

## **ANALYTICAL TABLE**

**TABLE 1**  
**KUGEL W 4-3, 4-6**  
**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 @ 4'	10/28/2014	4	0.0535	<0.0500	1.04	2.97	<b>361</b>	<b>800</b>
E01 @ 4'	10/28/2014	4	<0.100	<0.100	0.387	<0.100	<b>149</b>	<b>400</b>
W01 @ 4'	10/28/2014	4	<0.100	<0.100	<0.100	<0.100	42.9	130
B01 @ 5'	10/28/2014	4	<0.0020	<0.0020	<0.0020	<0.0020	7.00	<200
S01 @ 4'	10/29/2014	4	<0.0020	<0.0020	<0.0020	<0.0020	40.5	120
E02 @ 4'	10/31/2014	4	<0.0020	<0.0020	0.0145	0.0050	<b>19.9</b>	<b>680</b>
B02 @ 5'	10/31/2014	5	<0.0020	<0.0020	0.208	0.309	<b>139</b>	<b>640</b>
N01 @ 4' <sup>(2)</sup>	10/31/2014	4	<0.0020	<0.0020	1.42	0.0063	<b>271</b>	<b>880</b>
W02 @ 4'	10/31/2014	4	<0.0020	<0.0020	<0.0020	<0.0020	<0.200	<200
B03 @ 9'	11/4/2014	9	<0.0020	<0.0020	<0.0020	<0.0020	0.696	<200
N03 @ 6'	11/4/2014	6	<0.100	<0.100	0.377	<0.100	<b>381</b>	<b>780</b>
E03 @ 7'	11/4/2014	7	<0.0020	<0.0020	<0.0020	<0.0020	0.758	<200
S03 @ 5'	11/4/2014	5	<b>1.07</b>	<0.100	2.42	<0.100	<b>306</b>	<b>1,600</b>
S04 @ 5'	11/4/2014	5	<0.100	<0.100	0.136	0.598	118	120
NE01 @ 7'	11/4/2014	7	<0.100	<0.100	<0.100	<0.100	17.9	<200
NW01 @ 7'	11/4/2014	7	<0.100	<0.100	<0.100	<0.100	<b>212</b>	<b>500</b>
E04 @ 5'	11/4/2014	5	0.0025	<0.0020	<0.0020	<0.0020	<0.200	<200
NW02 @ 7'	11/6/2014	7	<0.002	<0.002	<0.002	<0.002	<0.200	<200

**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

2. Soil sample ID inadvertently used twice.

(<) = 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.

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

## **LABORATORY ANALYTICAL REPORTS**

October 30, 2014

Tasman Geosciences

Christine Wasko

6899 Pecos Street, Unit C

Denver CO 80211

Project Name - Kugel W 4-3

Project Number - [none]

Attached are your analytical results for Kugel W 4-3 received by Origins Laboratory, Inc. October 28, 2014. This project is associated with Origins project number X410319-01.

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

Christine Wasko  
Project Number: [none]  
Project: Kugel W 4-3

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
N01 @ 4	X410319-01	Soil	October 28, 2014 13:47	10/28/2014 15:45
E01 @ 4	X410319-03	Soil	October 28, 2014 13:52	10/28/2014 15:45
W01 @ 4	X410319-04	Soil	October 28, 2014 13:55	10/28/2014 15:45
B01 @ 4	X410319-05	Soil	October 28, 2014 14:00	10/28/2014 15:45

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

Christine Wasko  
 Project Number: [none]  
 Project: Kugel W 4-3

www.originslaboratory.com

X410319

**ORIGINS**  
 LABORATORY, INC

page 1 of 1

Client: Tasman Geo Project Manager/Send Report To: Christine Wasko  
 Address: \_\_\_\_\_ Email Address: CWasko@Tasman-geo.com  
 Telephone Number: 912 270 2867 Project Name/Number: Kugel W4-3  
 Samples Collected By: Dave Nelson

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

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative				Matrix			Analysis/Method	Sample Instructions
				Unpreserved	HCl	HNO <sub>3</sub>	Other	Groundwater	Soil	Air Summa #		
A0104	10/28/14	1347	1	X				X			Hold	1
S0104		1350	1	X				X			Hold	2
E0104		1352	1	X				X			BTEX (600) (8200) TPH-Dioxin (800)	4
W0104		1355	1	X				X			↓	5
B0104		1400	1	X				X				6
												7
												8
												9
												10
Relinquished By:	Date: 10/28/14	Time: 1545	Received By:	Date: 10-28-14	Time: 1545	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 type="checkbox"/>						
Relinquished By:	Date:	Time:	Received By:	Date: 10-28-14	Time: 1545							

Delta Result Standard

Comments:

Origins Laboratory, Inc.

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Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Christine Wasko  
 Project Number: [none]  
 Project: Kugel W 4-3

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: X410319

Client: Tasman

Client Project ID: Kugel W4-3

Checklist Completed by: Jeff Smith

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

Date/time completed: 10/28/14

Airbill #: NA

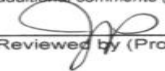
Matrix(s) Received: (Check all that apply):  Soil/Solid  Water  Other: \_\_\_\_\_

Cooler Number/Temperature: 1 / 2.8 °C 1 / \_\_\_\_\_ °C 1 / \_\_\_\_\_ °C 1 / \_\_\_\_\_ °C

Thermometer ID: 7003

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> ?	X			
Is there ice present (document if blue ice is used)	X			
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)		X		
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)		X		
Were all samples received intact <sup>(1)</sup> ?	X			
Was adequate sample volume provided <sup>(1)</sup> ?	X			
Are short holding time analytes or samples with HTs due within 48 hours present <sup>(1)</sup> ?		X		
Is a chain-of-custody (COC) present and filled out completely <sup>(1)</sup> ?	X			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	X			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	X			
Is the COC properly relinquished by the client with date and time recorded <sup>(1)</sup> ?	X			
For volatiles in water – is there headspace (> ¼ inch bubble) present? <b>if yes, contact client and note in narrative.</b>			X	
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)			X	
<b>Additional Comments (if any):</b> Sample times on container for E0104 are 1353, for W004 sample time reads 1352.				

<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 in the additional comments (above) and the case narrative.

  
 Reviewed by (Project Manager)

10-28-14  
 Date/Time Reviewed

Origins Laboratory, Inc.



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Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Christine Wasko  
 Project Number: [none]  
 Project: Kugel W 4-3

**N01 @ 4**  
**10/28/2014 1:47:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X410319-01 (Soil)**

**DRO/RRO by EPA8015C**

Diesel (C10-C28)	<b>800</b>	50	mg/kg	1	4J29010	10/29/2014	10/29/2014	
Residual Range Organics (C28-C36)	ND	200	"	"	"	"	"	

*Surrogate: o-Terphenyl* 83.2 % 59-131 " " "

**GBTEX by EPA 8260C**

Gasoline Range Hydrocarbons	<b>361</b>	5.00	mg/kg	25	4J29013	10/29/2014	10/29/2014	
Benzene	<b>0.0535</b>	0.0500	"	"	"	"	"	
Toluene	ND	0.0500	"	"	"	"	"	
Ethylbenzene	<b>1.04</b>	0.0500	"	"	"	"	"	
Xylenes, total	<b>2.97</b>	0.0500	"	"	"	"	"	

*Surrogate: 1,2-Dichloroethane-d4* 103 % 70-130 " " "  
*Surrogate: Toluene-d8* 114 % 70-130 " " "  
*Surrogate: 4-Bromofluorobenzene* 100 % 70-130 " " "

Origins Laboratory, Inc.



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Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Christine Wasko  
 Project Number: [none]  
 Project: Kugel W 4-3

**E01 @ 4**  
**10/28/2014 1:52:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X410319-03 (Soil)**

**DRO/RRO by EPA8015C**

Diesel (C10-C28)	<b>400</b>	50	mg/kg	1	4J28009	10/28/2014	10/29/2014	
Residual Range Organics (C28-C36)	ND	200	"	"	"	"	"	

*Surrogate: o-Terphenyl* 73.4 % 59-131 " " "

**GBTEX by EPA 8260C**

Gasoline Range Hydrocarbons	<b>149</b>	10.0	mg/kg	50	4J28008	10/28/2014	10/28/2014	
Benzene	ND	0.100	"	"	"	"	"	
Toluene	ND	0.100	"	"	"	"	"	
Ethylbenzene	<b>0.387</b>	0.100	"	"	"	"	"	
Xylenes, total	ND	0.100	"	"	"	"	"	

*Surrogate: 1,2-Dichloroethane-d4* 93.9 % 70-130 " " "  
*Surrogate: Toluene-d8* 103 % 70-130 " " "  
*Surrogate: 4-Bromofluorobenzene* 98.6 % 70-130 " " "

Origins Laboratory, Inc.



