



March 8, 2019

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

**Re: Sump Replacement Summary Letter Report  
Camp 2C-25HZ Production Facility  
API: 05-123-34484  
Facility ID: 327230  
Legal: SWSE Sec 25-T3N-R66W  
Remediation Project # 12507**

Dear Mr. Hamilton:

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 site assessment activities and the results of environmental testing at the above-referenced site (Site). This Report is being submitted under Form 27 Site Investigation and Remediation Workplan Remediation Project # 12507. Tasman provided environmental services at the Site that included collection of confirmation samples from the excavation, documentation of field activities, and review of analytical data 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 replacement of two produced water sumps. Soil sampling activities, laboratory analytical results, and conclusions are presented below.

Excavation activities were initiated on May 5, 2017 following removal of the produced water sumps. The final extent of the excavation measured approximately 50 feet by 27 feet with an approximate depth of 4 feet below ground surface (bgs). Excavated material was not removed from the Site during excavation and sump closure activities. A liner was not present at the location. Groundwater was not encountered during excavation activities.

Eight soil samples were collected from the sidewalls and base of the final extent of the sump excavation area at approximately 3 feet and 4 feet bgs, respectively. The soil samples were field screened for volatile organic compound (VOC) concentrations using a photoionization detector (PID). Based on the field screening results, the base soil samples (B01@4' and B02@4') 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. The remaining samples were placed on hold pending base sample results.

The general Site layout, sample locations and approximate extent of the excavation are illustrated on Figure 1.

## Results

Soil analytical results for base soil samples B01@4' and B02@4' indicated that constituent concentrations were in full compliance with State standards. Based on these results, the remaining soil samples were not analyzed. Soil analytical data are provided in Table 1. The laboratory analytical report is provided as Attachment A.

## Conclusions

Analytical results described herein confirm that BTEX and TPH impacts are not present at concentrations above applicable regulatory standards at the former produced water sump locations. Therefore, no further Site assessment or remedial activity is recommended at this time. Following Site assessment activities, the produced water sumps were replaced and the excavation area was backfilled and contoured to match pre-existing 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 black ink, appearing to read 'MJahn', is positioned above the typed name.

Mike Jahn, PG  
Project Manager

## Attachments:

Table 1 – Soil Sample Results Summary Table  
Figure 1 – Sample Location Map  
Attachment A – Laboratory Analytical Report

## **Table**

**TABLE 1**  
**CAMP 2C-25HZ PRODUCTION FACILITY**  
**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)
<b>COGCC standards for soil (mg/kg) <sup>(1)</sup></b>			<b>0.17</b>	<b>85</b>	<b>100</b>	<b>175</b>	<b>500</b>			<b>4 mmhos/cm or 2x BG</b>	<b>6-9</b>
B01@4'	05/05/17	4	<0.002	<0.002	<0.002	<0.002	<0.200	<25.0	<100	0.0664	<b>9.20*</b>
B02@4'	05/05/17	4	<0.002	<0.002	<0.002	<0.002	<0.200	<25.0	<100	0.0719	8.90

**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

mmhos/cm = Millimhos per centimeter

mg/kg = Milligrams per kilogram.

ft. bgs = Feet below ground surface.

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

\* pH sample was collected below the designated root zone (>3' bgs)



**Figure**



**B01@4'**  
 B < 0.002 mg/kg  
 TPH < 100 mg/kg

**B02@4'**  
 B < 0.002 mg/kg  
 TPH < 100 mg/kg

**Legend**

-  Final excavation extent
-  Soil sample location

**Notes**

All locations are approximate unless otherwise noted.

APC infrastructure shown on this map has been removed, and is illustrated for reference only.

B – Benzene  
 TPH – Total petroleum hydrocarbons  
 mg/kg – Milligrams per kilogram



Image Source: Google Earth 2016

DATE:	May 18, 2017
DESIGNED BY:	A. Chapin
DRAWN BY:	M. Petersen



**Kerr-McGee Oil and Gas Onshore LP**  
**CAMP 2C – 25HZ PRODUCTION FACILITY**  
 SWSE Sec. 25-T3N-R66W  
 Weld County, Colorado

Sample Location  
 Map

FIGURE  
 1

**Attachment A**

May 08, 2017

Tasman Geosciences

Bob Cornez

6899 Pecos Street, Unit C

Denver CO 80211

Project Name - KMG - Camp 2C-25HZ

Project Number - [none]

Attached are your analytical results for KMG - Camp 2C-25HZ received by Origins Laboratory, Inc. May 05, 2017. This project is associated with Origins project number Y705101-01.

