

March 03, 2022

**Chaco Energy**

**Matt Nelson**

**455 Sherman St**

**Denver**

**CO 80203**

**Project Name - 909J**

**Project Number - -**

Attached are your analytical results for 909J received by Origins Laboratory, Inc. February 18, 2022. This project is associated with Origins project number Y202434-01.

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



Chaco Energy  
455 Sherman St  
Denver CO 80203

Matt Nelson  
Project Number: -  
Project: 909J

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Kindt Produced H2O	Y202434-01	Water	February 17, 2022 11:00	02/18/2022 13:01
Rothrock Produced H2O	Y202434-02	Water	February 17, 2022 12:00	02/18/2022 13:01

Origins Laboratory, Inc.



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Chaco Energy  
 455 Sherman St  
 Denver CO 80203

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 Project Number: -  
 Project: 909J

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: 1722434 Client: Chaco Energy  
 Client Project ID: 909J  
 Checklist Completed by: JKH Shipped Via: HD  
 Date/Time completed: 2/15/22 (UPS, FedEx, Hand Delivered, Pick-up, etc.)  
 Airbill #: NA  
 Matrix(s) Received: (Check all that apply):  Soil/Solid  Water  Other: \_\_\_\_\_  
 Cooler Number/Temperature: 1/12-9-c / \_\_\_\_\_ °C / \_\_\_\_\_ °C (Describe) \_\_\_\_\_ °C  
 Thermometer ID: T005

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> ?		-		same day Jm
Is there ice present (document if blue ice is used)	-			
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)		-		
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)		-		
Were all samples received intact <sup>(1)</sup> ?	-			
Was adequate sample volume provided <sup>(1)</sup> ?	-			
Are short holding time analytes or samples with HTs due within 48 hours present <sup>(1)</sup> ?	X	dry		NO <sub>2</sub> , NO <sub>3</sub>
Is a chain-of-custody (COC) present and filled out completely <sup>(1)</sup> ?	-			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	-			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	-			
Is the COC properly relinquished by the client with date and time recorded <sup>(1)</sup> ?	-			
For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.	-	with		
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)	-			not checked
Additional Comments (if any): <u>Head spare in vials</u>				

<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) Jm

Date/Time Reviewed 2-21-22

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 Project: 909J

**Kindt Produced H2O**  
**2/17/2022 11:00:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Y202434-01 (Water)**  
**Origins Laboratory, Inc.**

**Anions by IC 300.0**

Chloride	1720	31.2	mg/L	125	B2B1814	AHK	02/18/2022	02/19/2022	
Fluoride	3.21	1.00	"	10	"	AHK	"	02/19/2022	
Bromide	8.20	1.00	"	"	"	AHK	"	"	
Sulfate	135	2.50	"	"	"	AHK	"	"	
Nitrate	ND	1.00	"	"	"	AHK	"	"	
Nitrite	ND	1.00	"	"	"	AHK	"	"	

**DRO/ORO by EPA 8015D**

Diesel (C10-C28)	ND	5.00	mg/L	1	B2B2413	EPC	02/24/2022	02/25/2022	Ua
Residual Range Organics (C28-C40)	ND	10.0	"	"	"	EPC	"	"	Ua

Surrogate: o-Terphenyl 95.1 % 50-150 " " "

**GBTEX + Naphthalene by EPA 8260D**

Benzene	ND	2.00	ug/L	1	B2B2316	ZZZ	02/23/2022	02/23/2022	Ua
Ethylbenzene	ND	2.00	"	"	"	ZZZ	"	"	Ua
Toluene	ND	2.00	"	"	"	ZZZ	"	"	Ua
Naphthalene	ND	10.0	"	"	"	ZZZ	"	"	Ua
Gasoline Range Hydrocarbons	ND	200	"	"	"	ZZZ	"	"	Ua
Xylenes, total	4.49	2.00	"	"	"	ZZZ	"	"	

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

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**Kindt Produced H2O**  
**2/17/2022 11:00:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Y202434-01 (Water)**  
**Origins Laboratory, Inc.**

**GBTEX + Naphthalene by EPA 8260D**

Surrogate: Toluene-d8	93.4 %	70-130			B2B23 16		02/23/2022	02/23/2022	
Surrogate: 4-Bromofluorobenzene	110 %	70-130			"	"	"	"	

