



January 23, 2020

Tasman Geosciences

Bob Cornez

6855 West 119th Avenue

Broomfield CO 80020

**Project Name - KMG - UPRR 21 Pan Am B#1**

**Project Number - 90058467**

Attached are your analytical results for KMG - UPRR 21 Pan Am B#1 received by Origins Laboratory, Inc. January 17, 2020. This project is associated with Origins project number Y001239-01.

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

Tasman Geosciences  
6855 West 119th Avenue  
Broomfield CO 80020

Bob Cornez  
Project Number: 90058467  
Project: KMG - UPRR 21 Pan Am B#1

## CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
B01@5.5'	Y001239-01	Soil	January 17, 2020 13:22	01/17/2020 16:15
N01@4'	Y001239-02	Soil	January 17, 2020 13:24	01/17/2020 16:15
S01@4'	Y001239-03	Soil	January 17, 2020 13:26	01/17/2020 16:15
E01@4'	Y001239-04	Soil	January 17, 2020 13:28	01/17/2020 16:15
W01@4'	Y001239-05	Soil	January 17, 2020 13:30	01/17/2020 16:15

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Y001239

page 1 of 1

**ORIGINS**  
LABORATORY, INC

Client: 0341 Tasman  
Address: 6855 W 119th Ave  
Telephone Number:  
Email Address: rcovine2@tasman-geo.com

Project Manager: Robert Cornez  
Project Name: UPRR 21 Pan Am B#1  
Project Number: 90058467  
Samples Collected By: DS

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative				Matrix			Analysis				Sample Instructions
				Unpreserved	HCl	HNO <sub>3</sub>	Other	Groundwater	Soil	Air Sample	Other	TPH Dist	BTEX + 2	PH	
B01@5.5'	11/17/20	13:22	2	X				X				X	X	X	1
N01@4'		13:24	1									X			2
S01@4'		13:26	1									X			3
E01@4'		13:28	1									X			4
W01@4'		13:30	1									X			5
B601@3"		14:00	1										X	X	6
															7
															8
															9
															10

  

Relinquished By:	Date:	Time:	Received By:	Date:	Time:	Turnaround Time:
AS	11/17/20	16:15	[Signature]	11-20	11:05	Same Day <input checked="" type="checkbox"/> 24 Hr <input type="checkbox"/> 48 Hr <input type="checkbox"/> 72 Hr <input type="checkbox"/> Standard <input checked="" type="checkbox"/> 1

Date Results Needed

11/9

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

Origins Laboratory, Inc.

*Jefe Pellegrini*

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Origins Laboratory

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

## Sample Receipt Checklist

Origins Work Order: Y001239

Client: Tasman

Client Project ID: UPRR 21 Pan Am B#1

Checklist Completed by: JG

Shipped Via: HD

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

Date/time completed: 1/17/2020

Airbill #: N/A

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

(Describe)

Cooler Number/Temperature: 1 / 4.9 °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? 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]

Date/Time Reviewed 1/17/20

Origins Laboratory, Inc.

Jefe Pellegrini

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Project Number: 90058467  
Project: KMG - UPRR 21 Pan Am B#1

B01@5.5'  
1/17/2020 1:22:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y001239-01 (Soil)**

**DRO/ORO by EPA 8015D**

Diesel (C10-C28)	ND	25.0	mg/kg	1	B0A1712	KDK	01/17/2020	01/18/2020	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	KDK	"	"	U

Surrogate: o-Terphenyl 102 % 50-150 " " "

**GBTEX + Naphthalene by EPA 8260D**

Gasoline Range Hydrocarbons	ND	5.00	mg/kg	25	B0A1711	KDK	01/17/2020	01/18/2020	U
Benzene	ND	0.050	"	"	"	KDK	"	"	U
Toluene	ND	0.050	"	"	"	KDK	"	"	U
Ethylbenzene	ND	0.050	"	"	"	KDK	"	"	U
Xylenes, total	ND	0.050	"	"	"	KDK	"	"	U
Naphthalene	ND	0.200	"	"	"	KDK	"	"	U

