



December 26, 2018

Olsson Associates

Jason Davidson

1525 Raleigh St, Suite 400

Denver

CO 80204

Project Name - Kowitz 27-5 Tank Pull

Project Number - [none]

Attached are your analytical results for Kowitz 27-5 Tank Pull received by Origins Laboratory, Inc. December 18, 2018. This project is associated with Origins project number Y812287-01.

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

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

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

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

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

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



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

Olsson Associates

1525 Raleigh St, Suite 400

Denver CO 80204

Jason Davidson

Project Number: [none]

Project: Kowitz 27-5 Tank Pull

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
KowitzBase@4.5	Y812287-01	Soil	December 18, 2018 9:45	12/18/2018 12:30
KowitzNorthSW@4	Y812287-02	Soil	December 18, 2018 9:50	12/18/2018 12:30
KowitzEastSW@4	Y812287-03	Soil	December 18, 2018 9:55	12/18/2018 12:30
KowitzSouth@4	Y812287-04	Soil	December 18, 2018 10:00	12/18/2018 12:30
KowitzWest@4	Y812287-05	Soil	December 18, 2018 10:05	12/18/2018 12:30

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.

Jen Pellegrini, Project Manager

Olsson Associates
1525 Raleigh St, Suite 400
Denver CO 80204

Jason Davidson
Project Number: [none]
Project: Kowitz 27-5 Tank Pull

48/12287
Chain of Custody

olsson

PROJECT NAME Kowitz 27-5 Tank Pull	PROJECT NUMBER 48/12287	PHONE NUMBER	CITY/STATE/ZIP Denver CO	PROJECT MANAGER Jason Davidson	PIR EMAIL jason.davidson@olsson.com	DISPOSAL By Lab	PAGE 1 of 1
COMPANY NAME Olsson Associates	ADDRESS 1525 Raleigh St, Suite 400	PROJECT MANAGER Jason Davidson	SAMPLER Trent Wainre	LAB USE ONLY: Temperature upon receipt: 9.7 Custody seals intact: Yes No N/A	Turn Around Time (check) Standard x 48hr 24hr Same Day		
DIRECT BILL CLIENT? YES: <input type="checkbox"/> NO: <input checked="" type="checkbox"/>		CLIENT COMPANY: GROC					
SEND COPY OF ANALYTICAL TO CLIENT? YES: <input type="checkbox"/> NO: <input checked="" type="checkbox"/>		CLIENT NAME: GROC					
		CLIENT EMAIL: GROC					
		CLIENT PROJECT #:					

Lab ID	Field ID	Matrix	Sample Date Time	Sample Time Date	# Bottles	Notes
	Kowitz 27-5 Tank Pull	Soil	0945	12/18/18	1	
	Kowitz 27-5 Tank Pull	Soil	0950	12/18/18	1	
	Kowitz 27-5 Tank Pull	Soil	0955	12/18/18	1	
	Kowitz 27-5 Tank Pull	Soil	1000	12/18/18	1	
	Kowitz 27-5 Tank Pull	Soil	1005	12/18/18	1	
12/18/18						

RELINQUISHED BY Trent Wainre	PRINTED NAME Trent Wainre	SIGNATURE Trent Wainre	DATE 12/18/18	TIME 1230
RECEIVED BY Jason Davidson	RELINQUISHED BY	RECEIVED BY	DATE 12/18/18	TIME 1230
RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY		

Comments:	QC PACKAGE (check below)			
	X	LEVEL I (Standard CC)		
		LEVEL II (Std CC + formal)		
		LEVEL IV (Std CC + formal + raw data)		

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.

Olsson Associates
1525 Raleigh St, Suite 400
Denver CO 80204

Jason Davidson
Project Number: [none]
Project: Kowitz 27-5 Tank Pull

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: 4812287

Client: Olsson Assoc.

