



March 26, 2018

**Quandary Consultants**

**Asher Weinberg**

**2252 Emerson St.**

**Denver**

**CO 80205**

**Project Name - Leinweber Fed 5N-8Hz**

**Project Number - APC0035**

Attached are your analytical results for Leinweber Fed 5N-8Hz received by Origins Laboratory, Inc. March 02, 2018. This project is associated with Origins project number Y803053-01.

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

Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: APC0035  
Project: Leinweber Fed 5N-8Hz

### CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS01	Y803053-01	Soil	March 2, 2018 14:48	03/02/2018 17:10
SS02	Y803053-02	Soil	March 2, 2018 14:55	03/02/2018 17:10
SS03	Y803053-03	Soil	March 2, 2018 14:58	03/02/2018 17:10
SS07	Y803053-04	Soil	March 2, 2018 15:23	03/02/2018 17:10
SS10	Y803053-05	Soil	March 2, 2018 15:27	03/02/2018 17:10
SS16	Y803053-06	Soil	March 2, 2018 15:33	03/02/2018 17:10
SS14	Y803053-07	Soil	March 2, 2018 15:37	03/02/2018 17:10
SS22	Y803053-08	Soil	March 2, 2018 15:41	03/02/2018 17:10
SS15	Y803053-09	Soil	March 2, 2018 15:55	03/02/2018 17:10
Background 1	Y803053-10	Soil	March 2, 2018 16:00	03/02/2018 17:10
Background 2	Y803053-11	Soil	March 2, 2018 16:05	03/02/2018 17:10

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Project Number: APC0035

Project: Leinweber Fed 5N-8Hz

Per the email from Caroline on 3/26/18, the following ID changed were made.

SS04 to SS07

SS05 to SS10

SS06 to SS16

SS07 to SS14

SS08 to SS22

SS09 to SS15

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1803053

**ORIGINS**  
LABORATORY, INC

Client: Quandary Consultants  
Address: 1009 Grant St, Unit 450  
Denver, CO 80203  
Telephone Number: (710) 757-4940  
Email Address: aweinberg@quandaryconsultants.com

Project Manager: \_\_\_\_\_  
Project Name: Leinweber Fed 5N-8Hz  
Project Number: APC0035  
Samples Collected By: C. Mathis

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative				Matrix				Analysis				Sample Instructions
				Unpreserved	HCl	HNO <sub>3</sub>	Other	Groundwater	Soil	Air Summa Canister #	Other	TPH (GAL/100G)	EC	PH		
SS01	3/2/18	2:48	1	X				X					X	X		
SS02		2:55	2													
SS03		2:58	2													
SS07		3:23	1													
SS10		3:27	1													
SS16		3:33	1													
SS14		3:37	1													
SS22		3:41	1													
SS15		3:55	1													
Background 1		4:00	1													
Relinquished By: Background 2																
Relinquished By: C. Mathis	3/2/18	11:05														
				Date:	3/2/18	Time:	11:05	Received By: [Signature]				Date:	3-2-18	Time:	11:05	
				Date:		Time:		Received By:				Date:		Time:		
				Temp Received: 34				Date Results Needed: 3-4								
				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"/>												

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*Jefe Pellegrini*

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2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: APC0035  
Project: Leinweber Fed 5N-8Hz

Origins Laboratory

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

### Sample Receipt Checklist

Origins Work Order: Y803053

Client: Quandary Consultants  
Client Project ID: Leinweber Fed 5N-8Hz

Checklist Completed by: Daniel  
Date/time completed: 3-2-18

Shipped Via: AD  
(UPS, FedEx, Hand Delivered, Pick-up, etc.)  
Airbill #: NA

Matrix(s) Received: (Check all that apply): ☒ Soil/Solid ☐ Water ☐ Other: \_\_\_\_\_ (Describe)  
Cooler Number/Temperature: 1 / 3.4 °C 1 / \_\_\_\_\_ °C 1 / \_\_\_\_\_ °C 1 / \_\_\_\_\_ °C  
Thermometer ID: 1003

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C <sup>(1)</sup> ?	<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 <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are short holding time analytes or samples with HTs due within 48 hours present <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>AD</u>
Is a chain-of-custody (COC) present and filled out completely <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client with date and time recorded <sup>(1)</sup> ?	<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 <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 type="checkbox"/>	<input type="checkbox"/>	<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) [Signature]

3-2-18  
Date/Time Reviewed

Origins Laboratory, Inc.

Jefe Pellegrini

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Project Number: APC0035  
Project: Leinweber Fed 5N-8Hz

## SS01

3/2/2018 2:48:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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## Origins Laboratory, Inc. Y803053-01 (Soil)

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

Diesel (C10-C28)	2810	25.0	mg/kg	1	B8C0210	03/02/2018	03/02/2018
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Surrogate: o-Terphenyl	80.2 %	59-131			"	"	"
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### GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	108	5.00	mg/kg	25	B8C0209	03/02/2018	03/02/2018	
Benzene	ND	0.050	"	"	"	"	"	U
Toluene	ND	0.050	"	"	"	"	"	U
Ethylbenzene	0.072	0.050	"	"	"	"	"	
Xylenes, total	0.491	0.050	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	101 %	70-130			"	"	"
Surrogate: Toluene-d8	100 %	70-130			"	"	"
Surrogate: 4-Bromofluorobenzene	98.4 %	70-130			"	"	"

### pH in Soil by EPA 9045D

pH	8.32		pH Units	1	B8C0205	03/02/2018	03/03/2018
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### Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.128		mmhos/cm	"	B8C0206	03/02/2018	"
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Origins Laboratory, Inc.



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Denver CO 80205

Asher Weinberg  
Project Number: APC0035  
Project: Leinweber Fed 5N-8Hz

## SS02

3/2/2018 2:55:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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## Origins Laboratory, Inc. Y803053-02 (Soil)

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

Diesel (C10-C28)	4790	250	mg/kg	10	B8C0210	03/02/2018	03/03/2018
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Surrogate: o-Terphenyl	112 %	59-131			"	"	"
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### GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	116	5.00	mg/kg	25	B8C0209	03/02/2018	03/02/2018	
Benzene	ND	0.050	"	"	"	"	"	U
Toluene	ND	0.050	"	"	"	"	"	U
Ethylbenzene	0.080	0.050	"	"	"	"	"	
Xylenes, total	0.525	0.050	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	100 %	70-130			"	"	"
Surrogate: Toluene-d8	99.2 %	70-130			"	"	"
Surrogate: 4-Bromofluorobenzene	101 %	70-130			"	"	"

### pH in Soil by EPA 9045D

pH	8.30		pH Units	1	B8C0205	03/02/2018	03/03/2018
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### Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.251		mmhos/cm	"	B8C0206	03/02/2018	"
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## SS03

3/2/2018 2:58:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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## Origins Laboratory, Inc. Y803053-03 (Soil)

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

Diesel (C10-C28)	7640	250	mg/kg	10	B8C0210	03/02/2018	03/03/2018
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Surrogate: o-Terphenyl	125 %	59-131			"	"	"
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### GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	224	5.00	mg/kg	25	B8C0209	03/02/2018	03/03/2018
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Benzene	ND	0.050	"	"	"	"	" U
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Toluene	0.213	0.050	"	"	"	"	"
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Ethylbenzene	0.358	0.050	"	"	"	"	"
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Xylenes, total	2.26	0.050	"	"	"	"	"
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Surrogate: 1,2-Dichloroethane-d4	103 %	70-130			"	"	03/02/2018
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Surrogate: Toluene-d8	99.6 %	70-130			"	"	"
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Surrogate: 4-Bromofluorobenzene	96.5 %	70-130			"	"	"
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### pH in Soil by EPA 9045D

pH	8.43		pH Units	1	B8C0205	03/02/2018	03/03/2018
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### Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.0779		mmhos/cm	"	B8C0206	03/02/2018	"
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Project: Leinweber Fed 5N-8Hz

SS07

3/2/2018 3:23:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.  
Y803053-04 (Soil)

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

Diesel (C10-C28)	13800	250	mg/kg	10	B8C0210	03/02/2018	03/03/2018
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Surrogate: o-Terphenyl	104 %	59-131			"	"	"
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## GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	352	5.00	mg/kg	25	B8C0209	03/02/2018	03/03/2018
Benzene	0.093	0.050	"	"	"	"	"
Toluene	1.00	0.050	"	"	"	"	"
Ethylbenzene	1.44	0.050	"	"	"	"	"
Xylenes, total	8.48	0.050	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	103 %	70-130			"	"	03/02/2018
Surrogate: Toluene-d8	97.2 %	70-130			"	"	"
Surrogate: 4-Bromofluorobenzene	98.6 %	70-130			"	"	"

## pH in Soil by EPA 9045D

pH	8.32		pH Units	1	B8C0205	03/02/2018	03/03/2018
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## Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.313		mmhos/cm	"	B8C0206	03/02/2018	"
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Project: Leinweber Fed 5N-8Hz

## SS10

3/2/2018 3:27:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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## Origins Laboratory, Inc. Y803053-05 (Soil)

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

Diesel (C10-C28)	9390	250	mg/kg	10	B8C0210	03/02/2018	03/03/2018
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Surrogate: o-Terphenyl	95.0 %	59-131			"	"	"
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### GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	298	5.00	mg/kg	25	B8C0209	03/02/2018	03/02/2018
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Benzene	ND	0.050	"	"	"	"	" U
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Toluene	0.686	0.050	"	"	"	"	"
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Ethylbenzene	1.18	0.050	"	"	"	"	"
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Xylenes, total	7.17	0.050	"	"	"	"	"
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Surrogate: 1,2-Dichloroethane-d4	100 %	70-130			"	"	"
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Surrogate: Toluene-d8	87.1 %	70-130			"	"	"
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Surrogate: 4-Bromofluorobenzene	136 %	70-130			"	"	" S-04
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### pH in Soil by EPA 9045D

pH	8.40		pH Units	1	B8C0205	03/02/2018	03/03/2018
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### Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.261		mmhos/cm	"	B8C0206	03/02/2018	"
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Project Number: APC0035  
Project: Leinweber Fed 5N-8Hz

## SS16

3/2/2018 3:33:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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## Origins Laboratory, Inc. Y803053-06 (Soil)

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

Diesel (C10-C28)	688	25.0	mg/kg	1	B8C0210	03/02/2018	03/03/2018
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Surrogate: o-Terphenyl	106 %	59-131			"	"	"
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### GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	59.1	5.00	mg/kg	25	B8C0209	03/02/2018	03/03/2018
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Benzene	ND	0.050	"	"	"	"	" U
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Toluene	0.056	0.050	"	"	"	"	"
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Ethylbenzene	0.059	0.050	"	"	"	"	"
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Xylenes, total	0.346	0.050	"	"	"	"	"
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Surrogate: 1,2-Dichloroethane-d4	99.4 %	70-130			"	"	"
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Surrogate: Toluene-d8	98.8 %	70-130			"	"	"
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Surrogate: 4-Bromofluorobenzene	95.5 %	70-130			"	"	"
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### pH in Soil by EPA 9045D

pH	8.64		pH Units	1	B8C0205	03/02/2018	03/03/2018
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### Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.0436		mmhos/cm	"	B8C0206	03/02/2018	"
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Project: Leinweber Fed 5N-8Hz

## SS14

3/2/2018 3:37:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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## Origins Laboratory, Inc. Y803053-07 (Soil)

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

Diesel (C10-C28)	19600	250	mg/kg	10	B8C0210	03/02/2018	03/03/2018
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Surrogate: o-Terphenyl	98.2 %	59-131			"	"	"
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### GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	393	5.00	mg/kg	25	B8C0209	03/02/2018	03/03/2018
Benzene	0.138	0.050	"	"	"	"	"
Toluene	1.51	0.050	"	"	"	"	"
Ethylbenzene	2.50	0.050	"	"	"	"	"
Xylenes, total	15.4	0.050	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	100 %	70-130			"	"	"
Surrogate: Toluene-d8	79.8 %	70-130			"	"	"
Surrogate: 4-Bromofluorobenzene	157 %	70-130			"	"	" S-04

### pH in Soil by EPA 9045D

pH	8.28		pH Units	1	B8C0205	03/02/2018	03/03/2018
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### Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.334		mmhos/cm	"	B8C0206	03/02/2018	"
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## SS22

3/2/2018 3:41:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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## Origins Laboratory, Inc. Y803053-08 (Soil)

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

Diesel (C10-C28)	ND	25.0	mg/kg	1	B8C0210	03/02/2018	03/03/2018	U
Surrogate: o-Terphenyl	64.4 %	59-131			"	"	"	

### GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	0.453	0.200	mg/kg	1	B8C0209	03/02/2018	03/03/2018	
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	104 %	70-130			"	"	"	
Surrogate: Toluene-d8	100 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	96.0 %	70-130			"	"	"	

### pH in Soil by EPA 9045D

pH	8.43		pH Units	1	B8C0205	03/02/2018	03/03/2018	
----	------	--	----------	---	---------	------------	------------	--

### Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.129		mmhos/cm	"	B8C0206	03/02/2018	"	
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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.

Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: APC0035  
Project: Leinweber Fed 5N-8Hz

## SS15

3/2/2018 3:55:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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## Origins Laboratory, Inc. Y803053-09 (Soil)

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

Diesel (C10-C28)	2030	25.0	mg/kg	1	B8C0210	03/02/2018	03/03/2018
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Surrogate: o-Terphenyl	82.4 %	59-131			"	"	"
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### GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	103	5.00	mg/kg	25	B8C0209	03/02/2018	03/03/2018	
Benzene	ND	0.050	"	"	"	"	"	U
Toluene	ND	0.050	"	"	"	"	"	U
Ethylbenzene	ND	0.050	"	"	"	"	"	U
Xylenes, total	ND	0.050	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	96.8 %	70-130			"	"	"
Surrogate: Toluene-d8	101 %	70-130			"	"	"
Surrogate: 4-Bromofluorobenzene	97.6 %	70-130			"	"	"

### pH in Soil by EPA 9045D

pH	8.70		pH Units	1	B8C0205	03/02/2018	03/03/2018
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### Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.151		mmhos/cm	"	B8C0206	03/02/2018	"
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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.

Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: APC0035  
Project: Leinweber Fed 5N-8Hz

## Background 1

3/2/2018 4:00:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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## Origins Laboratory, Inc. Y803053-10 (Soil)

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

Diesel (C10-C28)	ND	25.0	mg/kg	1	B8C0210	03/02/2018	03/03/2018	U
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Surrogate: o-Terphenyl	78.2 %	59-131			"	"	"	
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### GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B8C0209	03/02/2018	03/03/2018	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	102 %	70-130			"	"	"	
Surrogate: Toluene-d8	102 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	98.2 %	70-130			"	"	"	

### pH in Soil by EPA 9045D

pH	8.15		pH Units	1	B8C0205	03/02/2018	03/03/2018	
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### Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.129		mmhos/cm	"	B8C0206	03/02/2018	"	
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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.



Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: APC0035  
Project: Leinweber Fed 5N-8Hz

## Background 2

3/2/2018 4:05:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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## Origins Laboratory, Inc. Y803053-11 (Soil)

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

Diesel (C10-C28)	ND	25.0	mg/kg	1	B8C0210	03/02/2018	03/02/2018	U
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Surrogate: o-Terphenyl	72.7 %	59-131			"	"	"	
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### GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B8C0209	03/02/2018	03/02/2018	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	109 %	70-130			"	"	"	
Surrogate: Toluene-d8	99.9 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	100 %	70-130			"	"	"	

### pH in Soil by EPA 9045D

pH	8.34		pH Units	1	B8C0205	03/02/2018	03/03/2018	
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### Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.0882		mmhos/cm	"	B8C0206	03/02/2018	"	
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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.

Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: APC0035  
Project: Leinweber Fed 5N-8Hz

**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
<b>Batch B8C0209 - EPA 5030 (soil)</b>										
<b>Blank (B8C0209-BLK1)</b>					Prepared: 03/02/2018 Analyzed: 03/02/2018					
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	67		ug/kg	62.5		107	70-130			
Surrogate: Toluene-d8	62		"	62.5		98.8	70-130			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		99.1	70-130			

Origins Laboratory, Inc.