Surrogate: 1,2-Dichloroethane-d4 102 % 70-130 " " "  
Surrogate: Toluene-d8 98.9 % 70-130 " " "  
Surrogate: 4-Bromofluorobenzene 98.5 % 70-130 " " "

**Metals (Saturated Paste Prep)**

Calcium	1.96	me/L	1	[none]		01/20/2020	01/22/2020
Magnesium	1.08	"	"	"		"	"
Sodium	3.24	"	"	"		"	"

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B01@5.5'  
1/17/2020 1:22:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.  
Y001239-01 (Soil)

**pH in Soil by EPA 9045D**

pH	7.01		pH Units	1	B0A1708	KDK	01/17/2020	01/17/2020	
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**SAR by 20B Saturated Paste**

SAR	2.63			1	[none]		01/20/2020	01/22/2020	
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**Specific Conductance by Modified 9050A**

Specific Conductance (EC)	0.0904	0.00500	mmhos/cm	1	B0A1709	KDK	01/17/2020	01/17/2020	
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N01@4'

1/17/2020 1:24:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y001239-02 (Soil)**

**DRO/ORO by EPA 8015D**

Diesel (C10-C28)	ND	25.0	mg/kg	1	B0A1712	KDK	01/17/2020	01/18/2020	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	KDK	"	"	U

Surrogate: o-Terphenyl 116 % 50-150 " " "

**GBTEX + Naphthalene by EPA 8260D**

Gasoline Range Hydrocarbons	ND	5.00	mg/kg	25	B0A1711	KDK	01/17/2020	01/18/2020	U
Benzene	ND	0.050	"	"	"	KDK	"	"	U
Toluene	ND	0.050	"	"	"	KDK	"	"	U
Ethylbenzene	ND	0.050	"	"	"	KDK	"	"	U
Xylenes, total	ND	0.050	"	"	"	KDK	"	"	U
Naphthalene	ND	0.200	"	"	"	KDK	"	"	U

Surrogate: 1,2-Dichloroethane-d4 103 % 70-130 " " "  
Surrogate: Toluene-d8 99.0 % 70-130 " " "  
Surrogate: 4-Bromofluorobenzene 99.0 % 70-130 " " "

Origins Laboratory, Inc.



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S01@4'

1/17/2020 1:26:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y001239-03 (Soil)**

**DRO/ORO by EPA 8015D**

Diesel (C10-C28)	ND	25.0	mg/kg	1	B0A1712	KDK	01/17/2020	01/18/2020	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	KDK	"	"	U

Surrogate: o-Terphenyl 110 % 50-150 " " "

**GBTEX + Naphthalene by EPA 8260D**

Gasoline Range Hydrocarbons	ND	5.00	mg/kg	25	B0A1711	KDK	01/17/2020	01/18/2020	U
Benzene	ND	0.050	"	"	"	KDK	"	"	U
Toluene	ND	0.050	"	"	"	KDK	"	"	U
Ethylbenzene	ND	0.050	"	"	"	KDK	"	"	U
Xylenes, total	ND	0.050	"	"	"	KDK	"	"	U
Naphthalene	ND	0.200	"	"	"	KDK	"	"	U

Surrogate: 1,2-Dichloroethane-d4 103 % 70-130 " " "  
Surrogate: Toluene-d8 99.2 % 70-130 " " "  
Surrogate: 4-Bromofluorobenzene 98.7 % 70-130 " " "

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E01@4'

1/17/2020 1:28:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y001239-04 (Soil)**

**DRO/ORO by EPA 8015D**

Diesel (C10-C28)	ND	25.0	mg/kg	1	B0A1712	KDK	01/17/2020	01/18/2020	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	KDK	"	"	U

Surrogate: o-Terphenyl 96.3 % 50-150 " " "