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  
o-squad@oelabinc.com



Tasman Geosciences  
6899 Pecos Street, Unit C  
Denver CO 80211

Bob Cornez  
Project Number: [none]  
Project: KMG - Camp 2C-25HZ

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
B01@4'	Y705101-01	Soil	May 5, 2017 16:00	05/05/2017 17:59
B02@4'	Y705101-02	Soil	May 5, 2017 16:05	05/05/2017 17:59

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



Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Bob Cornez  
 Project Number: [none]  
 Project: KMG - Camp 2C-25HZ

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: 4205101

Client: Tasman

Client Project ID: KMG - Camp 2C-25HZ

Checklist Completed by: Dan Lee

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

Date/time completed: 5-5-12 1522

Airbill #: NA

Matrix(s) Received: (Check all that apply): 1 Soil/Solid          Water          Other:         

Cooler Number/Temperature: 1 / 15.4 = C          °C          °C          °C (Describe)

Thermometer ID: 1003

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>		/		sampled same Day
Is there ice present (document if blue ice is used)	/			
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)		/		
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)		/		
Were all samples received intact <sup>(1)?</sup>	/			
Was adequate sample volume provided <sup>(1)?</sup>	/			
Are short holding time analytes or samples with HTs due within 48 hours present <sup>(1)?</sup>	/			pH
Is a chain-of-custody (COC) present and filled out completely <sup>(1)?</sup>	/			
Does the COC agree with the number and type of sample bottles received <sup>(1)?</sup>	/			
Do the sample IDs on the bottle labels match the COC <sup>(1)?</sup>	/			
Is the COC properly relinquished by the client with date and time recorded <sup>(1)?</sup>	/			
For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.			/	
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 HNO3, HCL, H2SO4) / (pH >10 for samples preserved with NaAsO2+NaOH, ZnAc+NaOH)		/		
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: [Signature] (Project Manager)

Date/Time Reviewed: 5-5-12 1522

Origins Laboratory, Inc.

Jefe Pellegrini

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Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Bob Cornez  
 Project Number: [none]  
 Project: KMG - Camp 2C-25HZ

**B01@4'**  
**5/5/2017 4:00:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y705101-01 (Soil)**

**DRO/RRO by EPA8015C**

Diesel (C10-C28)	ND	25.0	mg/kg	1	B7E0504	05/05/2017	05/05/2017	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	"	"	U

*Surrogate: o-Terphenyl* 83.8 % 59-131 " " "

**GBTEX by EPA 8260C**

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B7E0503	05/05/2017	05/05/2017	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* 115 % 70-130 " " "  
*Surrogate: Toluene-d8* 99.0 % 70-130 " " "  
*Surrogate: 4-Bromofluorobenzene* 101 % 70-130 " " "

**pH in Soil by EPA 9045D**

pH	9.20		pH Units	1	B7E0506	05/05/2017	05/06/2017	
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**Specific Conductance by Modified 9050A**

Specific Conductance (EC)	0.0664		mmhos/cm	"	B7E0507	05/05/2017	05/06/2017	
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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 - Camp 2C-25HZ

**B02@4'**  
**5/5/2017 4:05:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y705101-02 (Soil)**

**DRO/RRO by EPA8015C**

Diesel (C10-C28)	ND	25.0	mg/kg	1	B7E0504	05/05/2017	05/05/2017	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	"	"	U

*Surrogate: o-Terphenyl* 88.2 % 59-131 " " "

**GBTEX by EPA 8260C**

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B7E0503	05/05/2017	05/05/2017	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* 113 % 70-130 " " "  
*Surrogate: Toluene-d8* 95.9 % 70-130 " " "  
*Surrogate: 4-Bromofluorobenzene* 101 % 70-130 " " "

**pH in Soil by EPA 9045D**

pH	8.90		pH Units	1	B7E0506	05/05/2017	05/06/2017	
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**Specific Conductance by Modified 9050A**

Specific Conductance (EC)	0.0719		mmhos/cm	"	B7E0507	05/05/2017	05/06/2017	
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Origins Laboratory, Inc.