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Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Christine Wasko  
 Project Number: [none]  
 Project: Kugel W 4-3

**W01 @ 4**  
**10/28/2014 1:55:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X410319-04 (Soil)**

**DRO/RRO by EPA8015C**

Diesel (C10-C28)	130	50	mg/kg	1	4J28009	10/28/2014	10/29/2014	
Residual Range Organics (C28-C36)	ND	200	"	"	"	"	"	

*Surrogate: o-Terphenyl* 75.6 % 59-131 " " "

**GBTEX by EPA 8260C**

Gasoline Range Hydrocarbons	42.9	10.0	mg/kg	50	4J28008	10/28/2014	10/28/2014	
Benzene	ND	0.100	"	"	"	"	"	
Toluene	ND	0.100	"	"	"	"	"	
Ethylbenzene	ND	0.100	"	"	"	"	"	
Xylenes, total	ND	0.100	"	"	"	"	"	

*Surrogate: 1,2-Dichloroethane-d4* 92.4 % 70-130 " " "  
*Surrogate: Toluene-d8* 101 % 70-130 " " "  
*Surrogate: 4-Bromofluorobenzene* 96.1 % 70-130 " " "

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Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Christine Wasko  
 Project Number: [none]  
 Project: Kugel W 4-3

**B01 @ 4**  
**10/28/2014 2:00:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X410319-05 (Soil)**

**DRO/RRO by EPA8015C**

Diesel (C10-C28)	ND	50	mg/kg	1	4J28009	10/28/2014	10/29/2014	
Residual Range Organics (C28-C36)	ND	200	"	"	"	"	"	

*Surrogate: o-Terphenyl* 69.6 % 59-131 " " "

**GBTEX by EPA 8260C**

Gasoline Range Hydrocarbons	<b>7.00</b>	0.200	mg/kg	1	4J28008	10/28/2014	10/29/2014	
Benzene	ND	0.0020	"	"	"	"	"	
Toluene	ND	0.0020	"	"	"	"	"	
Ethylbenzene	ND	0.0020	"	"	"	"	"	
Xylenes, total	ND	0.0020	"	"	"	"	"	

*Surrogate: 1,2-Dichloroethane-d4* 104 % 70-130 " " "  
*Surrogate: Toluene-d8* 100 % 70-130 " " "  
*Surrogate: 4-Bromofluorobenzene* 100 % 70-130 " " "

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 6899 Pecos Street, Unit C  
 Denver CO 80211

Christine Wasko  
 Project Number: [none]  
 Project: Kugel W 4-3

**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 4J28008 - EPA 5030 (soil)**

**Blank (4J28008-BLK1)**

Prepared: 10/28/2014 Analyzed: 10/28/2014

Gasoline Range Hydrocarbons	ND	0.200	mg/kg							
Benzene	ND	0.0020	"							
Toluene	ND	0.0020	"							
Ethylbenzene	ND	0.0020	"							
Xylenes, total	ND	0.0020	"							
Surrogate: 1,2-Dichloroethane-d4	61.0		ug/kg	62.5		97.5	70-130			
Surrogate: Toluene-d8	63.1		"	62.5		101	70-130			
Surrogate: 4-Bromofluorobenzene	58.4		"	62.5		93.4	70-130			

Origins Laboratory, Inc.



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Ross S Hutto For Noelle Doyle Mathis, President

Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Christine Wasko  
 Project Number: [none]  
 Project: Kugel W 4-3

**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 4J28008 - EPA 5030 (soil)**

**LCS (4J28008-BS1)**

Prepared: 10/28/2014 Analyzed: 10/28/2014

Benzene	0.105	0.0020	mg/kg	0.100		105	77.1-124			
Toluene	0.100	0.0020	"	0.100		100	74.5-128			
Ethylbenzene	0.0975	0.0020	"	0.100		97.5	66.4-127			
m,p-Xylene	0.191	0.0040	"	0.200		95.4	76.6-124			
o-Xylene	0.0919	0.0020	"	0.100		91.9	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	57.7		ug/kg	62.5		92.3	70-130			
Surrogate: Toluene-d8	62.4		"	62.5		99.9	70-130			
Surrogate: 4-Bromofluorobenzene	61.1		"	62.5		97.8	70-130			

Origins Laboratory, Inc.



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 Denver CO 80211

Christine Wasko  
 Project Number: [none]  
 Project: Kugel W 4-3

**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 4J28008 - EPA 5030 (soil)

Matrix Spike (4J28008-MS1)	Source: X410240-01			Prepared: 10/28/2014 Analyzed: 10/28/2014						
Benzene	0.109	0.0020	mg/kg	0.100	ND	109	71.8-126			
Toluene	0.101	0.0020	"	0.100	ND	101	65.1-130			
Ethylbenzene	0.102	0.0020	"	0.100	ND	102	62.2-130			
m,p-Xylene	0.203	0.0040	"	0.200	ND	101	46.5-137			
o-Xylene	0.102	0.0020	"	0.100	ND	102	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	57.9		ug/kg	62.5		92.6	70-130			
Surrogate: Toluene-d8	60.4		"	62.5		96.6	70-130			
Surrogate: 4-Bromofluorobenzene	62.0		"	62.5		99.3	70-130			

Origins Laboratory, Inc.



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Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Christine Wasko  
 Project Number: [none]  
 Project: Kugel W 4-3

**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 4J28008 - EPA 5030 (soil)

Matrix Spike Dup (4J28008-MSD1)	Source: X410240-01			Prepared: 10/28/2014 Analyzed: 10/28/2014						
Benzene	0.0951	0.0020	mg/kg	0.100	ND	95.1	71.8-126	13.5	11.3	QM-07
Toluene	0.0915	0.0020	"	0.100	ND	91.5	65.1-130	9.69	15.4	
Ethylbenzene	0.0855	0.0020	"	0.100	ND	85.5	62.2-130	17.6	19.6	
m,p-Xylene	0.173	0.0040	"	0.200	ND	86.4	46.5-137	16.1	19.2	
o-Xylene	0.0873	0.0020	"	0.100	ND	87.3	54.2-134	15.0	17.9	
Surrogate: 1,2-Dichloroethane-d4	57.7		ug/kg	62.5		92.3	70-130			
Surrogate: Toluene-d8	61.1		"	62.5		97.7	70-130			
Surrogate: 4-Bromofluorobenzene	58.1		"	62.5		92.9	70-130			

Origins Laboratory, Inc.



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Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Christine Wasko  
 Project Number: [none]  
 Project: Kugel W 4-3

**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 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 4J28009 - EPA 3580**

**Blank (4J28009-BLK1)**

Prepared: 10/28/2014 Analyzed: 10/29/2014

Diesel (C10-C28)	ND	50	mg/kg							
Residual Range Organics (C28-C36)	ND	200	"							
Surrogate: o-Terphenyl	40		g	50.0		80.8	59-131			

**LCS (4J28009-BS1)**

Prepared: 10/28/2014 Analyzed: 10/29/2014

Diesel (C10-C28)	1000	50	mg/kg	1000		101	64-121			
Residual Range Organics (C28-C36)	990	200	"	1000		98.9	58-124			
Surrogate: o-Terphenyl	40		g	50.0		79.8	59-131			

**Matrix Spike (4J28009-MS1)**

Source: X410301-01

Prepared: 10/28/2014 Analyzed: 10/29/2014

**QM-07**

Diesel (C10-C28)	580	50	mg/kg	1000	20	56.4	53-125			
Residual Range Organics (C28-C36)	320	200	"	1000	31	29.3	47-133			
Surrogate: o-Terphenyl	30		g	50.0		60.4	59-131			

**Matrix Spike Dup (4J28009-MSD1)**

Source: X410301-01

Prepared: 10/28/2014 Analyzed: 10/29/2014

**QM-07**

Diesel (C10-C28)	800	50	mg/kg	1000	20	78.4	53-125	31.7	20	
Residual Range Organics (C28-C36)	470	200	"	1000	31	44.1	47-133	37.2	20	
Surrogate: o-Terphenyl	38		g	50.0		76.7	59-131			

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

Christine Wasko  
Project Number: [none]  
Project: Kugel W 4-3

---

**Notes and Definitions**

- QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
- ND Analyte NOT DETECTED at or above the reporting limit
- RPD Relative Percent Difference

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.*

---

Ross S Hutto For Noelle Doyle Mathis, President

October 30, 2014

Tasman Geosciences

Christine Wasko

6899 Pecos Street, Unit C

Denver CO 80211

Project Name - Kugel W 4-3

Project Number - [none]

Attached are your analytical results for Kugel W 4-3 received by Origins Laboratory, Inc. October 29, 2014. This project is associated with Origins project number X410346-01.

