

## **ANALYTICAL TABLES**

**TABLE 1**  
**RADEMACHER 9, 16-25A, 10, 15, 23, 37, 38, 39-25**  
**SOIL SAMPLE RESULTS SUMMARY TABLE**  
**KERR-McGEE OIL AND GAS ONSHORE LP**

Sample ID	Date Sampled	Depth (feet bgs)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	TVPH - GRO (mg/kg)	TEPH - DRO + ORO (mg/kg)
<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>	
N01 @3'	9/16/2014	3	<0.002	<0.002	<0.002	0.0046	0.313	<100
S01 @3'	9/16/2014	3	<0.002	<0.002	<0.002	0.0075	3.62	<100
E01 @3'	9/16/2014	3	0.0020	<0.002	<0.002	0.374	196	88
W01 @3'	9/16/2014	3	<0.002	<0.002	0.0385	<0.002	11.1	<100

**Notes:**

1. Standards for soil are taken from 2 CCR 404-1, Table 910-1, effective February 1, 2014.

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

mg/kg = Milligrams per kilogram.

bgs = Below ground surface.

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

**TABLE 2**  
**RADEMACHER 9, 16-25A, 10, 15, 23, 37, 38, 39-25**  
**GROUNDWATER SAMPLE RESULTS SUMMARY TABLE**  
**KERR-McGEE OIL AND GAS ONSHORE LP**

Sample ID	Date Sampled	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)
COGCC Table 910-1 Groundwater Standard (ug/L) <sup>(1)</sup>		5	560	700	1,400
GW01	9/11/2014	138	<1.0	23.2	31.9

**Notes:**

1. Groundwater standards referenced from 2 CCR 404-1, Table 910-1, effective February 1, 2014.

COGCC = Colorado Oil and Gas Conservation Commission

ug/L = Micrograms per liter

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

= Analytical result is in exceedance of COGCC groundwater standards.

## **LABORATORY ANALYTICAL REPORTS**



September 12, 2014

Tasman Geosciences

Phil Hamlin

6899 Pecos Street, Unit C

Denver

CO 80211

Project Name - Edward Rademacher #2

Project Number - WO# 88601464

Attached are your analytical results for Edward Rademacher #2 received by Origins Laboratory, Inc. September 11, 2014. This project is associated with Origins project number X409124-01.

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



1725 Elk Place, Denver, CO 80211 | Phone: 303.433.1322 | Fax: 303.265.9645

Tasman Geosciences  
6899 Pecos Street, Unit C  
Denver CO 80211

Phil Hamlin  
Project Number: WO# 88601464  
Project: Edward Rademacher #2

### CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
N01 @ 3	X409124-01	Soil	September 11, 2014 0:00	09/11/2014 16:00
S01 @ 3	X409124-02	Soil	September 11, 2014 0:00	09/11/2014 16:00
E01 @ 3	X409124-03	Soil	September 11, 2014 0:00	09/11/2014 16:00
W01 @ 3	X409124-04	Soil	September 11, 2014 0:00	09/11/2014 16:00
GW01	X409124-05	Water	September 11, 2014 0:00	09/11/2014 16:00

Origins Laboratory, Inc.



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Tasman Geosciences  
6899 Pecos Street, Unit C  
Denver CO 80211

Phil Hamlin  
Project Number: WO# 88601464  
Project: Edward Rademacher #2

# ORIGINS

LABORATORY, INC

www.originslaboratory.com

page 1 of 1

X409124

Client: Anadarko  
Project Manager: Phil Hamlin  
Project Name: Edward Rademacher #2  
Project Number: WO# 88601464  
Samples Collected By: Phil Hamlin

Address:  
Telephone Number:  
Email Address:

Fax: 303.265.9645

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative				Matrix			Analysis		Sample Instructions
				Unpreserved	HCl	HNO <sub>3</sub>	Other	Groundwater	Soil	As Sampled	Other	Analysis	
N0103	7/11/14		1	X				X			X	X	1
S0103	7/11/14		1	X				X			X	X	2
E0103	7/11/14		1	X				X			X	X	3
W0103	7/11/14		1	X				X			X	X	4
G0101	7/11/14		3	X				X			X	X	5
													6
													7
													8
													9
													10

  

Relinquished By:	Date:	Time:	Received By:	Date:	Time:	Turnaround Time:
Phil Hamlin	9/11/14	1400	Phil Hamlin	9-11-14	1400	24 Hr
Phil Hamlin	9/11/14	1400	Phil Hamlin	9-11-14	1400	48 Hr
						Standard 4.4

Date Results Needed By: 9/12/14

Origins Laboratory, Inc.