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Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: APC0035  
Project: Leinweber Fed 5N-8Hz

**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 B8C0209 - EPA 5030 (soil)										
LCS (B8C0209-BS1)					Prepared: 03/02/2018 Analyzed: 03/02/2018					
Benzene	0.106	0.002	mg/kg	0.100		106	77.1-124			
Toluene	0.103	0.002	"	0.100		103	74.5-128			
Ethylbenzene	0.095	0.002	"	0.100		95.5	66.4-127			
m,p-Xylene	0.202	0.004	"	0.200		101	76.6-124			
o-Xylene	0.097	0.002	"	0.100		97.3	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	58		ug/kg	62.5		93.1	70-130			
Surrogate: Toluene-d8	62		"	62.5		98.9	70-130			
Surrogate: 4-Bromofluorobenzene	59		"	62.5		94.3	70-130			

Origins Laboratory, Inc.



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Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: APC0035  
Project: Leinweber Fed 5N-8Hz

**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 B8C0209 - EPA 5030 (soil)**

Matrix Spike (B8C0209-MS1)		Source: Y803053-11			Prepared: 03/02/2018 Analyzed: 03/02/2018					
Benzene	0.117	0.002	mg/kg	0.100	ND	117	71.8-126			
Toluene	0.116	0.002	"	0.100	ND	116	65.1-130			
Ethylbenzene	0.108	0.002	"	0.100	ND	108	62.2-130			
m,p-Xylene	0.228	0.004	"	0.200	ND	114	46.5-137			
o-Xylene	0.110	0.002	"	0.100	0.0005	109	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	63		ug/kg	62.5		100	70-130			
Surrogate: Toluene-d8	63		"	62.5		100	70-130			
Surrogate: 4-Bromofluorobenzene	61		"	62.5		96.9	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.*

Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: APC0035  
Project: Leinweber Fed 5N-8Hz

**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
<b>Batch B8C0209 - EPA 5030 (soil)</b>										
<b>Matrix Spike Dup (B8C0209-MSD1)</b>	<b>Source: Y803053-11</b>				Prepared: 03/02/2018 Analyzed: 03/02/2018					
Benzene	0.119	0.002	mg/kg	0.100	ND	119	71.8-126	1.80	11.3	
Toluene	0.114	0.002	"	0.100	ND	114	65.1-130	0.939	15.4	
Ethylbenzene	0.111	0.002	"	0.100	ND	111	62.2-130	3.27	19.6	
m,p-Xylene	0.237	0.004	"	0.200	ND	119	46.5-137	3.92	19.2	
o-Xylene	0.112	0.002	"	0.100	0.0005	112	54.2-134	2.38	17.9	
Surrogate: 1,2-Dichloroethane-d4	62		ug/kg	62.5		98.4	70-130			
Surrogate: Toluene-d8	62		"	62.5		99.5	70-130			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		99.2	70-130			

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Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: APC0035  
Project: Leinweber Fed 5N-8Hz

**Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Extractable Petroleum Hydrocarbons by 8015C - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B8C0210 - EPA 3550B**

**Blank (B8C0210-BLK1)**

Prepared: 03/02/2018 Analyzed: 03/02/2018

Diesel (C10-C28)	ND	50.0	mg/kg							U
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Surrogate: o-Terphenyl

40

"

50.0

80.0

59-131

**LCS (B8C0210-BS1)**

Prepared: 03/02/2018 Analyzed: 03/02/2018

Diesel (C10-C28)	996	50.0	mg/kg	1000		99.6	64-121			
------------------	-----	------	-------	------	--	------	--------	--	--	--

Surrogate: o-Terphenyl

45

"

50.0

89.9

59-131

**Matrix Spike (B8C0210-MS1)**

**Source: Y803053-11**

Prepared: 03/02/2018 Analyzed: 03/02/2018

Diesel (C10-C28)	932	50.0	mg/kg	1000	ND	93.2	53-125			
------------------	-----	------	-------	------	----	------	--------	--	--	--

Surrogate: o-Terphenyl

45

"

50.0

89.2

59-131

**Matrix Spike Dup (B8C0210-MSD1)**

**Source: Y803053-11**

Prepared: 03/02/2018 Analyzed: 03/02/2018

Diesel (C10-C28)	979	50.0	mg/kg	1000	ND	97.9	53-125	4.94	20	
------------------	-----	------	-------	------	----	------	--------	------	----	--

Surrogate: o-Terphenyl

47

"

50.0

94.9

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.

Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: APC0035  
Project: Leinweber Fed 5N-8Hz

## Classical Chemistry Parameters - Quality Control Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B8C0205 - NO PREP</b>										
<b>Duplicate (B8C0205-DUP1)</b>	<b>Source: Y803026-01</b>				Prepared: 03/02/2018 Analyzed: 03/02/2018					
pH	8.82		pH Units		8.71			1.25	25	
<b>Duplicate (B8C0205-DUP2)</b>	<b>Source: Y803051-01</b>				Prepared: 03/02/2018 Analyzed: 03/02/2018					
pH	9.17		pH Units		9.10			0.766	25	
<b>Batch B8C0206 - NO PREP</b>										
<b>Blank (B8C0206-BLK1)</b>	Prepared: 03/02/2018 Analyzed: 03/02/2018									
Specific Conductance (EC)	0.00220		mmhos/cm							
<b>Blank (B8C0206-BLK2)</b>	Prepared: 03/02/2018 Analyzed: 03/02/2018									
Specific Conductance (EC)	0.00240		mmhos/cm							
<b>Duplicate (B8C0206-DUP1)</b>	<b>Source: Y803026-01</b>				Prepared: 03/02/2018 Analyzed: 03/02/2018					
Specific Conductance (EC)	0.396		mmhos/cm		0.374			5.59	25	
<b>Duplicate (B8C0206-DUP2)</b>	<b>Source: Y803051-01</b>				Prepared: 03/02/2018 Analyzed: 03/03/2018					
Specific Conductance (EC)	0.110		mmhos/cm		0.108			1.83	25	

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Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: APC0035  
Project: Leinweber Fed 5N-8Hz

### Notes and Definitions

U Sample is Non-Detect.

S-04 The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.

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.*



March 14, 2018

**Quandary Consultants**

**Asher Weinberg**

**2252 Emerson St.**

**Denver**

**CO 80205**

**Project Name - Leinweber**

**Project Number - [none]**

Attached are your analytical results for Leinweber received by Origins Laboratory, Inc. March 13, 2018. This project is associated with Origins project number Y803228-01.

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

Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: [none]  
Project: Leinweber

### CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS01@6ft	Y803228-01	Soil	March 13, 2018 12:01	03/13/2018 17:10
SS02@6ft	Y803228-02	Soil	March 13, 2018 12:04	03/13/2018 17:10
SS03@5ft	Y803228-03	Soil	March 13, 2018 12:09	03/13/2018 17:10
SS04@5ft	Y803228-04	Soil	March 13, 2018 12:15	03/13/2018 17:10
SS05@5ft	Y803228-05	Soil	March 13, 2018 12:20	03/13/2018 17:10
SS06@5ft	Y803228-06	Soil	March 13, 2018 12:22	03/13/2018 17:10
SS07@5ft	Y803228-07	Soil	March 13, 2018 12:25	03/13/2018 17:10
SS08@5ft	Y803228-08	Soil	March 13, 2018 12:27	03/13/2018 17:10
SS09@5ft	Y803228-09	Soil	March 13, 2018 12:31	03/13/2018 17:10
SS10@7ft	Y803228-10	Soil	March 13, 2018 12:37	03/13/2018 17:10
SS11@6ft	Y803228-11	Soil	March 13, 2018 12:38	03/13/2018 17:10
SS12@6ft	Y803228-12	Soil	March 13, 2018 12:40	03/13/2018 17:10
SS13@6ft	Y803228-13	Soil	March 13, 2018 12:42	03/13/2018 17:10
SS14@1ft	Y803228-14	Soil	March 13, 2018 12:49	03/13/2018 17:10

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.*

Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: [none]  
Project: Leinweber

## CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS15@1ft	Y803228-15	Soil	March 13, 2018 12:55	03/13/2018 17:10
SS16@0ft	Y803228-16	Soil	March 13, 2018 13:07	03/13/2018 17:10

Per the phone call from Asher on 03/14/18, BTEX and TPH were added to SS14, SS15, and SS16.

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.*

Asher Weinberg  
Project Number: [none]  
Project: Leinweber

# ORIGINS

LABORATORY, INC

www.originslaboratory.com

Client: Quandary Consultants  
 Address: 1009 Grant St., Suite 1150  
Denver, CO 80203  
 Telephone Number: 770 757 4740  
 Email Address: a.wienberg@quandaryconsultants.com

963228

page of

Project Manager: Asher Wienberg  
 Project Name: Lennicker  
 Project Number: \_\_\_\_\_  
 Samples Collected By: Carolee & Asher  
Alc Taylor Rowley

Sample ID Description	Date Sampled	Time Sampled	# of Containers				Preservative				Matrix			Analysis				Sample Instructions
			Unpreserved	HCl	HNO <sub>3</sub>	Other	Groundwater	Soil	Air Summ. #	Other	TPH	BTEX	Other					
SS01 @ 6 ft	3/13/18	12:01	1	X					X				X	BTEX				1
SS02 @ 6 ft		12:04																2
SS03 @ 5 ft		12:09																3
SS04 @ 5 ft		12:15																4
SS05 @ 5 ft		12:20																5
SS06 @ 5 ft		12:22																6
SS07 @ 5 ft		12:25																7
SS08 @ 5 ft		12:27																8
SS09 @ 5 ft		12:31																9
SS10 @ 14		12:57																10
Relinquished by: <u>SS10 @ 6 ft</u>	Date: <u>3/13/18</u>	Time: <u>12:30</u>	Received By: <u>[Signature]</u>				Received By: <u>[Signature]</u>				Date: <u>3-13-18</u>	Time: <u>1710</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: <u>[Signature]</u>	Date: <u>3/13/18</u>	Time: <u>1710</u>	Received By: <u>[Signature]</u>				Received By: <u>[Signature]</u>				Date: <u>3-13-18</u>	Time: <u>1710</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"/>					

Fax: 303.265.9645

Phone: 303.433.1322

Denver, CO 80211

1725 Elk Place

Temp Received: 47

Date Results Needed 4/7

Origins Laboratory, Inc.

Jeff Pellipini

*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.*

Asher Weinberg  
Project Number: [none]  
Project: Leinweber

# ORIGINS

LABORATORY, INC





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Y83228

page of

Client: Quandary Consultants  
 Address: 1009 Grant St, Suite 1150  
 Telephone Number: 770 757 4740  
 Email Address: awenbury@quandaryconsultants.com

Project Manager: Asher Wenbury  
 Project Name: Levee 2nd  
 Project Number:           
 Samples Collected By: Cerise d Asher  
APC Taylor Boies

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative				Matrix			Analysis				Sample Instructions	
				Unpreserved	HCl	HNO <sub>3</sub>	Other	Groundwater	Soil	Air Summa #	Other	BTEX	TPH	EC		PH
SS12 @ 6ft.	3/13/18	12:40 PM	1	X					X				X			1
SS13 @ 6ft.		12:42	1										X			2
SS14 @ 1 ft.		12:49											X			3
SS15 @ 1 ft.		12:55											X			4
SS16 @ 0 ft.		1:07											X			5
																6
																7
																8
																9
																10
Relinquished By: 	Date: 3/13/18	Time: 1710	Received By: 	Date: 3-13-18	Time: 1710	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: 3/13/18	Time: 1710	Received By: 	Date: 3-13-18	Time: 1710	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"/>										

Temp Received: 41.2

Date Results Needed

Origins Laboratory, Inc.

Jeff Pellipini

*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.*



Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: [none]  
Project: Leinweber

Origins Laboratory

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

### Sample Receipt Checklist

Origins Work Order: 1803228

Client: Quandary Consultants

Client Project ID: Leinweber

Checklist Completed by: [Signature]

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

Date/time completed: 3-13-12

Airbill #: NA

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

Cooler Number/Temperature: 1 4.2 °C 1 °C 1 °C 1 °C

Thermometer ID: 1003

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C <sup>(1)</sup> ?	<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 <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are short holding time analytes or samples with HTs due within 48 hours present <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ph
Is a chain-of-custody (COC) present and filled out completely <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client with date and time recorded <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace (> ¼ inch bubble) present? <b>If yes, contact client and note in narrative.</b>	<input type="checkbox"/>	<input type="checkbox"/>	<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 type="checkbox"/>	<input type="checkbox"/>	<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) [Signature]

Date/Time Reviewed 3-13-12

Origins Laboratory, Inc.

[Signature]

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.



Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: [none]  
Project: Leinweber

SS01@6ft

3/13/2018 12:01:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y803228-01 (Soil)**

**BTEX by EPA 8260C**

Benzene	ND	0.050	mg/kg	25	B8C1306	03/13/2018	03/14/2018	U
Toluene	ND	0.050	"	"	"	"	"	U
Ethylbenzene	ND	0.050	"	"	"	"	"	U
Xylenes, total	ND	0.050	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	108 %	70-130			"	"	"	
Surrogate: Toluene-d8	99.9 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	97.5 %	70-130			"	"	"	

**TPH-Carbon Chain by EPA Method 8015C**

Gasoline (C6-C10)	ND	25.0	mg/kg	1	B8C1307	03/13/2018	03/13/2018	U
Diesel (C10-C28)	183	25.0	"	"	"	"	"	

Surrogate: o-Terphenyl	93.4 %	65-146			"	"	"	
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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.

Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: [none]  
Project: Leinweber

SS02@6ft

3/13/2018 12:04:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y803228-02 (Soil)**

**BTEX by EPA 8260C**

Benzene	ND	0.050	mg/kg	25	B8C1306	03/13/2018	03/14/2018	U
Toluene	ND	0.050	"	"	"	"	"	U
Ethylbenzene	ND	0.050	"	"	"	"	"	U
Xylenes, total	ND	0.050	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	106 %	70-130			"	"	"	
Surrogate: Toluene-d8	99.8 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	96.0 %	70-130			"	"	"	

**TPH-Carbon Chain by EPA Method 8015C**

Gasoline (C6-C10)	ND	25.0	mg/kg	1	B8C1307	03/13/2018	03/13/2018	U
Diesel (C10-C28)	204	25.0	"	"	"	"	"	

Surrogate: o-Terphenyl	82.0 %	65-146			"	"	"	
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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.

Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: [none]  
Project: Leinweber

SS03@5ft

3/13/2018 12:09:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y803228-03 (Soil)**

**BTEX by EPA 8260C**

Benzene	ND	0.050	mg/kg	25	B8C1306	03/13/2018	03/14/2018	U
Toluene	ND	0.050	"	"	"	"	"	U
Ethylbenzene	ND	0.050	"	"	"	"	"	U
Xylenes, total	ND	0.050	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	94.4 %	70-130			"	"	"	
Surrogate: Toluene-d8	100 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	96.8 %	70-130			"	"	"	

**TPH-Carbon Chain by EPA Method 8015C**

Gasoline (C6-C10)	ND	25.0	mg/kg	1	B8C1307	03/13/2018	03/13/2018	U
Diesel (C10-C28)	ND	25.0	"	"	"	"	"	U

Surrogate: o-Terphenyl	80.6 %	65-146			"	"	"	
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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.

Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: [none]  
Project: Leinweber

SS04@5ft

3/13/2018 12:15:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y803228-04 (Soil)**

**BTEX by EPA 8260C**

Benzene	0.051	0.050	mg/kg	25	B8C1306	03/13/2018	03/14/2018
Toluene	1.01	0.050	"	"	"	"	"
Ethylbenzene	1.69	0.050	"	"	"	"	"
Xylenes, total	9.72	0.050	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	108 %	70-130			"	"	"
Surrogate: Toluene-d8	82.9 %	70-130			"	"	"
Surrogate: 4-Bromofluorobenzene	148 %	70-130			"	"	" S-04

**TPH-Carbon Chain by EPA Method 8015C**

Gasoline (C6-C10)	727	250	mg/kg	10	B8C1307	03/13/2018	03/14/2018
Diesel (C10-C28)	6670	250	"	"	"	"	"

Surrogate: o-Terphenyl	104 %	65-146			"	"	"
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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.

Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: [none]  
Project: Leinweber

SS05@5ft

3/13/2018 12:20:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y803228-05 (Soil)**

**BTEX by EPA 8260C**

Benzene	ND	0.050	mg/kg	25	B8C1306	03/13/2018	03/14/2018	U
Toluene	<b>0.056</b>	0.050	"	"	"	"	"	
Ethylbenzene	<b>0.103</b>	0.050	"	"	"	"	"	
Xylenes, total	<b>0.732</b>	0.050	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	103 %	70-130			"	"	"	
Surrogate: Toluene-d8	99.6 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	101 %	70-130			"	"	"	

**TPH-Carbon Chain by EPA Method 8015C**

Gasoline (C6-C10)	<b>53.2</b>	25.0	mg/kg	1	B8C1307	03/13/2018	03/13/2018	
Diesel (C10-C28)	<b>714</b>	25.0	"	"	"	"	"	

Surrogate: o-Terphenyl	116 %	65-146			"	"	"	
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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.

Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: [none]  
Project: Leinweber

SS06@5ft

3/13/2018 12:22:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.  
Y803228-06 (Soil)

## BTEX by EPA 8260C

Benzene	ND	0.050	mg/kg	25	B8C1306	03/13/2018	03/14/2018	U
Toluene	0.651	0.050	"	"	"	"	"	
Ethylbenzene	1.12	0.050	"	"	"	"	"	
Xylenes, total	6.68	0.050	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	102 %	70-130			"	"	"	
Surrogate: Toluene-d8	84.5 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	140 %	70-130			"	"	"	S-04

## TPH-Carbon Chain by EPA Method 8015C

Gasoline (C6-C10)	481	25.0	mg/kg	1	B8C1307	03/13/2018	03/13/2018	
Diesel (C10-C28)	3990	25.0	"	"	"	"	"	

Surrogate: o-Terphenyl	82.2 %	65-146			"	"	"	
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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.

Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: [none]  
Project: Leinweber

SS07@5ft

3/13/2018 12:25:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y803228-07 (Soil)**

**BTEX by EPA 8260C**

Benzene	ND	0.002	mg/kg	1	B8C1306	03/13/2018	03/14/2018	U
Toluene	<b>0.004</b>	0.002	"	"	"	"	"	
Ethylbenzene	<b>0.003</b>	0.002	"	"	"	"	"	
Xylenes, total	<b>0.017</b>	0.002	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	108 %	70-130			"	"	"	
Surrogate: Toluene-d8	99.2 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	101 %	70-130			"	"	"	

**TPH-Carbon Chain by EPA Method 8015C**

Gasoline (C6-C10)	ND	25.0	mg/kg	1	B8C1307	03/13/2018	03/13/2018	U
Diesel (C10-C28)	ND	25.0	"	"	"	"	"	U

Surrogate: o-Terphenyl	81.3 %	65-146			"	"	"	
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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.



Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: [none]  
Project: Leinweber

SS08@5ft

3/13/2018 12:27:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y803228-08 (Soil)**

**BTEX by EPA 8260C**

Benzene	0.003	0.002	mg/kg	1	B8C1306	03/13/2018	03/14/2018
Toluene	0.064	0.002	"	"	"	"	"
Ethylbenzene	0.114	0.002	"	"	"	"	"
Xylenes, total	0.666	0.002	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	111 %	70-130			"	"	"
Surrogate: Toluene-d8	79.1 %	70-130			"	"	"
Surrogate: 4-Bromofluorobenzene	164 %	70-130			"	"	" S-04

**TPH-Carbon Chain by EPA Method 8015C**

Gasoline (C6-C10)	378	25.0	mg/kg	1	B8C1307	03/13/2018	03/13/2018
Diesel (C10-C28)	3580	25.0	"	"	"	"	"

Surrogate: o-Terphenyl	89.3 %	65-146			"	"	"
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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.

Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: [none]  
Project: Leinweber

SS09@5ft

3/13/2018 12:31:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y803228-09 (Soil)**

**BTEX by EPA 8260C**

Benzene	ND	0.002	mg/kg	1	B8C1306	03/13/2018	03/14/2018	U
Toluene	<b>0.018</b>	0.002	"	"	"	"	"	
Ethylbenzene	<b>0.031</b>	0.002	"	"	"	"	"	
Xylenes, total	<b>0.207</b>	0.002	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	113 %	70-130			"	"	"	
Surrogate: Toluene-d8	90.7 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	112 %	70-130			"	"	"	

**TPH-Carbon Chain by EPA Method 8015C**

Gasoline (C6-C10)	<b>49.3</b>	25.0	mg/kg	1	B8C1307	03/13/2018	03/13/2018	
Diesel (C10-C28)	<b>674</b>	25.0	"	"	"	"	"	

Surrogate: o-Terphenyl	84.8 %	65-146			"	"	"	
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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.

Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: [none]  
Project: Leinweber

SS10@7ft

3/13/2018 12:37:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y803228-10 (Soil)**

**BTEX by EPA 8260C**

Benzene	ND	0.050	mg/kg	25	B8C1306	03/13/2018	03/14/2018	U
Toluene	<b>0.058</b>	0.050	"	"	"	"	"	
Ethylbenzene	<b>0.088</b>	0.050	"	"	"	"	"	
Xylenes, total	<b>0.578</b>	0.050	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	98.3 %	70-130			"	"	"	
Surrogate: Toluene-d8	99.7 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	101 %	70-130			"	"	"	

**TPH-Carbon Chain by EPA Method 8015C**

Gasoline (C6-C10)	<b>38.7</b>	25.0	mg/kg	1	B8C1307	03/13/2018	03/14/2018	
Diesel (C10-C28)	<b>416</b>	25.0	"	"	"	"	"	

Surrogate: o-Terphenyl	94.5 %	65-146			"	"	"	
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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.

Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: [none]  
Project: Leinweber

SS11@6ft

3/13/2018 12:38:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y803228-11 (Soil)**

**BTEX by EPA 8260C**

Benzene	ND	0.050	mg/kg	25	B8C1306	03/13/2018	03/14/2018	U
Toluene	ND	0.050	"	"	"	"	"	U
Ethylbenzene	<b>0.053</b>	0.050	"	"	"	"	"	
Xylenes, total	<b>0.355</b>	0.050	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	97.7 %	70-130			"	"	"	
Surrogate: Toluene-d8	101 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	99.5 %	70-130			"	"	"	

**TPH-Carbon Chain by EPA Method 8015C**

Gasoline (C6-C10)	ND	25.0	mg/kg	1	B8C1307	03/13/2018	03/14/2018	U
Diesel (C10-C28)	<b>54.6</b>	25.0	"	"	"	"	"	

Surrogate: o-Terphenyl	80.0 %	65-146			"	"	"	
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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.

Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: [none]  
Project: Leinweber

SS12@6ft

3/13/2018 12:40:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y803228-12 (Soil)**

**BTEX by EPA 8260C**

Benzene	ND	0.002	mg/kg	1	B8C1306	03/13/2018	03/14/2018	U
Toluene	ND	0.002	"	"	"	"	"	U
Ethylbenzene	ND	0.002	"	"	"	"	"	U
Xylenes, total	ND	0.002	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	112 %	70-130			"	"	"	
Surrogate: Toluene-d8	99.5 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	101 %	70-130			"	"	"	

**TPH-Carbon Chain by EPA Method 8015C**

Gasoline (C6-C10)	ND	25.0	mg/kg	1	B8C1307	03/13/2018	03/14/2018	U
Diesel (C10-C28)	ND	25.0	"	"	"	"	"	U

Surrogate: o-Terphenyl	87.0 %	65-146			"	"	"	
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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.

Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: [none]  
Project: Leinweber

SS13@6ft

3/13/2018 12:42:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y803228-13 (Soil)**

**BTEX by EPA 8260C**

Benzene	ND	0.002	mg/kg	1	B8C1306	03/13/2018	03/14/2018	U
Toluene	ND	0.002	"	"	"	"	"	U
Ethylbenzene	ND	0.002	"	"	"	"	"	U
Xylenes, total	ND	0.002	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	113 %	70-130			"	"	"	
Surrogate: Toluene-d8	98.1 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	99.0 %	70-130			"	"	"	

**TPH-Carbon Chain by EPA Method 8015C**

Gasoline (C6-C10)	ND	25.0	mg/kg	1	B8C1307	03/13/2018	03/14/2018	U
Diesel (C10-C28)	ND	25.0	"	"	"	"	"	U

Surrogate: o-Terphenyl	94.6 %	65-146			"	"	"	
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Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: [none]  
Project: Leinweber

SS14@1ft

3/13/2018 12:49:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y803228-14 (Soil)**

**BTEX by EPA 8260C**

Benzene	ND	0.050	mg/kg	25	B8C1306	03/13/2018	03/14/2018	U
Toluene	ND	0.050	"	"	"	"	"	U
Ethylbenzene	ND	0.050	"	"	"	"	"	U
Xylenes, total	ND	0.050	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	98.0 %	70-130			"	"	"	
Surrogate: Toluene-d8	98.6 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	95.1 %	70-130			"	"	"	

**pH in Soil by EPA 9045D**

pH	8.38		pH Units	1	B8C1310	03/13/2018	03/13/2018	
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**Specific Conductance by Modified 9050A**

Specific Conductance (EC)	0.575		mmhos/cm	"	B8C1311	03/13/2018	"	
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**TPH-Carbon Chain by EPA Method 8015C**

Gasoline (C6-C10)	ND	50.0	mg/kg	1	B8C1402	03/14/2018	03/14/2018	U
Diesel (C10-C28)	53.1	50.0	"	"	"	"	"	

Surrogate: o-Terphenyl	83.0 %	65-146			"	"	"	
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2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: [none]  
Project: Leinweber

SS15@1ft

3/13/2018 12:55:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y803228-15 (Soil)**

**BTEX by EPA 8260C**

Benzene	ND	0.050	mg/kg	25	B8C1306	03/13/2018	03/14/2018	U
Toluene	ND	0.050	"	"	"	"	"	U
Ethylbenzene	ND	0.050	"	"	"	"	"	U
Xylenes, total	ND	0.050	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	102 %	70-130			"	"	"	
Surrogate: Toluene-d8	102 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	98.6 %	70-130			"	"	"	

**pH in Soil by EPA 9045D**

pH	8.47		pH Units	1	B8C1310	03/13/2018	03/13/2018	
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**Specific Conductance by Modified 9050A**

Specific Conductance (EC)	0.161		mmhos/cm	"	B8C1311	03/13/2018	"	
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**TPH-Carbon Chain by EPA Method 8015C**

Gasoline (C6-C10)	ND	50.0	mg/kg	1	B8C1402	03/14/2018	03/14/2018	U
Diesel (C10-C28)	ND	50.0	"	"	"	"	"	U

Surrogate: o-Terphenyl	76.5 %	65-146			"	"	"	
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2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: [none]  
Project: Leinweber

SS16@0ft  
3/13/2018 1:07:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y803228-16 (Soil)**

**BTEX by EPA 8260C**

Benzene	ND	0.050	mg/kg	25	B8C1306	03/13/2018	03/14/2018	U
Toluene	ND	0.050	"	"	"	"	"	U
Ethylbenzene	ND	0.050	"	"	"	"	"	U
Xylenes, total	ND	0.050	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	103 %	70-130			"	"	"	
Surrogate: Toluene-d8	101 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	98.1 %	70-130			"	"	"	

**pH in Soil by EPA 9045D**

pH	8.34		pH Units	1	B8C1310	03/13/2018	03/13/2018	
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**Specific Conductance by Modified 9050A**

Specific Conductance (EC)	0.262		mmhos/cm	"	B8C1311	03/13/2018	"	
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**TPH-Carbon Chain by EPA Method 8015C**

Gasoline (C6-C10)	ND	50.0	mg/kg	1	B8C1402	03/14/2018	03/14/2018	U
Diesel (C10-C28)	773	50.0	"	"	"	"	"	

Surrogate: o-Terphenyl	92.7 %	65-146			"	"	"	
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2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: [none]  
Project: Leinweber

**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
<b>Batch B8C1306 - EPA 5030 (soil)</b>										
<b>Blank (B8C1306-BLK1)</b>					Prepared: 03/12/2018 Analyzed: 03/12/2018					
Benzene	ND	0.002	mg/kg							U
Toluene	ND	0.002	"							U
Ethylbenzene	ND	0.002	"							U
Xylenes, total	ND	0.002	"							U
Surrogate: 1,2-Dichloroethane-d4	67		ug/kg	62.5		107	70-130			
Surrogate: Toluene-d8	63		"	62.5		100	70-130			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		100	70-130			

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Denver CO 80205

Asher Weinberg  
Project Number: [none]  
Project: Leinweber

**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
<b>Batch B8C1306 - EPA 5030 (soil)</b>										
<b>Blank (B8C1306-BLK2)</b>					Prepared: 03/13/2018 Analyzed: 03/13/2018					
Benzene	ND	0.002	mg/kg							U
Toluene	ND	0.002	"							U
Ethylbenzene	ND	0.002	"							U
Xylenes, total	ND	0.002	"							U
Surrogate: 1,2-Dichloroethane-d4	73		ug/kg	62.5		117	70-130			
Surrogate: Toluene-d8	60		"	62.5		95.9	70-130			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		101	70-130			

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2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: [none]  
Project: Leinweber

**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
<b>Batch B8C1306 - EPA 5030 (soil)</b>										
<b>LCS (B8C1306-BS1)</b>					Prepared: 03/12/2018 Analyzed: 03/12/2018					
Benzene	0.115	0.002	mg/kg	0.100		115	77.1-124			
Toluene	0.110	0.002	"	0.100		110	74.5-128			
Ethylbenzene	0.107	0.002	"	0.100		107	66.4-127			
m,p-Xylene	0.211	0.004	"	0.200		106	76.6-124			
o-Xylene	0.107	0.002	"	0.100		107	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	61		ug/kg	62.5		96.9	70-130			
Surrogate: Toluene-d8	62		"	62.5		99.1	70-130			
Surrogate: 4-Bromofluorobenzene	60		"	62.5		96.4	70-130			

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Asher Weinberg  
Project Number: [none]  
Project: Leinweber

**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
<b>Batch B8C1306 - EPA 5030 (soil)</b>										
<b>LCS (B8C1306-BS2)</b>					Prepared: 03/13/2018 Analyzed: 03/13/2018					
Benzene	0.105	0.002	mg/kg	0.100		105	77.1-124			
Toluene	0.099	0.002	"	0.100		99.2	74.5-128			
Ethylbenzene	0.098	0.002	"	0.100		97.7	66.4-127			
m,p-Xylene	0.196	0.004	"	0.200		98.1	76.6-124			
o-Xylene	0.097	0.002	"	0.100		97.1	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	66		ug/kg	62.5		105	70-130			
Surrogate: Toluene-d8	62		"	62.5		98.4	70-130			
Surrogate: 4-Bromofluorobenzene	61		"	62.5		98.0	70-130			

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Asher Weinberg  
Project Number: [none]  
Project: Leinweber

**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 B8C1306 - EPA 5030 (soil)**

Matrix Spike (B8C1306-MS1)		Source: Y803162-01			Prepared: 03/13/2018 Analyzed: 03/13/2018					
Benzene	0.109	0.002	mg/kg	0.100	ND	109	71.8-126			
Toluene	0.103	0.002	"	0.100	ND	103	65.1-130			
Ethylbenzene	0.103	0.002	"	0.100	0.001	102	62.2-130			
m,p-Xylene	0.204	0.004	"	0.200	0.008	98.3	46.5-137			
o-Xylene	0.102	0.002	"	0.100	0.003	98.3	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	64		ug/kg	62.5		102	70-130			
Surrogate: Toluene-d8	62		"	62.5		98.5	70-130			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		99.9	70-130			