Client Project ID: Kowitz 27-5 Tank Pull

Checklist Completed by: Davidson

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

Date/time completed: 12-10-12

Airbill #: NP

Matrix(s) Received: (Check all that apply): ☒ Soil/Solid ☐ Water ☐ Other: _____

Cooler Number/Temperature: 1 9.7 °C 1 °C 1 °C 1 °C (Describe)

Thermometer ID: 1002

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C ⁽¹⁾ ?		<input checked="" type="checkbox"/>		Sampled same Day
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 ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Are short holding time analytes or samples with HTs due within 48 hours present ⁽¹⁾ ?		<input checked="" type="checkbox"/>		
Is a chain-of-custody (COC) present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client with date and time recorded ⁽¹⁾ ?	<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 ⁽¹⁾ ? (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 ₃ , HCL, H ₂ SO ₄) / (pH >10 for samples preserved with NaAsO ₂ +NaOH, ZnAc+NaOH)			<input checked="" type="checkbox"/>	
Additional Comments (if any):				

⁽¹⁾ 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) JPD

Date/Time Reviewed 12/19/12

Origins Laboratory, Inc.

Jen 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.

Jen Pellegrini, Project Manager

Olsson Associates
1525 Raleigh St, Suite 400
Denver CO 80204

Jason Davidson
Project Number: [none]
Project: Kowitz 27-5 Tank Pull

KowitzBase@4.5
12/18/2018 9:45:00AM

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

Origins Laboratory, Inc.
Y812287-01 (Soil)

Diesel Range Organics (DRO/TEPH) by EPA 8015C

Diesel (C10-C28)	ND	50.0	mg/kg	1	B8L2102	JTD	12/21/2018	12/21/2018	U
------------------	----	------	-------	---	---------	-----	------------	------------	---

Surrogate: o-Terphenyl	68.0 %	59-131			"	"	"		
------------------------	--------	--------	--	--	---	---	---	--	--

GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B8L2105	JTD	12/21/2018	12/22/2018	U
Benzene	ND	0.002	"	"	"	JTD	"	"	U
Toluene	ND	0.002	"	"	"	JTD	"	"	U
Ethylbenzene	ND	0.002	"	"	"	JTD	"	"	U
Xylenes, total	ND	0.002	"	"	"	JTD	"	"	U

Surrogate: 1,2-Dichloroethane-d4	109 %	70-130			"	"	"		
Surrogate: Toluene-d8	88.4 %	70-130			"	"	"		
Surrogate: 4-Bromofluorobenzene	97.6 %	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.

Jen Pellegrini, Project Manager

Olsson Associates
1525 Raleigh St, Suite 400
Denver CO 80204

Jason Davidson
Project Number: [none]
Project: Kowitz 27-5 Tank Pull

KowitzNorthSW@4
12/18/2018 9:50:00AM

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

Origins Laboratory, Inc.
Y812287-02 (Soil)

Diesel Range Organics (DRO/TEPH) by EPA 8015C

Diesel (C10-C28)	ND	50.0	mg/kg	1	B8L2102	JTD	12/21/2018	12/21/2018	U
------------------	----	------	-------	---	---------	-----	------------	------------	---

Surrogate: o-Terphenyl	70.4 %	59-131			"	"	"		
------------------------	--------	--------	--	--	---	---	---	--	--

GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B8L2105	JTD	12/21/2018	12/22/2018	U
Benzene	ND	0.002	"	"	"	JTD	"	"	U
Toluene	ND	0.002	"	"	"	JTD	"	"	U
Ethylbenzene	ND	0.002	"	"	"	JTD	"	"	U
Xylenes, total	ND	0.002	"	"	"	JTD	"	"	U

Surrogate: 1,2-Dichloroethane-d4	99.0 %	70-130			"	"	"		
Surrogate: Toluene-d8	100 %	70-130			"	"	"		
Surrogate: 4-Bromofluorobenzene	93.1 %	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.