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Tasman Geosciences  
6899 Pecos Street, Unit C  
Denver CO 80211

Phil Hamlin  
Project Number: WO# 88601464  
Project: Edward Rademacher #2

Origins Laboratory

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

## Sample Receipt Checklist

Origins Work Order: X409124

Client: Tasman

Client Project ID: Edward Rademacher #2

Checklist Completed by: Jeff Smith

Shipped Via: Pick Up

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

Date/Time completed: 9/11/14 1637

Airbill #: NA

Matrix(s) Received: (Check all that apply)

☒ Soil/Solid

☒ Water

☐ Other

Cooler Number/Temperature: 14.4 °C / 1 °C / 1 °C (Describe)

Thermometer ID: 7202

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C <sup>1,2</sup> ?	<input checked="" type="checkbox"/>			
Is there ice present (document if blue-coils used)?	<input checked="" type="checkbox"/>			
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)		<input checked="" type="checkbox"/>		
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)		<input checked="" type="checkbox"/>		
Were all samples received intact <sup>1,2</sup> ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided <sup>1,2</sup> ?	<input checked="" type="checkbox"/>			
Are short holding time analytes or samples with HTs due within 48 hours present <sup>1,2</sup> ?		<input checked="" type="checkbox"/>		
Is a chain-of-custody (COC) present and filled out completely <sup>1,2</sup> ?		<input checked="" type="checkbox"/>		No Sample Time
Does the COC agree with the number and type of sample bottles received <sup>1,2</sup> ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC <sup>1,2</sup> ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client with date and time recorded <sup>1,2</sup> ?	<input checked="" type="checkbox"/>			
For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.		<input checked="" type="checkbox"/>		
Are samples preserved that require preservation and was it checked <sup>1,2</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)	<input checked="" type="checkbox"/>			AC
Additional Comments (if any):				

<sup>1,2</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

9-11-14 1745  
Date/Time Reviewed

Origins Laboratory, Inc.

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Tasman Geosciences  
6899 Pecos Street, Unit C  
Denver CO 80211

Phil Hamlin  
Project Number: WO# 88601464  
Project: Edward Rademacher #2

N01 @ 3

9/11/2014 12:00:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.  
X409124-01 (Soil)

## DRO/RRO by EPA8015C

Diesel (C10-C28)	ND	50	mg/kg	1	4111020	09/11/2014	09/11/2014
Residual Range Organics (C28-C36)	ND	100	"	"	"	"	"

<i>Surrogate: o-Terphenyl</i>	85.9 %	59-131			"	"	"
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## GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	0.313	0.200	mg/kg	1	4111019	09/11/2014	09/11/2014
Benzene	ND	0.0020	"	"	"	"	"
Toluene	ND	0.0020	"	"	"	"	"
Ethylbenzene	ND	0.0020	"	"	"	"	"
Xylenes, total	0.0046	0.0020	"	"	"	"	"

<i>Surrogate: 1,2-Dichloroethane-d4</i>	91.0 %	70-130			"	"	"
<i>Surrogate: Toluene-d8</i>	103 %	70-130			"	"	"
<i>Surrogate: 4-Bromofluorobenzene</i>	102 %	70-130			"	"	"

Origins Laboratory, Inc.



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Tasman Geosciences  
6899 Pecos Street, Unit C  
Denver CO 80211

Phil Hamlin  
Project Number: WO# 88601464  
Project: Edward Rademacher #2

S01 @ 3

9/11/2014 12:00:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.  
X409124-02 (Soil)

## DRO/RRO by EPA8015C

Diesel (C10-C28)	ND	50	mg/kg	1	4111020	09/11/2014	09/11/2014
Residual Range Organics (C28-C36)	ND	100	"	"	"	"	"

<i>Surrogate: o-Terphenyl</i>	88.0 %	59-131			"	"	"
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## GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	3.62	0.200	mg/kg	1	4111019	09/11/2014	09/11/2014
Benzene	ND	0.0020	"	"	"	"	"
Toluene	ND	0.0020	"	"	"	"	"
Ethylbenzene	ND	0.0020	"	"	"	"	"
Xylenes, total	0.0075	0.0020	"	"	"	"	"