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

Christine Wasko  
Project Number: [none]  
Project: Kugel W 4-3

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
S01 @ 4	X410346-01	Soil	October 29, 2014 14:20	10/29/2014 16:30

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.*

Ross S Hutto For Noelle Doyle Mathis, President

Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211



Christine Wasko  
 Project Number: [none]  
 Project: Kugel W 4-3

X410346

page ( ) of ( )

Client: Tasman Geo  
 Project Manager/Send Report To: CHRISTINE WASKO  
 Address: \_\_\_\_\_  
 Email Address: awasko@tasman-geo.com  
 Project Name/Number: Kugel W4-3  
 Telephone Number: 12 230 2807  
 Samples Collected By: Brian N

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

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative				Matrix			Analysis/Method	Sample Instructions
				Unpreserved	HCl	HNO <sub>3</sub>	Other	Groundwater	Soil	Air Summa #		
S0104	10/21/14	1420	1	X				X				STEIN 6.20 (870) TPH - Dissolved (801)
												2
												3
												4
												5
												6
												7
												8
												9
												10
Relinquished By: 	Date: 11/25/2014	Time: 1630	Time: 1630	Received By: 	Date: 10/25/14	Time: 1630	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 type="checkbox"/> 16.8					
Relinquished By:	Date:	Time:	Time:	Received By:	Date:	Time:						

Comments:

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

Christine Wasko  
 Project Number: [none]  
 Project: Kugel W 4-3

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: X410344

Client: Tasman

Client Project ID: Kugel W4-3

Checklist Completed by: Jesse Smith

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

Date/time completed: 10/29/14

Airbill #: N/A

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

Cooler Number/Temperature: \_\_\_\_\_ / 16.8 °C \_\_\_\_\_ / \_\_\_\_\_ °C \_\_\_\_\_ / \_\_\_\_\_ °C (Describe) \_\_\_\_\_ °C

Thermometer ID: T063

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

R. Hutto  
 Reviewed by (Project Manager)

10/30/14 6:17  
 Date/Time Reviewed

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

Christine Wasko  
 Project Number: [none]  
 Project: Kugel W 4-3

**S01 @ 4**  
**10/29/2014 2:20:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X410346-01 (Soil)**

**DRO/RRO by EPA8015C**

Diesel (C10-C28)	120	50	mg/kg	1	4J29010	10/29/2014	10/29/2014	
Residual Range Organics (C28-C36)	ND	200	"	"	"	"	"	

*Surrogate: o-Terphenyl*      64.5 %      59-131      "      "      "

**GBTEX by EPA 8260C**

Gasoline Range Hydrocarbons	40.5	5.00	mg/kg	25	4J29013	10/29/2014	10/29/2014	
Benzene	ND	0.0020	"	1	"	"	"	
Toluene	ND	0.0020	"	"	"	"	"	
Ethylbenzene	ND	0.0020	"	"	"	"	"	
Xylenes, total	ND	0.0020	"	"	"	"	"	

*Surrogate: 1,2-Dichloroethane-d4*      95.6 %      70-130      "      "      "

*Surrogate: Toluene-d8*      103 %      70-130      "      "      "

*Surrogate: 4-Bromofluorobenzene*      112 %      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

Christine Wasko  
 Project Number: [none]  
 Project: Kugel W 4-3

**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 4J29013 - EPA 5030 (soil)**

**Blank (4J29013-BLK1)**

Prepared: 10/29/2014 Analyzed: 10/29/2014

Gasoline Range Hydrocarbons	ND	0.200	mg/kg							
Benzene	ND	0.0020	"							
Toluene	ND	0.0020	"							
Ethylbenzene	ND	0.0020	"							
Xylenes, total	ND	0.0020	"							
Surrogate: 1,2-Dichloroethane-d4	60.6		ug/kg	62.5		96.9	70-130			
Surrogate: Toluene-d8	63.1		"	62.5		101	70-130			
Surrogate: 4-Bromofluorobenzene	59.6		"	62.5		95.3	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.*

Ross S Hutto For Noelle Doyle Mathis, President

Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Christine Wasko  
 Project Number: [none]  
 Project: Kugel W 4-3

**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 4J29013 - EPA 5030 (soil)

**LCS (4J29013-BS1)**

Prepared: 10/29/2014 Analyzed: 10/29/2014

Benzene	0.0966	0.0020	mg/kg	0.100		96.6	77.1-124			
Toluene	0.0910	0.0020	"	0.100		91.0	74.5-128			
Ethylbenzene	0.0885	0.0020	"	0.100		88.5	66.4-127			
m,p-Xylene	0.174	0.0040	"	0.200		87.1	76.6-124			
o-Xylene	0.0848	0.0020	"	0.100		84.8	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	59.6		ug/kg	62.5		95.4	70-130			
Surrogate: Toluene-d8	64.6		"	62.5		103	70-130			
Surrogate: 4-Bromofluorobenzene	58.4		"	62.5		93.4	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

Christine Wasko  
 Project Number: [none]  
 Project: Kugel W 4-3

**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 4J29013 - EPA 5030 (soil)

Matrix Spike (4J29013-MS1)	Source: X410325-02			Prepared: 10/29/2014 Analyzed: 10/29/2014						
Benzene	0.0954	0.0020	mg/kg	0.100	ND	95.4	71.8-126			
Toluene	0.0911	0.0020	"	0.100	ND	91.1	65.1-130			
Ethylbenzene	0.104	0.0020	"	0.100	0.0047	98.9	62.2-130			
m,p-Xylene	0.418	0.0040	"	0.200	0.127	146	46.5-137			QM-07
o-Xylene	0.0885	0.0020	"	0.100	ND	88.5	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	54.1		ug/kg	62.5		86.5	70-130			
Surrogate: Toluene-d8	65.2		"	62.5		104	70-130			
Surrogate: 4-Bromofluorobenzene	56.8		"	62.5		90.8	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.*

Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Christine Wasko  
 Project Number: [none]  
 Project: Kugel W 4-3

**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 4J29013 - EPA 5030 (soil)

Matrix Spike Dup (4J29013-MSD1)	Source: X410325-02			Prepared: 10/29/2014 Analyzed: 10/29/2014						
Benzene	0.0971	0.0020	mg/kg	0.100	ND	97.1	71.8-126	1.77	11.3	
Toluene	0.0890	0.0020	"	0.100	ND	89.0	65.1-130	2.27	15.4	
Ethylbenzene	0.0990	0.0020	"	0.100	0.0047	94.3	62.2-130	4.54	19.6	
m,p-Xylene	0.336	0.0040	"	0.200	0.127	105	46.5-137	21.8	19.2	QM-07
o-Xylene	0.0839	0.0020	"	0.100	ND	83.9	54.2-134	5.43	17.9	
Surrogate: 1,2-Dichloroethane-d4	62.4		ug/kg	62.5		99.8	70-130			
Surrogate: Toluene-d8	62.0		"	62.5		99.2	70-130			
Surrogate: 4-Bromofluorobenzene	51.5		"	62.5		82.4	70-130			

Origins Laboratory, Inc.



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Tasman Geosciences  
6899 Pecos Street, Unit C  
Denver CO 80211

Christine Wasko  
Project Number: [none]  
Project: Kugel W 4-3

---

### Notes and Definitions

- QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
- ND Analyte NOT DETECTED at or above the reporting limit
- RPD Relative Percent Difference

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.*

---

Ross S Hutto For Noelle Doyle Mathis, President

November 03, 2014

Tasman Geosciences

Christine Wasko

6899 Pecos Street, Unit C

Denver CO 80211

Project Name - Kugel W 4-3

Project Number - [none]

Attached are your analytical results for Kugel W 4-3 received by Origins Laboratory, Inc. October 31, 2014. This project is associated with Origins project number X410374-01.

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

Christine Wasko  
Project Number: [none]  
Project: Kugel W 4-3

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
E02 @ 4	X410374-01	Soil	October 31, 2014 15:00	10/31/2014 16:13
B02 @ 5	X410374-02	Soil	October 31, 2014 15:11	10/31/2014 16:13
N01 @ 4	X410374-03	Soil	October 31, 2014 14:55	10/31/2014 16:13
W02 @ 4	X410374-04	Soil	October 31, 2014 14:50	10/31/2014 16:13

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

Christine Wasko  
 Project Number: [none]  
 Project: Kugel W 4-3

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: X410374

Client: Tasman

Client Project ID: Kugel W4-3

Checklist Completed by: Jesse Smith

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

Date/time completed: 10/31/14

Airbill #: NA

Matrix(s) Received: (Check all that apply):  Soil/Solid  Water  Other: \_\_\_\_\_ (Describe)

Cooler Number/Temperature: \_\_\_\_\_ / 13.4 °C \_\_\_\_\_ / \_\_\_\_\_ °C \_\_\_\_\_ / \_\_\_\_\_ °C \_\_\_\_\_ / \_\_\_\_\_ °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> ?	<input checked="" type="checkbox"/>			
Is there ice present (document if blue ice is 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)</sup> ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Are short holding time analytes or samples with HTs due within 48 hours present <sup>(1)</sup> ?		<input checked="" type="checkbox"/>		
Is a chain-of-custody (COC) present and filled out completely <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client with date and time recorded <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
For volatiles in water – is there headspace (> ¼ inch bubble) present? <b>If yes, contact client and note in narrative.</b>			<input checked="" type="checkbox"/>	
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)			<input checked="" type="checkbox"/>	
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) 