**GBTEX + Naphthalene by EPA 8260D**

Gasoline Range Hydrocarbons	ND	5.00	mg/kg	25	B0A1711	KDK	01/17/2020	01/18/2020	U
Benzene	ND	0.050	"	"	"	KDK	"	"	U
Toluene	ND	0.050	"	"	"	KDK	"	"	U
Ethylbenzene	ND	0.050	"	"	"	KDK	"	"	U
Xylenes, total	ND	0.050	"	"	"	KDK	"	"	U
Naphthalene	ND	0.200	"	"	"	KDK	"	"	U

Surrogate: 1,2-Dichloroethane-d4 104 % 70-130 " " "  
Surrogate: Toluene-d8 99.2 % 70-130 " " "  
Surrogate: 4-Bromofluorobenzene 98.5 % 70-130 " " "

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Project: KMG - UPRR 21 Pan Am B#1

W01@4'

1/17/2020 1:30:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y001239-05 (Soil)**

**DRO/ORO by EPA 8015D**

Diesel (C10-C28)	ND	25.0	mg/kg	1	B0A1712	KDK	01/17/2020	01/18/2020	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	KDK	"	"	U

Surrogate: o-Terphenyl 113 % 50-150 " " "

**GBTEX + Naphthalene by EPA 8260D**

Gasoline Range Hydrocarbons	ND	5.00	mg/kg	25	B0A1711	KDK	01/17/2020	01/18/2020	U
Benzene	ND	0.050	"	"	"	KDK	"	"	U
Toluene	ND	0.050	"	"	"	KDK	"	"	U
Ethylbenzene	ND	0.050	"	"	"	KDK	"	"	U
Xylenes, total	ND	0.050	"	"	"	KDK	"	"	U
Naphthalene	ND	0.200	"	"	"	KDK	"	"	U

Surrogate: 1,2-Dichloroethane-d4 104 % 70-130 " " "

Surrogate: Toluene-d8 99.4 % 70-130 " " "

Surrogate: 4-Bromofluorobenzene 98.6 % 70-130 " " "

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Project Number: 90058467  
Project: KMG - UPRR 21 Pan Am B#1

**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 B0A1711 - EPA 5030 (soil)</b>										
<b>Blank (B0A1711-BLK1)</b>					Prepared: 01/17/2020 Analyzed: 01/17/2020					
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
Naphthalene	ND	0.008	"							U
Surrogate: 1,2-Dichloroethane-d4	0.13		"	0.125		105	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		98.2	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		99.3	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 B0A1711 - EPA 5030 (soil)</b>										
<b>LCS (B0A1711-BS1)</b>					Prepared: 01/17/2020 Analyzed: 01/17/2020					
Benzene	0.097	0.002	mg/kg	0.100		97.2	70-130			
Toluene	0.099	0.002	"	0.100		99.1	70-130			
Ethylbenzene	0.094	0.002	"	0.100		94.1	70-130			
m,p-Xylene	0.193	0.004	"	0.200		96.4	70-130			
o-Xylene	0.100	0.002	"	0.100		99.8	70-130			
Naphthalene	0.093	0.008	"	0.100		92.7	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.12		"	0.125		99.2	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		99.4	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		101	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 B0A1711 - EPA 5030 (soil)</b>										
<b>Matrix Spike (B0A1711-MS1)</b>		<b>Source: Y001238-01</b>			Prepared: 01/17/2020 Analyzed: 01/17/2020					
Benzene	0.094	0.002	mg/kg	0.100	ND	94.5	70-130			
Toluene	0.097	0.002	"	0.100	ND	96.6	70-130			
Ethylbenzene	0.093	0.002	"	0.100	ND	93.4	70-130			
m,p-Xylene	0.191	0.004	"	0.200	ND	95.5	70-130			
o-Xylene	0.098	0.002	"	0.100	ND	97.7	70-130			
Naphthalene	0.087	0.008	"	0.100	0.021	65.7	70-130			QM-07
Surrogate: 1,2-Dichloroethane-d4	0.13		"	0.125		100	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		99.2	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		100	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 B0A1711 - EPA 5030 (soil)</b>										
<b>Matrix Spike Dup (B0A1711-MSD1)</b>		<b>Source: Y001238-01</b>			Prepared: 01/17/2020 Analyzed: 01/17/2020					
Benzene	0.094	0.002	mg/kg	0.100	ND	94.1	70-130	0.382	20	
Toluene	0.097	0.002	"	0.100	ND	97.2	70-130	0.578	20	
Ethylbenzene	0.093	0.002	"	0.100	ND	93.2	70-130	0.193	20	
m,p-Xylene	0.192	0.004	"	0.200	ND	96.1	70-130	0.605	20	
o-Xylene	0.099	0.002	"	0.100	ND	98.7	70-130	1.04	20	
Naphthalene	0.090	0.008	"	0.100	0.021	68.7	70-130	3.38	20	QM-07
Surrogate: 1,2-Dichloroethane-d4	0.12		"	0.125		98.7	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		98.8	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		98.0	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
<b>Batch B0A1712 - EPA 3580</b>										
<b>Blank (B0A1712-BLK1)</b>					Prepared: 01/17/2020 Analyzed: 01/18/2020					
Diesel (C10-C28)	ND	25.0	mg/kg							U
Residual Range Organics (C28-C40)	ND	100	"							U
Surrogate: o-Terphenyl	29		"	25.0		115	50-150			

