

## **ANALYTICAL TABLE**

**TABLE 1**  
**COUGHLIN RED V V 22-1, 22-2, WAGNER RED V V 22-7, 22-8**  
**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)
<b>COGCC Table 910-1 Groundwater Standard (ug/L) <sup>(1)</sup></b>		<b>5</b>	<b>560</b>	<b>700</b>	<b>1,400</b>
GW01	10/24/2014	<b>2620</b>	1.5	170	704

**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.

**BOLD**= Analytical result is in exceedance of COGCC groundwater standards.

# **LABORATORY ANALYTICAL REPORT**

October 27, 2014

Tasman Geosciences

Christine Wasko

6899 Pecos Street, Unit C

Denver CO 80211

Project Name - Coughlin Red VV 22-1

Project Number - [none]

Attached are your analytical results for Coughlin Red VV 22-1 received by Origins Laboratory, Inc. October 24, 2014. This project is associated with Origins project number X410280-01.

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: Coughlin Red VV 22-1

## CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
NW01 @ 8	X410280-01	Soil	October 24, 2014 13:47	10/24/2014 15:00
NE01 @ 8	X410280-02	Soil	October 24, 2014 13:50	10/24/2014 15:00
SW01 @ 8	X410280-03	Soil	October 24, 2014 13:53	10/24/2014 15:00
SE01 @ 8	X410280-04	Soil	October 24, 2014 13:55	10/24/2014 15:00
E01 @ 8	X410280-05	Soil	October 24, 2014 13:57	10/24/2014 15:00
W01 @ 8	X410280-06	Soil	October 24, 2014 14:00	10/24/2014 15:00
GW01	X410280-07	Water	October 24, 2014 14:10	10/24/2014 15:00

Origins Laboratory, Inc.



*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Christine Wasko  
 Project Number: [none]  
 Project: Coughlin Red VV 22-1

www.originslaboratory.com

X410280

ORIGINS  
 LABORATORY, INC

page 1 of 1

Client: Tasman Geo Project Manager/Send Report To: Christine Wasko  
 Address: \_\_\_\_\_ Email Address: twasko@tasman-geo.com  
 Telephone Number: 912 256 2807 Project Name/Number: Coughlin Red VV 22-1  
 Samples Collected By: Bobb 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 #		
NW1008	10/24/14	1347	1	X				X			BTEX (6260) TPH D10000 (8215)	1
NE1008		1356	1	X				X				2
SW1008		1353	1	X				X				3
SE1008		1355	1	X				X				4
EW1008		1357	1	X				X				5
W1008		1400	1	X				X				6
G1001		1410	3		X			X			BTEX (6260)	7
												8
												9
												10
Relinquished By:	Date: <u>10/24</u>	Time: <u>1500</u>	Received By:	Date: <u>10-24-14</u>	Time: <u>1500</u>	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: <u>10-24-14</u>	Time: <u>1500</u>	Standard <input type="checkbox"/> 8.9						

ORIGINS LABORATORY, INC

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: Coughlin Red VV 22-1

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: X410280 Client: Tasman  
 Client Project ID: Coughlin Red VV22-1  
 Checklist Completed by: Jen Pellegrini Shipped Via: Pickup  
 Date/time completed: 10-24-14 (UPS, FedEx, Hand Delivered, Pick-up, etc.)  
 Airbill #: N/A  
 Matrix(s) Received: (Check all that apply):  Soil/Solid  Water Other: \_\_\_\_\_  
 Cooler Number/Temperature: 1 / 8.9 °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> ?		X		samples same day
Is there ice present (document if blue ice is used)	Y			
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)		Y		
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)		Y		
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> ?		Y		
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.		Y		
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)	X			HCL
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

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: Coughlin Red VV 22-1

NW01 @ 8  
 10/24/2014 1:47:00PM

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

**Origins Laboratory, Inc.**  
 X410280-01 (Soil)

**DRO/RRO by EPA8015C**

Diesel (C10-C28)	ND	50	mg/kg	1	4J24013	10/24/2014	10/26/2014	
Residual Range Organics (C28-C36)	ND	200	"	"	"	"	"	