<i>Surrogate: 1,2-Dichloroethane-d4</i>	91.0 %	70-130			"	"	"
<i>Surrogate: Toluene-d8</i>	105 %	70-130			"	"	"
<i>Surrogate: 4-Bromofluorobenzene</i>	105 %	70-130			"	"	"

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6899 Pecos Street, Unit C  
Denver CO 80211

Phil Hamlin  
Project Number: WO# 88601464  
Project: Edward Rademacher #2

E01 @ 3

9/11/2014 12:00:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.  
X409124-03 (Soil)

## DRO/RRO by EPA8015C

Diesel (C10-C28)	88	50	mg/kg	1	4111020	09/11/2014	09/11/2014
Residual Range Organics (C28-C36)	ND	100	"	"	"	"	"

<i>Surrogate: o-Terphenyl</i>	93.7 %	59-131			"	"	"
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## GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	196	5.00	mg/kg	25	4111019	09/11/2014	09/12/2014
Benzene	0.0020	0.0020	"	1	"	"	09/11/2014
Toluene	ND	0.0020	"	"	"	"	"
Ethylbenzene	ND	0.0020	"	"	"	"	"
Xylenes, total	0.374	0.0020	"	"	"	"	"

<i>Surrogate: 1,2-Dichloroethane-d4</i>	91.0 %	70-130			"	"	"
<i>Surrogate: Toluene-d8</i>	113 %	70-130			"	"	09/12/2014
<i>Surrogate: 4-Bromofluorobenzene</i>	101 %	70-130			"	"	"

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6899 Pecos Street, Unit C  
Denver CO 80211

Phil Hamlin  
Project Number: WO# 88601464  
Project: Edward Rademacher #2

W01 @ 3

9/11/2014 12:00:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.  
X409124-04 (Soil)

## DRO/RRO by EPA8015C

Diesel (C10-C28)	ND	50	mg/kg	1	4111020	09/11/2014	09/11/2014
Residual Range Organics (C28-C36)	ND	100	"	"	"	"	"

Surrogate: o-Terphenyl 85.9 % 59-131 " " "

## GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	11.1	0.200	mg/kg	1	4111019	09/11/2014	09/11/2014
Benzene	ND	0.0020	"	"	"	"	"
Toluene	ND	0.0020	"	"	"	"	"
Ethylbenzene	0.0385	0.0020	"	"	"	"	"
Xylenes, total	ND	0.0020	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4 85.3 % 70-130 " " "  
Surrogate: Toluene-d8 101 % 70-130 " " "  
Surrogate: 4-Bromofluorobenzene 112 % 70-130 " " "

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6899 Pecos Street, Unit C  
Denver CO 80211

Phil Hamlin  
Project Number: WO# 88601464  
Project: Edward Rademacher #2

GW01

9/11/2014 12:00:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.  
X409124-05 (Water)

## BTEX by EPA 8260C

Benzene	138	1.0	ug/L	1	4110009	09/11/2014	09/11/2014	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	23.2	1.0	"	"	"	"	"	
Xylenes, total	31.9	1.0	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	96.3 %	87.3-113			"	"	"
Surrogate: Toluene-d8	101 %	90.9-108			"	"	"
Surrogate: 4-Bromofluorobenzene	97.9 %	88.6-111			"	"	"

Origins Laboratory, Inc.



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6899 Pecos Street, Unit C  
Denver CO 80211

Phil Hamlin  
Project Number: WO# 88601464  
Project: Edward Rademacher #2

**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 4I10009 - EPA 5030B (Water)

Blank (4I10009-BLK1)

Prepared: 09/10/2014 Analyzed: 09/11/2014

Benzene	ND	1.0	ug/L							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes, total	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	61		"	62.5	97.6		87.3-113			
Surrogate: Toluene-d8	63		"	62.5	101		90.9-108			
Surrogate: 4-Bromofluorobenzene	61		"	62.5	97.9		88.6-111			

Origins Laboratory, Inc.