Jen Pellegrini, Project Manager

Olsson Associates
1525 Raleigh St, Suite 400
Denver CO 80204

Jason Davidson
Project Number: [none]
Project: Kowitz 27-5 Tank Pull

KowitzEastSW@4
12/18/2018 9:55:00AM

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

Origins Laboratory, Inc.
Y812287-03 (Soil)

Diesel Range Organics (DRO/TEPH) by EPA 8015C

Diesel (C10-C28)	ND	50.0	mg/kg	1	B8L2102	JTD	12/21/2018	12/21/2018	U
------------------	----	------	-------	---	---------	-----	------------	------------	---

Surrogate: o-Terphenyl	70.8 %	59-131			"	"	"		
------------------------	--------	--------	--	--	---	---	---	--	--

GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B8L2105	JTD	12/21/2018	12/22/2018	U
Benzene	ND	0.002	"	"	"	JTD	"	"	U
Toluene	ND	0.002	"	"	"	JTD	"	"	U
Ethylbenzene	ND	0.002	"	"	"	JTD	"	"	U
Xylenes, total	ND	0.002	"	"	"	JTD	"	"	U

Surrogate: 1,2-Dichloroethane-d4	104 %	70-130			"	"	"		
Surrogate: Toluene-d8	97.8 %	70-130			"	"	"		
Surrogate: 4-Bromofluorobenzene	97.0 %	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.

Jen Pellegrini, Project Manager

Olsson Associates
1525 Raleigh St, Suite 400
Denver CO 80204

Jason Davidson
Project Number: [none]
Project: Kowitz 27-5 Tank Pull

KowitzSouth@4
12/18/2018 10:00:00AM

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

Origins Laboratory, Inc.
Y812287-04 (Soil)

Diesel Range Organics (DRO/TEPH) by EPA 8015C

Diesel (C10-C28)	ND	50.0	mg/kg	1	B8L2102	JTD	12/21/2018	12/21/2018	U
------------------	----	------	-------	---	---------	-----	------------	------------	---

Surrogate: o-Terphenyl	78.8 %	59-131			"	"	"		
------------------------	--------	--------	--	--	---	---	---	--	--

GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B8L2105	JTD	12/21/2018	12/22/2018	U
Benzene	ND	0.002	"	"	"	JTD	"	"	U
Toluene	ND	0.002	"	"	"	JTD	"	"	U
Ethylbenzene	ND	0.002	"	"	"	JTD	"	"	U
Xylenes, total	ND	0.002	"	"	"	JTD	"	"	U

Surrogate: 1,2-Dichloroethane-d4	107 %	70-130			"	"	"		
Surrogate: Toluene-d8	95.5 %	70-130			"	"	"		
Surrogate: 4-Bromofluorobenzene	96.1 %	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.

Jen Pellegrini, Project Manager

Olsson Associates
1525 Raleigh St, Suite 400
Denver CO 80204

Jason Davidson
Project Number: [none]
Project: Kowitz 27-5 Tank Pull

KowitzWest@4
12/18/2018 10:05:00AM

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

Origins Laboratory, Inc.
Y812287-05 (Soil)

Diesel Range Organics (DRO/TEPH) by EPA 8015C

Diesel (C10-C28)	ND	50.0	mg/kg	1	B8L2102	JTD	12/21/2018	12/21/2018	U
------------------	----	------	-------	---	---------	-----	------------	------------	---

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

GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B8L2105	JTD	12/21/2018	12/22/2018	U
Benzene	ND	0.002	"	"	"	JTD	"	"	U
Toluene	ND	0.002	"	"	"	JTD	"	"	U
Ethylbenzene	ND	0.002	"	"	"	JTD	"	"	U
Xylenes, total	ND	0.002	"	"	"	JTD	"	"	U

Surrogate: 1,2-Dichloroethane-d4	109 %	70-130			"	"	"		
Surrogate: Toluene-d8	104 %	70-130			"	"	"		
Surrogate: 4-Bromofluorobenzene	97.6 %	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.

Jen Pellegrini, Project Manager

Olsson Associates
1525 Raleigh St, Suite 400
Denver CO 80204

Jason Davidson
Project Number: [none]
Project: Kowitz 27-5 Tank Pull

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 B8L2105 - EPA 5030 (soil)										
Blank (B8L2105-BLK1)					Prepared: 12/21/2018 Analyzed: 12/22/2018					
Gasoline Range Hydrocarbons	ND	0.200	mg/kg							U
Benzene	ND	0.002	"							U
Toluene	ND	0.002	"							U
Ethylbenzene	ND	0.002	"							U
Xylenes, total	ND	0.002	"							U
Surrogate: 1,2-Dichloroethane-d4	0.13		"	0.125		101	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		98.7	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		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.