Surrogate: *o*-Terphenyl 92.5 % 59-131 " " "

**GBTEX by EPA 8260C**

Gasoline Range Hydrocarbons	<b>0.238</b>	0.200	mg/kg	1	4J24014	10/24/2014	10/24/2014	
Benzene	ND	0.0020	"	"	"	"	"	
Toluene	ND	0.0020	"	"	"	"	"	
Ethylbenzene	ND	0.0020	"	"	"	"	"	
Xylenes, total	ND	0.0020	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4 93.7 % 70-130 " " "  
 Surrogate: Toluene-d8 99.7 % 70-130 " " "  
 Surrogate: 4-Bromofluorobenzene 102 % 70-130 " " "

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Christine Wasko  
 Project Number: [none]  
 Project: Coughlin Red VV 22-1

**NE01 @ 8**  
**10/24/2014 1:50:00PM**

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

**Origins Laboratory, Inc.**  
**X410280-02 (Soil)**

**DRO/RRO by EPA8015C**

Diesel (C10-C28)	ND	50	mg/kg	1	4J24013	10/24/2014	10/26/2014	
Residual Range Organics (C28-C36)	ND	200	"	"	"	"	"	
<i>Surrogate: o-Terphenyl</i>	89.4 %	59-131			"	"	"	

**GBTEX by EPA 8260C**

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	4J24014	10/24/2014	10/24/2014	
Benzene	ND	0.0020	"	"	"	"	"	
Toluene	ND	0.0020	"	"	"	"	"	
Ethylbenzene	ND	0.0020	"	"	"	"	"	
Xylenes, total	ND	0.0020	"	"	"	"	"	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	90.0 %	70-130			"	"	"	
<i>Surrogate: Toluene-d8</i>	98.6 %	70-130			"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>	98.9 %	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: Coughlin Red VV 22-1

**SW01 @ 8**  
**10/24/2014 1:53:00PM**

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

**Origins Laboratory, Inc.**  
**X410280-03 (Soil)**

**DRO/RRO by EPA8015C**

Diesel (C10-C28)	ND	50	mg/kg	1	4J24013	10/24/2014	10/27/2014	
Residual Range Organics (C28-C36)	ND	200	"	"	"	"	"	
<i>Surrogate: o-Terphenyl</i>	89.6 %	59-131			"	"	"	

**GBTEX by EPA 8260C**

Gasoline Range Hydrocarbons	<b>67.3</b>	5.00	mg/kg	25	4J24014	10/24/2014	10/27/2014	
Benzene	<b>0.381</b>	0.0020	"	1	"	"	10/24/2014	
Toluene	ND	0.0020	"	"	"	"	"	
Ethylbenzene	<b>0.0131</b>	0.0020	"	"	"	"	"	
Xylenes, total	ND	0.0020	"	"	"	"	"	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	79.8 %	70-130			"	"	"	
<i>Surrogate: Toluene-d8</i>	119 %	70-130			"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>	107 %	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: Coughlin Red VV 22-1

**SE01 @ 8**  
**10/24/2014 1:55:00PM**

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

**Origins Laboratory, Inc.**  
**X410280-04 (Soil)**

**DRO/RRO by EPA8015C**

Diesel (C10-C28)	ND	50	mg/kg	1	4J24013	10/24/2014	10/27/2014	
Residual Range Organics (C28-C36)	ND	200	"	"	"	"	"	

*Surrogate: o-Terphenyl* 86.4 % 59-131 " " "

**GBTEX by EPA 8260C**

Gasoline Range Hydrocarbons	<b>0.546</b>	0.200	mg/kg	1	4J24014	10/24/2014	10/25/2014	
Benzene	<b>0.0229</b>	0.0020	"	"	"	"	"	
Toluene	ND	0.0020	"	"	"	"	"	
Ethylbenzene	ND	0.0020	"	"	"	"	"	
Xylenes, total	ND	0.0020	"	"	"	"	"	