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Asher Weinberg  
Project Number: [none]  
Project: Leinweber

**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 B8C1306 - EPA 5030 (soil)**

Matrix Spike (B8C1306-MS2)		Source: Y803162-02			Prepared: 03/13/2018 Analyzed: 03/13/2018					
Benzene	0.090	0.002	mg/kg	0.100	ND	89.9	71.8-126			
Toluene	0.084	0.002	"	0.100	ND	84.0	65.1-130			
Ethylbenzene	0.086	0.002	"	0.100	ND	85.7	62.2-130			
m,p-Xylene	0.171	0.004	"	0.200	ND	85.3	46.5-137			
o-Xylene	0.084	0.002	"	0.100	ND	84.2	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	65		ug/kg	62.5		104	70-130			
Surrogate: Toluene-d8	61		"	62.5		97.8	70-130			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		101	70-130			

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Asher Weinberg  
Project Number: [none]  
Project: Leinweber

**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 B8C1306 - EPA 5030 (soil)**

Matrix Spike Dup (B8C1306-MSD1)		Source: Y803162-01			Prepared: 03/13/2018 Analyzed: 03/13/2018					
Benzene	0.086	0.002	mg/kg	0.100	ND	85.6	71.8-126	24.0	11.3	QR-02
Toluene	0.080	0.002	"	0.100	ND	79.7	65.1-130	25.2	15.4	QR-02
Ethylbenzene	0.078	0.002	"	0.100	0.001	76.7	62.2-130	27.3	19.6	QR-02
m,p-Xylene	0.157	0.004	"	0.200	0.008	74.4	46.5-137	26.5	19.2	QR-02
o-Xylene	0.077	0.002	"	0.100	0.003	73.9	54.2-134	27.2	17.9	QR-02
Surrogate: 1,2-Dichloroethane-d4	67		ug/kg	62.5		107	70-130			
Surrogate: Toluene-d8	61		"	62.5		98.4	70-130			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		98.9	70-130			

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2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: [none]  
Project: Leinweber

**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 B8C1306 - EPA 5030 (soil)

Matrix Spike Dup (B8C1306-MSD2)		Source: Y803162-02			Prepared: 03/13/2018 Analyzed: 03/13/2018					
Benzene	0.102	0.002	mg/kg	0.100	ND	102	71.8-126	12.5	11.3	QR-02
Toluene	0.096	0.002	"	0.100	ND	96.4	65.1-130	13.7	15.4	
Ethylbenzene	0.106	0.002	"	0.100	ND	106	62.2-130	21.5	19.6	QR-02
m,p-Xylene	0.216	0.004	"	0.200	ND	108	46.5-137	23.5	19.2	QR-02
o-Xylene	0.103	0.002	"	0.100	ND	103	54.2-134	20.4	17.9	QR-02

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2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: [none]  
Project: Leinweber

**Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Extractable Petroleum Hydrocarbons by 8015C - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B8C1307 - EPA 3550B**

**Blank (B8C1307-BLK1)**

Prepared: 03/13/2018 Analyzed: 03/13/2018

Gasoline (C6-C10)	ND	50.0	mg/kg							U
Diesel (C10-C28)	ND	50.0	"							U
Residual Range Organics (C28-C40)	ND	200	"							U

Surrogate: o-Terphenyl

43.0

"

50.0

86.1

65-146

**Blank (B8C1307-BLK2)**

Prepared: 03/13/2018 Analyzed: 03/13/2018

Gasoline (C6-C10)	ND	50.0	mg/kg							U
Diesel (C10-C28)	ND	50.0	"							U
Residual Range Organics (C28-C40)	ND	200	"							U

Surrogate: o-Terphenyl

46.8

"

50.0

93.5

65-146

**LCS (B8C1307-BS1)**

Prepared: 03/13/2018 Analyzed: 03/13/2018

Gasoline (C6-C10)	894	50.0	mg/kg	1000		89.4	66.7-119			
Diesel (C10-C28)	1230	50.0	"	1000		123	70.1-127			
Residual Range Organics (C28-C40)	1430	200	"	1000		143	54.5-139			QM-11

Surrogate: o-Terphenyl

59.4

"

50.0

119

65-146

**LCS (B8C1307-BS2)**

Prepared: 03/13/2018 Analyzed: 03/13/2018

Gasoline (C6-C10)	938	50.0	mg/kg	1000		93.8	66.7-119			
Diesel (C10-C28)	1110	50.0	"	1000		111	70.1-127			
Residual Range Organics (C28-C40)	1420	200	"	1000		142	54.5-139			QM-11

Surrogate: o-Terphenyl

55.4

"

50.0

111

65-146

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2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: [none]  
Project: Leinweber

## Extractable Petroleum Hydrocarbons by 8015C - Quality Control Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B8C1307 - EPA 3550B</b>										
<b>Matrix Spike (B8C1307-MS1)</b>		<b>Source: Y803136-01</b>			Prepared: 03/13/2018 Analyzed: 03/13/2018					
Gasoline (C6-C10)	879	50.0	mg/kg	1000	ND	87.9	56.4-132			
Diesel (C10-C28)	1200	50.0	"	1000	33.0	117	57.4-138			
Residual Range Organics (C28-C40)	1510	200	"	1000	113	140	47.7-129			QM-07
Surrogate: o-Terphenyl	56.1		"	50.0		112	65-146			
<b>Matrix Spike (B8C1307-MS2)</b>		<b>Source: Y803136-02</b>			Prepared: 03/13/2018 Analyzed: 03/13/2018					
Gasoline (C6-C10)	876	50.0	mg/kg	1000	ND	87.6	56.4-132			
Diesel (C10-C28)	1130	50.0	"	1000	27.4	110	57.4-138			
Residual Range Organics (C28-C40)	1360	200	"	1000	92.7	127	47.7-129			
Surrogate: o-Terphenyl	54.7		"	50.0		109	65-146			
<b>Matrix Spike Dup (B8C1307-MSD1)</b>		<b>Source: Y803136-01</b>			Prepared: 03/13/2018 Analyzed: 03/13/2018					
Gasoline (C6-C10)	844	50.0	mg/kg	1000	ND	84.4	56.4-132	4.08	22	
Diesel (C10-C28)	1110	50.0	"	1000	33.0	108	57.4-138	8.02	18.3	
Residual Range Organics (C28-C40)	1360	200	"	1000	113	125	47.7-129	10.3	30.1	
Surrogate: o-Terphenyl	53.0		"	50.0		106	65-146			
<b>Matrix Spike Dup (B8C1307-MSD2)</b>		<b>Source: Y803136-02</b>			Prepared: 03/13/2018 Analyzed: 03/13/2018					
Gasoline (C6-C10)	898	50.0	mg/kg	1000	ND	89.8	56.4-132	2.50	22	
Diesel (C10-C28)	1170	50.0	"	1000	27.4	114	57.4-138	3.78	18.3	
Residual Range Organics (C28-C40)	1290	200	"	1000	92.7	120	47.7-129	5.51	30.1	
Surrogate: o-Terphenyl	55.7		"	50.0		111	65-146			
<b>Batch B8C1402 - EPA 3550B</b>										
<b>Blank (B8C1402-BLK1)</b>		Prepared: 03/14/2018 Analyzed: 03/14/2018								
Gasoline (C6-C10)	ND	50.0	mg/kg							U
Diesel (C10-C28)	ND	50.0	"							U

Origins Laboratory, Inc.



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2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: [none]  
Project: Leinweber

## Extractable Petroleum Hydrocarbons by 8015C - Quality Control Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B8C1402 - EPA 3550B</b>										
<b>Blank (B8C1402-BLK1)</b>					Prepared: 03/14/2018 Analyzed: 03/14/2018					
Residual Range Organics (C28-C40)	ND	200	"							U
Surrogate: o-Terphenyl	44.0		"	50.0		88.0	65-146			
<b>LCS (B8C1402-BS1)</b>					Prepared: 03/14/2018 Analyzed: 03/14/2018					
Gasoline (C6-C10)	825	50.0	mg/kg	1000		82.5	66.7-119			
Diesel (C10-C28)	1090	50.0	"	1000		109	70.1-127			
Residual Range Organics (C28-C40)	1230	200	"	1000		123	54.5-139			
Surrogate: o-Terphenyl	49.4		"	50.0		98.7	65-146			
<b>Matrix Spike (B8C1402-MS1)</b>					<b>Source: Y803228-14</b>		Prepared: 03/14/2018 Analyzed: 03/14/2018			
Gasoline (C6-C10)	838	50.0	mg/kg	1000	ND	83.8	56.4-132			
Diesel (C10-C28)	1140	50.0	"	1000	53.1	108	57.4-138			
Residual Range Organics (C28-C40)	1240	200	"	1000	29.6	121	47.7-129			
Surrogate: o-Terphenyl	51.5		"	50.0		103	65-146			
<b>Matrix Spike Dup (B8C1402-MSD1)</b>					<b>Source: Y803228-14</b>		Prepared: 03/14/2018 Analyzed: 03/14/2018			
Gasoline (C6-C10)	845	50.0	mg/kg	1000	ND	84.5	56.4-132	0.800	22	
Diesel (C10-C28)	1130	50.0	"	1000	53.1	108	57.4-138	0.316	18.3	
Residual Range Organics (C28-C40)	1190	200	"	1000	29.6	116	47.7-129	3.46	30.1	
Surrogate: o-Terphenyl	51.7		"	50.0		103	65-146			

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Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: [none]  
Project: Leinweber

## Classical Chemistry Parameters - Quality Control Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B8C1310 - NO PREP</b>										
<b>Duplicate (B8C1310-DUP1)</b>	<b>Source: Y803201-02</b>				Prepared: 03/13/2018 Analyzed: 03/13/2018					
pH	8.86		pH Units		8.73			1.48	25	
<b>Batch B8C1311 - NO PREP</b>										
<b>Blank (B8C1311-BLK1)</b>					Prepared: 03/13/2018 Analyzed: 03/13/2018					
Specific Conductance (EC)	0.00310		mmhos/cm							
<b>Duplicate (B8C1311-DUP1)</b>	<b>Source: Y803201-02</b>				Prepared: 03/13/2018 Analyzed: 03/13/2018					
Specific Conductance (EC)	0.122		mmhos/cm		0.103			17.2	25	

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Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: [none]  
Project: Leinweber

## Notes and Definitions

U Sample is Non-Detect.

S-04 The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.

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.

QM-11 Spike recovery was outside acceptance limits for LCS, however samples are non-detect for this compound.

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.*



March 20, 2018

**Quandary Consultants**

**Asher Weinberg**

**2252 Emerson St.**

**Denver**

**CO 80205**

**Project Name - Leinweber**

**Project Number - APC035**

Attached are your analytical results for Leinweber received by Origins Laboratory, Inc. March 19, 2018. This project is associated with Origins project number Y803298-01.

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

Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: APC035  
Project: Leinweber

### CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS16 @ 2ft	Y803298-01	Soil	March 19, 2018 12:25	03/19/2018 14:25
SS17 @ 5ft	Y803298-02	Soil	March 19, 2018 12:15	03/19/2018 14:25
SS18 @ 5ft	Y803298-03	Soil	March 19, 2018 12:20	03/19/2018 14:25
SS19 @ 5ft	Y803298-04	Soil	March 19, 2018 12:30	03/19/2018 14:25
SS20 @ 5ft	Y803298-05	Soil	March 19, 2018 12:35	03/19/2018 14:25
SS21 @ 5ft	Y803298-06	Soil	March 19, 2018 12:40	03/19/2018 14:25

Origins Laboratory, Inc.



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Asher Weinberg  
Project Number: APC035  
Project: Leinweber

# ORIGINS

LABORATORY, INC

Y83299

www.originslaboratory.com

page of

Client: Quandary Consultants

Address: 1009 Grant St.

Denver, CO 80203

Telephone Number: 770 757 4740

Email Address: awenbery@quandaryconsultants.com

Project Manager: Arthur Wenbery

Project Name: Leinwucher

Project Number: APC035

Samples Collected By: 3/19/10

for Taylor Koenig APC

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative				Matrix			Analysis				Sample Instructions		
				Unpreserved	HCl	HNO <sub>3</sub>	Other	Groundwater	Soil	Air Summa #	Other	BTEX	TPH	EC		PH	
SS16 @ 2ft	3/19/10	12:25	1	X					X				X				1
SS17 @ 5ft	3/19/10	12:15	1														2
SS18 @ 5ft	3/19/10	12:20	1														3
SS19 @ 5ft	3/19/10	12:30	1														4
SS20 @ 5ft	3/19/10	12:35	1														5
SS21 @ 5ft	3/19/10	12:40	1														6
																	7
																	8
																	9
																	10
Relinquished By: <u>Carol Wootli</u>	Date: <u>3/19/10</u>	Time: <u>2:25</u>		Received By: <u>[Signature]</u>				Date: <u>3/19/10</u>	Time: <u>14:25</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:	Time:								

1725 Elk Place

Denver, CO 80211

Phone: 303.433.1322

Fax: 303.265.9645

Temp Received: 1.0°

Date Results Needed

Origins Laboratory, Inc.

Jeff Pellgrini

*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.*

Quandary Consultants

2252 Emerson St.

Denver CO 80205

Asher Weinberg

Project Number: APC035

Project: Leinweber

Origins Laboratory

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

### Sample Receipt Checklist

Origins Work Order: Y803298

Client: Quandary Consultants

Client Project ID: Leinweber

Checklist Completed by: SG

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

Date/time completed: 3/19/18

Airbill #: N/A

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

Cooler Number/Temperature: 1 / 1.2 °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"/>	<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 <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are short holding time analytes or samples with HTs due within 48 hours present <sup>(1)</sup> ?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Is a chain-of-custody (COC) present and filled out completely <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client with date and time recorded <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace (> ¼ inch bubble) present? <b>If yes, contact client and note in narrative.</b>	<input type="checkbox"/>	<input type="checkbox"/>	<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 type="checkbox"/>	<input checked="" type="checkbox"/>	<input 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)

3/19/18  
Date/Time Reviewed

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.

Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: APC035  
Project: Leinweber

**SS16 @ 2ft****3/19/2018 12:25:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y803298-01 (Soil)****BTEX by EPA 8260C**

Benzene	ND	0.002	mg/kg	1	B8C1903	03/19/2018	03/19/2018	U
Toluene	ND	0.002	"	"	"	"	"	U
Ethylbenzene	ND	0.002	"	"	"	"	"	U
Xylenes, total	ND	0.002	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4  
Surrogate: Toluene-d8  
Surrogate: 4-Bromofluorobenzene

122 %  
97.2 %  
101 %

70-130  
70-130  
70-130

"  
"  
"

"  
"  
"

"  
"  
"

**pH in Soil by EPA 9045D**

pH	6.85		pH Units	1	B8C1905	03/19/2018	03/19/2018	
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**Specific Conductance by Modified 9050A**

Specific Conductance (EC)	0.111		mmhos/cm	"	B8C1906	"	"	
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**TPH-Carbon Chain by EPA Method 8015C**

Gasoline (C6-C10)	ND	25.0	mg/kg	1	B8C1904	03/19/2018	03/19/2018	U
Diesel (C10-C28)	ND	25.0	"	"	"	"	"	U

Surrogate: o-Terphenyl

81.0 %

65-146

"

"

"

Origins Laboratory, Inc.



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Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: APC035  
Project: Leinweber

**SS17 @ 5ft****3/19/2018 12:15:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y803298-02 (Soil)****BTEX by EPA 8260C**

Benzene	ND	0.050	mg/kg	25	B8C1903	03/19/2018	03/19/2018	U
Toluene	ND	0.050	"	"	"	"	"	U
Ethylbenzene	ND	0.050	"	"	"	"	"	U
Xylenes, total	ND	0.050	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	112 %	70-130			"	"	"	
Surrogate: Toluene-d8	96.7 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	95.9 %	70-130			"	"	"	

**TPH-Carbon Chain by EPA Method 8015C**

Gasoline (C6-C10)	ND	25.0	mg/kg	1	B8C1904	03/19/2018	03/19/2018	U
Diesel (C10-C28)	ND	25.0	"	"	"	"	"	U

Surrogate: o-Terphenyl	81.9 %	65-146			"	"	"	
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Origins Laboratory, Inc.