Jen Pellegrini, Project Manager

Olsson Associates
1525 Raleigh St, Suite 400
Denver CO 80204

Jason Davidson
Project Number: [none]
Project: Kowitz 27-5 Tank Pull

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 B8L2105 - EPA 5030 (soil)										
Blank (B8L2105-BLK2)					Prepared: 12/21/2018 Analyzed: 12/22/2018					
Gasoline Range Hydrocarbons	ND	0.200	mg/kg							U
Benzene	ND	0.002	"							U
Toluene	ND	0.002	"							U
Ethylbenzene	ND	0.002	"							U
Xylenes, total	ND	0.002	"							U
Surrogate: 1,2-Dichloroethane-d4	0.13		"	0.125		102	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		97.9	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		96.5	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.

Jen Pellegrini, Project Manager

Olsson Associates
1525 Raleigh St, Suite 400
Denver CO 80204

Jason Davidson
Project Number: [none]
Project: Kowitz 27-5 Tank Pull

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 B8L2105 - EPA 5030 (soil)

LCS (B8L2105-BS1)

Prepared: 12/21/2018 Analyzed: 12/21/2018

Benzene	0.100	0.002	mg/kg	0.100	100	77.1-124
Toluene	0.105	0.002	"	0.100	105	74.5-128
Ethylbenzene	0.108	0.002	"	0.100	108	66.4-127
m,p-Xylene	0.207	0.004	"	0.200	103	76.6-124
o-Xylene	0.115	0.002	"	0.100	115	76.6-124
Surrogate: 1,2-Dichloroethane-d4	0.12		"	0.125	98.2	70-130
Surrogate: Toluene-d8	0.13		"	0.125	102	70-130
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125	99.4	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.

Jen Pellegrini, Project Manager

Olsson Associates
1525 Raleigh St, Suite 400
Denver CO 80204

Jason Davidson
Project Number: [none]
Project: Kowitz 27-5 Tank Pull

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 B8L2105 - EPA 5030 (soil)										
LCS (B8L2105-BS2)					Prepared: 12/21/2018 Analyzed: 12/22/2018					
Benzene	0.111	0.002	mg/kg	0.100		111	77.1-124			
Toluene	0.107	0.002	"	0.100		107	74.5-128			
Ethylbenzene	0.114	0.002	"	0.100		114	66.4-127			
m,p-Xylene	0.214	0.004	"	0.200		107	76.6-124			
o-Xylene	0.117	0.002	"	0.100		117	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	0.12		"	0.125		96.8	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		97.7	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		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.

Jen Pellegrini, Project Manager

Olsson Associates
1525 Raleigh St, Suite 400
Denver CO 80204

Jason Davidson
Project Number: [none]
Project: Kowitz 27-5 Tank Pull

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 B8L2105 - EPA 5030 (soil)

Matrix Spike (B8L2105-MS1)		Source: Y812287-01			Prepared: 12/21/2018 Analyzed: 12/22/2018					
Benzene	0.094	0.002	mg/kg	0.100	ND	94.0	71.8-126			
Toluene	0.094	0.002	"	0.100	ND	94.1	65.1-130			
Ethylbenzene	0.100	0.002	"	0.100	ND	100	62.2-130			
m,p-Xylene	0.189	0.004	"	0.200	0.001	93.8	46.5-137			
o-Xylene	0.101	0.002	"	0.100	ND	101	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	0.13		"	0.125		105	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		96.0	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		103	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.

