



June 27, 2019

Wayne Wise

John Nussbaumer

PO Box 5116

Englewood CO 80155

Project Name - CO State 32-12

Project Number - 6199

Attached are your analytical results for CO State 32-12 received by Origins Laboratory, Inc. June 19, 2019. This project is associated with Origins project number Y906337-01.

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  
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Wayne Wise

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John Nussbaumer

Project Number: 6199

Project: CO State 32-12

## CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SW-1	Y906337-01	Soil	June 19, 2019 10:30	06/19/2019 13:18
SW-2	Y906337-02	Soil	June 19, 2019 9:30	06/19/2019 13:18

Per client request, the TPH was rerun with silica gel treatment.

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Project Number: 6199

Project: CO State 32-12

Origins Laboratory

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

## Sample Receipt Checklist

Origins Work Order: Y906337

Client: Wayne Wise

Client Project ID: CO State 32-12

Checklist Completed by: JG

Shipped Via: HD

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

Date/time completed: 6/19/19

Airbill #: N/A

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

Cooler Number/Temperature: 1 2.7 °C        °C        °C        °C (Describe)

Thermometer ID: TC03

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? 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) WJ

Date/Time Reviewed 6/20/19

Origins Laboratory, Inc.

*Jefe Pellegrini*

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John Nussbaumer  
Project Number: 6199  
Project: CO State 32-12

## SW-1

6/19/2019 10:30:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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## Origins Laboratory, Inc. Y906337-01 (Soil)

### BTEX by EPA 8260D

Benzene	ND	0.002	mg/kg	1	B9F2003	KDK	06/20/2019	06/20/2019	U
Toluene	ND	0.002	"	"	"	KDK	"	"	U
Ethylbenzene	ND	0.002	"	"	"	KDK	"	"	U
Xylenes, total	ND	0.002	"	"	"	KDK	"	"	U

Surrogate: 1,2-Dichloroethane-d4	131 %	70-130			"	"	"	S-07
Surrogate: Toluene-d8	96.0 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	100 %	70-130			"	"	"	

### Metals (Saturated Paste Prep)

Calcium	6.85	me/L	1	'[none]'		06/20/2019	06/21/2019
Magnesium	2.62	"	"	"		"	"
Sodium	10.34	"	"	"		"	"

### SAR by 20B Saturated Paste

SAR	4.75		1	'[none]'		"	06/21/2019
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### TPH-Carbon Chain by EPA 8015D Silica Gel

Gasoline (C6-C10)	ND	50.0	mg/kg	1	B9F2605	KDK	06/26/2019	06/26/2019	U
Diesel (C10-C28)	ND	50.0	"	"	"	KDK	"	"	U
Residual Range Organics (C28-C40)	ND	200	"	"	"	KDK	"	"	U

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## SW-2

6/19/2019 9:30:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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## Origins Laboratory, Inc. Y906337-02 (Soil)

### BTEX by EPA 8260D

Benzene	ND	0.002	mg/kg	1	B9F2003	KDK	06/20/2019	06/21/2019	U
Toluene	ND	0.002	"	"	"	KDK	"	"	U
Ethylbenzene	ND	0.002	"	"	"	KDK	"	"	U
Xylenes, total	ND	0.002	"	"	"	KDK	"	"	U

Surrogate: 1,2-Dichloroethane-d4	117 %	70-130			"	"	"
Surrogate: Toluene-d8	100 %	70-130			"	"	"
Surrogate: 4-Bromofluorobenzene	123 %	70-130			"	"	"

### Metals (Saturated Paste Prep)

Calcium	5.78	me/L	1	'[none]'	06/20/2019	06/21/2019
Magnesium	1.36	"	"	"	"	"
Sodium	13.59	"	"	"	"	"

### SAR by 20B Saturated Paste

SAR	7.19	1	'[none]'	"	06/21/2019
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### TPH-Carbon Chain by EPA 8015D Silica Gel