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Noelle Doyle Mathis, President

Tasman Geosciences  
6899 Pecos Street, Unit C  
Denver CO 80211

Phil Hamlin  
Project Number: WO# 88601464  
Project: Edward Rademacher #2

**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 4I10009 - EPA 5030B (Water)

LCS (4I10009-BS1)

Prepared: 09/10/2014 Analyzed: 09/11/2014

Benzene	48.0	1.0	ug/L	50.0		95.9	75-126			
Toluene	49.4	1.0	"	50.0		98.8	78.7-126			
Ethylbenzene	50.0	1.0	"	50.0		100	81-130			
m,p-Xylene	99.8	2.0	"	100		99.8	77.2-133			
o-Xylene	49.7	1.0	"	50.0		99.5	77.9-126			
Surrogate: 1,2-Dichloroethane-d4	58		"	62.5		92.1	87.3-113			
Surrogate: Toluene-d8	62		"	62.5		99.5	90.9-108			
Surrogate: 4-Bromofluorobenzene	61		"	62.5		98.2	88.6-111			

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6899 Pecos Street, Unit C  
Denver CO 80211

Phil Hamlin  
Project Number: WO# 88601464  
Project: Edward Rademacher #2

**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 4110009 - EPA 5030B (Water)

Matrix Spike (4110009-MS1)		Source: X409092-10			Prepared: 09/10/2014 Analyzed: 09/11/2014					
Benzene	44.5	1.0	ug/L	50.0	0.1	88.6	74-130			
Toluene	46.4	1.0	"	50.0	ND	92.8	73-131			
Ethylbenzene	47.1	1.0	"	50.0	ND	94.3	76-132			
m,p-Xylene	94.9	2.0	"	100	ND	94.9	69-139			
o-Xylene	46.7	1.0	"	50.0	ND	93.4	74-131			
Surrogate: 1,2-Dichloroethane-d4	56		"	62.5		89.7	87.3-113			
Surrogate: Toluene-d8	63		"	62.5		100	90.9-108			
Surrogate: 4-Bromofluorobenzene	61		"	62.5		97.6	88.6-111			

Origins Laboratory, Inc.



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Tasman Geosciences  
6899 Pecos Street, Unit C  
Denver CO 80211

Phil Hamlin  
Project Number: WO# 88601464  
Project: Edward Rademacher #2

**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 4110009 - EPA 5030B (Water)

Matrix Spike Dup (4110009-MSD1)		Source: X409092-10			Prepared: 09/10/2014 Analyzed: 09/11/2014					
Benzene	44.6	1.0	ug/L	50.0	0.1	89.0	74-130	0.382	20	
Toluene	46.5	1.0	"	50.0	ND	93.0	73-131	0.280	20	
Ethylbenzene	46.6	1.0	"	50.0	ND	93.3	76-132	1.07	20	
m,p-Xylene	93.9	2.0	"	100	ND	93.9	69-139	1.06	20	
o-Xylene	47.1	1.0	"	50.0	ND	94.2	74-131	0.853	20	
Surrogate: 1,2-Dichloroethane-d4	57		"	62.5		90.6	87.3-113			
Surrogate: Toluene-d8	63		"	62.5		100	90.9-108			
Surrogate: 4-Bromofluorobenzene	61		"	62.5		98.3	88.6-111			

Origins Laboratory, Inc.



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Noelle Doyle Mathis, President

Tasman Geosciences  
6899 Pecos Street, Unit C  
Denver CO 80211

Phil Hamlin  
Project Number: WO# 88601464  
Project: Edward Rademacher #2

**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 4111019 - EPA 5030 (soil)

**Blank (4111019-BLK1)**

Prepared: 09/11/2014 Analyzed: 09/11/2014

Gasoline Range Hydrocarbons	ND	0.2	mg/kg							
Benzene	ND	0.002	"							
Toluene	ND	0.002	"							
Ethylbenzene	ND	0.002	"							
Xylenes, total	ND	0.002	"							
Surrogate: 1,2-Dichloroethane-d4	62.1		ug/kg	62.5		99.3	70-130			
Surrogate: Toluene-d8	61.5		"	62.5		98.4	70-130			
Surrogate: 4-Bromofluorobenzene	63.8		"	62.5		102	70-130			

Origins Laboratory, Inc.