**pH in Water by EPA 9040C**

pH	9.09		pH Units	1	B2B1812	ACC	02/18/2022	02/18/2022	
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**Specific Conductance Mod. 9050A**

Specific Conductance (EC)	7610	5.00	uS/cm	"	B2B1813	ACC	02/18/2022	02/18/2022	
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**Total Dissolved Solids by 2540C**

Total Dissolved Solids	5230	5.00	mg/L	"	B2B2202	SCL	02/22/2022	02/22/2022	
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**Total Suspended Solids by 2540D**

Total Suspended Solids	68.0	5.00	"	"	B2B2118	SCL	02/21/2022	02/21/2022	
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**GEL Laboratories, LLC**

**Alkalinity by SM 2320B**

Alkalinity, Total as CaCO3	1900	4.00	mg/L	1	2230835	RXB5	02/17/2022	02/19/2022	
Bicarbonate alkalinity (CaCO3)	1450	4.00	"	"	"	RXB5	"	"	
Carbonate alkalinity (CaCO3)	452	4.00	"	"	"	RXB5	"	"	

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**Kindt Produced H2O**  
**2/17/2022 11:00:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Y202434-01 (Water)**  
**GEL Laboratories, LLC**

**Radium 226 by EPA 903.1**

Radium-226	1.12	1.00	pCi/L	1	2232330	LXP1	"	02/27/2022	
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**Radium 228 by EPA 904.0**

Radium-228	0.884	3.00	pCi/L	1	2232334	JXC9	"	03/01/2022	U
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**Total Metals by 200.8**

Barium	0.163	0.00400	mg/L	1	2232436	BAJ	02/22/2022	02/23/2022	
Boron	34.7	7.50	"	500	"	BAJ	"	03/01/2022	
Calcium	8.08	0.200	"	1	"	BAJ	"	02/23/2022	
Iron	3.43	0.100	"	"	"	BAJ	"	"	
Magnesium	2.79	0.0300	"	"	"	BAJ	"	"	
Manganese	0.0905	0.00500	"	"	"	BAJ	"	"	
Potassium	8.57	0.300	"	"	"	BAJ	"	"	
Selenium	ND	0.0250	"	5	"	BAJ	"	03/02/2022	U
Sodium	2370	125	"	500	"	BAJ	"	03/01/2022	
Strontium	0.640	0.0100	"	1	"	BAJ	"	"	

**Total Phosphorus by EPA 365.4**

Phosphorus, Total as P	0.503	0.0500	mg/L	1	2232486	KLP1	02/21/2022	02/21/2022	
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**Rothrock Produced H2O**  
**2/17/2022 12:00:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Y202434-02 (Water)**  
**Origins Laboratory, Inc.**

**Anions by IC 300.0**

Chloride	2780	125	mg/L	501	B2B1814	AHK	02/18/2022	02/19/2022	
Fluoride	53.4	1.00	"	10	"	AHK	"	02/19/2022	
Bromide	18.1	1.00	"	"	"	AHK	"	"	
Sulfate	220	2.50	"	"	"	AHK	"	"	
Nitrate	ND	1.00	"	"	"	AHK	"	"	
Nitrite	ND	1.00	"	"	"	AHK	"	"	

**DRO/ORO by EPA 8015D**

Diesel (C10-C28)	13.3	5.00	mg/L	1	B2B2413	EPC	02/24/2022	02/25/2022	
Residual Range Organics (C28-C40)	ND	10.0	"	"	"	EPC	"	"	Ua

Surrogate: *o*-Terphenyl 93.1 % 50-150 " " "

**GBTEX + Naphthalene by EPA 8260D**

Benzene	3020	200	ug/L	100	B2B2316	ZZZ	02/23/2022	02/23/2022	
Ethylbenzene	432	200	"	"	"	ZZZ	"	"	
Toluene	4540	200	"	"	"	ZZZ	"	"	
Naphthalene	196	10.0	"	1	"	ZZZ	"	02/26/2022	
Gasoline Range Hydrocarbons	13900	2000	"	10	"	ZZZ	"	02/27/2022	
Xylenes, total	2220	200	"	100	"	ZZZ	"	02/23/2022	

Surrogate: 1,2-Dichloroethane-d4 100 % 70-130 " " "  
 Surrogate: Toluene-d8 98.2 % 70-130 " " "

