



Ensolum

November 13, 2024

Jeremy Espinoza

11049 W 44th Avenue, Suite 103

Wheat Ridge CO 80033

**Project Name - KMG - Sherwood L Fed 30-29D  
Wellhead**

**Project Number - 09A1417184**

Attached are your analytical results for KMG - Sherwood L Fed 30-29D Wellhead received by Origins Laboratory October 31, 2024. This project is associated with Origins project number E4J0020-01.

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  
303.433.1322  
projectmanager@originslab.com



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

Ensolum  
11049 W 44th Avenue, Suite 103  
Wheat Ridge CO 80033

Jeremy Espinoza  
Project Number: 09A1417184  
Project: KMG - Sherwood L Fed 30-29D Wellhead

## CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FL03/FL04-W02@3'	E4J0020-01	Soil	October 31, 2024 12:00	10/31/2024 17:14
N01(L30-32D)@4.5'	E4J0020-02	Soil	October 31, 2024 12:30	10/31/2024 17:14
S01(L30-32D)@4.5'	E4J0020-03	Soil	October 31, 2024 12:40	10/31/2024 17:14
E01(L30-31D)@4.5'	E4J0020-04	Soil	October 31, 2024 12:50	10/31/2024 17:14
W01(L30-31D)@4.5'	E4J0020-05	Soil	October 31, 2024 13:00	10/31/2024 17:14
W01(L30-30D)@4.5'	E4J0020-06	Soil	October 31, 2024 13:10	10/31/2024 17:14

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

**Sample Receipt Checklist**

Origins Work Order: E4J0020 Client: ENSOLUM  
 Client Project ID: Sherwood  
 Checklist Completed by: SHD WS Shipped Via: HO  
 Date/Time completed: 10/31/24 (UPS, FedEx, Hand Delivered, Pick-up, etc.)  
 Airbill #: N/A  
 Matrix(s) Received: (Check all that apply):  Soil/Solid  Water  Other: \_\_\_\_\_  
 Cooler Number/Temperature: 1 18.8 °C \_\_\_\_\_ °C \_\_\_\_\_ °C (Describe) \_\_\_\_\_ °C  
 Thermometer ID: 1007

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> ?	/			
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> ?		/		
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.			/	
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)			/	
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) SHD 10/31/24  
 Date/Time Reviewed

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**FL03/FL04-W02@3'**  
**10/31/2024 12:00:00PM**

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory**  
**E4J0020-01 (Soil)**

**Boron (DTPA Sorbitol)**

Boron	0.145		0.0993	mg/L	1	B4K0605	11/06/2024	11/07/2024	
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**DRO/ORO by EPA 8015D**

Diesel (C10-C28)	ND		25.0	mg/kg	1	B4J3146	10/31/2024	11/01/2024	U
Residual Range Organics (C28-C40)	ND		100	"	"	"	"	"	U

Surrogate: <i>o</i> -Terphenyl	81.8 %		50-150			"	"	"	
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**GBTEX+TMBs by 8260D**

Gasoline Range Hydrocarbons	ND		0.200	mg/kg	1	B4J3147	10/31/2024	11/01/2024	U
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Surrogate: 1,2-Dichloroethane-d4	100 %		70-130			"	"	"	
Surrogate: Toluene-d8	96.6 %		70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	94.5 %		70-130			"	"	"	

**PAH by EPA 8270E extracted via 3580A**

1-Methylnaphthalene	ND		0.002	mg/kg	1	B4J3145	10/31/2024	11/06/2024	U
2-Methylnaphthalene	ND		0.002	"	"	"	"	"	U
Acenaphthene	ND		0.020	"	"	"	"	"	U

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Project: KMG - Sherwood L Fed 30-29D Wellhead

**FL03/FL04-W02@3'**  
**10/31/2024 12:00:00PM**

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory**  
**E4J0020-01 (Soil)**

**PAH by EPA 8270E extracted via 3580A**

Anthracene	0.038		0.020	mg/kg	1	B4J3145	10/31/2024	11/06/2024	
Benzo (a) anthracene	0.091		0.005	"	"	"	"	"	
Benzo (a) pyrene	0.092		0.020	"	"	"	"	"	
Benzo (b) fluoranthene	0.072		0.020	"	"	"	"	"	
Benzo (k) fluoranthene	0.034		0.020	"	"	"	"	"	
Chrysene	0.081		0.020	"	"	"	"	"	
Dibenz (a,h) anthracene	ND		0.020	"	"	"	"	"	U
Fluoranthene	0.212		0.020	"	"	"	"	"	
Fluorene	ND		0.020	"	"	"	"	"	U
Indeno (1,2,3-cd) pyrene	0.055		0.020	"	"	"	"	"	
Naphthalene	ND		0.002	"	"	"	"	"	U
Pyrene	0.177		0.020	"	"	"	"	"	