Gasoline (C6-C10)	ND	50.0	mg/kg	1	B9F2605	KDK	06/26/2019	06/26/2019	U
Diesel (C10-C28)	ND	50.0	"	"	"	KDK	"	"	U
Residual Range Organics (C28-C40)	ND	200	"	"	"	KDK	"	"	U

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B9F2003 - EPA 5030 (soil)</b>										
<b>Blank (B9F2003-BLK1)</b>					Prepared: 06/20/2019 Analyzed: 06/20/2019					
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	0.14		"	0.125	115		70-130			
Surrogate: Toluene-d8	0.12		"	0.125	98.3		70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125	99.4		70-130			

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**Volatile Organic Compounds by GC/MS SW846 8260D - 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 B9F2003 - EPA 5030 (soil)**

**Blank (B9F2003-BLK2)**

Prepared: 06/20/2019 Analyzed: 06/20/2019

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	0.13		"	0.125	102		70-130			
Surrogate: Toluene-d8	0.13		"	0.125	101		70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125	99.9		70-130			

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B9F2003 - EPA 5030 (soil)

**LCS (B9F2003-BS1)**

Prepared: 06/20/2019 Analyzed: 06/20/2019

Benzene	0.096	0.002	mg/kg	0.100		96.2	70-130			
Toluene	0.097	0.002	"	0.100		97.4	70-130			
Ethylbenzene	0.101	0.002	"	0.100		101	70-130			
m,p-Xylene	0.203	0.004	"	0.200		102	70-130			
o-Xylene	0.099	0.002	"	0.100		99.4	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.12		"	0.125		98.3	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		100	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		99.4	70-130			

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**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B9F2003 - EPA 5030 (soil)**

**LCS (B9F2003-BS2)**

Prepared: 06/20/2019 Analyzed: 06/20/2019

Benzene	0.104	0.002	mg/kg	0.100		104	70-130			
Toluene	0.111	0.002	"	0.100		111	70-130			
Ethylbenzene	0.111	0.002	"	0.100		111	70-130			
m,p-Xylene	0.218	0.004	"	0.200		109	70-130			
o-Xylene	0.105	0.002	"	0.100		105	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.12		"	0.125		97.0	70-130			
Surrogate: Toluene-d8	0.13		"	0.125		103	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		102	70-130			

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**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B9F2003 - EPA 5030 (soil)**

Matrix Spike (B9F2003-MS1)		Source: Y906337-01			Prepared: 06/20/2019 Analyzed: 06/20/2019					
Benzene	0.075	0.002	mg/kg	0.100	ND	75.1	70-130			
Toluene	0.077	0.002	"	0.100	ND	77.5	70-130			
Ethylbenzene	0.074	0.002	"	0.100	ND	74.5	70-130			
m,p-Xylene	0.150	0.004	"	0.200	ND	75.1	70-130			
o-Xylene	0.076	0.002	"	0.100	ND	76.2	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.14		"	0.125		108	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		99.3	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		105	70-130			

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B9F2003 - EPA 5030 (soil)**

Matrix Spike (B9F2003-MS2)		Source: Y906355-03			Prepared: 06/20/2019 Analyzed: 06/20/2019					
Benzene	0.073	0.002	mg/kg	0.100	ND	73.2	70-130			
Toluene	0.085	0.002	"	0.100	ND	84.7	70-130			
Ethylbenzene	0.105	0.002	"	0.100	ND	105	70-130			
m,p-Xylene	0.209	0.004	"	0.200	ND	104	70-130			
o-Xylene	0.096	0.002	"	0.100	ND	96.3	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.091		"	0.125		73.0	70-130			
Surrogate: Toluene-d8	0.14		"	0.125		111	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		107	70-130			