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 6899 Pecos Street, Unit C  
 Denver CO 80211

Bob Cornez  
 Project Number: [none]  
 Project: KMG - Camp 2C-25HZ

**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 B7E0503 - EPA 5030 (soil)**

**Blank (B7E0503-BLK1)**

Prepared: 05/05/2017 Analyzed: 05/05/2017

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	64		ug/kg	62.5		103	70-130			
Surrogate: Toluene-d8	63		"	62.5		100	70-130			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		100	70-130			

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Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Bob Cornez  
 Project Number: [none]  
 Project: KMG - Camp 2C-25HZ

**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 B7E0503 - EPA 5030 (soil)**

**Blank (B7E0503-BLK2)**

Prepared: 05/05/2017 Analyzed: 05/05/2017

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		103	70-130			
Surrogate: Toluene-d8	62		"	62.5		99.5	70-130			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		98.9	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 - Camp 2C-25HZ

**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 B7E0503 - EPA 5030 (soil)**

**Blank (B7E0503-BLK3)**

Prepared: 05/05/2017 Analyzed: 05/05/2017

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		104	70-130			
Surrogate: Toluene-d8	62		"	62.5		99.9	70-130			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		99.4	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 - Camp 2C-25HZ

**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 B7E0503 - EPA 5030 (soil)**

**LCS (B7E0503-BS1)**

Prepared: 05/05/2017 Analyzed: 05/05/2017

Benzene	0.098	0.002	mg/kg	0.100		97.6	77.1-124			
Toluene	0.100	0.002	"	0.100		100	74.5-128			
Ethylbenzene	0.110	0.002	"	0.100		110	66.4-127			
m,p-Xylene	0.220	0.004	"	0.200		110	76.6-124			
o-Xylene	0.101	0.002	"	0.100		101	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	60		ug/kg	62.5		95.2	70-130			
Surrogate: Toluene-d8	64		"	62.5		102	70-130			
Surrogate: 4-Bromofluorobenzene	64		"	62.5		102	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 - Camp 2C-25HZ

**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 B7E0503 - EPA 5030 (soil)**

**LCS (B7E0503-BS2)**

Prepared: 05/05/2017 Analyzed: 05/05/2017

Benzene	0.098	0.002	mg/kg	0.100		98.0	77.1-124			
Toluene	0.098	0.002	"	0.100		97.6	74.5-128			
Ethylbenzene	0.107	0.002	"	0.100		107	66.4-127			
m,p-Xylene	0.215	0.004	"	0.200		108	76.6-124			
o-Xylene	0.099	0.002	"	0.100		98.5	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	61		ug/kg	62.5		97.9	70-130			
Surrogate: Toluene-d8	63		"	62.5		101	70-130			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		100	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 - Camp 2C-25HZ

**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 B7E0503 - EPA 5030 (soil)**

**LCS (B7E0503-BS3)**

Prepared: 05/05/2017 Analyzed: 05/05/2017

Benzene	0.102	0.002	mg/kg	0.100		102	77.1-124			
Toluene	0.101	0.002	"	0.100		101	74.5-128			
Ethylbenzene	0.114	0.002	"	0.100		114	66.4-127			
m,p-Xylene	0.226	0.004	"	0.200		113	76.6-124			
o-Xylene	0.103	0.002	"	0.100		103	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	61		ug/kg	62.5		97.1	70-130			
Surrogate: Toluene-d8	63		"	62.5		100	70-130			
Surrogate: 4-Bromofluorobenzene	64		"	62.5		102	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 - Camp 2C-25HZ

**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 B7E0503 - EPA 5030 (soil)

Matrix Spike (B7E0503-MS1)	Source: Y705038-01			Prepared: 05/05/2017 Analyzed: 05/05/2017						
Benzene	0.084	0.002	mg/kg	0.100	ND	84.2	71.8-126			
Toluene	0.080	0.002	"	0.100	ND	79.8	65.1-130			
Ethylbenzene	0.090	0.002	"	0.100	ND	90.1	62.2-130			
m,p-Xylene	0.178	0.004	"	0.200	ND	88.8	46.5-137			
o-Xylene	0.083	0.002	"	0.100	ND	83.5	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	65		ug/kg	62.5		104	70-130			
Surrogate: Toluene-d8	63		"	62.5		101	70-130			
Surrogate: 4-Bromofluorobenzene	66		"	62.5		105	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 - Camp 2C-25HZ