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Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: APC035  
Project: Leinweber

**SS18 @ 5ft**

**3/19/2018 12:20:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y803298-03 (Soil)**

**BTEX by EPA 8260C**

Benzene	ND	0.050	mg/kg	25	B8C1903	03/19/2018	03/20/2018	U
Toluene	ND	0.050	"	"	"	"	"	U
Ethylbenzene	ND	0.050	"	"	"	"	"	U
Xylenes, total	ND	0.050	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	108 %	70-130			"	"	"	
Surrogate: Toluene-d8	98.5 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	98.1 %	70-130			"	"	"	

**TPH-Carbon Chain by EPA Method 8015C**

Gasoline (C6-C10)	ND	25.0	mg/kg	1	B8C1904	03/19/2018	03/19/2018	U
Diesel (C10-C28)	ND	25.0	"	"	"	"	"	U

Surrogate: o-Terphenyl	86.4 %	65-146			"	"	"	
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Origins Laboratory, Inc.



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Denver CO 80205

Asher Weinberg  
Project Number: APC035  
Project: Leinweber

## SS19 @ 5ft

3/19/2018 12:30:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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## Origins Laboratory, Inc. Y803298-04 (Soil)

### BTEX by EPA 8260C

Benzene	ND	0.002	mg/kg	1	B8C1903	03/19/2018	03/20/2018	U
Toluene	ND	0.002	"	"	"	"	"	U
Ethylbenzene	0.002	0.002	"	"	"	"	"	
Xylenes, total	ND	0.002	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	120 %	70-130			"	"	"	
Surrogate: Toluene-d8	95.7 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	98.7 %	70-130			"	"	"	

### TPH-Carbon Chain by EPA Method 8015C

Gasoline (C6-C10)	ND	25.0	mg/kg	1	B8C1904	03/19/2018	03/19/2018	U
Diesel (C10-C28)	ND	25.0	"	"	"	"	"	U

Surrogate: o-Terphenyl	98.4 %	65-146			"	"	"	
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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.

Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: APC035  
Project: Leinweber

## SS20 @ 5ft

3/19/2018 12:35:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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## Origins Laboratory, Inc. Y803298-05 (Soil)

### BTEX by EPA 8260C

Benzene	ND	0.002	mg/kg	1	B8C1903	03/19/2018	03/20/2018	U
Toluene	ND	0.002	"	"	"	"	"	U
Ethylbenzene	ND	0.002	"	"	"	"	"	U
Xylenes, total	ND	0.002	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	121 %	70-130			"	"	"	
Surrogate: Toluene-d8	96.4 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	99.0 %	70-130			"	"	"	

### TPH-Carbon Chain by EPA Method 8015C

Gasoline (C6-C10)	ND	25.0	mg/kg	1	B8C1904	03/19/2018	03/19/2018	U
Diesel (C10-C28)	ND	25.0	"	"	"	"	"	U

Surrogate: o-Terphenyl	88.6 %	65-146			"	"	"	
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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.

Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: APC035  
Project: Leinweber

## SS21 @ 5ft

3/19/2018 12:40:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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## Origins Laboratory, Inc. Y803298-06 (Soil)

### BTEX by EPA 8260C

Benzene	ND	0.002	mg/kg	1	B8C1903	03/19/2018	03/20/2018	U
Toluene	ND	0.002	"	"	"	"	"	U
Ethylbenzene	ND	0.002	"	"	"	"	"	U
Xylenes, total	ND	0.002	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	123 %	70-130			"	"	"	
Surrogate: Toluene-d8	95.9 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	99.0 %	70-130			"	"	"	

### TPH-Carbon Chain by EPA Method 8015C

Gasoline (C6-C10)	ND	25.0	mg/kg	1	B8C1904	03/19/2018	03/19/2018	U
Diesel (C10-C28)	ND	25.0	"	"	"	"	"	U

Surrogate: o-Terphenyl	47.0 %	65-146			"	"	"	S-DUP
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Origins Laboratory, Inc.



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Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: APC035  
Project: Leinweber

**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
<b>Batch B8C1903 - EPA 5030 (soil)</b>										
<b>Blank (B8C1903-BLK1)</b>					Prepared: 03/19/2018 Analyzed: 03/19/2018					
Benzene	ND	0.002	mg/kg							U
Toluene	ND	0.002	"							U
Ethylbenzene	ND	0.002	"							U
Xylenes, total	ND	0.002	"							U
Surrogate: 1,2-Dichloroethane-d4	76		ug/kg	62.5		122	70-130			
Surrogate: Toluene-d8	59		"	62.5		94.7	70-130			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		99.2	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.

Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: APC035  
Project: Leinweber

**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
<b>Batch B8C1903 - EPA 5030 (soil)</b>										
<b>LCS (B8C1903-BS1)</b>					Prepared: 03/19/2018 Analyzed: 03/19/2018					
Benzene	0.086	0.002	mg/kg	0.100		86.1	77.1-124			
Toluene	0.078	0.002	"	0.100		77.6	74.5-128			
Ethylbenzene	0.077	0.002	"	0.100		77.4	66.4-127			
m,p-Xylene	0.154	0.004	"	0.200		76.8	76.6-124			
o-Xylene	0.074	0.002	"	0.100		74.4	76.6-124			QM-11
Surrogate: 1,2-Dichloroethane-d4	71		ug/kg	62.5		114	70-130			
Surrogate: Toluene-d8	60		"	62.5		95.9	70-130			
Surrogate: 4-Bromofluorobenzene	61		"	62.5		97.1	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.

Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: APC035  
Project: Leinweber

**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 B8C1903 - EPA 5030 (soil)**

Matrix Spike (B8C1903-MS1)		Source: Y803298-01			Prepared: 03/19/2018 Analyzed: 03/19/2018					
Benzene	0.083	0.002	mg/kg	0.100	ND	83.4	71.8-126			
Toluene	0.074	0.002	"	0.100	ND	74.1	65.1-130			
Ethylbenzene	0.078	0.002	"	0.100	ND	77.6	62.2-130			
m,p-Xylene	0.155	0.004	"	0.200	ND	77.3	46.5-137			
o-Xylene	0.075	0.002	"	0.100	0.0003	75.3	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	70		ug/kg	62.5		113	70-130			
Surrogate: Toluene-d8	59		"	62.5		94.9	70-130			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		99.0	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.

Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: APC035  
Project: Leinweber

**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
<b>Batch B8C1903 - EPA 5030 (soil)</b>										
<b>Matrix Spike Dup (B8C1903-MSD1)</b>		<b>Source: Y803298-01</b>			Prepared: 03/19/2018 Analyzed: 03/19/2018					
Benzene	0.084	0.002	mg/kg	0.100	ND	83.6	71.8-126	0.239	11.3	
Toluene	0.077	0.002	"	0.100	ND	77.2	65.1-130	4.10	15.4	
Ethylbenzene	0.078	0.002	"	0.100	ND	78.2	62.2-130	0.744	19.6	
m,p-Xylene	0.152	0.004	"	0.200	ND	76.1	46.5-137	1.63	19.2	
o-Xylene	0.074	0.002	"	0.100	0.0003	74.2	54.2-134	1.45	17.9	
Surrogate: 1,2-Dichloroethane-d4	69		ug/kg	62.5		110	70-130			
Surrogate: Toluene-d8	60		"	62.5		96.5	70-130			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		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.

Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: APC035  
Project: Leinweber

## Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control

### Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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## Extractable Petroleum Hydrocarbons by 8015C - Quality Control

### Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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#### Batch B8C1904 - EPA 3550B

#### Blank (B8C1904-BLK1)

Prepared: 03/19/2018 Analyzed: 03/19/2018

Gasoline (C6-C10)	ND	50.0	mg/kg							U
Diesel (C10-C28)	ND	50.0	"							U
Residual Range Organics (C28-C40)	ND	200	"							U

Surrogate: o-Terphenyl

61.0

"

50.0

122

65-146

#### LCS (B8C1904-BS1)

Prepared: 03/19/2018 Analyzed: 03/19/2018

Gasoline (C6-C10)	999	50.0	mg/kg	1000		99.9	66.7-119			
Diesel (C10-C28)	943	50.0	"	1000		94.3	70.1-127			
Residual Range Organics (C28-C40)	959	200	"	1000		95.9	54.5-139			

Surrogate: o-Terphenyl

46.8

"

50.0

93.6

65-146

#### Matrix Spike (B8C1904-MS1)

Source: Y803298-01

Prepared: 03/19/2018 Analyzed: 03/19/2018

Gasoline (C6-C10)	979	50.0	mg/kg	1000	ND	97.9	56.4-132			
Diesel (C10-C28)	953	50.0	"	1000	ND	95.3	57.4-138			
Residual Range Organics (C28-C40)	907	200	"	1000	ND	90.7	47.7-129			

Surrogate: o-Terphenyl

46.8

"

50.0

93.5

65-146

#### Matrix Spike Dup (B8C1904-MSD1)

Source: Y803298-01

Prepared: 03/19/2018 Analyzed: 03/19/2018

Gasoline (C6-C10)	984	50.0	mg/kg	1000	ND	98.4	56.4-132	0.449	22	
Diesel (C10-C28)	970	50.0	"	1000	ND	97.0	57.4-138	1.71	18.3	
Residual Range Organics (C28-C40)	925	200	"	1000	ND	92.5	47.7-129	1.95	30.1	

Surrogate: o-Terphenyl

46.4

"

50.0

92.8

65-146

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.



Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: APC035  
Project: Leinweber

## Classical Chemistry Parameters - Quality Control Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B8C1905 - NO PREP</b>										
<b>Duplicate (B8C1905-DUP1)</b>		<b>Source: Y803298-01</b>			Prepared: 03/19/2018 Analyzed: 03/19/2018					
pH	6.78		pH Units		6.85			1.03	25	
<b>Batch B8C1906 - NO PREP</b>										
<b>Blank (B8C1906-BLK1)</b>		Prepared: 03/19/2018 Analyzed: 03/19/2018								
Specific Conductance (EC)	0.00240		mmhos/cm							
<b>Duplicate (B8C1906-DUP1)</b>		<b>Source: Y803298-01</b>			Prepared: 03/19/2018 Analyzed: 03/19/2018					
Specific Conductance (EC)	0.107		mmhos/cm		0.111			4.13	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.

Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: APC035  
Project: Leinweber

---

### Notes and Definitions

U Sample is Non-Detect.

S-DUP Duplicate analysis confirmed surrogate failure due to matrix effects.

QM-11 Spike recovery was outside acceptance limits for LCS, however samples are non-detect for this compound.

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 For Noelle Doyle Mathis, President



March 14, 2018

**Quandary Consultants**

**Asher Weinberg**

**2252 Emerson St.**

**Denver**

**CO 80205**

**Project Name - Leinweber**

**Project Number - [none]**

Attached are your analytical results for Leinweber received by Origins Laboratory, Inc. March 13, 2018. This project is associated with Origins project number Y803228-01.

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

Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: [none]  
Project: Leinweber

### CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS01@6ft	Y803228-01	Soil	March 13, 2018 12:01	03/13/2018 17:10
SS02@6ft	Y803228-02	Soil	March 13, 2018 12:04	03/13/2018 17:10
SS03@5ft	Y803228-03	Soil	March 13, 2018 12:09	03/13/2018 17:10
SS04@5ft	Y803228-04	Soil	March 13, 2018 12:15	03/13/2018 17:10
SS05@5ft	Y803228-05	Soil	March 13, 2018 12:20	03/13/2018 17:10
SS06@5ft	Y803228-06	Soil	March 13, 2018 12:22	03/13/2018 17:10
SS07@5ft	Y803228-07	Soil	March 13, 2018 12:25	03/13/2018 17:10
SS08@5ft	Y803228-08	Soil	March 13, 2018 12:27	03/13/2018 17:10
SS09@5ft	Y803228-09	Soil	March 13, 2018 12:31	03/13/2018 17:10
SS10@7ft	Y803228-10	Soil	March 13, 2018 12:37	03/13/2018 17:10
SS11@6ft	Y803228-11	Soil	March 13, 2018 12:38	03/13/2018 17:10
SS12@6ft	Y803228-12	Soil	March 13, 2018 12:40	03/13/2018 17:10
SS13@6ft	Y803228-13	Soil	March 13, 2018 12:42	03/13/2018 17:10
SS14@1ft	Y803228-14	Soil	March 13, 2018 12:49	03/13/2018 17:10

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.*

Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: [none]  
Project: Leinweber

## CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS15@1ft	Y803228-15	Soil	March 13, 2018 12:55	03/13/2018 17:10
SS16@0ft	Y803228-16	Soil	March 13, 2018 13:07	03/13/2018 17:10

Per the phone call from Asher on 03/14/18, BTEX and TPH were added to SS14, SS15, and SS16.

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.*

Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: [none]  
Project: Leinweber

Client: Quandary Consultants  
Address: 1009 Grant St., Suite 1150  
Denver, CO 80203  
Telephone Number: 770 757 4740  
Email Address: a.weinberg@quandaryconsultants.com

Project Manager: Asher Weinberg  
Project Name: Leinweber  
Project Number:  
Samples Collected By: Covaline & Asher  
APC Taylor Rowley

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		Sample Instructions	
				Unpreserved	HCl	HNO <sub>3</sub>	Other	Groundwater	Soil	Air Sampling	Other	TPH		DTX
SS01 @ 6 ft	3/13/18	12:01	1	X				X				X	DTX	1
SS02 @ 6 ft		12:04												2
SS03 @ 5 ft		12:09												3
SS04 @ 5 ft		12:15												4
SS05 @ 5 ft		12:20												5
SS06 @ 5 ft		12:22												6
SS07 @ 5 ft		12:25												7
SS08 @ 5 ft		12:27												8
SS09 @ 5 ft		12:31												9
SS10 @ 1 ft		12:31												10
Relinquished By: SS11 @ 6 ft	3/15/18	12:30												
Relinquished By:	3/15/18	17:10												

Turnaround Time: 24 Hr ☒ 48 Hr ☐ 72 Hr ☐ Standard ☐

Received By: [Signature] Date: 3-13-18 Time: 17:10

Received By: [Signature] Date: 3-13-18 Time: 17:10

Temp Received: 4/2 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.

Asher Weinberg  
Project Number: [none]  
Project: Leinweber

# ORIGINS

LABORATORY, INC





www.originslaboratory.com

Y83228

page of

Client: Quandary Consultants  
 Address: 1009 Grant St, Suite 1150  
 Telephone Number: 770 757 4740  
 Email Address: awenbury@quandaryconsultants.com

Project Manager: Asher Wenbury  
 Project Name: Remedial  
 Project Number: \_\_\_\_\_  
 Samples Collected By: Cerise d Asher  
APC Taylor Robies

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative				Matrix			Analysis				Sample Instructions	
				Unpreserved	HCl	HNO <sub>3</sub>	Other	Groundwater	Soil	Air Summa #	Other	BTEX	TPH	EC		PH
SS12 @ 6ft.	3/13/18	12:40 PM	1	X					X				X			1
SS13 @ 6ft.		12:42	1										X			2
SS14 @ 1 ft.		12:49											X			3
SS15 @ 1 ft.		12:55											X			4
SS16 @ 0 ft.		1:07											X			5
																6
																7
																8
																9
																10
Relinquished By: 	Date: 3/13/18	Time: 1710	Received By: 	Date: 3-13-18	Time: 1710	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: 3/13/18	Time: 1710	Received By: 	Date: 3-13-18	Time: 1710	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"/>										

Temp Received: 41.2

Date Results Needed

Origins Laboratory, Inc.