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Bob Cornez  
Project Number: 90058467  
Project: KMG - UPRR 21 Pan Am B#1

## 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
Batch B0A1712 - EPA 3580										
LCS (B0A1712-BS1)					Prepared: 01/17/2020 Analyzed: 01/18/2020					
Diesel (C10-C28)	1370	50.0	mg/kg	1000		137	70-130			QM-11
Residual Range Organics (C28-C40)	1330	200	"	1000		133	70-130			QM-11
Surrogate: o-Terphenyl	59		"	50.0		119	50-150			

Origins Laboratory, Inc.



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Tasman Geosciences  
6855 West 119th Avenue  
Broomfield CO 80020

Bob Cornez  
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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 B0A1712 - EPA 3580

Matrix Spike (B0A1712-MS1)		Source: Y001238-01			Prepared: 01/17/2020 Analyzed: 01/18/2020					
Diesel (C10-C28)	1330	50.0	mg/kg	1000	ND	133	70-130			QM-11
Residual Range Organics (C28-C40)	1340	200	"	1000	ND	134	70-130			QM-11
Surrogate: o-Terphenyl	59		"	50.0		117	50-150			

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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 B0A1712 - EPA 3580

Matrix Spike Dup (B0A1712-MSD1)		Source: Y001238-01			Prepared: 01/17/2020 Analyzed: 01/18/2020					
Diesel (C10-C28)	1440	50.0	mg/kg	1000	ND	144	70-130	8.08	35	QM-11
Residual Range Organics (C28-C40)	1380	200	"	1000	ND	138	70-130	3.12	35	QM-11
Surrogate: o-Terphenyl	61		"	50.0		123	50-150			

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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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## Classical Chemistry Parameters - 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 B0A1708 - NO PREP

<b>Duplicate (B0A1708-DUP1)</b>		<b>Source: Y001232-01</b>			Prepared: 01/17/2020 Analyzed: 01/17/2020					
pH	7.34		pH Units		7.08			3.61	25	

#### Batch B0A1709 - NO PREP

<b>Blank (B0A1709-BLK1)</b>		Prepared: 01/17/2020 Analyzed: 01/17/2020								
Specific Conductance (EC)	0.00210	0.00500	mmhos/cm							
<b>Duplicate (B0A1709-DUP1)</b>		<b>Source: Y001232-01</b>			Prepared: 01/17/2020 Analyzed: 01/17/2020					
Specific Conductance (EC)	0.0123	0.00503	mmhos/cm		0.0134			8.56	25	

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### Notes and Definitions

U Sample is Non-Detect.

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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