*Surrogate: 1,2-Dichloroethane-d4* 77.7 % 70-130 " " "  
*Surrogate: Toluene-d8* 98.8 % 70-130 " " "  
*Surrogate: 4-Bromofluorobenzene* 96.4 % 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: Coughlin Red VV 22-1

**E01 @ 8**

**10/24/2014 1:57:00PM**

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

**Origins Laboratory, Inc.**  
**X410280-05 (Soil)**

**DRO/RRO by EPA8015C**

Diesel (C10-C28)	ND	50	mg/kg	1	4J24013	10/24/2014	10/27/2014	
Residual Range Organics (C28-C36)	ND	200	"	"	"	"	"	

*Surrogate: o-Terphenyl* 90.1 % 59-131 " " "

**GBTEX by EPA 8260C**

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	4J24014	10/24/2014	10/25/2014	
Benzene	ND	0.0020	"	"	"	"	"	
Toluene	ND	0.0020	"	"	"	"	"	
Ethylbenzene	ND	0.0020	"	"	"	"	"	
Xylenes, total	ND	0.0020	"	"	"	"	"	

*Surrogate: 1,2-Dichloroethane-d4* 86.6 % 70-130 " " "

*Surrogate: Toluene-d8* 100 % 70-130 " " "

*Surrogate: 4-Bromofluorobenzene* 98.9 % 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: Coughlin Red VV 22-1

**W01 @ 8**  
**10/24/2014 2:00:00PM**

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

**Origins Laboratory, Inc.**  
**X410280-06 (Soil)**

**DRO/RRO by EPA8015C**

Diesel (C10-C28)	ND	50	mg/kg	1	4J24013	10/24/2014	10/27/2014	
Residual Range Organics (C28-C36)	ND	200	"	"	"	"	"	
<i>Surrogate: o-Terphenyl</i>	78.4 %	59-131			"	"	"	

**GBTEX by EPA 8260C**

Gasoline Range Hydrocarbons	<b>0.591</b>	0.200	mg/kg	1	4J24014	10/24/2014	10/25/2014	
Benzene	ND	0.0020	"	"	"	"	"	
Toluene	ND	0.0020	"	"	"	"	"	
Ethylbenzene	ND	0.0020	"	"	"	"	"	
Xylenes, total	ND	0.0020	"	"	"	"	"	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	80.2 %	70-130			"	"	"	
<i>Surrogate: Toluene-d8</i>	102 %	70-130			"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>	97.2 %	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: Coughlin Red VV 22-1

**GW01**  
**10/24/2014 2:10:00PM**

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

**Origins Laboratory, Inc.**  
**X410280-07 (Water)**

**BTEX by EPA 8260C**

Benzene	2620	50.0	ug/L	50	4J24012	10/24/2014	10/26/2014	
Toluene	1.5	1.0	"	1	"	"	10/24/2014	
Ethylbenzene	170	1.0	"	"	"	"	"	
Xylenes, total	704	50.0	"	50	"	"	10/26/2014	
Surrogate: 1,2-Dichloroethane-d4	92.3 %	87.3-113			"	"	10/24/2014	
Surrogate: Toluene-d8	99.4 %	90.9-108			"	"	10/26/2014	
Surrogate: 4-Bromofluorobenzene	101 %	88.6-111			"	"	10/24/2014	

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: Coughlin Red VV 22-1

**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 4J24012 - EPA 5030B (Water)**

**Blank (4J24012-BLK1)**

Prepared: 10/24/2014 Analyzed: 10/24/2014

Benzene	ND	1.0	ug/L							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes, total	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	54		"	62.5	86.2		87.3-113			S-GC
Surrogate: Toluene-d8	66		"	62.5	105		90.9-108			
Surrogate: 4-Bromofluorobenzene	63		"	62.5	100		88.6-111			