Date/Time Reviewed 10-31-14

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

Christine Wasko  
 Project Number: [none]  
 Project: Kugel W 4-3

E02 @ 4  
 10/31/2014 3:00:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
 X410374-01 (Soil)

**DRO/RRO by EPA8015C**

Diesel (C10-C28)	680	50	mg/kg	1	4J31006	10/31/2014	11/02/2014	
Residual Range Organics (C28-C36)	ND	200	"	"	"	"	"	

*Surrogate: o-Terphenyl*      119 %      59-131      "      "      "

**GBTEX by EPA 8260C**

Gasoline Range Hydrocarbons	19.9	0.200	mg/kg	1	4J31005	"	10/31/2014	
Benzene	ND	0.0020	"	"	"	"	10/31/2014	
Toluene	ND	0.0020	"	"	"	"	"	
Ethylbenzene	0.0145	0.0020	"	"	"	"	"	
Xylenes, total	0.0050	0.0020	"	"	"	"	"	

*Surrogate: 1,2-Dichloroethane-d4*      89.1 %      70-130      "      "      10/31/2014  
*Surrogate: Toluene-d8*      103 %      70-130      "      "      "  
*Surrogate: 4-Bromofluorobenzene*      108 %      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

Christine Wasko  
 Project Number: [none]  
 Project: Kugel W 4-3

B02 @ 5

10/31/2014 3:11:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
---------	--------	-----------------	-------	----------	-------	----------	----------	-------

**Origins Laboratory, Inc.**  
 X410374-02 (Soil)

**DRO/RRO by EPA8015C**

Diesel (C10-C28)	640	50	mg/kg	1	4J31006	10/31/2014	11/02/2014	
Residual Range Organics (C28-C36)	ND	200	"	"	"	"	"	

*Surrogate: o-Terphenyl*      111 %      59-131      "      "      "

**GBTEX by EPA 8260C**

Gasoline Range Hydrocarbons	139	10.0	mg/kg	50	4J31005	"	10/31/2014	
Benzene	ND	0.0020	"	1	"	"	10/31/2014	
Toluene	ND	0.0020	"	"	"	"	"	
Ethylbenzene	0.208	0.0020	"	"	"	"	"	
Xylenes, total	0.309	0.0020	"	"	"	"	"	

*Surrogate: 1,2-Dichloroethane-d4*      90.2 %      70-130      "      "      10/31/2014  
*Surrogate: Toluene-d8*      102 %      70-130      "      "      "  
*Surrogate: 4-Bromofluorobenzene*      108 %      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

Christine Wasko  
 Project Number: [none]  
 Project: Kugel W 4-3

N01 @ 4  
 10/31/2014 2:55:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
---------	--------	-----------------	-------	----------	-------	----------	----------	-------

**Origins Laboratory, Inc.**  
 X410374-03 (Soil)

**DRO/RRO by EPA8015C**

Diesel (C10-C28)	880	50	mg/kg	1	4J31006	10/31/2014	11/02/2014	
Residual Range Organics (C28-C36)	ND	200	"	"	"	"	"	

*Surrogate: o-Terphenyl*      107 %      59-131      "      "      "

**GBTEX by EPA 8260C**

Gasoline Range Hydrocarbons	271	10.0	mg/kg	50	4J31005	"	10/31/2014	
Benzene	ND	0.0020	"	1	"	"	10/31/2014	
Toluene	ND	0.0020	"	"	"	"	"	
Ethylbenzene	1.42	0.100	"	50	"	"	10/31/2014	
Xylenes, total	0.0063	0.0020	"	1	"	"	10/31/2014	

*Surrogate: 1,2-Dichloroethane-d4*      88.1 %      70-130      "      "      10/31/2014  
*Surrogate: Toluene-d8*      99.6 %      70-130      "      "      "  
*Surrogate: 4-Bromofluorobenzene*      114 %      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

Christine Wasko  
 Project Number: [none]  
 Project: Kugel W 4-3

W02 @ 4

10/31/2014 2:50:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
 X410374-04 (Soil)

**DRO/RRO by EPA8015C**

Diesel (C10-C28)	ND	50	mg/kg	1	4J31006	10/31/2014	11/02/2014	
Residual Range Organics (C28-C36)	ND	200	"	"	"	"	"	

*Surrogate: o-Terphenyl*      105 %      59-131      "      "      "

**GBTEX by EPA 8260C**

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	4J31005	"	10/31/2014	
Benzene	ND	0.0020	"	"	"	"	"	
Toluene	ND	0.0020	"	"	"	"	"	
Ethylbenzene	ND	0.0020	"	"	"	"	"	
Xylenes, total	ND	0.0020	"	"	"	"	"	

*Surrogate: 1,2-Dichloroethane-d4*      96.4 %      70-130      "      "      "

*Surrogate: Toluene-d8*      99.9 %      70-130      "      "      "

*Surrogate: 4-Bromofluorobenzene*      109 %      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

Christine Wasko  
 Project Number: [none]  
 Project: Kugel W 4-3

**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 4J31005 - EPA 5030 (soil)

**Blank (4J31005-BLK1)**

Prepared: 10/31/2014 Analyzed: 10/31/2014

Gasoline Range Hydrocarbons	ND	0.200	mg/kg							
Benzene	ND	0.0020	"							
Toluene	ND	0.0020	"							
Ethylbenzene	ND	0.0020	"							
Xylenes, total	ND	0.0020	"							
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>59.4</i>		<i>ug/kg</i>	<i>62.5</i>		<i>95.1</i>	<i>70-130</i>			
<i>Surrogate: Toluene-d8</i>	<i>62.2</i>		<i>"</i>	<i>62.5</i>		<i>99.6</i>	<i>70-130</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>62.4</i>		<i>"</i>	<i>62.5</i>		<i>99.9</i>	<i>70-130</i>			

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

Christine Wasko  
 Project Number: [none]  
 Project: Kugel W 4-3

**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 4J31005 - EPA 5030 (soil)

LCS (4J31005-BS1)

Prepared: 10/31/2014 Analyzed: 10/31/2014

Benzene	0.0926	0.0020	mg/kg	0.100		92.6	77.1-124			
Toluene	0.0981	0.0020	"	0.100		98.1	74.5-128			
Ethylbenzene	0.0938	0.0020	"	0.100		93.8	66.4-127			
m,p-Xylene	0.185	0.0040	"	0.200		92.4	76.6-124			
o-Xylene	0.0842	0.0020	"	0.100		84.2	76.6-124			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>59.5</i>		<i>ug/kg</i>	<i>62.5</i>		<i>95.1</i>	<i>70-130</i>			
<i>Surrogate: Toluene-d8</i>	<i>63.3</i>		<i>"</i>	<i>62.5</i>		<i>101</i>	<i>70-130</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>63.2</i>		<i>"</i>	<i>62.5</i>		<i>101</i>	<i>70-130</i>			

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

Christine Wasko  
 Project Number: [none]  
 Project: Kugel W 4-3

**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 4J31005 - EPA 5030 (soil)

Matrix Spike (4J31005-MS1)	Source: X410348-01			Prepared: 10/31/2014 Analyzed: 10/31/2014						
Benzene	0.0935	0.0020	mg/kg	0.100	ND	93.5	71.8-126			
Toluene	0.0992	0.0020	"	0.100	ND	99.2	65.1-130			
Ethylbenzene	0.0959	0.0020	"	0.100	ND	95.9	62.2-130			
m,p-Xylene	0.186	0.0040	"	0.200	ND	93.2	46.5-137			
o-Xylene	0.0866	0.0020	"	0.100	ND	86.6	54.2-134			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>58.3</i>		<i>ug/kg</i>	<i>62.5</i>		<i>93.2</i>	<i>70-130</i>			
<i>Surrogate: Toluene-d8</i>	<i>64.4</i>		<i>"</i>	<i>62.5</i>		<i>103</i>	<i>70-130</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>63.6</i>		<i>"</i>	<i>62.5</i>		<i>102</i>	<i>70-130</i>			

Origins Laboratory, Inc.



