / (preservation is not confirmed for subcontracted analyses in order to insure sample integrity) / (pH < 2 for samples preserved with HNO <sub>3</sub> , HCL, H <sub>2</sub> SO <sub>4</sub> ) / (pH > 10 for samples preserved with NaAsO <sub>2</sub> +NaOH, ZnAc+NaOH)			<u>X</u>	
Additional Comments (if any):				

<sup>(1)</sup>If NO, then contact the client before proceeding with analysis and note date/time and person contacted as well as the corrective action to in the additional comments (above) and the case narrative.

Reviewed by (Project Manager) Jeff Smith

Date/Time Reviewed 6/14/12

Origins Laboratory, Inc.

*Jen Pellegrini*

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Tasman Geosciences  
6899 Pecos Street, Unit C  
Denver CO 80211

Bob Cornez  
Project Number: [none]  
Project: KMG - Green XX 8-3

**B03 @ 8'**  
**6/14/2016 3:15:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X606170-01 (Soil)**

**DRO/RRO by EPA8015C**

Diesel (C10-C28)	45.4	25.0	mg/kg	1	B6F1404	06/14/2016	06/14/2016	
Residual Range Organics (C28-C40)	ND	100	"	"	"	"	"	U

Surrogate: o-Terphenyl	75.7 %	59-131			"	"	"	
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**GBTEX by EPA 8260C**

Gasoline Range Hydrocarbons	ND	5.00	mg/kg	25	B6F1403	06/14/2016	06/14/2016	U
Benzene	ND	0.050	"	"	"	"	"	U
Toluene	ND	0.050	"	"	"	"	"	U
Ethylbenzene	ND	0.050	"	"	"	"	"	U
Xylenes, total	ND	0.050	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	94.1 %	70-130			"	"	"	
Surrogate: Toluene-d8	102 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	106 %	70-130			"	"	"	

**pH in Soil by EPA 9045D**

pH	9.43		pH Units	1	B6F1405	06/14/2016	06/14/2016	
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**Specific Conductance by Modified 9050A**

Specific Conductance (EC)	0.142		mmhos/cm	"	B6F1406	"	06/14/2016	
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Tasman Geosciences  
6899 Pecos Street, Unit C  
Denver CO 80211

Bob Cornez  
Project Number: [none]  
Project: KMG - Green XX 8-3

**Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B6F1403 - EPA 5030 (soil)</b>										
<b>Blank (B6F1403-BLK1)</b>					Prepared: 06/14/2016 Analyzed: 06/14/2016					
Gasoline Range Hydrocarbons	ND	0.200	mg/kg							U
Benzene	ND	0.002	"							U
Toluene	ND	0.002	"							U
Ethylbenzene	ND	0.002	"							U
Xylenes, total	ND	0.002	"							U
Surrogate: 1,2-Dichloroethane-d4	67		ug/kg	62.5		107	70-130			
Surrogate: Toluene-d8	61		"	62.5		98.4	70-130			
Surrogate: 4-Bromofluorobenzene	64		"	62.5		102	70-130			

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Tasman Geosciences  
6899 Pecos Street, Unit C  
Denver CO 80211

Bob Cornez  
Project Number: [none]  
Project: KMG - Green XX 8-3

**Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B6F1403 - EPA 5030 (soil)</b>										
<b>LCS (B6F1403-BS1)</b>					Prepared: 06/14/2016 Analyzed: 06/14/2016					
Benzene	0.104	0.002	mg/kg	0.100		104	77.1-124			
Toluene	0.103	0.002	"	0.100		103	74.5-128			
Ethylbenzene	0.104	0.002	"	0.100		104	66.4-127			
m,p-Xylene	0.211	0.004	"	0.200		105	76.6-124			
o-Xylene	0.103	0.002	"	0.100		103	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	74		ug/kg	62.5		119	70-130			
Surrogate: Toluene-d8	62		"	62.5		99.0	70-130			
Surrogate: 4-Bromofluorobenzene	64		"	62.5		102	70-130			

Origins Laboratory, Inc.



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6899 Pecos Street, Unit C  
Denver CO 80211

Bob Cornez  
Project Number: [none]  
Project: KMG - Green XX 8-3

**Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B6F1403 - EPA 5030 (soil)**

Matrix Spike (B6F1403-MS1)		Source: X606171-01			Prepared: 06/14/2016 Analyzed: 06/14/2016					
Benzene	0.112	0.002	mg/kg	0.100	ND	112	71.8-126			
Toluene	0.113	0.002	"	0.100	ND	113	65.1-130			
Ethylbenzene	0.114	0.002	"	0.100	ND	114	62.2-130			
m,p-Xylene	0.234	0.004	"	0.200	ND	117	46.5-137			
o-Xylene	0.113	0.002	"	0.100	ND	113	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	60		ug/kg	62.5		96.4	70-130			
Surrogate: Toluene-d8	63		"	62.5		100	70-130			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		101	70-130			

Origins Laboratory, Inc.