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Noelle Doyle Mathis, President

Tasman Geosciences  
6899 Pecos Street, Unit C  
Denver CO 80211

Phil Hamlin  
Project Number: WO# 88601464  
Project: Edward Rademacher #2

**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 4I11019 - EPA 5030 (soil)

LCS (4I11019-BS1)

Prepared: 09/11/2014 Analyzed: 09/11/2014

Benzene	0.1	0.002	mg/kg	0.100		101	77.1-124			
Toluene	0.1	0.002	"	0.100		96.3	74.5-128			
Ethylbenzene	0.1	0.002	"	0.100		99.4	66.4-127			
m,p-Xylene	0.2	0.004	"	0.200		101	76.6-124			
o-Xylene	0.1	0.002	"	0.100		101	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	62.3		ug/kg	62.5		99.7	70-130			
Surrogate: Toluene-d8	60.9		"	62.5		97.4	70-130			
Surrogate: 4-Bromofluorobenzene	61.8		"	62.5		98.8	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.*

Noelle Doyle Mathis, President

Tasman Geosciences  
6899 Pecos Street, Unit C  
Denver CO 80211

Phil Hamlin  
Project Number: WO# 88601464  
Project: Edward Rademacher #2

**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 4111019 - EPA 5030 (soil)

Matrix Spike (4111019-MS1)		Source: X409122-02			Prepared: 09/11/2014 Analyzed: 09/11/2014					
Benzene	0.1	0.002	mg/kg	0.100	ND	102	71.8-126			
Toluene	0.1	0.002	"	0.100	ND	98.9	65.1-130			
Ethylbenzene	0.1	0.002	"	0.100	ND	98.1	62.2-130			
m,p-Xylene	0.2	0.004	"	0.200	0.002	97.9	46.5-137			
o-Xylene	0.1	0.002	"	0.100	0.0005	98.9	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	62.8		ug/kg	62.5		101	70-130			
Surrogate: Toluene-d8	62.4		"	62.5		99.9	70-130			
Surrogate: 4-Bromofluorobenzene	63.4		"	62.5		101	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
Batch 4111019 - EPA 5030 (soil)										
Matrix Spike Dup (4111019-MSD1)		Source: X409122-02			Prepared: 09/11/2014 Analyzed: 09/11/2014					
Benzene	0.1	0.002	mg/kg	0.100	ND	101	71.8-126	1.24	11.3	
Toluene	0.1	0.002	"	0.100	ND	98.4	65.1-130	0.487	15.4	
Ethylbenzene	0.1	0.002	"	0.100	ND	97.4	62.2-130	0.757	19.6	
m,p-Xylene	0.2	0.004	"	0.200	0.002	97.4	46.5-137	0.559	19.2	
o-Xylene	0.1	0.002	"	0.100	0.0005	99.4	54.2-134	0.462	17.9	
Surrogate: 1,2-Dichloroethane-d4	61.4		ug/kg	62.5		98.2	70-130			
Surrogate: Toluene-d8	61.6		"	62.5		98.6	70-130			
Surrogate: 4-Bromofluorobenzene	62.6		"	62.5		100	70-130			

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Phil Hamlin  
Project Number: WO# 88601464  
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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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## Extractable Petroleum Hydrocarbons by 8015M - 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 4I11020 - EPA 3580

#### Blank (4I11020-BLK1)

Prepared: 09/11/2014 Analyzed: 09/11/2014

Diesel (C10-C28) ND 50 mg/kg

Residual Range Organics (C28-C36) ND 100 "

Surrogate: o-Terphenyl 49 g 50.0 98.9 59-131

#### LCS (4I11020-BS1)

Prepared: 09/11/2014 Analyzed: 09/11/2014

Diesel (C10-C28) 770 50 mg/kg 1000 77.3 64-121

Residual Range Organics (C28-C36) 850 100 " 1000 85.4 58-124

Surrogate: o-Terphenyl 46 g 50.0 92.0 59-131

#### Matrix Spike (4I11020-MS1)

Source: X409122-01

Prepared: 09/11/2014 Analyzed: 09/11/2014

Diesel (C10-C28) 780 50 mg/kg 1000 18 76.1 53-125

Residual Range Organics (C28-C36) 850 100 " 1000 59 78.7 47-133

Surrogate: o-Terphenyl 44 g 50.0 87.8 59-131

#### Matrix Spike Dup (4I11020-MSD1)

Source: X409122-01

Prepared: 09/11/2014 Analyzed: 09/11/2014

Diesel (C10-C28) 790 50 mg/kg 1000 18 77.1 53-125 1.29 20

Residual Range Organics (C28-C36) 840 100 " 1000 59 78.0 47-133 0.814 20

Surrogate: o-Terphenyl 45 g 50.0 89.0 59-131

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Tasman Geosciences

6899 Pecos Street, Unit C

Denver CO 80211

Phil Hamlin

Project Number: WO# 88601464

Project: Edward Rademacher #2

### Notes and Definitions

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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