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Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Christine Wasko  
 Project Number: [none]  
 Project: Kugel W 4-3

**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 4J31005 - EPA 5030 (soil)

Matrix Spike Dup (4J31005-MSD1)	Source: X410348-01			Prepared: 10/31/2014 Analyzed: 10/31/2014						
Benzene	0.0909	0.0020	mg/kg	0.100	ND	90.9	71.8-126	2.82	11.3	
Toluene	0.0940	0.0020	"	0.100	ND	94.0	65.1-130	5.36	15.4	
Ethylbenzene	0.0915	0.0020	"	0.100	ND	91.5	62.2-130	4.68	19.6	
m,p-Xylene	0.181	0.0040	"	0.200	ND	90.3	46.5-137	3.23	19.2	
o-Xylene	0.0802	0.0020	"	0.100	ND	80.2	54.2-134	7.72	17.9	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>56.7</i>		<i>ug/kg</i>	<i>62.5</i>		<i>90.7</i>	<i>70-130</i>			
<i>Surrogate: Toluene-d8</i>	<i>63.4</i>		<i>"</i>	<i>62.5</i>		<i>101</i>	<i>70-130</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>66.4</i>		<i>"</i>	<i>62.5</i>		<i>106</i>	<i>70-130</i>			

Origins Laboratory, Inc.



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Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Christine Wasko  
 Project Number: [none]  
 Project: Kugel W 4-3

**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 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 4J31006 - EPA 3580

**Blank (4J31006-BLK1)**

Prepared: 10/31/2014 Analyzed: 10/31/2014

Diesel (C10-C28)	ND	50	mg/kg							
Residual Range Organics (C28-C36)	ND	200	"							
Surrogate: o-Terphenyl	43		g	50.0		86.9	59-131			

**LCS (4J31006-BS1)**

Prepared: 10/31/2014 Analyzed: 10/31/2014

Diesel (C10-C28)	970	50	mg/kg	1000		97.1	64-121			
Residual Range Organics (C28-C36)	810	200	"	1000		81.2	58-124			
Surrogate: o-Terphenyl	44		g	50.0		88.3	59-131			

**Matrix Spike (4J31006-MS1)**

Source: X410348-01

Prepared: 10/31/2014 Analyzed: 10/31/2014

Diesel (C10-C28)	1100	50	mg/kg	1000	ND	108	53-125			
Residual Range Organics (C28-C36)	860	200	"	1000	45	81.4	47-133			
Surrogate: o-Terphenyl	45		g	50.0		89.2	59-131			

**Matrix Spike Dup (4J31006-MSD1)**

Source: X410348-01

Prepared: 10/31/2014 Analyzed: 10/31/2014

Diesel (C10-C28)	1100	50	mg/kg	1000	ND	109	53-125	0.876	20	
Residual Range Organics (C28-C36)	870	200	"	1000	45	82.8	47-133	1.52	20	
Surrogate: o-Terphenyl	44		g	50.0		88.9	59-131			

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

Christine Wasko  
Project Number: [none]  
Project: Kugel W 4-3

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### 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.



*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

November 05, 2014

Tasman Geosciences

Christine Wasko

6899 Pecos Street, Unit C

Denver CO 80211

Project Name - Kugel W 4-3

Project Number - [none]

Attached are your analytical results for Kugel W 4-3 received by Origins Laboratory, Inc. November 04, 2014. This project is associated with Origins project number X411017-01.

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

Christine Wasko  
Project Number: [none]  
Project: Kugel W 4-3

## CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
B03 @ 9	X411017-01	Soil	November 4, 2014 13:00	11/04/2014 16:40
N03 @ 6	X411017-02	Soil	November 4, 2014 13:05	11/04/2014 16:40
E03 @ 7	X411017-03	Soil	November 4, 2014 13:40	11/04/2014 16:40
S03 @ 5	X411017-04	Soil	November 4, 2014 14:00	11/04/2014 16:40
S04 @ 5	X411017-05	Soil	November 4, 2014 15:25	11/04/2014 16:40
NE01 @ 7	X411017-06	Soil	November 4, 2014 15:30	11/04/2014 16:40
NW01 @ 7	X411017-07	Soil	November 4, 2014 15:35	11/04/2014 16:40
E04 @ 5	X411017-08	Soil	November 4, 2014 13:50	11/04/2014 16:40

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

Christine Wasko  
 Project Number: [none]  
 Project: Kugel W 4-3

www.originslaboratory.com

X11017

page  of

**ORIGINS**  
 LABORATORY, INC

Client: Tasman Geo  
 Address:  
 Telephone Number: 712 272 2807  
 Email Address: cwick@tasman-geo.com

Project Manager: Christine Wasko  
 Project Name: Kugel W4-3  
 Project Number:  
 Samples Collected By: Drake Nelson

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative					Matrix			Analysis	Sample Instructions
				Unpreserved	HCl	HNO <sub>3</sub>	Other	Groundwater	Soil	Air Canister #	Other		
B0309	11/4/14	13:00	2										BTEX (600 (820)) TPH (200 (825))
N0306		13:05	2										
E0307		13:10	2										
S0305		14:06	2										
S0405		15:25	2										
NE0107		15:30											BTEX (600 (820)) TPH (200 (825))
NW0107		15:55											Hold
S0305		14:00											Hold
EA005		18:50											Hold
Relinquished By:													
Relinquished By:													

Date Results Needed

Origins Laboratory, Inc.

*Jefe 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

Christine Wasko  
 Project Number: [none]  
 Project: Kugel W 4-3

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: X411017

Client: Tasman

Client Project ID: Kugel W4-3

Checklist Completed by: Jeff Smith

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

Date/time completed: 11/4/14

Airbill #: NA

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

Cooler Number/Temperature: \_\_\_\_\_ / 4.1 °C \_\_\_\_\_ / \_\_\_\_\_ °C \_\_\_\_\_ / \_\_\_\_\_ °C (Describe)

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> ?	<input checked="" type="checkbox"/>			
Is there ice present (document if blue ice is 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)</sup> ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Are short holding time analytes or samples with HTs due within 48 hours present <sup>(1)</sup> ?		<input checked="" type="checkbox"/>		
Is a chain-of-custody (COC) present and filled out completely <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client with date and time recorded <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
For volatiles in water – is there headspace (> ¼ inch bubble) present? <b>if yes, contact client and note in narrative.</b>			<input checked="" type="checkbox"/>	
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)			<input checked="" type="checkbox"/>	
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)

11/4/14 18:29  
 Date/Time Reviewed

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

Christine Wasko  
 Project Number: [none]  
 Project: Kugel W 4-3

**B03 @ 9**  
**11/4/2014 1:00:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X411017-01 (Soil)**

**DRO/RRO by EPA8015C**

Diesel (C10-C28)	ND	50	mg/kg	1	4K04010	11/04/2014	11/05/2014	
Residual Range Organics (C28-C36)	ND	200	"	"	"	"	"	

*Surrogate: o-Terphenyl*      73.9 %      59-131      "      "      "

**GBTEX by EPA 8260C**

Gasoline Range Hydrocarbons	<b>0.696</b>	0.200	mg/kg	1	4K04011	11/04/2014	11/04/2014	
Benzene	ND	0.0020	"	"	"	"	"	
Toluene	ND	0.0020	"	"	"	"	"	
Ethylbenzene	ND	0.0020	"	"	"	"	"	
Xylenes, total	ND	0.0020	"	"	"	"	"	

*Surrogate: 1,2-Dichloroethane-d4*      102 %      70-130      "      "      "

*Surrogate: Toluene-d8*      104 %      70-130      "      "      "

*Surrogate: 4-Bromofluorobenzene*      94.9 %      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

Christine Wasko  
 Project Number: [none]  
 Project: Kugel W 4-3

**N03 @ 6**  
**11/4/2014 1:05:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X411017-02 (Soil)**

**DRO/RRO by EPA8015C**

Diesel (C10-C28)	780	50	mg/kg	1	4K04010	11/04/2014	11/05/2014	
Residual Range Organics (C28-C36)	ND	200	"	"	"	"	"	

*Surrogate: o-Terphenyl* 78.1 % 59-131 " " "

**GBTEX by EPA 8260C**

Gasoline Range Hydrocarbons	381	50.0	mg/kg	250	4K04011	11/04/2014	11/04/2014	
Benzene	ND	0.100	"	50	"	"	11/05/2014	
Toluene	ND	0.100	"	"	"	"	"	
Ethylbenzene	0.377	0.100	"	"	"	"	"	
Xylenes, total	ND	0.100	"	"	"	"	"	

*Surrogate: 1,2-Dichloroethane-d4* 98.6 % 70-130 " " 11/04/2014  
*Surrogate: Toluene-d8* 101 % 70-130 " " "  
*Surrogate: 4-Bromofluorobenzene* 94.8 % 70-130 " " "

Origins Laboratory, Inc.