**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 B7E0503 - EPA 5030 (soil)**

<b>Matrix Spike (B7E0503-MS2)</b>	<b>Source: Y705042-02</b>			<b>Prepared: 05/05/2017 Analyzed: 05/05/2017</b>						
Benzene	0.097	0.002	mg/kg	0.100	ND	96.6	71.8-126			
Toluene	0.095	0.002	"	0.100	ND	95.0	65.1-130			
Ethylbenzene	0.106	0.002	"	0.100	ND	106	62.2-130			
m,p-Xylene	0.210	0.004	"	0.200	ND	105	46.5-137			
o-Xylene	0.098	0.002	"	0.100	ND	97.7	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	64		ug/kg	62.5		103	70-130			
Surrogate: Toluene-d8	61		"	62.5		98.4	70-130			
Surrogate: 4-Bromofluorobenzene	65		"	62.5		103	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 - Camp 2C-25HZ

**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 B7E0503 - EPA 5030 (soil)

Matrix Spike (B7E0503-MS3)	Source: Y705042-03			Prepared: 05/05/2017 Analyzed: 05/05/2017						
Benzene	0.099	0.002	mg/kg	0.100	ND	98.7	71.8-126			
Toluene	0.095	0.002	"	0.100	ND	94.8	65.1-130			
Ethylbenzene	0.105	0.002	"	0.100	ND	105	62.2-130			
m,p-Xylene	0.209	0.004	"	0.200	ND	105	46.5-137			
o-Xylene	0.097	0.002	"	0.100	ND	97.2	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	64		ug/kg	62.5		102	70-130			
Surrogate: Toluene-d8	61		"	62.5		97.7	70-130			
Surrogate: 4-Bromofluorobenzene	64		"	62.5		103	70-130			

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Bob Cornez  
 Project Number: [none]  
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**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 B7E0503 - EPA 5030 (soil)**

<b>Matrix Spike Dup (B7E0503-MSD1)</b>	<b>Source: Y705038-01</b>			<b>Prepared: 05/05/2017 Analyzed: 05/05/2017</b>						
Benzene	0.091	0.002	mg/kg	0.100	ND	91.4	71.8-126	8.13	11.3	
Toluene	0.089	0.002	"	0.100	ND	88.8	65.1-130	10.7	15.4	
Ethylbenzene	0.107	0.002	"	0.100	ND	107	62.2-130	16.7	19.6	
m,p-Xylene	0.214	0.004	"	0.200	ND	107	46.5-137	18.4	19.2	
o-Xylene	0.099	0.002	"	0.100	ND	99.3	54.2-134	17.3	17.9	
Surrogate: 1,2-Dichloroethane-d4	66		ug/kg	62.5		105	70-130			
Surrogate: Toluene-d8	62		"	62.5		99.4	70-130			
Surrogate: 4-Bromofluorobenzene	69		"	62.5		110	70-130			

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**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 B7E0503 - EPA 5030 (soil)

Matrix Spike Dup (B7E0503-MSD2)	Source: Y705042-02			Prepared: 05/05/2017 Analyzed: 05/05/2017						
Benzene	0.096	0.002	mg/kg	0.100	ND	95.7	71.8-126	0.978	11.3	
Toluene	0.094	0.002	"	0.100	ND	93.5	65.1-130	1.53	15.4	
Ethylbenzene	0.102	0.002	"	0.100	ND	102	62.2-130	3.84	19.6	
m,p-Xylene	0.204	0.004	"	0.200	ND	102	46.5-137	3.07	19.2	
o-Xylene	0.095	0.002	"	0.100	ND	95.4	54.2-134	2.40	17.9	
Surrogate: 1,2-Dichloroethane-d4	65		ug/kg	62.5		105	70-130			
Surrogate: Toluene-d8	62		"	62.5		98.8	70-130			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		101	70-130			

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Bob Cornez  
 Project Number: [none]  
 Project: KMG - Camp 2C-25HZ