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: Coughlin Red VV 22-1

**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 4J24012 - EPA 5030B (Water)

**LCS (4J24012-BS1)**

Prepared: 10/24/2014 Analyzed: 10/24/2014

Benzene	55.2	1.0	ug/L	50.0		110	75-126			
Toluene	55.2	1.0	"	50.0		110	78.7-126			
Ethylbenzene	55.4	1.0	"	50.0		111	81-130			
m,p-Xylene	111	2.0	"	100		111	77.2-133			
o-Xylene	55.6	1.0	"	50.0		111	77.9-126			
Surrogate: 1,2-Dichloroethane-d4	61		"	62.5		97.0	87.3-113			
Surrogate: Toluene-d8	62		"	62.5		99.8	90.9-108			
Surrogate: 4-Bromofluorobenzene	61		"	62.5		97.7	88.6-111			

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: Coughlin Red VV 22-1

**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 4J24012 - EPA 5030B (Water)**

<b>Matrix Spike (4J24012-MS1)</b>	<b>Source: X410250-01</b>			<b>Prepared: 10/24/2014 Analyzed: 10/24/2014</b>						
Benzene	57.5	1.0	ug/L	50.0	ND	115	74-130			
Toluene	59.0	1.0	"	50.0	ND	118	73-131			
Ethylbenzene	60.2	1.0	"	50.0	ND	120	76-132			
m,p-Xylene	119	2.0	"	100	ND	119	69-139			
o-Xylene	57.7	1.0	"	50.0	ND	115	74-131			
Surrogate: 1,2-Dichloroethane-d4	60		"	62.5		95.5	87.3-113			
Surrogate: Toluene-d8	63		"	62.5		101	90.9-108			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		101	88.6-111			

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: Coughlin Red VV 22-1

**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 4J24012 - EPA 5030B (Water)**

Matrix Spike Dup (4J24012-MSD1)	Source: X410250-01			Prepared: 10/24/2014 Analyzed: 10/24/2014						
Benzene	53.9	1.0	ug/L	50.0	ND	108	74-130	6.51	20	
Toluene	54.7	1.0	"	50.0	ND	109	73-131	7.44	20	
Ethylbenzene	56.1	1.0	"	50.0	ND	112	76-132	7.19	20	
m,p-Xylene	112	2.0	"	100	ND	112	69-139	6.23	20	
o-Xylene	54.2	1.0	"	50.0	ND	108	74-131	6.27	20	
Surrogate: 1,2-Dichloroethane-d4	60		"	62.5		96.3	87.3-113			
Surrogate: Toluene-d8	63		"	62.5		101	90.9-108			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		101	88.6-111			

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: Coughlin Red VV 22-1

**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 4J24014 - EPA 5030 (soil)**

**Blank (4J24014-BLK1)**

Prepared: 10/24/2014 Analyzed: 10/24/2014

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	56.3		ug/kg	62.5		90.1	70-130			
Surrogate: Toluene-d8	61.2		"	62.5		97.9	70-130			
Surrogate: 4-Bromofluorobenzene	60.9		"	62.5		97.4	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: Coughlin Red VV 22-1

**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 4J24014 - EPA 5030 (soil)**

**LCS (4J24014-BS1)**

Prepared: 10/24/2014 Analyzed: 10/24/2014

Benzene	0.103	0.0020	mg/kg	0.100		103	77.1-124			
Toluene	0.0997	0.0020	"	0.100		99.7	74.5-128			
Ethylbenzene	0.105	0.0020	"	0.100		105	66.4-127			
m,p-Xylene	0.210	0.0040	"	0.200		105	76.6-124			
o-Xylene	0.105	0.0020	"	0.100		105	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	56.7		ug/kg	62.5		90.7	70-130			
Surrogate: Toluene-d8	62.5		"	62.5		99.9	70-130			
Surrogate: 4-Bromofluorobenzene	63.4		"	62.5		101	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: Coughlin Red VV 22-1