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Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Christine Wasko  
 Project Number: [none]  
 Project: Kugel W 4-3

**E03 @ 7**  
**11/4/2014 1:40:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X411017-03 (Soil)**

**DRO/RRO by EPA8015C**

Diesel (C10-C28)	ND	50	mg/kg	1	4K04010	11/04/2014	11/05/2014	
Residual Range Organics (C28-C36)	ND	200	"	"	"	"	"	

*Surrogate: o-Terphenyl*      62.9 %      59-131      "      "      "

**GBTEX by EPA 8260C**

Gasoline Range Hydrocarbons	<b>0.758</b>	0.200	mg/kg	1	4K04011	11/04/2014	11/04/2014	
Benzene	ND	0.0020	"	"	"	"	"	
Toluene	ND	0.0020	"	"	"	"	"	
Ethylbenzene	ND	0.0020	"	"	"	"	"	
Xylenes, total	ND	0.0020	"	"	"	"	"	

*Surrogate: 1,2-Dichloroethane-d4*      99.6 %      70-130      "      "      "

*Surrogate: Toluene-d8*      93.8 %      70-130      "      "      "

*Surrogate: 4-Bromofluorobenzene*      89.7 %      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

Christine Wasko  
 Project Number: [none]  
 Project: Kugel W 4-3

**S03 @ 5**  
**11/4/2014 2:00:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X411017-04 (Soil)**

**DRO/RRO by EPA8015C**

Diesel (C10-C28)	1600	50	mg/kg	1	4K04010	11/04/2014	11/05/2014	
Residual Range Organics (C28-C36)	ND	200	"	"	"	"	"	

*Surrogate: o-Terphenyl* 87.7 % 59-131 " " "

**GBTEX by EPA 8260C**

Gasoline Range Hydrocarbons	306	50.0	mg/kg	250	4K04011	11/04/2014	11/04/2014	
Benzene	1.07	0.100	"	50	"	"	11/05/2014	
Toluene	ND	0.100	"	"	"	"	"	
Ethylbenzene	2.42	0.100	"	"	"	"	"	
Xylenes, total	ND	0.100	"	"	"	"	"	

*Surrogate: 1,2-Dichloroethane-d4* 101 % 70-130 " " 11/04/2014  
*Surrogate: Toluene-d8* 101 % 70-130 " " "  
*Surrogate: 4-Bromofluorobenzene* 89.7 % 70-130 " " "

Origins Laboratory, Inc.



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Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Christine Wasko  
 Project Number: [none]  
 Project: Kugel W 4-3

**S04 @ 5**  
**11/4/2014 3:25:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X411017-05 (Soil)**

**DRO/RRO by EPA8015C**

Diesel (C10-C28)	120	50	mg/kg	1	4K05006	11/05/2014	11/05/2014	
Residual Range Organics (C28-C36)	ND	200	"	"	"	"	"	

*Surrogate: o-Terphenyl* 60.7 % 59-131 " " "

**GBTEX by EPA 8260C**

Gasoline Range Hydrocarbons	118	10.0	mg/kg	50	4K05005	"	11/05/2014	
Benzene	ND	0.100	"	"	"	"	11/05/2014	
Toluene	ND	0.100	"	"	"	"	"	
Ethylbenzene	0.136	0.100	"	"	"	"	"	
Xylenes, total	0.598	0.100	"	"	"	"	"	

*Surrogate: 1,2-Dichloroethane-d4* 124 % 70-130 " " "  
*Surrogate: Toluene-d8* 107 % 70-130 " " "  
*Surrogate: 4-Bromofluorobenzene* 95.4 % 70-130 " " "

Origins Laboratory, Inc.



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Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Christine Wasko  
 Project Number: [none]  
 Project: Kugel W 4-3

**NE01 @ 7**  
**11/4/2014 3:30:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X411017-06 (Soil)**

**DRO/RRO by EPA8015C**

Diesel (C10-C28)	ND	50	mg/kg	1	4K04010	11/04/2014	11/05/2014	
Residual Range Organics (C28-C36)	ND	200	"	"	"	"	"	

*Surrogate: o-Terphenyl*      67.5 %      59-131      "      "      "

**GBTEX by EPA 8260C**

Gasoline Range Hydrocarbons	<b>17.9</b>	10.0	mg/kg	50	4K04011	11/04/2014	11/04/2014	
Benzene	ND	0.100	"	"	"	"	11/05/2014	
Toluene	ND	0.100	"	"	"	"	"	
Ethylbenzene	ND	0.100	"	"	"	"	"	
Xylenes, total	ND	0.100	"	"	"	"	"	

*Surrogate: 1,2-Dichloroethane-d4*      98.6 %      70-130      "      "      11/04/2014  
*Surrogate: Toluene-d8*      103 %      70-130      "      "      "  
*Surrogate: 4-Bromofluorobenzene*      99.8 %      70-130      "      "      "

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Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Christine Wasko  
 Project Number: [none]  
 Project: Kugel W 4-3

**NW01 @ 7**  
**11/4/2014 3:35:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X411017-07 (Soil)**

**DRO/RRO by EPA8015C**

Diesel (C10-C28)	500	50	mg/kg	1	4K05006	11/05/2014	11/05/2014	
Residual Range Organics (C28-C36)	ND	200	"	"	"	"	"	

*Surrogate: o-Terphenyl*      72.1 %      59-131      "      "      "

**GBTEX by EPA 8260C**

Gasoline Range Hydrocarbons	212	10.0	mg/kg	50	4K05005	"	11/05/2014	
Benzene	ND	0.100	"	"	"	"	11/05/2014	
Toluene	ND	0.100	"	"	"	"	"	
Ethylbenzene	ND	0.100	"	"	"	"	"	
Xylenes, total	ND	0.100	"	"	"	"	"	

*Surrogate: 1,2-Dichloroethane-d4*      118 %      70-130      "      "      "

*Surrogate: Toluene-d8*      99.0 %      70-130      "      "      "

*Surrogate: 4-Bromofluorobenzene*      98.2 %      70-130      "      "      "

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 6899 Pecos Street, Unit C  
 Denver CO 80211

Christine Wasko  
 Project Number: [none]  
 Project: Kugel W 4-3

**E04 @ 5**  
**11/4/2014 1:50:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X411017-08 (Soil)**

**DRO/RRO by EPA8015C**

Diesel (C10-C28)	ND	50	mg/kg	1	4K04010	11/04/2014	11/05/2014	
Residual Range Organics (C28-C36)	ND	200	"	"	"	"	"	

*Surrogate: o-Terphenyl* 64.4 % 59-131 " " "

**GBTEX by EPA 8260C**

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	4K04011	11/04/2014	11/04/2014	
Benzene	<b>0.0025</b>	0.0020	"	"	"	"	"	
Toluene	ND	0.0020	"	"	"	"	"	
Ethylbenzene	ND	0.0020	"	"	"	"	"	
Xylenes, total	ND	0.0020	"	"	"	"	"	

*Surrogate: 1,2-Dichloroethane-d4* 88.7 % 70-130 " " "  
*Surrogate: Toluene-d8* 103 % 70-130 " " "  
*Surrogate: 4-Bromofluorobenzene* 87.9 % 70-130 " " "

Origins Laboratory, Inc.



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Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Christine Wasko  
 Project Number: [none]  
 Project: Kugel W 4-3

**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 4K04011 - EPA 5030 (soil)**

**Blank (4K04011-BLK1)**

Prepared: 11/04/2014 Analyzed: 11/04/2014

Gasoline Range Hydrocarbons	ND	0.200	mg/kg							
Benzene	ND	0.0020	"							
Toluene	ND	0.0020	"							
Ethylbenzene	ND	0.0020	"							
m,p-Xylene	ND	0.0040	"							
o-Xylene	ND	0.0020	"							
Xylenes, total	ND	0.0020	"							
Surrogate: 1,2-Dichloroethane-d4	57.8		ug/kg	62.5	92.5		70-130			
Surrogate: Toluene-d8	49.4		"	62.5	79.1		70-130			
Surrogate: 4-Bromofluorobenzene	49.6		"	62.5	79.4		70-130			

Origins Laboratory, Inc.



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Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Christine Wasko  
 Project Number: [none]  
 Project: Kugel W 4-3

**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 4K04011 - EPA 5030 (soil)**

**LCS (4K04011-BS1)**

Prepared: 11/04/2014 Analyzed: 11/04/2014

Benzene	0.104	0.0020	mg/kg	0.100		104	77.1-124			
Toluene	0.0888	0.0020	"	0.100		88.8	74.5-128			
Ethylbenzene	0.0932	0.0020	"	0.100		93.2	66.4-127			
m,p-Xylene	0.176	0.0040	"	0.200		88.0	76.6-124			
o-Xylene	0.0858	0.0020	"	0.100		85.8	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	59.8		ug/kg	62.5		95.7	70-130			
Surrogate: Toluene-d8	62.4		"	62.5		99.8	70-130			
Surrogate: 4-Bromofluorobenzene	54.7		"	62.5		87.5	70-130			

Origins Laboratory, Inc.