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**Rothrock Produced H2O**  
**2/17/2022 12:00:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Y202434-02 (Water)**  
**Origins Laboratory, Inc.**

**GBTEX + Naphthalene by EPA 8260D**

Surrogate: 4-Bromofluorobenzene	109 %	70-130			B2B23 16		02/23/2022	02/23/2022	
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**pH in Water by EPA 9040C**

pH	7.75		pH Units	1	B2B1812	ACC	02/18/2022	02/18/2022	
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**Specific Conductance Mod. 9050A**

Specific Conductance (EC)	10600	5.00	uS/cm	"	B2B1813	ACC	02/18/2022	02/18/2022	
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**Total Dissolved Solids by 2540C**

Total Dissolved Solids	7270	5.00	mg/L	"	B2B2202	SCL	02/22/2022	02/22/2022	
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**Total Suspended Solids by 2540D**

Total Suspended Solids	14.0	5.00	"	"	B2B2118	SCL	02/21/2022	02/21/2022	
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**GEL Laboratories, LLC**

**Alkalinity by SM 2320B**

Alkalinity, Total as CaCO3	1650	4.00	mg/L	1	2230835	RXB5	02/17/2022	02/19/2022	
Bicarbonate alkalinity (CaCO3)	1650	4.00	"	"	"	RXB5	"	"	
Carbonate alkalinity (CaCO3)	ND	4.00	"	"	"	RXB5	"	"	U

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**Rothrock Produced H2O**  
**2/17/2022 12:00:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Y202434-02 (Water)**  
**GEL Laboratories, LLC**

**Radium 226 by EPA 903.1**

Radium-226	3.72	1.00	pCi/L	1	2232330	LXP1	"	02/27/2022	
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**Radium 228 by EPA 904.0**

Radium-228	4.84	3.00	pCi/L	1	2232334	JXC9	"	03/01/2022	
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**Total Metals by 200.8**

Barium	0.244	0.00400	mg/L	1	2232436	BAJ	02/22/2022	02/24/2022	
Boron	30.2	7.50	"	500	"	BAJ	"	03/01/2022	
Calcium	15.4	0.200	"	1	"	BAJ	"	02/24/2022	
Iron	0.612	0.100	"	"	"	BAJ	"	"	
Magnesium	2.81	0.0300	"	"	"	BAJ	"	"	
Manganese	0.0160	0.00500	"	"	"	BAJ	"	"	
Potassium	6.65	0.300	"	"	"	BAJ	"	"	
Selenium	ND	0.00500	"	"	"	BAJ	"	03/02/2022	U
Sodium	2930	125	"	500	"	BAJ	"	03/01/2022	
Strontium	1.79	0.100	"	10	"	BAJ	"	"	

**Total Phosphorus by EPA 365.4**

Phosphorus, Total as P	1.47	0.0500	mg/L	1	2232486	KLP1	02/21/2022	02/21/2022	
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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 B2B2316 - EPA 5030B (Water)**

**Blank (B2B2316-BLK1)**

Prepared: 02/23/2022 Analyzed: 02/23/2022

Benzene	ND	2.00	ug/L							Ua
Ethylbenzene	ND	2.00	"							Ua
Toluene	ND	2.00	"							Ua
Naphthalene	ND	10.0	"							Ua
1,2-Dichloroethane	ND	1.00	"							Ua
Methyl tert-Butyl Ether	ND	1.00	"							Ua
Gasoline Range Hydrocarbons	ND	200	"							Ua
Xylenes, total	ND	2.00	"							Ua
Surrogate: 1,2-Dichloroethane-d4	62		"	62.5		99.8	70-130			
Surrogate: Toluene-d8	61		"	62.5		98.0	70-130			
Surrogate: 4-Bromofluorobenzene	67		"	62.5		106	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 B2B2316 - EPA 5030B (Water)**