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B9F2003 - EPA 5030 (soil)</b>										
<b>Matrix Spike Dup (B9F2003-MSD1)</b>			<b>Source: Y906337-01</b>		Prepared: 06/20/2019 Analyzed: 06/20/2019					
Benzene	0.074	0.002	mg/kg	0.100	ND	74.2	70-130	1.21	20	
Toluene	0.069	0.002	"	0.100	ND	69.3	70-130	11.2	20	QM-07
Ethylbenzene	0.064	0.002	"	0.100	ND	63.8	70-130	15.5	20	QM-07
m,p-Xylene	0.128	0.004	"	0.200	ND	63.9	70-130	16.1	20	QM-07
o-Xylene	0.067	0.002	"	0.100	ND	66.6	70-130	13.4	20	QM-07
Surrogate: 1,2-Dichloroethane-d4	0.15		"	0.125		123	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		93.3	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		101	70-130			

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**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B9F2003 - EPA 5030 (soil)**

Matrix Spike Dup (B9F2003-MSD2)		Source: Y906355-03			Prepared: 06/20/2019 Analyzed: 06/20/2019					
Benzene	0.084	0.002	mg/kg	0.100	ND	83.7	70-130	13.4	20	
Toluene	0.084	0.002	"	0.100	ND	84.4	70-130	0.307	20	
Ethylbenzene	0.085	0.002	"	0.100	ND	85.5	70-130	20.3	20	QR-03
m,p-Xylene	0.174	0.004	"	0.200	ND	86.9	70-130	18.4	20	
o-Xylene	0.088	0.002	"	0.100	ND	87.6	70-130	9.47	20	
Surrogate: 1,2-Dichloroethane-d4	0.14		"	0.125		115	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		97.3	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		102	70-130			

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B9F2605 - EPA 3580 with Silica Gel Cleanup**

**Blank (B9F2605-BLK1)**

Prepared: 06/26/2019 Analyzed: 06/26/2019

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

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Jen Pellegrini For Noelle Doyle Mathis, President



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**Extractable Petroleum Hydrocarbons by 8015D - 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 B9F2605 - EPA 3580 with Silica Gel Cleanup**

**LCS (B9F2605-BS1)**

Prepared: 06/26/2019 Analyzed: 06/26/2019

Gasoline (C6-C10)	804	50.0	mg/kg	1000		80.4	70-130			
Diesel (C10-C28)	810	50.0	"	1000		81.0	70-130			
Residual Range Organics (C28-C40)	707	200	"	1000		70.7	70-130			

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**Extractable Petroleum Hydrocarbons by 8015D - 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 B9F2605 - EPA 3580 with Silica Gel Cleanup**

Matrix Spike (B9F2605-MS1)		Source: Y906337-01			Prepared: 06/26/2019 Analyzed: 06/26/2019					
Gasoline (C6-C10)	949	50.0	mg/kg	1000	39.5	91.0	70-130			
Diesel (C10-C28)	916	50.0	"	1000	15.4	90.0	70-130			
Residual Range Organics (C28-C40)	862	200	"	1000	33.7	82.8	70-130			

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B9F2605 - EPA 3580 with Silica Gel Cleanup**

Matrix Spike Dup (B9F2605-MSD1)		Source: Y906337-01			Prepared: 06/26/2019 Analyzed: 06/26/2019					
Gasoline (C6-C10)	843	50.0	mg/kg	1000	39.5	80.3	70-130	11.9	35	
Diesel (C10-C28)	788	50.0	"	1000	15.4	77.2	70-130	15.0	35	
Residual Range Organics (C28-C40)	781	200	"	1000	33.7	74.7	70-130	9.88	35	

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Project: CO State 32-12

### Notes and Definitions

U Sample is Non-Detect.

S-07 High surrogate in sample, however sample is non-detect. High surrogate indicates result values are biased high.

QR-03 The RPD value for the sample duplicate or MS/MSD was outside of QC acceptance limits due to matrix interference. QC batch accepted based on LCS and/or LCSD recovery and/or RPD values.

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.*