Jeff Pellipini

*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.*



Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: [none]  
Project: Leinweber

Origins Laboratory

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

### Sample Receipt Checklist

Origins Work Order: 1803228

Client: Quandary Consultants

Client Project ID: Leinweber

Checklist Completed by: J. Pellegrini

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

Date/time completed: 3-13-12

Airbill #: NA

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

Cooler Number/Temperature: 1 4.2 °C 1 °C 1 °C 1 °C (Describe)

Thermometer ID: 1003

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C <sup>(1)</sup> ?	<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 <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are short holding time analytes or samples with HTs due within 48 hours present <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ph
Is a chain-of-custody (COC) present and filled out completely <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client with date and time recorded <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace (> ¼ inch bubble) present? <b>If yes, contact client and note in narrative.</b>	<input type="checkbox"/>	<input type="checkbox"/>	<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 type="checkbox"/>	<input type="checkbox"/>	<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) J. Pellegrini

Date/Time Reviewed 3-13-12

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.



Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: [none]  
Project: Leinweber

SS01@6ft

3/13/2018 12:01:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y803228-01 (Soil)**

**BTEX by EPA 8260C**

Benzene	ND	0.050	mg/kg	25	B8C1306	03/13/2018	03/14/2018	U
Toluene	ND	0.050	"	"	"	"	"	U
Ethylbenzene	ND	0.050	"	"	"	"	"	U
Xylenes, total	ND	0.050	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	108 %	70-130			"	"	"	
Surrogate: Toluene-d8	99.9 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	97.5 %	70-130			"	"	"	

**TPH-Carbon Chain by EPA Method 8015C**

Gasoline (C6-C10)	ND	25.0	mg/kg	1	B8C1307	03/13/2018	03/13/2018	U
Diesel (C10-C28)	183	25.0	"	"	"	"	"	

Surrogate: o-Terphenyl	93.4 %	65-146			"	"	"	
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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.

Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: [none]  
Project: Leinweber

SS02@6ft

3/13/2018 12:04:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y803228-02 (Soil)**

**BTEX by EPA 8260C**

Benzene	ND	0.050	mg/kg	25	B8C1306	03/13/2018	03/14/2018	U
Toluene	ND	0.050	"	"	"	"	"	U
Ethylbenzene	ND	0.050	"	"	"	"	"	U
Xylenes, total	ND	0.050	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	106 %	70-130			"	"	"	
Surrogate: Toluene-d8	99.8 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	96.0 %	70-130			"	"	"	

**TPH-Carbon Chain by EPA Method 8015C**

Gasoline (C6-C10)	ND	25.0	mg/kg	1	B8C1307	03/13/2018	03/13/2018	U
Diesel (C10-C28)	204	25.0	"	"	"	"	"	

Surrogate: o-Terphenyl	82.0 %	65-146			"	"	"	
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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.

Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: [none]  
Project: Leinweber

SS03@5ft

3/13/2018 12:09:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y803228-03 (Soil)**

**BTEX by EPA 8260C**

Benzene	ND	0.050	mg/kg	25	B8C1306	03/13/2018	03/14/2018	U
Toluene	ND	0.050	"	"	"	"	"	U
Ethylbenzene	ND	0.050	"	"	"	"	"	U
Xylenes, total	ND	0.050	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	94.4 %	70-130			"	"	"	
Surrogate: Toluene-d8	100 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	96.8 %	70-130			"	"	"	

**TPH-Carbon Chain by EPA Method 8015C**

Gasoline (C6-C10)	ND	25.0	mg/kg	1	B8C1307	03/13/2018	03/13/2018	U
Diesel (C10-C28)	ND	25.0	"	"	"	"	"	U

Surrogate: o-Terphenyl	80.6 %	65-146			"	"	"	
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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.

Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: [none]  
Project: Leinweber

SS04@5ft

3/13/2018 12:15:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y803228-04 (Soil)**

**BTEX by EPA 8260C**

Benzene	0.051	0.050	mg/kg	25	B8C1306	03/13/2018	03/14/2018
Toluene	1.01	0.050	"	"	"	"	"
Ethylbenzene	1.69	0.050	"	"	"	"	"
Xylenes, total	9.72	0.050	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	108 %	70-130			"	"	"
Surrogate: Toluene-d8	82.9 %	70-130			"	"	"
Surrogate: 4-Bromofluorobenzene	148 %	70-130			"	"	" S-04

**TPH-Carbon Chain by EPA Method 8015C**

Gasoline (C6-C10)	727	250	mg/kg	10	B8C1307	03/13/2018	03/14/2018
Diesel (C10-C28)	6670	250	"	"	"	"	"

Surrogate: o-Terphenyl	104 %	65-146			"	"	"
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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.

Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: [none]  
Project: Leinweber

SS05@5ft

3/13/2018 12:20:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y803228-05 (Soil)**

**BTEX by EPA 8260C**

Benzene	ND	0.050	mg/kg	25	B8C1306	03/13/2018	03/14/2018	U
Toluene	<b>0.056</b>	0.050	"	"	"	"	"	
Ethylbenzene	<b>0.103</b>	0.050	"	"	"	"	"	
Xylenes, total	<b>0.732</b>	0.050	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	103 %	70-130			"	"	"	
Surrogate: Toluene-d8	99.6 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	101 %	70-130			"	"	"	

**TPH-Carbon Chain by EPA Method 8015C**

Gasoline (C6-C10)	<b>53.2</b>	25.0	mg/kg	1	B8C1307	03/13/2018	03/13/2018	
Diesel (C10-C28)	<b>714</b>	25.0	"	"	"	"	"	

Surrogate: o-Terphenyl	116 %	65-146			"	"	"	
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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.

Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: [none]  
Project: Leinweber

SS06@5ft

3/13/2018 12:22:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.  
Y803228-06 (Soil)

## BTEX by EPA 8260C

Benzene	ND	0.050	mg/kg	25	B8C1306	03/13/2018	03/14/2018	U
Toluene	0.651	0.050	"	"	"	"	"	
Ethylbenzene	1.12	0.050	"	"	"	"	"	
Xylenes, total	6.68	0.050	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	102 %	70-130			"	"	"	
Surrogate: Toluene-d8	84.5 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	140 %	70-130			"	"	"	S-04

## TPH-Carbon Chain by EPA Method 8015C

Gasoline (C6-C10)	481	25.0	mg/kg	1	B8C1307	03/13/2018	03/13/2018	
Diesel (C10-C28)	3990	25.0	"	"	"	"	"	

Surrogate: o-Terphenyl	82.2 %	65-146			"	"	"	
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Origins Laboratory, Inc.



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Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: [none]  
Project: Leinweber

SS07@5ft

3/13/2018 12:25:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y803228-07 (Soil)**

**BTEX by EPA 8260C**

Benzene	ND	0.002	mg/kg	1	B8C1306	03/13/2018	03/14/2018	U
Toluene	<b>0.004</b>	0.002	"	"	"	"	"	
Ethylbenzene	<b>0.003</b>	0.002	"	"	"	"	"	
Xylenes, total	<b>0.017</b>	0.002	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	108 %	70-130			"	"	"	
Surrogate: Toluene-d8	99.2 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	101 %	70-130			"	"	"	

**TPH-Carbon Chain by EPA Method 8015C**

Gasoline (C6-C10)	ND	25.0	mg/kg	1	B8C1307	03/13/2018	03/13/2018	U
Diesel (C10-C28)	ND	25.0	"	"	"	"	"	U

Surrogate: o-Terphenyl	81.3 %	65-146			"	"	"	
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Origins Laboratory, Inc.



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Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: [none]  
Project: Leinweber

SS08@5ft

3/13/2018 12:27:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y803228-08 (Soil)**

**BTEX by EPA 8260C**

Benzene	0.003	0.002	mg/kg	1	B8C1306	03/13/2018	03/14/2018
Toluene	0.064	0.002	"	"	"	"	"
Ethylbenzene	0.114	0.002	"	"	"	"	"
Xylenes, total	0.666	0.002	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	111 %	70-130			"	"	"
Surrogate: Toluene-d8	79.1 %	70-130			"	"	"
Surrogate: 4-Bromofluorobenzene	164 %	70-130			"	"	" S-04

**TPH-Carbon Chain by EPA Method 8015C**

Gasoline (C6-C10)	378	25.0	mg/kg	1	B8C1307	03/13/2018	03/13/2018
Diesel (C10-C28)	3580	25.0	"	"	"	"	"

Surrogate: o-Terphenyl	89.3 %	65-146			"	"	"
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Origins Laboratory, Inc.



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Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: [none]  
Project: Leinweber

SS09@5ft

3/13/2018 12:31:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y803228-09 (Soil)**

**BTEX by EPA 8260C**

Benzene	ND	0.002	mg/kg	1	B8C1306	03/13/2018	03/14/2018	U
Toluene	<b>0.018</b>	0.002	"	"	"	"	"	
Ethylbenzene	<b>0.031</b>	0.002	"	"	"	"	"	
Xylenes, total	<b>0.207</b>	0.002	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	113 %	70-130			"	"	"	
Surrogate: Toluene-d8	90.7 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	112 %	70-130			"	"	"	

**TPH-Carbon Chain by EPA Method 8015C**

Gasoline (C6-C10)	<b>49.3</b>	25.0	mg/kg	1	B8C1307	03/13/2018	03/13/2018	
Diesel (C10-C28)	<b>674</b>	25.0	"	"	"	"	"	

Surrogate: o-Terphenyl	84.8 %	65-146			"	"	"	
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Origins Laboratory, Inc.



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Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: [none]  
Project: Leinweber

SS10@7ft

3/13/2018 12:37:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.  
Y803228-10 (Soil)

### BTEX by EPA 8260C

Benzene	ND	0.050	mg/kg	25	B8C1306	03/13/2018	03/14/2018	U
Toluene	0.058	0.050	"	"	"	"	"	
Ethylbenzene	0.088	0.050	"	"	"	"	"	
Xylenes, total	0.578	0.050	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	98.3 %	70-130			"	"	"	
Surrogate: Toluene-d8	99.7 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	101 %	70-130			"	"	"	

### TPH-Carbon Chain by EPA Method 8015C

Gasoline (C6-C10)	38.7	25.0	mg/kg	1	B8C1307	03/13/2018	03/14/2018	
Diesel (C10-C28)	416	25.0	"	"	"	"	"	

Surrogate: o-Terphenyl	94.5 %	65-146			"	"	"	
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Origins Laboratory, Inc.



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Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: [none]  
Project: Leinweber

SS11@6ft

3/13/2018 12:38:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y803228-11 (Soil)**

**BTEX by EPA 8260C**

Benzene	ND	0.050	mg/kg	25	B8C1306	03/13/2018	03/14/2018	U
Toluene	ND	0.050	"	"	"	"	"	U
Ethylbenzene	<b>0.053</b>	0.050	"	"	"	"	"	
Xylenes, total	<b>0.355</b>	0.050	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	97.7 %	70-130			"	"	"	
Surrogate: Toluene-d8	101 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	99.5 %	70-130			"	"	"	

**TPH-Carbon Chain by EPA Method 8015C**

Gasoline (C6-C10)	ND	25.0	mg/kg	1	B8C1307	03/13/2018	03/14/2018	U
Diesel (C10-C28)	<b>54.6</b>	25.0	"	"	"	"	"	

Surrogate: o-Terphenyl	80.0 %	65-146			"	"	"	
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Origins Laboratory, Inc.



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Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: [none]  
Project: Leinweber

SS12@6ft

3/13/2018 12:40:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y803228-12 (Soil)**

**BTEX by EPA 8260C**

Benzene	ND	0.002	mg/kg	1	B8C1306	03/13/2018	03/14/2018	U
Toluene	ND	0.002	"	"	"	"	"	U
Ethylbenzene	ND	0.002	"	"	"	"	"	U
Xylenes, total	ND	0.002	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	112 %	70-130			"	"	"	
Surrogate: Toluene-d8	99.5 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	101 %	70-130			"	"	"	

**TPH-Carbon Chain by EPA Method 8015C**

Gasoline (C6-C10)	ND	25.0	mg/kg	1	B8C1307	03/13/2018	03/14/2018	U
Diesel (C10-C28)	ND	25.0	"	"	"	"	"	U

Surrogate: o-Terphenyl	87.0 %	65-146			"	"	"	
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Origins Laboratory, Inc.



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Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: [none]  
Project: Leinweber

SS13@6ft

3/13/2018 12:42:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y803228-13 (Soil)**

**BTEX by EPA 8260C**

Benzene	ND	0.002	mg/kg	1	B8C1306	03/13/2018	03/14/2018	U
Toluene	ND	0.002	"	"	"	"	"	U
Ethylbenzene	ND	0.002	"	"	"	"	"	U
Xylenes, total	ND	0.002	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	113 %	70-130			"	"	"	
Surrogate: Toluene-d8	98.1 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	99.0 %	70-130			"	"	"	

**TPH-Carbon Chain by EPA Method 8015C**

Gasoline (C6-C10)	ND	25.0	mg/kg	1	B8C1307	03/13/2018	03/14/2018	U
Diesel (C10-C28)	ND	25.0	"	"	"	"	"	U

Surrogate: o-Terphenyl	94.6 %	65-146			"	"	"	
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Origins Laboratory, Inc.



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Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: [none]  
Project: Leinweber

SS14@1ft

3/13/2018 12:49:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y803228-14 (Soil)**

**BTEX by EPA 8260C**

Benzene	ND	0.050	mg/kg	25	B8C1306	03/13/2018	03/14/2018	U
Toluene	ND	0.050	"	"	"	"	"	U
Ethylbenzene	ND	0.050	"	"	"	"	"	U
Xylenes, total	ND	0.050	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	98.0 %	70-130			"	"	"	
Surrogate: Toluene-d8	98.6 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	95.1 %	70-130			"	"	"	

**pH in Soil by EPA 9045D**

pH	8.38		pH Units	1	B8C1310	03/13/2018	03/13/2018	
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**Specific Conductance by Modified 9050A**

Specific Conductance (EC)	0.575		mmhos/cm	"	B8C1311	03/13/2018	"	
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**TPH-Carbon Chain by EPA Method 8015C**

Gasoline (C6-C10)	ND	50.0	mg/kg	1	B8C1402	03/14/2018	03/14/2018	U
Diesel (C10-C28)	53.1	50.0	"	"	"	"	"	

Surrogate: o-Terphenyl	83.0 %	65-146			"	"	"	
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Origins Laboratory, Inc.



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Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: [none]  
Project: Leinweber

SS15@1ft

3/13/2018 12:55:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y803228-15 (Soil)**

**BTEX by EPA 8260C**

Benzene	ND	0.050	mg/kg	25	B8C1306	03/13/2018	03/14/2018	U
Toluene	ND	0.050	"	"	"	"	"	U
Ethylbenzene	ND	0.050	"	"	"	"	"	U
Xylenes, total	ND	0.050	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	102 %	70-130			"	"	"	
Surrogate: Toluene-d8	102 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	98.6 %	70-130			"	"	"	

**pH in Soil by EPA 9045D**

pH	8.47		pH Units	1	B8C1310	03/13/2018	03/13/2018	
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**Specific Conductance by Modified 9050A**

Specific Conductance (EC)	0.161		mmhos/cm	"	B8C1311	03/13/2018	"	
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**TPH-Carbon Chain by EPA Method 8015C**

Gasoline (C6-C10)	ND	50.0	mg/kg	1	B8C1402	03/14/2018	03/14/2018	U
Diesel (C10-C28)	ND	50.0	"	"	"	"	"	U

Surrogate: o-Terphenyl	76.5 %	65-146			"	"	"	
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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.

Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: [none]  
Project: Leinweber

SS16@0ft  
3/13/2018 1:07:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y803228-16 (Soil)**

**BTEX by EPA 8260C**

Benzene	ND	0.050	mg/kg	25	B8C1306	03/13/2018	03/14/2018	U
Toluene	ND	0.050	"	"	"	"	"	U
Ethylbenzene	ND	0.050	"	"	"	"	"	U
Xylenes, total	ND	0.050	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	103 %	70-130			"	"	"	
Surrogate: Toluene-d8	101 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	98.1 %	70-130			"	"	"	

**pH in Soil by EPA 9045D**

pH	8.34		pH Units	1	B8C1310	03/13/2018	03/13/2018	
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**Specific Conductance by Modified 9050A**

Specific Conductance (EC)	0.262		mmhos/cm	"	B8C1311	03/13/2018	"	
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**TPH-Carbon Chain by EPA Method 8015C**

Gasoline (C6-C10)	ND	50.0	mg/kg	1	B8C1402	03/14/2018	03/14/2018	U
Diesel (C10-C28)	773	50.0	"	"	"	"	"	

Surrogate: o-Terphenyl	92.7 %	65-146			"	"	"	
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Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: [none]  
Project: Leinweber

**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
<b>Batch B8C1306 - EPA 5030 (soil)</b>										
<b>Blank (B8C1306-BLK1)</b>					Prepared: 03/12/2018 Analyzed: 03/12/2018					
Benzene	ND	0.002	mg/kg							U
Toluene	ND	0.002	"							U
Ethylbenzene	ND	0.002	"							U
Xylenes, total	ND	0.002	"							U
Surrogate: 1,2-Dichloroethane-d4	67		ug/kg	62.5		107	70-130			
Surrogate: Toluene-d8	63		"	62.5		100	70-130			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		100	70-130			

Origins Laboratory, Inc.



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Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: [none]  
Project: Leinweber

**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
<b>Batch B8C1306 - EPA 5030 (soil)</b>										
<b>Blank (B8C1306-BLK2)</b>					Prepared: 03/13/2018 Analyzed: 03/13/2018					
Benzene	ND	0.002	mg/kg							U
Toluene	ND	0.002	"							U
Ethylbenzene	ND	0.002	"							U
Xylenes, total	ND	0.002	"							U
Surrogate: 1,2-Dichloroethane-d4	73		ug/kg	62.5		117	70-130			
Surrogate: Toluene-d8	60		"	62.5		95.9	70-130			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		101	70-130			

Origins Laboratory, Inc.



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Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: [none]  
Project: Leinweber

**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
<b>Batch B8C1306 - EPA 5030 (soil)</b>										
<b>LCS (B8C1306-BS1)</b>					Prepared: 03/12/2018 Analyzed: 03/12/2018					
Benzene	0.115	0.002	mg/kg	0.100		115	77.1-124			
Toluene	0.110	0.002	"	0.100		110	74.5-128			
Ethylbenzene	0.107	0.002	"	0.100		107	66.4-127			
m,p-Xylene	0.211	0.004	"	0.200		106	76.6-124			
o-Xylene	0.107	0.002	"	0.100		107	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	61		ug/kg	62.5		96.9	70-130			
Surrogate: Toluene-d8	62		"	62.5		99.1	70-130			
Surrogate: 4-Bromofluorobenzene	60		"	62.5		96.4	70-130			

Origins Laboratory, Inc.



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Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: [none]  
Project: Leinweber

**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
<b>Batch B8C1306 - EPA 5030 (soil)</b>										
<b>LCS (B8C1306-BS2)</b>					Prepared: 03/13/2018 Analyzed: 03/13/2018					
Benzene	0.105	0.002	mg/kg	0.100		105	77.1-124			
Toluene	0.099	0.002	"	0.100		99.2	74.5-128			
Ethylbenzene	0.098	0.002	"	0.100		97.7	66.4-127			
m,p-Xylene	0.196	0.004	"	0.200		98.1	76.6-124			
o-Xylene	0.097	0.002	"	0.100		97.1	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	66		ug/kg	62.5		105	70-130			
Surrogate: Toluene-d8	62		"	62.5		98.4	70-130			
Surrogate: 4-Bromofluorobenzene	61		"	62.5		98.0	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.*

Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: [none]  
Project: Leinweber

**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 B8C1306 - EPA 5030 (soil)**

Matrix Spike (B8C1306-MS1)		Source: Y803162-01			Prepared: 03/13/2018 Analyzed: 03/13/2018					
Benzene	0.109	0.002	mg/kg	0.100	ND	109	71.8-126			
Toluene	0.103	0.002	"	0.100	ND	103	65.1-130			
Ethylbenzene	0.103	0.002	"	0.100	0.001	102	62.2-130			
m,p-Xylene	0.204	0.004	"	0.200	0.008	98.3	46.5-137			
o-Xylene	0.102	0.002	"	0.100	0.003	98.3	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	64		ug/kg	62.5		102	70-130			
Surrogate: Toluene-d8	62		"	62.5		98.5	70-130			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		99.9	70-130			

Origins Laboratory, Inc.



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Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: [none]  
Project: Leinweber

**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 B8C1306 - EPA 5030 (soil)**

Matrix Spike (B8C1306-MS2)		Source: Y803162-02			Prepared: 03/13/2018 Analyzed: 03/13/2018					
Benzene	0.090	0.002	mg/kg	0.100	ND	89.9	71.8-126			
Toluene	0.084	0.002	"	0.100	ND	84.0	65.1-130			
Ethylbenzene	0.086	0.002	"	0.100	ND	85.7	62.2-130			
m,p-Xylene	0.171	0.004	"	0.200	ND	85.3	46.5-137			
o-Xylene	0.084	0.002	"	0.100	ND	84.2	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	65		ug/kg	62.5		104	70-130			
Surrogate: Toluene-d8	61		"	62.5		97.8	70-130			
Surrogate: 4-Bromofluorobenzene	63		"	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.

Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: [none]  
Project: Leinweber

**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
<b>Batch B8C1306 - EPA 5030 (soil)</b>										
<b>Matrix Spike Dup (B8C1306-MSD1)</b>		<b>Source: Y803162-01</b>			Prepared: 03/13/2018 Analyzed: 03/13/2018					
Benzene	0.086	0.002	mg/kg	0.100	ND	85.6	71.8-126	24.0	11.3	QR-02
Toluene	0.080	0.002	"	0.100	ND	79.7	65.1-130	25.2	15.4	QR-02
Ethylbenzene	0.078	0.002	"	0.100	0.001	76.7	62.2-130	27.3	19.6	QR-02
m,p-Xylene	0.157	0.004	"	0.200	0.008	74.4	46.5-137	26.5	19.2	QR-02
o-Xylene	0.077	0.002	"	0.100	0.003	73.9	54.2-134	27.2	17.9	QR-02
Surrogate: 1,2-Dichloroethane-d4	67		ug/kg	62.5		107	70-130			
Surrogate: Toluene-d8	61		"	62.5		98.4	70-130			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		98.9	70-130			

Origins Laboratory, Inc.



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Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: [none]  
Project: Leinweber

**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 B8C1306 - EPA 5030 (soil)

Matrix Spike Dup (B8C1306-MSD2)		Source: Y803162-02			Prepared: 03/13/2018 Analyzed: 03/13/2018					
Benzene	0.102	0.002	mg/kg	0.100	ND	102	71.8-126	12.5	11.3	QR-02
Toluene	0.096	0.002	"	0.100	ND	96.4	65.1-130	13.7	15.4	
Ethylbenzene	0.106	0.002	"	0.100	ND	106	62.2-130	21.5	19.6	QR-02
m,p-Xylene	0.216	0.004	"	0.200	ND	108	46.5-137	23.5	19.2	QR-02
o-Xylene	0.103	0.002	"	0.100	ND	103	54.2-134	20.4	17.9	QR-02

Origins Laboratory, Inc.



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Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: [none]  
Project: Leinweber

**Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Extractable Petroleum Hydrocarbons by 8015C - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B8C1307 - EPA 3550B**

**Blank (B8C1307-BLK1)**

Prepared: 03/13/2018 Analyzed: 03/13/2018

Gasoline (C6-C10)	ND	50.0	mg/kg							U
Diesel (C10-C28)	ND	50.0	"							U
Residual Range Organics (C28-C40)	ND	200	"							U

Surrogate: o-Terphenyl

43.0

"

50.0

86.1

65-146

**Blank (B8C1307-BLK2)**

Prepared: 03/13/2018 Analyzed: 03/13/2018

Gasoline (C6-C10)	ND	50.0	mg/kg							U
Diesel (C10-C28)	ND	50.0	"							U
Residual Range Organics (C28-C40)	ND	200	"							U

Surrogate: o-Terphenyl

46.8

"

50.0

93.5

65-146

**LCS (B8C1307-BS1)**

Prepared: 03/13/2018 Analyzed: 03/13/2018

Gasoline (C6-C10)	894	50.0	mg/kg	1000		89.4	66.7-119			
Diesel (C10-C28)	1230	50.0	"	1000		123	70.1-127			
Residual Range Organics (C28-C40)	1430	200	"	1000		143	54.5-139			QM-11

Surrogate: o-Terphenyl

59.4

"

50.0

119

65-146

**LCS (B8C1307-BS2)**

Prepared: 03/13/2018 Analyzed: 03/13/2018

Gasoline (C6-C10)	938	50.0	mg/kg	1000		93.8	66.7-119			
Diesel (C10-C28)	1110	50.0	"	1000		111	70.1-127			
Residual Range Organics (C28-C40)	1420	200	"	1000		142	54.5-139			QM-11

Surrogate: o-Terphenyl

55.4

"

50.0

111

65-146

Origins Laboratory, Inc.



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Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: [none]  
Project: Leinweber

## Extractable Petroleum Hydrocarbons by 8015C - Quality Control Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B8C1307 - EPA 3550B</b>										
<b>Matrix Spike (B8C1307-MS1)</b>		<b>Source: Y803136-01</b>			Prepared: 03/13/2018 Analyzed: 03/13/2018					
Gasoline (C6-C10)	879	50.0	mg/kg	1000	ND	87.9	56.4-132			
Diesel (C10-C28)	1200	50.0	"	1000	33.0	117	57.4-138			
Residual Range Organics (C28-C40)	1510	200	"	1000	113	140	47.7-129			QM-07
Surrogate: o-Terphenyl	56.1		"	50.0		112	65-146			
<b>Matrix Spike (B8C1307-MS2)</b>		<b>Source: Y803136-02</b>			Prepared: 03/13/2018 Analyzed: 03/13/2018					
Gasoline (C6-C10)	876	50.0	mg/kg	1000	ND	87.6	56.4-132			
Diesel (C10-C28)	1130	50.0	"	1000	27.4	110	57.4-138			
Residual Range Organics (C28-C40)	1360	200	"	1000	92.7	127	47.7-129			
Surrogate: o-Terphenyl	54.7		"	50.0		109	65-146			
<b>Matrix Spike Dup (B8C1307-MSD1)</b>		<b>Source: Y803136-01</b>			Prepared: 03/13/2018 Analyzed: 03/13/2018					
Gasoline (C6-C10)	844	50.0	mg/kg	1000	ND	84.4	56.4-132	4.08	22	
Diesel (C10-C28)	1110	50.0	"	1000	33.0	108	57.4-138	8.02	18.3	
Residual Range Organics (C28-C40)	1360	200	"	1000	113	125	47.7-129	10.3	30.1	
Surrogate: o-Terphenyl	53.0		"	50.0		106	65-146			
<b>Matrix Spike Dup (B8C1307-MSD2)</b>		<b>Source: Y803136-02</b>			Prepared: 03/13/2018 Analyzed: 03/13/2018					
Gasoline (C6-C10)	898	50.0	mg/kg	1000	ND	89.8	56.4-132	2.50	22	
Diesel (C10-C28)	1170	50.0	"	1000	27.4	114	57.4-138	3.78	18.3	
Residual Range Organics (C28-C40)	1290	200	"	1000	92.7	120	47.7-129	5.51	30.1	
Surrogate: o-Terphenyl	55.7		"	50.0		111	65-146			
<b>Batch B8C1402 - EPA 3550B</b>										
<b>Blank (B8C1402-BLK1)</b>		Prepared: 03/14/2018 Analyzed: 03/14/2018								
Gasoline (C6-C10)	ND	50.0	mg/kg							U
Diesel (C10-C28)	ND	50.0	"							U

Origins Laboratory, Inc.



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Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: [none]  
Project: Leinweber

## Extractable Petroleum Hydrocarbons by 8015C - Quality Control Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B8C1402 - EPA 3550B</b>										
<b>Blank (B8C1402-BLK1)</b>					Prepared: 03/14/2018 Analyzed: 03/14/2018					
Residual Range Organics (C28-C40)	ND	200	"							U
Surrogate: o-Terphenyl	44.0		"	50.0		88.0	65-146			
<b>LCS (B8C1402-BS1)</b>					Prepared: 03/14/2018 Analyzed: 03/14/2018					
Gasoline (C6-C10)	825	50.0	mg/kg	1000		82.5	66.7-119			
Diesel (C10-C28)	1090	50.0	"	1000		109	70.1-127			
Residual Range Organics (C28-C40)	1230	200	"	1000		123	54.5-139			
Surrogate: o-Terphenyl	49.4		"	50.0		98.7	65-146			
<b>Matrix Spike (B8C1402-MS1)</b>					<b>Source: Y803228-14</b>		Prepared: 03/14/2018 Analyzed: 03/14/2018			
Gasoline (C6-C10)	838	50.0	mg/kg	1000	ND	83.8	56.4-132			
Diesel (C10-C28)	1140	50.0	"	1000	53.1	108	57.4-138			
Residual Range Organics (C28-C40)	1240	200	"	1000	29.6	121	47.7-129			
Surrogate: o-Terphenyl	51.5		"	50.0		103	65-146			
<b>Matrix Spike Dup (B8C1402-MSD1)</b>					<b>Source: Y803228-14</b>		Prepared: 03/14/2018 Analyzed: 03/14/2018			
Gasoline (C6-C10)	845	50.0	mg/kg	1000	ND	84.5	56.4-132	0.800	22	
Diesel (C10-C28)	1130	50.0	"	1000	53.1	108	57.4-138	0.316	18.3	
Residual Range Organics (C28-C40)	1190	200	"	1000	29.6	116	47.7-129	3.46	30.1	
Surrogate: o-Terphenyl	51.7		"	50.0		103	65-146			

Origins Laboratory, Inc.



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Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: [none]  
Project: Leinweber

## Classical Chemistry Parameters - Quality Control Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B8C1310 - NO PREP</b>										
<b>Duplicate (B8C1310-DUP1)</b>		<b>Source: Y803201-02</b>			Prepared: 03/13/2018 Analyzed: 03/13/2018					
pH	8.86		pH Units		8.73			1.48	25	
<b>Batch B8C1311 - NO PREP</b>										
<b>Blank (B8C1311-BLK1)</b>		Prepared: 03/13/2018 Analyzed: 03/13/2018								
Specific Conductance (EC)	0.00310		mmhos/cm							
<b>Duplicate (B8C1311-DUP1)</b>		<b>Source: Y803201-02</b>			Prepared: 03/13/2018 Analyzed: 03/13/2018					
Specific Conductance (EC)	0.122		mmhos/cm		0.103			17.2	25	

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Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: [none]  
Project: Leinweber

## Notes and Definitions

- U Sample is Non-Detect.
- S-04 The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
- 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.
- QM-11 Spike recovery was outside acceptance limits for LCS, however samples are non-detect for this compound.
- 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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March 20, 2018

**Quandary Consultants**

**Asher Weinberg**

**2252 Emerson St.**

**Denver**

**CO 80205**

**Project Name - Leinweber**

**Project Number - APC035**

Attached are your analytical results for Leinweber received by Origins Laboratory, Inc. March 19, 2018. This project is associated with Origins project number Y803298-01.

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

Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: APC035  
Project: Leinweber

### CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS16 @ 2ft	Y803298-01	Soil	March 19, 2018 12:25	03/19/2018 14:25
SS17 @ 5ft	Y803298-02	Soil	March 19, 2018 12:15	03/19/2018 14:25
SS18 @ 5ft	Y803298-03	Soil	March 19, 2018 12:20	03/19/2018 14:25
SS19 @ 5ft	Y803298-04	Soil	March 19, 2018 12:30	03/19/2018 14:25
SS20 @ 5ft	Y803298-05	Soil	March 19, 2018 12:35	03/19/2018 14:25
SS21 @ 5ft	Y803298-06	Soil	March 19, 2018 12:40	03/19/2018 14:25

Origins Laboratory, Inc.



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Asher Weinberg  
Project Number: APC035  
Project: Leinweber

# ORIGINS

LABORATORY, INC

Y83299

www.originslaboratory.com

page of

Client: Quandary Consultants

Address: 1009 Grant St.