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Tasman Geosciences  
6899 Pecos Street, Unit C  
Denver CO 80211

Bob Cornez  
Project Number: [none]  
Project: KMG - Green XX 8-3

**Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B6F1403 - EPA 5030 (soil)**

Matrix Spike Dup (B6F1403-MSD1)		Source: X606171-01			Prepared: 06/14/2016 Analyzed: 06/14/2016					
Benzene	0.102	0.002	mg/kg	0.100	ND	102	71.8-126	9.92	11.3	
Toluene	0.099	0.002	"	0.100	ND	99.3	65.1-130	12.9	15.4	
Ethylbenzene	0.102	0.002	"	0.100	ND	102	62.2-130	11.8	19.6	
m,p-Xylene	0.205	0.004	"	0.200	ND	103	46.5-137	13.0	19.2	
o-Xylene	0.101	0.002	"	0.100	ND	101	54.2-134	11.7	17.9	
Surrogate: 1,2-Dichloroethane-d4	67		ug/kg	62.5		107	70-130			
Surrogate: Toluene-d8	62		"	62.5		98.8	70-130			
Surrogate: 4-Bromofluorobenzene	64		"	62.5		103	70-130			

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Tasman Geosciences  
6899 Pecos Street, Unit C  
Denver CO 80211

Bob Cornez  
Project Number: [none]  
Project: KMG - Green XX 8-3

## Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control

### Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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## Extractable Petroleum Hydrocarbons by 8015C - Quality Control

### Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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#### Batch B6F1404 - EPA 3580

#### Blank (B6F1404-BLK1)

Prepared: 06/14/2016 Analyzed: 06/15/2016

Diesel (C10-C28)	ND	50.0	mg/kg							U
Residual Range Organics (C28-C40)	ND	200	"							U
Surrogate: o-Terphenyl	36		"	50.0		72.1	59-131			

#### LCS (B6F1404-BS1)

Prepared: 06/14/2016 Analyzed: 06/14/2016

Diesel (C10-C28)	921	50.0	mg/kg	1000		92.1	64-121			
Residual Range Organics (C28-C40)	889	200	"	1000		88.9	58-124			
Surrogate: o-Terphenyl	44		"	50.0		87.1	59-131			

#### Matrix Spike (B6F1404-MS1)

Source: X606171-01

Prepared: 06/14/2016 Analyzed: 06/14/2016

Diesel (C10-C28)	805	50.0	mg/kg	1000	30.5	77.5	53-125			
Residual Range Organics (C28-C40)	720	200	"	1000	14.8	70.5	47-133			
Surrogate: o-Terphenyl	40		"	50.0		80.6	59-131			

#### Matrix Spike Dup (B6F1404-MSD1)

Source: X606171-01

Prepared: 06/14/2016 Analyzed: 06/14/2016

Diesel (C10-C28)	918	50.0	mg/kg	1000	30.5	88.8	53-125	13.6	20	
Residual Range Organics (C28-C40)	917	200	"	1000	14.8	90.2	47-133	24.5	20	QR-02
Surrogate: o-Terphenyl	49		"	50.0		98.2	59-131			

Origins Laboratory, Inc.



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Tasman Geosciences  
6899 Pecos Street, Unit C  
Denver CO 80211

Bob Cornez  
Project Number: [none]  
Project: KMG - Green XX 8-3

## Classical Chemistry Parameters - Quality Control Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B6F1405 - NO PREP</b>										
<b>Duplicate (B6F1405-DUP1)</b>		<b>Source: X606171-01</b>			Prepared: 06/14/2016 Analyzed: 06/14/2016					
pH	8.32		pH Units		8.10			2.68	25	
<b>Batch B6F1406 - NO PREP</b>										
<b>Blank (B6F1406-BLK1)</b>		Prepared: 06/14/2016 Analyzed: 06/14/2016								
Specific Conductance (EC)	0.00250		mmhos/cm							
<b>Duplicate (B6F1406-DUP1)</b>		<b>Source: X606171-01</b>			Prepared: 06/14/2016 Analyzed: 06/14/2016					
Specific Conductance (EC)	0.0502		mmhos/cm		0.0446			11.8	25	

Origins Laboratory, Inc.



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Tasman Geosciences

6899 Pecos Street, Unit C

Denver CO 80211

Bob Cornez

Project Number: [none]

Project: KMG - Green XX 8-3

## Notes and Definitions

U Sample is Non-Detect.

QR-02 The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data.

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported at a wet weight basis.

Origins Laboratory, Inc.



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