**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 B7E0503 - EPA 5030 (soil)

Matrix Spike Dup (B7E0503-MSD3)	Source: Y705042-03			Prepared: 05/05/2017 Analyzed: 05/05/2017						
Benzene	0.098	0.002	mg/kg	0.100	ND	97.8	71.8-126	0.895	11.3	
Toluene	0.095	0.002	"	0.100	ND	95.2	65.1-130	0.484	15.4	
Ethylbenzene	0.103	0.002	"	0.100	ND	103	62.2-130	1.21	19.6	
m,p-Xylene	0.204	0.004	"	0.200	ND	102	46.5-137	2.76	19.2	
o-Xylene	0.096	0.002	"	0.100	ND	96.0	54.2-134	1.28	17.9	
Surrogate: 1,2-Dichloroethane-d4	63		ug/kg	62.5		101	70-130			
Surrogate: Toluene-d8	62		"	62.5		99.5	70-130			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		101	70-130			

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 Project: KMG - Camp 2C-25HZ

**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 B7E0504 - EPA 3550B**

**Blank (B7E0504-BLK1)**

Prepared: 05/05/2017 Analyzed: 05/05/2017

Diesel (C10-C28)	ND	50.0	mg/kg							U
Residual Range Organics (C28-C40)	ND	200	"							U
Surrogate: o-Terphenyl	35		"	50.0		69.3	59-131			

**Blank (B7E0504-BLK2)**

Prepared: 05/05/2017 Analyzed: 05/05/2017

Diesel (C10-C28)	ND	50.0	mg/kg							U
Residual Range Organics (C28-C40)	ND	200	"							U
Surrogate: o-Terphenyl	43		"	50.0		86.4	59-131			

**Blank (B7E0504-BLK3)**

Prepared: 05/05/2017 Analyzed: 05/05/2017

Diesel (C10-C28)	ND	50.0	mg/kg							U
Residual Range Organics (C28-C40)	ND	200	"							U
Surrogate: o-Terphenyl	43		"	50.0		86.1	59-131			

**LCS (B7E0504-BS1)**

Prepared: 05/05/2017 Analyzed: 05/05/2017

Diesel (C10-C28)	902	50.0	mg/kg	1000		90.2	64-121			
Residual Range Organics (C28-C40)	933	200	"	1000		93.3	58-124			
Surrogate: o-Terphenyl	46		"	50.0		91.3	59-131			

**LCS (B7E0504-BS2)**

Prepared: 05/05/2017 Analyzed: 05/05/2017

Diesel (C10-C28)	964	50.0	mg/kg	1000		96.4	64-121			
Residual Range Organics (C28-C40)	1060	200	"	1000		106	58-124			

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Bob Cornez  
 Project Number: [none]  
 Project: KMG - Camp 2C-25HZ

**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 B7E0504 - EPA 3550B</b>										
<b>LCS (B7E0504-BS2)</b>					Prepared: 05/05/2017 Analyzed: 05/05/2017					
Surrogate: o-Terphenyl	52		mg/kg	50.0		103	59-131			
<b>LCS (B7E0504-BS3)</b>					Prepared: 05/05/2017 Analyzed: 05/05/2017					
Diesel (C10-C28)	943	50.0	mg/kg	1000		94.3	64-121			
Residual Range Organics (C28-C40)	1020	200	"	1000		102	58-124			
Surrogate: o-Terphenyl	49		"	50.0		98.1	59-131			
<b>Matrix Spike (B7E0504-MS1)</b>		<b>Source: Y705038-01</b>			Prepared: 05/05/2017 Analyzed: 05/05/2017					
Diesel (C10-C28)	1040	50.0	mg/kg	1000	ND	104	53-125			
Residual Range Organics (C28-C40)	1120	200	"	1000	15.6	110	47-133			
Surrogate: o-Terphenyl	56		"	50.0		113	59-131			
<b>Matrix Spike (B7E0504-MS2)</b>		<b>Source: Y705042-02</b>			Prepared: 05/05/2017 Analyzed: 05/05/2017					
Diesel (C10-C28)	1020	50.0	mg/kg	1000	44.1	98.0	53-125			
Residual Range Organics (C28-C40)	1130	200	"	1000	75.8	105	47-133			
Surrogate: o-Terphenyl	52		"	50.0		103	59-131			
<b>Matrix Spike (B7E0504-MS3)</b>		<b>Source: Y705042-03</b>			Prepared: 05/05/2017 Analyzed: 05/05/2017					
Diesel (C10-C28)	988	50.0	mg/kg	1000	58.1	93.0	53-125			
Residual Range Organics (C28-C40)	1110	200	"	1000	100	101	47-133			
Surrogate: o-Terphenyl	53		"	50.0		107	59-131			
<b>Matrix Spike Dup (B7E0504-MSD1)</b>		<b>Source: Y705038-01</b>			Prepared: 05/05/2017 Analyzed: 05/05/2017					
Diesel (C10-C28)	969	50.0	mg/kg	1000	ND	96.9	53-125	6.65	20	
Residual Range Organics (C28-C40)	1050	200	"	1000	15.6	104	47-133	6.20	20	
Surrogate: o-Terphenyl	54		"	50.0		107	59-131			
<b>Matrix Spike Dup (B7E0504-MSD2)</b>		<b>Source: Y705042-02</b>			Prepared: 05/05/2017 Analyzed: 05/05/2017					