**LCS (B2B2316-BS1)**

Prepared: 02/23/2022 Analyzed: 02/23/2022

Benzene	47.9	2.00	ug/L	50.0		95.9	70-130			
Ethylbenzene	49.0	2.00	"	50.0		97.9	70-130			
m,p-Xylene	99.8	4.00	"	100		99.8	70-130			
o-Xylene	48.4	2.00	"	50.0		96.7	70-130			
Toluene	50.7	2.00	"	50.0		101	70-130			
Naphthalene	46.9	10.0	"	50.0		93.8	70-130			
1,2-Dibromoethane (EDB)	51.1	1.00	"	50.0		102	70-130			
1,2-Dichloroethane	45.7	1.00	"	50.0		91.3	70-130			
Methyl tert-Butyl Ether	46.0	1.00	"	50.0		92.0	70-130			
Surrogate: 1,2-Dichloroethane-d4	59		"	62.5		93.9	70-130			
Surrogate: Toluene-d8	63		"	62.5		102	70-130			
Surrogate: 4-Bromofluorobenzene	65		"	62.5		104	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 B2B2316 - EPA 5030B (Water)

Matrix Spike (B2B2316-MS1)	Source: Y202397-22			Prepared: 02/23/2022 Analyzed: 02/23/2022						
Benzene	49.8	2.00	ug/L	50.0	1.25	97.1	70-130			
Ethylbenzene	50.6	2.00	"	50.0	ND	101	70-130			
m,p-Xylene	103	4.00	"	100	ND	103	70-130			
o-Xylene	50.2	2.00	"	50.0	ND	100	70-130			
Toluene	51.3	2.00	"	50.0	ND	103	70-130			
Naphthalene	49.8	10.0	"	50.0	ND	99.5	70-130			
1,2-Dibromoethane (EDB)	53.2	1.00	"	50.0	ND	106	70-130			
1,2-Dichloroethane	47.2	1.00	"	50.0	ND	94.4	70-130			
Methyl tert-Butyl Ether	46.9	1.00	"	50.0	ND	93.8	70-130			
Surrogate: 1,2-Dichloroethane-d4	59		"	62.5		94.1	70-130			
Surrogate: Toluene-d8	64		"	62.5		102	70-130			
Surrogate: 4-Bromofluorobenzene	67		"	62.5		108	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 B2B2316 - EPA 5030B (Water)**

Matrix Spike Dup (B2B2316-MSD1)	Source: Y202397-22			Prepared: 02/23/2022 Analyzed: 02/23/2022						
Benzene	51.0	2.00	ug/L	50.0	1.25	99.4	70-130	2.32	20	
Ethylbenzene	51.2	2.00	"	50.0	ND	102	70-130	1.20	20	
m,p-Xylene	104	4.00	"	100	ND	104	70-130	1.04	20	
o-Xylene	50.1	2.00	"	50.0	ND	100	70-130	0.219	20	
Toluene	52.6	2.00	"	50.0	ND	105	70-130	2.42	20	
Naphthalene	48.8	10.0	"	50.0	ND	97.6	70-130	1.89	20	
1,2-Dibromoethane (EDB)	53.2	1.00	"	50.0	ND	106	70-130	0.0376	20	
1,2-Dichloroethane	48.7	1.00	"	50.0	ND	97.4	70-130	3.07	20	
Methyl tert-Butyl Ether	50.2	1.00	"	50.0	ND	100	70-130	6.88	20	
Surrogate: 1,2-Dichloroethane-d4	60		"	62.5		96.4	70-130			
Surrogate: Toluene-d8	64		"	62.5		103	70-130			
Surrogate: 4-Bromofluorobenzene	64		"	62.5		102	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 B2B2413 - EPA 3511 Mod.</b>										
<b>Blank (B2B2413-BLK1)</b>										
					Prepared: 02/24/2022 Analyzed: 02/25/2022					
Diesel (C10-C28)	ND	5.00	mg/L							Ua
Residual Range Organics (C28-C40)	ND	10.0	"							Ua
Surrogate: o-Terphenyl	5.2		"	4.98		105	50-150			

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Chaco Energy  
 455 Sherman St  
 Denver CO 80203

Matt Nelson  
 Project Number: -  
 Project: 909J

**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 B2B2413 - EPA 3511 Mod.**

**LCS (B2B2413-BS1)**

Prepared: 02/24/2022 Analyzed: 02/25/2022

Diesel (C10-C28)	94.2	5.00	mg/L	100		94.2	70-130			
Residual Range Organics (C28-C40)	85.8	10.0	"	100		85.8	70-130			
Surrogate: o-Terphenyl	4.1		"	4.98		82.4	50-150			