Jen Pellegrini, Project Manager

Olsson Associates
1525 Raleigh St, Suite 400
Denver CO 80204

Jason Davidson
Project Number: [none]
Project: Kowitz 27-5 Tank Pull

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 B8L2105 - EPA 5030 (soil)

Matrix Spike (B8L2105-MS2)		Source: Y812287-02			Prepared: 12/21/2018 Analyzed: 12/22/2018					
Benzene	0.079	0.002	mg/kg	0.100	ND	78.5	71.8-126			
Toluene	0.075	0.002	"	0.100	ND	75.3	65.1-130			
Ethylbenzene	0.064	0.002	"	0.100	ND	63.9	62.2-130			
m,p-Xylene	0.119	0.004	"	0.200	0.001	58.9	46.5-137			
o-Xylene	0.065	0.002	"	0.100	ND	65.1	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	0.15		"	0.125		123	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		94.4	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		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.

Jen Pellegrini, Project Manager

Olsson Associates
1525 Raleigh St, Suite 400
Denver CO 80204

Jason Davidson
Project Number: [none]
Project: Kowitz 27-5 Tank Pull

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 B8L2105 - EPA 5030 (soil)

Matrix Spike Dup (B8L2105-MSD1)		Source: Y812287-01			Prepared: 12/21/2018 Analyzed: 12/22/2018					
Benzene	0.079	0.002	mg/kg	0.100	ND	78.8	71.8-126	17.6	11.3	QR-02
Toluene	0.078	0.002	"	0.100	ND	78.1	65.1-130	18.6	15.4	QR-02
Ethylbenzene	0.082	0.002	"	0.100	ND	81.8	62.2-130	20.3	19.6	QR-02
m,p-Xylene	0.152	0.004	"	0.200	0.001	75.5	46.5-137	21.4	19.2	QR-02
o-Xylene	0.084	0.002	"	0.100	ND	84.3	54.2-134	17.6	17.9	
Surrogate: 1,2-Dichloroethane-d4	0.13		"	0.125		102	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		98.7	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		106	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.

Jen Pellegrini, Project Manager

Batch B8L2105 - EPA 5030 (soil)

Page 17 of 19

Olsson Associates
1525 Raleigh St, Suite 400
Denver CO 80204

Jason Davidson
Project Number: [none]
Project: Kowitz 27-5 Tank Pull

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 8015C - Quality Control

Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

Batch B8L2102 - EPA 3550B

Blank (B8L2102-BLK1)

Prepared: 12/21/2018 Analyzed: 12/21/2018

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

LCS (B8L2102-BS1)

Prepared: 12/21/2018 Analyzed: 12/21/2018

Diesel (C10-C28)	959	50.0	mg/kg	1000		95.9	64-121			
Surrogate: o-Terphenyl	47		"	50.0		93.4	59-131			

Matrix Spike (B8L2102-MS1)

Source: Y812281-01

Prepared: 12/21/2018 Analyzed: 12/21/2018

Diesel (C10-C28)	1200	50.0	mg/kg	1000	ND	120	53-125			
Surrogate: o-Terphenyl	58		"	50.0		115	59-131			

Matrix Spike Dup (B8L2102-MSD1)

Source: Y812281-01

Prepared: 12/21/2018 Analyzed: 12/21/2018

Diesel (C10-C28)	1090	50.0	mg/kg	1000	ND	109	53-125	9.67	20	
Surrogate: o-Terphenyl	51		"	50.0		103	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.

Jen Pellegrini, Project Manager

Olsson Associates

1525 Raleigh St, Suite 400

Denver CO 80204

Jason Davidson

Project Number: [none]

Project: Kowitz 27-5 Tank Pull

Notes and Definitions

U Sample is Non-Detect.

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

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported at a wet weight basis.

Origins Laboratory, Inc.



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

Jen Pellegrini, Project Manager



January 14, 2019

Olsson Associates

Jason Davidson

1525 Raleigh St, Suite 400

Denver

CO 80204

Project Name - Kowitz 27-5 Tank Pull

Project Number - [none]

Attached are your analytical results for Kowitz 27-5 Tank Pull received by Origins Laboratory, Inc. January 07, 2019. This project is associated with Origins project number Y901063-01.