Surrogate: Fluorene-d10	102 %		60-130			"	"	"	
Surrogate: Anthracene-d10	101 %		60-130			"	"	"	
Surrogate: Pyrene-d10	97.8 %		60-130			"	"	"	
Surrogate: Benzo (a) pyrene-d12	101 %		60-130			"	"	"	

**pH in Soil by 9045D**

pH	6.62			pH Units	1	B4K0428	11/04/2024	11/05/2024	
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**FL03/FL04-W02@3'**  
**10/31/2024 12:00:00PM**

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory**  
**E4J0020-01 (Soil)**

**Table 915 metals by EPA 6020B**

Arsenic	3.88	0.255	mg/kg	10	B4J3148	10/31/2024	11/01/2024
Barium	72.9	8.78	"	"	"	"	"
Cadmium	0.581	0.0878	"	"	"	"	"
Copper	31.9	8.78	"	"	"	"	"
Lead	26.1	0.878	"	"	"	"	"
Nickel	5.13	0.878	"	"	"	"	"
Selenium	ND	0.228	"	"	"	"	"
Silver	0.338	0.0878	"	"	"	"	"
Zinc	84.1	32.5	"	"	"	"	"

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**N01(L30-32D)@4.5'**  
**10/31/2024 12:30:00PM**

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory**  
**E4J0020-02 (Soil)**

**Table 915 metals by EPA 6020B**

Arsenic	1.03		0.276	mg/kg	10	B4J3148	10/31/2024	11/01/2024	
Cadmium	0.0979		0.0951	"	"	"	"	"	
Lead	4.79		0.951	"	"	"	"	"	
Selenium	ND		0.247	"	"	"	"	"	

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**S01(L30-32D)@4.5'**

**10/31/2024 12:40:00PM**

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory**  
**E4J0020-03 (Soil)**

**Table 915 metals by EPA 6020B**

Barium	88.4		9.70	mg/kg	10	B4J3148	10/31/2024	11/01/2024	
Copper	9.72		9.70	"	"	"	"	"	

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**E01(L30-31D)@4.5'**  
**10/31/2024 12:50:00PM**

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory**  
**E4J0020-04 (Soil)**

**Table 915 metals by EPA 6020B**

Barium	47.3		9.57	mg/kg	10	B4J3148	10/31/2024	11/01/2024	
Copper	ND		9.57	"	"	"	"	"	

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**W01(L30-31D)@4.5'**  
**10/31/2024 1:00:00PM**

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory**  
**E4J0020-05 (Soil)**

**Table 915 metals by EPA 6020B**

Barium	41.0		9.31	mg/kg	10	B4J3148	10/31/2024	11/01/2024	
Copper	ND		9.31	"	"	"	"	"	

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**W01(L30-30D)@4.5'**

**10/31/2024 1:10:00PM**

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory**  
**E4J0020-06 (Soil)**

**Table 915 metals by EPA 6020B**

Barium	53.8		8.71	mg/kg	10	B4J3148	10/31/2024	11/01/2024	
Copper	ND		8.71	"	"	"	"	"	

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**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B4J3146 - EPA 3550B</b>										
<b>Blank (B4J3146-BLK1)</b>										
					Prepared: 10/31/2024 Analyzed: 10/31/2024					
Diesel (C10-C28)	ND	25.0	mg/kg							U
Residual Range Organics (C28-C40)	ND	100	"							U
Surrogate: o-Terphenyl	20		"	24.9		79.6	50-150			

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**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B4J3146 - EPA 3550B**

**LCS (B4J3146-BS1)**

Prepared: 10/31/2024 Analyzed: 10/31/2024

Diesel (C10-C28)	974	50.0	mg/kg	1000		97.4	70-130			
Residual Range Organics (C28-C40)	1140	200	"	1000		114	70-130			
Surrogate: o-Terphenyl	44		"	49.8		89.1	50-150			

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**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B4J3146 - EPA 3550B**

<b>Matrix Spike (B4J3146-MS1)</b>	<b>Source: E4J0018-02</b>			<b>Prepared: 10/31/2024 Analyzed: 10/31/2024</b>						
Diesel (C10-C28)	972	50.0	mg/kg	1000	ND	97.2	70-130			
Residual Range Organics (C28-C40)	1150	200	"	1000	ND	115	70-130			
Surrogate: o-Terphenyl	40		"	49.8		80.2	50-150			