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 Project: 909J

**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 B2B2413 - EPA 3511 Mod.

Matrix Spike (B2B2413-MS1)	Source: Y202468-02			Prepared: 02/24/2022 Analyzed: 02/25/2022						
Diesel (C10-C28)	79.1	5.00	mg/L	100	ND	79.1	70-130			
Residual Range Organics (C28-C40)	77.1	10.0	"	100	ND	77.1	70-130			
Surrogate: o-Terphenyl	2.9		"	4.98		59.3	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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**Batch B2B2413 - EPA 3511 Mod.**

<b>Matrix Spike Dup (B2B2413-MSD1)</b>	<b>Source: Y202468-02</b>			<b>Prepared: 02/24/2022 Analyzed: 02/25/2022</b>						
Diesel (C10-C28)	89.3	5.00	mg/L	100	ND	89.3	70-130	12.2	20	
Residual Range Organics (C28-C40)	86.7	10.0	"	100	ND	86.7	70-130	11.7	20	
Surrogate: o-Terphenyl	5.3		"	4.98		106	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 B2B1812 - NO PREP**

**Duplicate (B2B1812-DUP1)** **Source: Y202434-01** Prepared: 02/18/2022 Analyzed: 02/18/2022

pH	9.17		pH Units		9.09			0.876	200	
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**Batch B2B1813 - NO PREP**

**Blank (B2B1813-BLK1)** Prepared: 02/18/2022 Analyzed: 02/18/2022

Specific Conductance (EC)	0.900	5.00	uS/cm							
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**Duplicate (B2B1813-DUP1)** **Source: Y202434-01** Prepared: 02/18/2022 Analyzed: 02/18/2022

Specific Conductance (EC)	7610	5.00	uS/cm		7610			0.00131	10	
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**Batch B2B1814 - Filter .45um non acidified**

**Blank (B2B1814-BLK1)** Prepared: 02/18/2022 Analyzed: 02/19/2022

Chloride	ND	0.250	mg/L							
Fluoride	ND	0.100	"							
Bromide	ND	0.100	"							
Sulfate	ND	0.250	"							
Nitrate	ND	0.100	"							
Nitrite	ND	0.100	"							

**LCS (B2B1814-BS1)** Prepared: 02/18/2022 Analyzed: 02/19/2022

Chloride	3.88	0.250	mg/L	4.00	96.9	90-110
Fluoride	3.87	0.100	"	4.00	96.7	90-110

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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 B2B1814 - Filter .45um non acidified**

**LCS (B2B1814-BS1)**

Prepared: 02/18/2022 Analyzed: 02/19/2022

Bromide	3.87	0.100	mg/L	4.00		96.8	90-110			
Sulfate	3.93	0.250	"	4.00		98.4	90-110			
Nitrate	3.93	0.100	"	4.00		98.3	90-110			
Nitrite	3.96	0.100	"	4.00		98.9	90-110			

**Matrix Spike (B2B1814-MS1)**

Source: Y202434-01

Prepared: 02/18/2022 Analyzed: 02/19/2022

Chloride	2120		mg/L	500	1720	80.4	80-120			
Fluoride	485		"	500	3.21	96.4	80-120			
Bromide	490		"	500	8.20	96.5	80-120			
Sulfate	614		"	500	135	95.9	80-120			
Nitrate	486		"	500	0.130	97.3	80-120			
Nitrite	484		"	500	0.00	96.8	80-120			

**Matrix Spike Dup (B2B1814-MSD1)**

Source: Y202434-01

Prepared: 02/18/2022 Analyzed: 02/19/2022

Chloride	2220		mg/L	500	1720	101	80-120	4.63	20	
Fluoride	488		"	500	3.21	96.9	80-120	0.450	20	
Bromide	494		"	500	8.20	97.1	80-120	0.617	20	
Sulfate	625		"	500	135	98.2	80-120	1.86	20	
Nitrate	490		"	500	0.130	97.9	80-120	0.638	20	
Nitrite	487		"	500	0.00	97.3	80-120	0.512	20	

**Batch B2B2118 - NO PREP**

**Blank (B2B2118-BLK1)**

Prepared: 02/21/2022 Analyzed: 02/21/2022

Total Suspended Solids	ND	5.00	mg/L							
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**LCS (B2B2118-BS1)**