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

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

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

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

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

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



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

Olsson Associates

1525 Raleigh St, Suite 400

Denver CO 80204

Jason Davidson

Project Number: [none]

Project: Kowitz 27-5 Tank Pull

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
KowitzWest@4	Y901063-01	Soil	January 7, 2019 11:15	01/07/2019 14:05

Origins Laboratory, Inc.



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

Jen Pellegrini, Project Manager

Olsson Associates
1525 Raleigh St, Suite 400
Denver CO 80204

Jason Davidson
Project Number: [none]
Project: Kowitz 27-5 Tank Pull

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: 7901063

Client: Olsson Assoc.

Client Project ID: Kowitz 27-5 Tank Pull

Checklist Completed by: Don Lee

Shipped Via: 411
(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Date/time completed: 1-7-19

Airbill #: NA

Matrix(s) Received: (Check all that apply): ☒ Soil/Solid ☐ Water ☐ Other: _____

Cooler Number/Temperature: 1 / 5.8 °C 1 / _____ °C 1 / _____ °C 1 / _____ °C (Describe)

Thermometer ID: 1603

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 8°C ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is there ice present (document if blue ice is used)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input 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 type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are short holding time analytes or samples with HTs due within 48 hours present ⁽¹⁾ ?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Is a chain-of-custody (COC) present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client with date and time recorded ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples preserved that require preservation and was it checked ⁽¹⁾ ? (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 ₃ , HCL, H ₂ SO ₄) / (pH >10 for samples preserved with NaAsO ₂ +NaOH, ZnAc+NaOH)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Additional Comments (if any):				

⁽¹⁾ 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 JP (Project Manager)

1/8/19
Date/Time Reviewed

Origins Laboratory, Inc.

Jen 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.

Olsson Associates
1525 Raleigh St, Suite 400
Denver CO 80204

Jason Davidson
Project Number: [none]
Project: Kowitz 27-5 Tank Pull

KowitzWest@4
1/7/2019 11:15:00AM

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

AAL, Inc.
Y901063-01 (Soil)

Metals (Saturated Paste Prep)

Calcium	4.96	me/L	1		'[none]'		01/09/2019	01/11/2019	
Magnesium	2.55	"	"		"		"	"	
Sodium	2.24	"	"		"		"	"	

pH in Soil by EPA 9045D

pH	8.76	pH Units	1		B9A0705	OLAB	01/07/2019	01/07/2019	
----	------	----------	---	--	---------	------	------------	------------	--

SAR by 20B Saturated Paste

SAR	1.16		1		'[none]'		01/09/2019	01/11/2019	
-----	------	--	---	--	----------	--	------------	------------	--

Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.130	0.00503	mmhos/cm	1	B9A0706	OLAB	01/07/2019	01/07/2019	
---------------------------	-------	---------	----------	---	---------	------	------------	------------	--

Origins Laboratory, Inc.



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

Jen Pellegrini, Project Manager

Olsson Associates
1525 Raleigh St, Suite 400
Denver CO 80204

Jason Davidson
Project Number: [none]
Project: Kowitz 27-5 Tank Pull

Classical Chemistry Parameters - Quality Control Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B9A0705 - NO PREP										
Duplicate (B9A0705-DUP1)		Source: Y901056-01			Prepared: 01/07/2019 Analyzed: 01/07/2019					
pH	8.25		pH Units		8.50			2.99	25	
Batch B9A0706 - NO PREP										
Blank (B9A0706-BLK1)		Prepared: 01/07/2019 Analyzed: 01/07/2019								
Specific Conductance (EC)	0.00280	0.00500	mmhos/cm							
Duplicate (B9A0706-DUP1)		Source: Y901056-01			Prepared: 01/07/2019 Analyzed: 01/07/2019					
Specific Conductance (EC)	0.0765	0.00501	mmhos/cm		0.0773			1.04	25	

Origins Laboratory, Inc.



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

Jen Pellegrini, Project Manager

Olsson Associates

1525 Raleigh St, Suite 400

Denver CO 80204

Jason Davidson

Project Number: [none]

Project: Kowitz 27-5 Tank Pull

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.

Jen Pellegrini, Project Manager