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**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B4J3146 - EPA 3550B**

<b>Matrix Spike Dup (B4J3146-MSD1)</b>	<b>Source: E4J0018-02</b>			<b>Prepared: 10/31/2024 Analyzed: 10/31/2024</b>						
Diesel (C10-C28)	1040	50.0	mg/kg	1000	ND	104	70-130	7.22	35	
Residual Range Organics (C28-C40)	1230	200	"	1000	ND	123	70-130	6.25	35	
<i>Surrogate: o-Terphenyl</i>	<i>41</i>		<i>"</i>	<i>49.8</i>		<i>83.3</i>	<i>50-150</i>			

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**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B4J3147 - EPA 5030 (soil)**

**Blank (B4J3147-BLK1)**

Prepared: 10/31/2024 Analyzed: 10/31/2024

1,2,4-Trimethylbenzene	ND	0.00200	mg/kg							U
1,3,5-Trimethylbenzene	ND	0.00200	"							U
Benzene	ND	0.00200	"							U
Ethylbenzene	ND	0.00200	"							U
Naphthalene	ND	0.00380	"							U
Toluene	ND	0.00200	"							U
Xylenes, total	ND	0.00200	"							U
Gasoline Range Hydrocarbons	ND	0.200	"							U
Surrogate: 1,2-Dichloroethane-d4	0.12		"	0.125		97.5	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		98.6	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		95.0	70-130			

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B4J3147 - EPA 5030 (soil)**

**LCS (B4J3147-BS1)**

Prepared: 10/31/2024 Analyzed: 10/31/2024

1,2,4-Trimethylbenzene	0.105	0.00200	mg/kg	0.100		105	70-130			
1,3,5-Trimethylbenzene	0.105	0.00200	"	0.100		105	70-130			
Benzene	0.108	0.00200	"	0.100		108	70-130			
Ethylbenzene	0.0957	0.00200	"	0.100		95.7	70-130			
Naphthalene	0.102	0.00380	"	0.100		102	70-130			
Toluene	0.0931	0.00200	"	0.100		93.1	70-130			
o-Xylene	0.0922	0.00200	"	0.100		92.2	70-130			
m,p-Xylene	0.194	0.00400	"	0.200		97.2	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.12		"	0.125		92.8	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		97.2	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		99.7	70-130			

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B4J3147 - EPA 5030 (soil)**

<b>Matrix Spike (B4J3147-MS1)</b>	<b>Source: E4J0016-01</b>			<b>Prepared: 10/31/2024 Analyzed: 10/31/2024</b>						
1,2,4-Trimethylbenzene	0.0841	0.00200	mg/kg	0.100	ND	84.1	70-130			
1,3,5-Trimethylbenzene	0.0825	0.00200	"	0.100	ND	82.5	70-130			
Benzene	0.0944	0.00200	"	0.100	ND	94.4	70-130			
Ethylbenzene	0.0790	0.00200	"	0.100	ND	79.0	70-130			
Naphthalene	0.0857	0.00380	"	0.100	ND	85.7	70-130			
Toluene	0.0813	0.00200	"	0.100	ND	81.3	70-130			
o-Xylene	0.0776	0.00200	"	0.100	ND	77.6	70-130			
m,p-Xylene	0.160	0.00400	"	0.200	ND	80.2	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.13		"	0.125		101	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		95.3	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		99.2	70-130			

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 Wheat Ridge CO 80033

Jeremy Espinoza  
 Project Number: 09A1417184  
 Project: KMG - Sherwood L Fed 30-29D Wellhead

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B4J3147 - EPA 5030 (soil)

Matrix Spike Dup (B4J3147-MSD1)	Source: E4J0016-01		Prepared: 10/31/2024 Analyzed: 10/31/2024							
1,2,4-Trimethylbenzene	0.0796	0.00200	mg/kg	0.100	ND	79.6	70-130	5.55	20	
1,3,5-Trimethylbenzene	0.0785	0.00200	"	0.100	ND	78.5	70-130	4.94	20	
Benzene	0.0910	0.00200	"	0.100	ND	91.0	70-130	3.67	20	
Ethylbenzene	0.0764	0.00200	"	0.100	ND	76.4	70-130	3.37	20	
Naphthalene	0.0803	0.00380	"	0.100	ND	80.3	70-130	6.48	20	
Toluene	0.0778	0.00200	"	0.100	ND	77.8	70-130	4.38	20	
o-Xylene	0.0747	0.00200	"	0.100	ND	74.7	70-130	3.75	20	
m,p-Xylene	0.155	0.00400	"	0.200	ND	77.3	70-130	3.71	20	
Surrogate: 1,2-Dichloroethane-d4	0.12		"	0.125		99.2	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		95.1	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**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Metals by EPA 6000/7000 Series Methods - Quality Control**  
**Origins Laboratory**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B4J3148 - EPA 3050B**