Prepared: 02/21/2022 Analyzed: 02/21/2022

Total Suspended Solids	85.0	5.00	mg/L	100		85.0	75-110			
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 Project: 909J

**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 B2B2118 - NO PREP</b>										
<b>Duplicate (B2B2118-DUP1)</b>		<b>Source: Y202442-01</b>			Prepared: 02/21/2022 Analyzed: 02/21/2022					
Total Suspended Solids	8.00	5.00	mg/L		10.0			22.2	20	QM-07
<b>Batch B2B2202 - NO PREP</b>										
<b>Blank (B2B2202-BLK1)</b>		Prepared: 02/22/2022 Analyzed: 02/22/2022								
Total Dissolved Solids	ND	5.00	mg/L							
<b>LCS (B2B2202-BS1)</b>		Prepared: 02/22/2022 Analyzed: 02/22/2022								
Total Dissolved Solids	993	5.00	mg/L	1000		99.3	90-110			
<b>Duplicate (B2B2202-DUP1)</b>		<b>Source: Y202471-01</b>			Prepared: 02/22/2022 Analyzed: 02/22/2022					
Total Dissolved Solids	1150	5.00	mg/L		1150			0.0868	10	

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**Alkalinity by SM 2320B - Quality Control**  
**GEL Laboratories, LLC**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 2230835 -</b>										
<b>LCS (1205022058-BKS)</b>					Prepared: Analyzed: 02/19/2022					
Alkalinity, Total as CaCO3	108	4.00	mg/L	100		108	90-110			
<b>DUP (1205024030 D)</b>		<b>Source: 570412001</b>			Prepared: Analyzed: 02/19/2022					
Alkalinity, Total as CaCO3	7270	8.00	mg/L		7360		0-20	1.23	20	
<b>MS (1205024031 S)</b>		<b>Source: 570412001</b>			Prepared: Analyzed: 02/19/2022					
Alkalinity, Total as CaCO3	7620	8.00	mg/L	200	7360	0	80-120			

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 Project: 909J

**Radium 226 by EPA 903.1 - Quality Control**  
**GEL Laboratories, LLC**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 2232330 -</b>										
<b>BLANK (1205024783-BLK)</b>					Prepared: Analyzed: 02/27/2022					
Radium-226	0.268	1.00	pCi/L				-			
<b>DUP (1205024784 D)</b>					Source: 570713001 Prepared: Analyzed: 02/27/2022					
Radium-226	0.424	1.00	pCi/L		<		0-20	0	20	U
<b>MS (1205024785 S)</b>					Source: 570713001 Prepared: Analyzed: 02/27/2022					
Radium-226	129	1.00	pCi/L	132	<	97.9	75-125			
<b>LCS (1205024786-BKS)</b>					Prepared: Analyzed: 02/27/2022					
Radium-226	26.0	1.00	pCi/L	26.7		97.7	75-125			

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**Radium 228 by EPA 904.0 - Quality Control**  
**GEL Laboratories, LLC**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 2232334 -</b>										
<b>BLANK (1205024799-BLK)</b>					Prepared: Analyzed: 03/01/2022					
Radium-228	1.34	3.00	pCi/L				-			U
<b>DUP (1205024800 D)</b>		<b>Source: 570955001</b>			Prepared: Analyzed: 03/01/2022					
Radium-228	1.92	3.00	pCi/L		2.33		0-20	19.6	20	
<b>LCS (1205024801-BKS)</b>					Prepared: Analyzed: 03/01/2022					
Radium-228	48.6	3.00	pCi/L	47.9		101	75-125			

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**Total Metals by 200.8 - Quality Control**  
**GEL Laboratories, LLC**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch 2232436 - EPA 200.2**

**BLANK (1205025032-BLK)**

Prepared: 02/22/2022 Analyzed: 03/02/2022

Selenium	ND	0.00500	mg/L				-			U
Potassium	ND	0.300	"				-			U
Manganese	ND	0.00500	"				-			U
Sodium	ND	0.250	"				-			U
Strontium	ND	0.0100	"				-			U
Iron	ND	0.100	"				-			U
Calcium	ND	0.200	"				-			U
Boron	ND	0.0150	"				-			U
Barium	ND	0.00400	"				-			U
Magnesium	ND	0.0300	"				-			U