**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 4J24014 - EPA 5030 (soil)

Matrix Spike (4J24014-MS1)	Source: X410270-01			Prepared: 10/24/2014 Analyzed: 10/24/2014						
Benzene	0.105	0.0020	mg/kg	0.100	ND	105	71.8-126			
Toluene	0.101	0.0020	"	0.100	ND	101	65.1-130			
Ethylbenzene	0.105	0.0020	"	0.100	ND	105	62.2-130			
m,p-Xylene	0.208	0.0040	"	0.200	ND	104	46.5-137			
o-Xylene	0.102	0.0020	"	0.100	ND	102	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	54.2		ug/kg	62.5		86.7	70-130			
Surrogate: Toluene-d8	61.3		"	62.5		98.0	70-130			
Surrogate: 4-Bromofluorobenzene	61.4		"	62.5		98.3	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.*

Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Christine Wasko  
 Project Number: [none]  
 Project: Coughlin Red VV 22-1

**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 4J24014 - EPA 5030 (soil)

Matrix Spike Dup (4J24014-MSD1)	Source: X410270-01			Prepared: 10/24/2014 Analyzed: 10/24/2014						
Benzene	0.105	0.0020	mg/kg	0.100	ND	105	71.8-126	0.590	11.3	
Toluene	0.100	0.0020	"	0.100	ND	100	65.1-130	0.458	15.4	
Ethylbenzene	0.110	0.0020	"	0.100	ND	110	62.2-130	4.20	19.6	
m,p-Xylene	0.217	0.0040	"	0.200	ND	108	46.5-137	4.23	19.2	
o-Xylene	0.106	0.0020	"	0.100	ND	106	54.2-134	3.88	17.9	
Surrogate: 1,2-Dichloroethane-d4	53.4		ug/kg	62.5		85.5	70-130			
Surrogate: Toluene-d8	60.5		"	62.5		96.7	70-130			
Surrogate: 4-Bromofluorobenzene	65.0		"	62.5		104	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: Coughlin Red VV 22-1

**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
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

**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
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

**Batch 4J24013 - EPA 3580**

**Blank (4J24013-BLK1)**

Prepared: 10/24/2014 Analyzed: 10/26/2014

Diesel (C10-C28)	ND	50	mg/kg							
Residual Range Organics (C28-C36)	ND	200	"							
Surrogate: o-Terphenyl	46		g	50.0		92.3	59-131			

**LCS (4J24013-BS1)**

Prepared: 10/24/2014 Analyzed: 10/27/2014

Diesel (C10-C28)	860	50	mg/kg	1000		85.6	64-121			
Residual Range Organics (C28-C36)	880	200	"	1000		87.8	58-124			
Surrogate: o-Terphenyl	47		g	50.0		94.5	59-131			

**Matrix Spike (4J24013-MS1)**

Source: X410270-01

Prepared: 10/24/2014 Analyzed: 10/26/2014

**QM-07**

Diesel (C10-C28)	180	50	mg/kg	1000	14	16.3	53-125			
Residual Range Organics (C28-C36)	28	200	"	1000	26	0.213	47-133			
Surrogate: o-Terphenyl	49		g	50.0		97.5	59-131			

**Matrix Spike Dup (4J24013-MSD1)**

Source: X410270-01

Prepared: 10/24/2014 Analyzed: 10/26/2014

**QM-07**

Diesel (C10-C28)	170	50	mg/kg	1000	14	16.1	53-125	1.50	20	
Residual Range Organics (C28-C36)	27	200	"	1000	26	0.130	47-133	2.98	20	
Surrogate: o-Terphenyl	47		g	50.0		94.2	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: Coughlin Red VV 22-1

---

### Notes and Definitions

- S-GC Surrogate recovery outside of control limits. The data was accepted based on valid recovery of the remaining surrogate.
- 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.



*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.*