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Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Christine Wasko  
 Project Number: [none]  
 Project: Kugel W 4-3

**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 4K04011 - EPA 5030 (soil)

Matrix Spike (4K04011-MS1)	Source: X411015-01			Prepared: 11/04/2014 Analyzed: 11/04/2014						
Benzene	0.115	0.0020	mg/kg	0.100	ND	115	71.8-126			
Toluene	0.110	0.0020	"	0.100	ND	110	65.1-130			
Ethylbenzene	0.106	0.0020	"	0.100	ND	106	62.2-130			
m,p-Xylene	0.195	0.0040	"	0.200	ND	97.6	46.5-137			
o-Xylene	0.0968	0.0020	"	0.100	ND	96.8	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	63.1		ug/kg	62.5		101	70-130			
Surrogate: Toluene-d8	65.2		"	62.5		104	70-130			
Surrogate: 4-Bromofluorobenzene	54.7		"	62.5		87.6	70-130			

Origins Laboratory, Inc.



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Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Christine Wasko  
 Project Number: [none]  
 Project: Kugel W 4-3

**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 4K04011 - EPA 5030 (soil)**

<b>Matrix Spike Dup (4K04011-MSD1)</b>	<b>Source: X411015-01</b>			<b>Prepared: 11/04/2014 Analyzed: 11/04/2014</b>						
Benzene	0.102	0.0020	mg/kg	0.100	ND	102	71.8-126	12.7	11.3	QM-07
Toluene	0.0954	0.0020	"	0.100	ND	95.4	65.1-130	14.0	15.4	
Ethylbenzene	0.0961	0.0020	"	0.100	ND	96.1	62.2-130	9.50	19.6	
m,p-Xylene	0.179	0.0040	"	0.200	ND	89.3	46.5-137	8.86	19.2	
o-Xylene	0.0870	0.0020	"	0.100	ND	87.0	54.2-134	10.7	17.9	
Surrogate: 1,2-Dichloroethane-d4	61.3		ug/kg	62.5		98.0	70-130			
Surrogate: Toluene-d8	63.7		"	62.5		102	70-130			
Surrogate: 4-Bromofluorobenzene	56.4		"	62.5		90.3	70-130			

Origins Laboratory, Inc.



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Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Christine Wasko  
 Project Number: [none]  
 Project: Kugel W 4-3

**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 4K05005 - EPA 5030 (soil)**

**Blank (4K05005-BLK1)**

Prepared: 11/05/2014 Analyzed: 11/05/2014

Gasoline Range Hydrocarbons	ND	0.200	mg/kg							
Benzene	ND	0.0020	"							
Toluene	ND	0.0020	"							
Ethylbenzene	ND	0.0020	"							
m,p-Xylene	ND	0.0040	"							
o-Xylene	ND	0.0020	"							
Xylenes, total	ND	0.0020	"							
Surrogate: 1,2-Dichloroethane-d4	71.8		ug/kg	62.5		115	70-130			
Surrogate: Toluene-d8	64.3		"	62.5		103	70-130			
Surrogate: 4-Bromofluorobenzene	63.9		"	62.5		102	70-130			

Origins Laboratory, Inc.



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Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Christine Wasko  
 Project Number: [none]  
 Project: Kugel W 4-3

**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 4K05005 - EPA 5030 (soil)**

**LCS (4K05005-BS1)**

Prepared: 11/05/2014 Analyzed: 11/05/2014

Benzene	0.101	0.0020	mg/kg	0.100		101	77.1-124			
Toluene	0.0985	0.0020	"	0.100		98.5	74.5-128			
Ethylbenzene	0.0940	0.0020	"	0.100		94.0	66.4-127			
m,p-Xylene	0.182	0.0040	"	0.200		91.2	76.6-124			
o-Xylene	0.0845	0.0020	"	0.100		84.5	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	75.9		ug/kg	62.5		121	70-130			
Surrogate: Toluene-d8	65.5		"	62.5		105	70-130			
Surrogate: 4-Bromofluorobenzene	56.6		"	62.5		90.5	70-130			

Origins Laboratory, Inc.



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Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Christine Wasko  
 Project Number: [none]  
 Project: Kugel W 4-3

**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 4K05005 - EPA 5030 (soil)

Matrix Spike (4K05005-MS1)	Source: X411024-01			Prepared: 11/05/2014 Analyzed: 11/05/2014						
Benzene	0.118	0.0020	mg/kg	0.100	ND	118	71.8-126			
Toluene	0.113	0.0020	"	0.100	0.0010	112	65.1-130			
Ethylbenzene	0.112	0.0020	"	0.100	ND	112	62.2-130			
m,p-Xylene	0.217	0.0040	"	0.200	0.0014	108	46.5-137			
o-Xylene	0.104	0.0020	"	0.100	0.0005	104	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	74.7		ug/kg	62.5		120	70-130			
Surrogate: Toluene-d8	64.8		"	62.5		104	70-130			
Surrogate: 4-Bromofluorobenzene	55.8		"	62.5		89.4	70-130			

Origins Laboratory, Inc.



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Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Christine Wasko  
 Project Number: [none]  
 Project: Kugel W 4-3

**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 4K05005 - EPA 5030 (soil)

Matrix Spike Dup (4K05005-MSD1)	Source: X411024-01			Prepared: 11/05/2014 Analyzed: 11/05/2014						
Benzene	0.112	0.0020	mg/kg	0.100	ND	112	71.8-126	5.05	11.3	
Toluene	0.114	0.0020	"	0.100	0.0010	113	65.1-130	0.813	15.4	
Ethylbenzene	0.112	0.0020	"	0.100	ND	112	62.2-130	0.589	19.6	
m,p-Xylene	0.219	0.0040	"	0.200	0.0014	109	46.5-137	0.541	19.2	
o-Xylene	0.103	0.0020	"	0.100	0.0005	103	54.2-134	0.751	17.9	
Surrogate: 1,2-Dichloroethane-d4	73.2		ug/kg	62.5		117	70-130			
Surrogate: Toluene-d8	66.4		"	62.5		106	70-130			
Surrogate: 4-Bromofluorobenzene	58.1		"	62.5		92.9	70-130			

Origins Laboratory, Inc.



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Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Christine Wasko  
 Project Number: [none]  
 Project: Kugel W 4-3

**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 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 4K04010 - EPA 3580**

**Blank (4K04010-BLK1)**

Prepared: 11/04/2014 Analyzed: 11/04/2014

Diesel (C10-C28)	ND	50	mg/kg							
Residual Range Organics (C28-C36)	ND	200	"							
Surrogate: o-Terphenyl	53		g	50.0		106	59-131			

**LCS (4K04010-BS1)**

Prepared: 11/04/2014 Analyzed: 11/04/2014

Diesel (C10-C28)	1100	50	mg/kg	1000		111	64-121			
Residual Range Organics (C28-C36)	830	200	"	1000		82.9	58-124			
Surrogate: o-Terphenyl	50		g	50.0		99.1	59-131			

**LCS Dup (4K04010-BSD1)**

Prepared: 11/04/2014 Analyzed: 11/04/2014

Diesel (C10-C28)	1200	50	mg/kg	1000		119	64-121	7.47	20	
Residual Range Organics (C28-C36)	900	200	"	1000		89.5	58-124	7.75	20	
Surrogate: o-Terphenyl	57		g	50.0		114	59-131			

**Batch 4K05006 - EPA 3580**

**Blank (4K05006-BLK1)**

Prepared: 11/05/2014 Analyzed: 11/05/2014

Diesel (C10-C28)	ND	50	mg/kg							
Residual Range Organics (C28-C36)	ND	200	"							
Surrogate: o-Terphenyl	36		g	50.0		72.9	59-131			

**LCS (4K05006-BS1)**

Prepared: 11/05/2014 Analyzed: 11/05/2014

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

Christine Wasko  
 Project Number: [none]  
 Project: Kugel W 4-3

**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
<b>Batch 4K05006 - EPA 3580</b>										
<b>LCS (4K05006-BS1)</b>					Prepared: 11/05/2014 Analyzed: 11/05/2014					
Diesel (C10-C28)	1100	50	mg/kg	1000		106	64-121			
Residual Range Organics (C28-C36)	860	200	"	1000		86.4	58-124			
Surrogate: o-Terphenyl	41		g	50.0		81.8	59-131			
<b>Matrix Spike (4K05006-MS1)</b>		<b>Source: X411024-01</b>			Prepared: 11/05/2014 Analyzed: 11/05/2014					
Diesel (C10-C28)	1100	50	mg/kg	1000	ND	109	53-125			
Residual Range Organics (C28-C36)	870	200	"	1000	ND	87.1	47-133			
Surrogate: o-Terphenyl	38		g	50.0		76.9	59-131			
<b>Matrix Spike Dup (4K05006-MSD1)</b>		<b>Source: X411024-01</b>			Prepared: 11/05/2014 Analyzed: 11/05/2014					
Diesel (C10-C28)	1000	50	mg/kg	1000	ND	100	53-125	7.74	20	
Residual Range Organics (C28-C36)	850	200	"	1000	ND	85.3	47-133	2.03	20	
Surrogate: o-Terphenyl	35		g	50.0		70.3	59-131			

Origins Laboratory, Inc.