**LCS (1205025033-BKS)**

Prepared: 02/22/2022 Analyzed: 02/23/2022

Iron	1.94	0.100	mg/L	2.00		97.1	85-115			
Strontium	0.0535	0.0100	"	0.0500		107	85-115			
Sodium	2.23	0.250	"	2.00		111	85-115			
Selenium	0.0561	0.00500	"	0.0500		112	85-115			
Potassium	1.97	0.300	"	2.00		98.5	85-115			
Magnesium	1.99	0.0300	"	2.00		99.4	85-115			
Calcium	2.02	0.200	"	2.00		101	85-115			
Boron	0.115	0.0150	"	0.100		115	85-115			
Barium	0.0504	0.00400	"	0.0500		101	85-115			
Manganese	0.0493	0.00500	"	0.0500		98.6	85-115			

**DUP (1205025034 D)**

Source: Y202434-01

Prepared: 02/22/2022 Analyzed: 02/23/2022

Manganese	0.0883	0.00500	mg/L		0.0905		0-20	2.41	20	
Barium	0.163	0.00400	"		0.163		0-20	0.351	20	
Boron	36.4	7.50	"		34.7		0-20	5.04	20	

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**Total Metals by 200.8 - Quality Control**  
**GEL Laboratories, LLC**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch 2232436 - EPA 200.2**

<b>DUP (1205025034 D)</b>		<b>Source: Y202434-01</b>			<b>Prepared: 02/22/2022 Analyzed: 02/23/2022</b>					
Calcium	8.14	0.200	mg/L		8.08		0-20	0.675	20	
Iron	3.33	0.100	"		3.43		0-20	2.99	20	
Magnesium	2.81	0.0300	"		2.79		0-20	0.465	20	
Potassium	8.61	0.300	"		8.57		0-20	0.438	20	
Sodium	2420	125	"		2370		0-20	1.86	20	
Strontium	0.557	0.0100	"		0.640		0-20	13.9	20	
Selenium	ND	0.0250	"		<0.00750		0-20	50.3	20	U
<b>MS (1205025035 S)</b>		<b>Source: Y202434-01</b>			<b>Prepared: 02/22/2022 Analyzed: 02/24/2022</b>					
Calcium	9.86	0.200	mg/L	2.00	8.08	0	75-125			
Boron	34.0	7.50	"	0.100	34.7	0	75-125			
Iron	5.02	0.100	"	2.00	3.43	79.5	75-125			
Magnesium	4.76	0.0300	"	2.00	2.79	98.4	75-125			
Manganese	0.129	0.00500	"	0.0500	0.0905	77.6	75-125			
Potassium	10.5	0.300	"	2.00	8.57	0	75-125			
Selenium	0.0548	0.0250	"	0.0500	<0.00750	104	75-125			
Sodium	2300	125	"	2.00	2370	0	75-125			
Strontium	0.592	0.0100	"	0.0500	0.640	0	75-125			
Barium	0.210	0.00400	"	0.0500	0.163	94.3	75-125			

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**Total Phosphorus by EPA 365.4 - Quality Control**  
**GEL Laboratories, LLC**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 2232486 - EPA 365.4 Prep</b>										
<b>BLANK (1205025162-BLK)</b>					Prepared: 02/21/2022 Analyzed: 02/21/2022					
Phosphorus, Total as P	ND	0.0500	mg/L				-			U
<b>LCS (1205025163-BKS)</b>					Prepared: 02/21/2022 Analyzed: 02/21/2022					
Phosphorus, Total as P	0.947	0.0500	mg/L	1.00		94.7	80-123			
<b>DUP (1205025164 D)</b>					Source: 568322003 Prepared: 02/21/2022 Analyzed: 02/21/2022					
Phosphorus, Total as P	0.0271	0.0500	mg/L		0.0414		0-36	41.8	36	HJh
<b>MS (1205025165 S)</b>					Source: 568322003 Prepared: 02/21/2022 Analyzed: 02/21/2022					
Phosphorus, Total as P	1.05	0.0500	mg/L	1.00	0.0414	101	66-140			Hh

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Project: 909J

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### Notes and Definitions

Ua Sample is Non-Detect.

U Result not detected above the detection limit

QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.

HJh [Undefined]

Hh [Undefined]

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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