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 Denver CO 80211

Bob Cornez  
 Project Number: [none]  
 Project: KMG - Camp 2C-25HZ

**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 B7E0504 - EPA 3550B</b>										
<b>Matrix Spike Dup (B7E0504-MSD2)</b>			<b>Source: Y705042-02</b>		Prepared: 05/05/2017 Analyzed: 05/05/2017					
Diesel (C10-C28)	1010	50.0	mg/kg	1000	44.1	96.9	53-125	1.08	20	
Residual Range Organics (C28-C40)	1180	200	"	1000	75.8	110	47-133	4.22	20	
Surrogate: o-Terphenyl	51		"	50.0		102	59-131			
<b>Matrix Spike Dup (B7E0504-MSD3)</b>			<b>Source: Y705042-03</b>		Prepared: 05/05/2017 Analyzed: 05/05/2017					
Diesel (C10-C28)	967	50.0	mg/kg	1000	58.1	90.9	53-125	2.30	20	
Residual Range Organics (C28-C40)	1090	200	"	1000	100	98.8	47-133	1.82	20	
Surrogate: o-Terphenyl	52		"	50.0		103	59-131			

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Bob Cornez  
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 Project: KMG - Camp 2C-25HZ

**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 B7E0506 - NO PREP</b>										
<b>Duplicate (B7E0506-DUP1)</b>			<b>Source: Y705042-01</b>		Prepared: 05/05/2017 Analyzed: 05/06/2017					
pH	8.62		pH Units		8.12			5.97	25	
<b>Duplicate (B7E0506-DUP2)</b>			<b>Source: Y705098-01</b>		Prepared: 05/05/2017 Analyzed: 05/06/2017					
pH	8.46		pH Units		8.45			0.118	25	
<b>Duplicate (B7E0506-DUP3)</b>			<b>Source: Y705099-01</b>		Prepared: 05/05/2017 Analyzed: 05/06/2017					
pH	8.74		pH Units		8.47			3.14	25	
<b>Batch B7E0507 - NO PREP</b>										
<b>Blank (B7E0507-BLK1)</b>					Prepared: 05/05/2017 Analyzed: 05/06/2017					
Specific Conductance (EC)	0.00330		mmhos/cm							
<b>Blank (B7E0507-BLK2)</b>					Prepared: 05/05/2017 Analyzed: 05/06/2017					
Specific Conductance (EC)	0.00350		mmhos/cm							
<b>Blank (B7E0507-BLK3)</b>					Prepared: 05/05/2017 Analyzed: 05/06/2017					
Specific Conductance (EC)	0.00340		mmhos/cm							
<b>Duplicate (B7E0507-DUP1)</b>			<b>Source: Y705042-01</b>		Prepared: 05/05/2017 Analyzed: 05/06/2017					
Specific Conductance (EC)	0.0158		mmhos/cm		0.0201			24.0	25	
<b>Duplicate (B7E0507-DUP2)</b>			<b>Source: Y705098-01</b>		Prepared: 05/05/2017 Analyzed: 05/06/2017					
Specific Conductance (EC)	0.115		mmhos/cm		0.118			2.14	25	
<b>Duplicate (B7E0507-DUP3)</b>			<b>Source: Y705099-01</b>		Prepared: 05/05/2017 Analyzed: 05/06/2017					
Specific Conductance (EC)	0.111		mmhos/cm		0.114			3.12	25	

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Denver CO 80211

Bob Cornez  
Project Number: [none]  
Project: KMG - Camp 2C-25HZ

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**Notes and Definitions**

U Sample is Non-Detect.

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported at a wet weight basis.

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Jen Pellegrini For Noelle Doyle Mathis, President