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Tasman Geosciences  
6899 Pecos Street, Unit C  
Denver CO 80211

Christine Wasko  
Project Number: [none]  
Project: Kugel W 4-3

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**Notes and Definitions**

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

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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November 07, 2014

Tasman Geosciences

Christine Wasko

6899 Pecos Street, Unit C

Denver CO 80211

Project Name - Kugel W 4-3

Project Number - [none]

Attached are your analytical results for Kugel W 4-3 received by Origins Laboratory, Inc. November 06, 2014. This project is associated with Origins project number X411052-01.

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

Christine Wasko  
Project Number: [none]  
Project: Kugel W 4-3

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
NW02 @ 7	X411052-01	Soil	November 6, 2014 14:15	11/06/2014 15:20

Origins Laboratory, Inc.



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Noelle Doyle Mathis, President



Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Christine Wasko  
 Project Number: [none]  
 Project: Kugel W 4-3

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

Origins Laboratory

**Sample Receipt Checklist**

Origins Work Order: X411052 Client: Tasman  
 Client Project ID: Kugel W4-3

Checklist Completed by: Jan Pellegrini Shipped Via: #1D  
 Date/time completed: 11-6-14 (UPS, FedEx, Hand Delivered, Pick-up, etc.)  
 Airbill #: N/A

Matrix(s) Received: (Check all that apply):  Soil/Solid  Water  Other: \_\_\_\_\_ (Describe)

Cooler Number/Temperature: 1 / 10.7 °C \_\_\_\_\_ / \_\_\_\_\_ °C \_\_\_\_\_ / \_\_\_\_\_ °C \_\_\_\_\_ / \_\_\_\_\_ °C

Thermometer ID: T003

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 8°C <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<u>sampled same day</u>
Is there ice present (document if blue ice is 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)</sup> ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Are short holding time analytes or samples with HTs due within 48 hours present <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Is a chain-of-custody (COC) present and filled out completely <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client with date and time recorded <sup>(1)</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)</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"/>	
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 be taken in the additional comments (above) and the case narrative.

Reviewed by (Project Manager) [Signature]

Date/Time Reviewed 11-06-14 17:00

Origins Laboratory, Inc.



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Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Christine Wasko  
 Project Number: [none]  
 Project: Kugel W 4-3

**NW02 @ 7**  
**11/6/2014 2:15:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X411052-01 (Soil)**

**DRO/RRO by EPA8015C**

Diesel (C10-C28)	ND	50	mg/kg	1	4K06005	11/06/2014	11/06/2014	
Residual Range Organics (C28-C36)	ND	200	"	"	"	"	"	

*Surrogate: o-Terphenyl* 74.2 % 59-131 " " "

**GBTEX by EPA 8260C**

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	4K06008	11/06/2014	11/06/2014	
Benzene	ND	0.002	"	"	"	"	"	
Toluene	ND	0.002	"	"	"	"	"	
Ethylbenzene	ND	0.002	"	"	"	"	"	
Xylenes, total	ND	0.002	"	"	"	"	"	

*Surrogate: 1,2-Dichloroethane-d4* 116 % 70-130 " " "  
*Surrogate: Toluene-d8* 93.7 % 70-130 " " "  
*Surrogate: 4-Bromofluorobenzene* 102 % 70-130 " " "

Origins Laboratory, Inc.



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 6899 Pecos Street, Unit C  
 Denver CO 80211

Christine Wasko  
 Project Number: [none]  
 Project: Kugel W 4-3

**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 4K06008 - EPA 5030 (soil)**

**Blank (4K06008-BLK1)**

Prepared: 11/06/2014 Analyzed: 11/06/2014

Gasoline Range Hydrocarbons	ND	0.200	mg/kg							
Benzene	ND	0.002	"							
Toluene	ND	0.002	"							
Ethylbenzene	ND	0.002	"							
Xylenes, total	ND	0.002	"							
Surrogate: 1,2-Dichloroethane-d4	63.1		ug/kg	62.5		101	70-130			
Surrogate: Toluene-d8	62.3		"	62.5		99.6	70-130			
Surrogate: 4-Bromofluorobenzene	64.5		"	62.5		103	70-130			

Origins Laboratory, Inc.



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 6899 Pecos Street, Unit C  
 Denver CO 80211

Christine Wasko  
 Project Number: [none]  
 Project: Kugel W 4-3

**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 4K06008 - EPA 5030 (soil)**

**LCS (4K06008-BS1)**

Prepared: 11/06/2014 Analyzed: 11/06/2014

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	0.093	0.002	"	0.100		93.4	66.4-127			
m,p-Xylene	0.207	0.004	"	0.200		103	76.6-124			
o-Xylene	0.093	0.002	"	0.100		92.5	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	61.1		ug/kg	62.5		97.7	70-130			
Surrogate: Toluene-d8	62.6		"	62.5		100	70-130			
Surrogate: 4-Bromofluorobenzene	64.5		"	62.5		103	70-130			

Origins Laboratory, Inc.



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 Denver CO 80211

Christine Wasko  
 Project Number: [none]  
 Project: Kugel W 4-3

**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 4K06008 - EPA 5030 (soil)

Matrix Spike (4K06008-MS1)	Source: X411046-01			Prepared: 11/06/2014 Analyzed: 11/06/2014						
Benzene	0.118	0.002	mg/kg	0.100	ND	118	71.8-126			
Toluene	0.112	0.002	"	0.100	ND	112	65.1-130			
Ethylbenzene	0.099	0.002	"	0.100	0.002	96.8	62.2-130			
m,p-Xylene	0.219	0.004	"	0.200	ND	109	46.5-137			
o-Xylene	0.103	0.002	"	0.100	ND	103	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	67.2		ug/kg	62.5		108	70-130			
Surrogate: Toluene-d8	61.3		"	62.5		98.0	70-130			
Surrogate: 4-Bromofluorobenzene	66.8		"	62.5		107	70-130			

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 6899 Pecos Street, Unit C  
 Denver CO 80211

Christine Wasko  
 Project Number: [none]  
 Project: Kugel W 4-3

**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 4K06008 - EPA 5030 (soil)

Matrix Spike Dup (4K06008-MSD1)	Source: X411046-01			Prepared: 11/06/2014 Analyzed: 11/06/2014						
Benzene	0.101	0.002	mg/kg	0.100	ND	101	71.8-126	15.3	11.3	
Toluene	0.097	0.002	"	0.100	ND	97.1	65.1-130	14.5	15.4	
Ethylbenzene	0.087	0.002	"	0.100	0.002	85.6	62.2-130	12.0	19.6	
m,p-Xylene	0.195	0.004	"	0.200	ND	97.4	46.5-137	11.6	19.2	
o-Xylene	0.086	0.002	"	0.100	ND	86.0	54.2-134	17.5	17.9	
Surrogate: 1,2-Dichloroethane-d4	66.0		ug/kg	62.5		106	70-130			
Surrogate: Toluene-d8	60.9		"	62.5		97.5	70-130			
Surrogate: 4-Bromofluorobenzene	62.6		"	62.5		100	70-130			

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 Denver CO 80211

Christine Wasko  
 Project Number: [none]  
 Project: Kugel W 4-3

**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 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 4K06005 - EPA 3580**

**Blank (4K06005-BLK1)**

Prepared: 11/06/2014 Analyzed: 11/06/2014

Diesel (C10-C28)	ND	50	mg/kg							
Residual Range Organics (C28-C36)	ND	200	"							
Surrogate: o-Terphenyl	37		g	50.0		73.1	59-131			

**LCS (4K06005-BS1)**

Prepared: 11/06/2014 Analyzed: 11/06/2014

Diesel (C10-C28)	1000	50	mg/kg	1000		103	64-121			
Residual Range Organics (C28-C36)	830	200	"	1000		82.8	58-124			
Surrogate: o-Terphenyl	39		g	50.0		77.8	59-131			

**Matrix Spike (4K06005-MS1)**

Source: X411040-01

Prepared: 11/06/2014 Analyzed: 11/06/2014

Diesel (C10-C28)	1100	50	mg/kg	1000	ND	107	53-125			
Residual Range Organics (C28-C36)	880	200	"	1000	ND	88.1	47-133			
Surrogate: o-Terphenyl	36		g	50.0		71.3	59-131			

**Matrix Spike Dup (4K06005-MSD1)**

Source: X411040-01

Prepared: 11/06/2014 Analyzed: 11/06/2014

Diesel (C10-C28)	1100	50	mg/kg	1000	ND	110	53-125	2.96	20	
Residual Range Organics (C28-C36)	890	200	"	1000	ND	89.0	47-133	1.05	20	
Surrogate: o-Terphenyl	41		g	50.0		81.6	59-131			

Origins Laboratory, Inc.



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Denver CO 80211

Christine Wasko  
Project Number: [none]  
Project: Kugel W 4-3

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**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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Noelle Doyle Mathis, President