Denver, CO 80203

Telephone Number: 770 757 4740

Email Address: awenbery@quandaryconsultants.com

Project Manager: Arthur Wenbery

Project Name: Leinwucher

Project Number: APC035

Samples Collected By: 3/19/10

for Taylor Koenig APC

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative				Matrix			Analysis				Sample Instructions	
				Unpreserved	HCl	HNO <sub>3</sub>	Other	Groundwater	Soil	Air Summa #	Other	BTEX	TPH	EC		PH
SS16 @ 2ft	3/19/10	12:25	1	X					X				X			1
SS17 @ 5ft	3/19/10	12:15	1													2
SS18 @ 5ft	3/19/10	12:20	1													3
SS19 @ 5ft	3/19/10	12:30	1													4
SS20 @ 5ft	3/19/10	12:35	1													5
SS21 @ 5ft	3/19/10	12:40	1													6
																7
																8
																9
																10
Relinquished By: <u>Carol Wootli</u>	Date: <u>3/19/10</u>	Time: <u>2:25</u>		Received By: <u>[Signature]</u>				Date: <u>3/19/10</u>	Time: <u>14:25</u>	Turnaround Time: Same Day <input checked="" type="checkbox"/> 24 Hr <input type="checkbox"/>						
Relinquished By:	Date:	Time:		Received By:				Date:	Time:	48 Hr <input type="checkbox"/> 72 Hr <input type="checkbox"/> Standard <input type="checkbox"/>						

1725 Elk Place

Denver, CO 80211

Phone: 303.433.1322

Fax: 303.265.9645

Temp Received: 1.0°

Date Results Needed

Origins Laboratory, Inc.

Jeff Pellgrini

*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.*



Quandary Consultants

2252 Emerson St.

Denver CO 80205

Asher Weinberg

Project Number: APC035

Project: Leinweber

Origins Laboratory

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

### Sample Receipt Checklist

Origins Work Order: Y803298

Client: Quandary Consultants

Client Project ID: Leinweber

Checklist Completed by: SG

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

Date/time completed: 3/19/18

Airbill #: N/A

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

Cooler Number/Temperature: 1 / 1.2 °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"/>	<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 <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are short holding time analytes or samples with HTs due within 48 hours present <sup>(1)</sup> ?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Is a chain-of-custody (COC) present and filled out completely <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client with date and time recorded <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace (> ¼ inch bubble) present? <b>If yes, contact client and note in narrative.</b>	<input type="checkbox"/>	<input type="checkbox"/>	<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 type="checkbox"/>	<input checked="" type="checkbox"/>	<input 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)

3/19/18  
Date/Time Reviewed

Origins Laboratory, Inc.

*Jefe Pellegrini*

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Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: APC035  
Project: Leinweber

**SS16 @ 2ft****3/19/2018 12:25:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y803298-01 (Soil)****BTEX by EPA 8260C**

Benzene	ND	0.002	mg/kg	1	B8C1903	03/19/2018	03/19/2018	U
Toluene	ND	0.002	"	"	"	"	"	U
Ethylbenzene	ND	0.002	"	"	"	"	"	U
Xylenes, total	ND	0.002	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	122 %	70-130			"	"	"
Surrogate: Toluene-d8	97.2 %	70-130			"	"	"
Surrogate: 4-Bromofluorobenzene	101 %	70-130			"	"	"

**pH in Soil by EPA 9045D**

pH	6.85		pH Units	1	B8C1905	03/19/2018	03/19/2018
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**Specific Conductance by Modified 9050A**

Specific Conductance (EC)	0.111		mmhos/cm	"	B8C1906	"	"
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**TPH-Carbon Chain by EPA Method 8015C**

Gasoline (C6-C10)	ND	25.0	mg/kg	1	B8C1904	03/19/2018	03/19/2018	U
Diesel (C10-C28)	ND	25.0	"	"	"	"	"	U

Surrogate: o-Terphenyl	81.0 %	65-146			"	"	"
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2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: APC035  
Project: Leinweber

**SS17 @ 5ft****3/19/2018 12:15:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y803298-02 (Soil)****BTEX by EPA 8260C**

Benzene	ND	0.050	mg/kg	25	B8C1903	03/19/2018	03/19/2018	U
Toluene	ND	0.050	"	"	"	"	"	U
Ethylbenzene	ND	0.050	"	"	"	"	"	U
Xylenes, total	ND	0.050	"	"	"	"	"	U

*Surrogate: 1,2-Dichloroethane-d4*

112 % 70-130

"

"

"

*Surrogate: Toluene-d8*

96.7 % 70-130

"

"

"

*Surrogate: 4-Bromofluorobenzene*

95.9 % 70-130

"

"

"

**TPH-Carbon Chain by EPA Method 8015C**

Gasoline (C6-C10)	ND	25.0	mg/kg	1	B8C1904	03/19/2018	03/19/2018	U
Diesel (C10-C28)	ND	25.0	"	"	"	"	"	U

*Surrogate: o-Terphenyl*

81.9 % 65-146

"

"

"

Origins Laboratory, Inc.



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Denver CO 80205

Asher Weinberg  
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Project: Leinweber

**SS18 @ 5ft****3/19/2018 12:20:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y803298-03 (Soil)****BTEX by EPA 8260C**

Benzene	ND	0.050	mg/kg	25	B8C1903	03/19/2018	03/20/2018	U
Toluene	ND	0.050	"	"	"	"	"	U
Ethylbenzene	ND	0.050	"	"	"	"	"	U
Xylenes, total	ND	0.050	"	"	"	"	"	U

*Surrogate: 1,2-Dichloroethane-d4*

108 % 70-130

"

"

"

*Surrogate: Toluene-d8*

98.5 % 70-130

"

"

"

*Surrogate: 4-Bromofluorobenzene*

98.1 % 70-130

"

"

"

**TPH-Carbon Chain by EPA Method 8015C**

Gasoline (C6-C10)	ND	25.0	mg/kg	1	B8C1904	03/19/2018	03/19/2018	U
Diesel (C10-C28)	ND	25.0	"	"	"	"	"	U

*Surrogate: o-Terphenyl*

86.4 % 65-146

"

"

"

Origins Laboratory, Inc.



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Project: Leinweber

SS19 @ 5ft

3/19/2018 12:30:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.  
Y803298-04 (Soil)

**BTEX by EPA 8260C**

Benzene	ND	0.002	mg/kg	1	B8C1903	03/19/2018	03/20/2018	U
Toluene	ND	0.002	"	"	"	"	"	U
Ethylbenzene	<b>0.002</b>	0.002	"	"	"	"	"	
Xylenes, total	ND	0.002	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	120 %	70-130			"	"	"	
Surrogate: Toluene-d8	95.7 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	98.7 %	70-130			"	"	"	

**TPH-Carbon Chain by EPA Method 8015C**

Gasoline (C6-C10)	ND	25.0	mg/kg	1	B8C1904	03/19/2018	03/19/2018	U
Diesel (C10-C28)	ND	25.0	"	"	"	"	"	U

Surrogate: o-Terphenyl	98.4 %	65-146			"	"	"	
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Origins Laboratory, Inc.



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Denver CO 80205

Asher Weinberg  
Project Number: APC035  
Project: Leinweber

## SS20 @ 5ft

3/19/2018 12:35:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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## Origins Laboratory, Inc. Y803298-05 (Soil)

### BTEX by EPA 8260C

Benzene	ND	0.002	mg/kg	1	B8C1903	03/19/2018	03/20/2018	U
Toluene	ND	0.002	"	"	"	"	"	U
Ethylbenzene	ND	0.002	"	"	"	"	"	U
Xylenes, total	ND	0.002	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	121 %	70-130			"	"	"	
Surrogate: Toluene-d8	96.4 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	99.0 %	70-130			"	"	"	

### TPH-Carbon Chain by EPA Method 8015C

Gasoline (C6-C10)	ND	25.0	mg/kg	1	B8C1904	03/19/2018	03/19/2018	U
Diesel (C10-C28)	ND	25.0	"	"	"	"	"	U

Surrogate: o-Terphenyl	88.6 %	65-146			"	"	"	
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Origins Laboratory, Inc.



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Denver CO 80205

Asher Weinberg  
Project Number: APC035  
Project: Leinweber

## SS21 @ 5ft

3/19/2018 12:40:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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## Origins Laboratory, Inc. Y803298-06 (Soil)

### BTEX by EPA 8260C

Benzene	ND	0.002	mg/kg	1	B8C1903	03/19/2018	03/20/2018	U
Toluene	ND	0.002	"	"	"	"	"	U
Ethylbenzene	ND	0.002	"	"	"	"	"	U
Xylenes, total	ND	0.002	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	123 %	70-130			"	"	"	
Surrogate: Toluene-d8	95.9 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	99.0 %	70-130			"	"	"	

### TPH-Carbon Chain by EPA Method 8015C

Gasoline (C6-C10)	ND	25.0	mg/kg	1	B8C1904	03/19/2018	03/19/2018	U
Diesel (C10-C28)	ND	25.0	"	"	"	"	"	U

Surrogate: o-Terphenyl	47.0 %	65-146			"	"	"	S-DUP
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2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: APC035  
Project: Leinweber

**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
<b>Batch B8C1903 - EPA 5030 (soil)</b>										
<b>Blank (B8C1903-BLK1)</b>					Prepared: 03/19/2018 Analyzed: 03/19/2018					
Benzene	ND	0.002	mg/kg							U
Toluene	ND	0.002	"							U
Ethylbenzene	ND	0.002	"							U
Xylenes, total	ND	0.002	"							U
Surrogate: 1,2-Dichloroethane-d4	76		ug/kg	62.5		122	70-130			
Surrogate: Toluene-d8	59		"	62.5		94.7	70-130			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		99.2	70-130			

Origins Laboratory, Inc.



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Denver CO 80205

Asher Weinberg  
Project Number: APC035  
Project: Leinweber

**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
<b>Batch B8C1903 - EPA 5030 (soil)</b>										
<b>LCS (B8C1903-BS1)</b>					Prepared: 03/19/2018 Analyzed: 03/19/2018					
Benzene	0.086	0.002	mg/kg	0.100		86.1	77.1-124			
Toluene	0.078	0.002	"	0.100		77.6	74.5-128			
Ethylbenzene	0.077	0.002	"	0.100		77.4	66.4-127			
m,p-Xylene	0.154	0.004	"	0.200		76.8	76.6-124			
o-Xylene	0.074	0.002	"	0.100		74.4	76.6-124			QM-11
Surrogate: 1,2-Dichloroethane-d4	71		ug/kg	62.5		114	70-130			
Surrogate: Toluene-d8	60		"	62.5		95.9	70-130			
Surrogate: 4-Bromofluorobenzene	61		"	62.5		97.1	70-130			

Origins Laboratory, Inc.



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2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: APC035  
Project: Leinweber

**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 B8C1903 - EPA 5030 (soil)**

Matrix Spike (B8C1903-MS1)		Source: Y803298-01			Prepared: 03/19/2018 Analyzed: 03/19/2018					
Benzene	0.083	0.002	mg/kg	0.100	ND	83.4	71.8-126			
Toluene	0.074	0.002	"	0.100	ND	74.1	65.1-130			
Ethylbenzene	0.078	0.002	"	0.100	ND	77.6	62.2-130			
m,p-Xylene	0.155	0.004	"	0.200	ND	77.3	46.5-137			
o-Xylene	0.075	0.002	"	0.100	0.0003	75.3	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	70		ug/kg	62.5		113	70-130			
Surrogate: Toluene-d8	59		"	62.5		94.9	70-130			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		99.0	70-130			

Origins Laboratory, Inc.



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Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: APC035  
Project: Leinweber

**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
<b>Batch B8C1903 - EPA 5030 (soil)</b>										
<b>Matrix Spike Dup (B8C1903-MSD1)</b>		<b>Source: Y803298-01</b>			Prepared: 03/19/2018 Analyzed: 03/19/2018					
Benzene	0.084	0.002	mg/kg	0.100	ND	83.6	71.8-126	0.239	11.3	
Toluene	0.077	0.002	"	0.100	ND	77.2	65.1-130	4.10	15.4	
Ethylbenzene	0.078	0.002	"	0.100	ND	78.2	62.2-130	0.744	19.6	
m,p-Xylene	0.152	0.004	"	0.200	ND	76.1	46.5-137	1.63	19.2	
o-Xylene	0.074	0.002	"	0.100	0.0003	74.2	54.2-134	1.45	17.9	
Surrogate: 1,2-Dichloroethane-d4	69		ug/kg	62.5		110	70-130			
Surrogate: Toluene-d8	60		"	62.5		96.5	70-130			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		99.4	70-130			

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Quandary Consultants  
2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: APC035  
Project: Leinweber

**Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Extractable Petroleum Hydrocarbons by 8015C - Quality Control**  
**Origins Laboratory, Inc.**

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

**Batch B8C1904 - EPA 3550B**

**Blank (B8C1904-BLK1)**

Prepared: 03/19/2018 Analyzed: 03/19/2018

Gasoline (C6-C10)	ND	50.0	mg/kg							U
Diesel (C10-C28)	ND	50.0	"							U
Residual Range Organics (C28-C40)	ND	200	"							U

Surrogate: o-Terphenyl

61.0

"

50.0

122

65-146

**LCS (B8C1904-BS1)**

Prepared: 03/19/2018 Analyzed: 03/19/2018

Gasoline (C6-C10)	999	50.0	mg/kg	1000		99.9	66.7-119			
Diesel (C10-C28)	943	50.0	"	1000		94.3	70.1-127			
Residual Range Organics (C28-C40)	959	200	"	1000		95.9	54.5-139			

Surrogate: o-Terphenyl

46.8

"

50.0

93.6

65-146

**Matrix Spike (B8C1904-MS1)**

Source: Y803298-01

Prepared: 03/19/2018 Analyzed: 03/19/2018

Gasoline (C6-C10)	979	50.0	mg/kg	1000	ND	97.9	56.4-132			
Diesel (C10-C28)	953	50.0	"	1000	ND	95.3	57.4-138			
Residual Range Organics (C28-C40)	907	200	"	1000	ND	90.7	47.7-129			

Surrogate: o-Terphenyl

46.8

"

50.0

93.5

65-146

**Matrix Spike Dup (B8C1904-MSD1)**

Source: Y803298-01

Prepared: 03/19/2018 Analyzed: 03/19/2018

Gasoline (C6-C10)	984	50.0	mg/kg	1000	ND	98.4	56.4-132	0.449	22	
Diesel (C10-C28)	970	50.0	"	1000	ND	97.0	57.4-138	1.71	18.3	
Residual Range Organics (C28-C40)	925	200	"	1000	ND	92.5	47.7-129	1.95	30.1	

Surrogate: o-Terphenyl

46.4

"

50.0

92.8

65-146

Origins Laboratory, Inc.



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2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: APC035  
Project: Leinweber

## Classical Chemistry Parameters - Quality Control Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B8C1905 - NO PREP</b>										
<b>Duplicate (B8C1905-DUP1)</b>	<b>Source: Y803298-01</b>				Prepared: 03/19/2018 Analyzed: 03/19/2018					
pH	6.78		pH Units		6.85			1.03	25	
<b>Batch B8C1906 - NO PREP</b>										
<b>Blank (B8C1906-BLK1)</b>					Prepared: 03/19/2018 Analyzed: 03/19/2018					
Specific Conductance (EC)	0.00240		mmhos/cm							
<b>Duplicate (B8C1906-DUP1)</b>	<b>Source: Y803298-01</b>				Prepared: 03/19/2018 Analyzed: 03/19/2018					
Specific Conductance (EC)	0.107		mmhos/cm		0.111			4.13	25	

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2252 Emerson St.  
Denver CO 80205

Asher Weinberg  
Project Number: APC035  
Project: Leinweber

### Notes and Definitions

U Sample is Non-Detect.

S-DUP Duplicate analysis confirmed surrogate failure due to matrix effects.

QM-11 Spike recovery was outside acceptance limits for LCS, however samples are non-detect for this compound.

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported at a wet weight basis.

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