**Blank (B4J3148-BLK1)**

Prepared: 10/31/2024 Analyzed: 11/01/2024

Arsenic	ND	0.290	mg/kg							
Barium	ND	10.0	"							
Cadmium	ND	0.100	"							
Copper	ND	10.0	"							
Lead	ND	1.00	"							
Nickel	ND	1.00	"							
Selenium	ND	0.260	"							
Silver	ND	0.100	"							
Zinc	ND	37.0	"							

**LCS (B4J3148-BS1)**

Prepared: 10/31/2024 Analyzed: 11/01/2024

Arsenic	5.32	0.290	mg/kg	5.00		106	80-120			
Barium	539	10.0	"	500		108	80-120			
Cadmium	5.29	0.100	"	5.00		106	80-120			
Copper	54.7	10.0	"	50.0		109	80-120			
Lead	5.26	1.00	"	5.00		105	80-120			
Nickel	5.41	1.00	"	5.00		108	80-120			
Selenium	5.39	0.260	"	5.00		108	80-120			
Silver	5.32	0.100	"	5.00		106	80-120			
Zinc	51.6	37.0	"	50.0		103	80-120			

**Matrix Spike (B4J3148-MS1)**

**Source: E4J0019-06**

Prepared: 10/31/2024 Analyzed: 11/01/2024

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**Metals by EPA 6000/7000 Series Methods - Quality Control**  
**Origins Laboratory**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B4J3148 - EPA 3050B**

<b>Matrix Spike (B4J3148-MS1)</b>		<b>Source: E4J0019-06</b>			<b>Prepared: 10/31/2024 Analyzed: 11/01/2024</b>					
Arsenic	10.6	0.248	mg/kg	4.27	3.32	170	75-125			QM-07
Barium	595	8.55	"	427	133	108	75-125			
Cadmium	4.99	0.0855	"	4.27	0.165	113	75-125			
Copper	56.8	8.55	"	42.7	6.85	117	75-125			
Lead	14.0	0.855	"	4.27	8.35	132	75-125			QM-07
Nickel	14.0	0.855	"	4.27	8.02	140	75-125			QM-07
Selenium	5.40	0.222	"	4.27	0.719	110	75-125			
Silver	4.82	0.0855	"	4.27	0.0126	112	75-125			
Zinc	75.4	31.6	"	42.7	30.5	105	75-125			

<b>Matrix Spike Dup (B4J3148-MSD1)</b>		<b>Source: E4J0019-06</b>			<b>Prepared: 10/31/2024 Analyzed: 11/01/2024</b>					
Arsenic	13.8	0.249	mg/kg	4.29	3.32	244	75-125	26.0	20	QM-07, QR-DUP
Barium	625	8.59	"	429	133	115	75-125	4.84	20	
Cadmium	4.80	0.0859	"	4.29	0.165	108	75-125	3.93	20	
Copper	55.8	8.59	"	42.9	6.85	114	75-125	1.67	20	
Lead	13.2	0.859	"	4.29	8.35	113	75-125	5.77	20	
Nickel	17.4	0.859	"	4.29	8.02	219	75-125	21.6	20	QM-07, QR-DUP
Selenium	5.48	0.223	"	4.29	0.719	111	75-125	1.39	20	
Silver	4.58	0.0859	"	4.29	0.0126	106	75-125	5.13	20	
Zinc	80.4	31.8	"	42.9	30.5	116	75-125	6.45	20	

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**EPA 8270E (SW846) - Semivolatile Organic Compounds - Quality Control**  
**Origins Laboratory**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B4J3145 - EPA 3580**

**Blank (B4J3145-BLK1)**

Prepared: 10/31/2024 Analyzed: 11/06/2024

1-Methylnaphthalene	ND	0.002	mg/kg							U
2-Methylnaphthalene	ND	0.002	"							U
Acenaphthene	ND	0.020	"							U
Anthracene	ND	0.020	"							U
Benzo (a) anthracene	ND	0.005	"							U
Benzo (a) pyrene	ND	0.020	"							U
Benzo (b) fluoranthene	ND	0.020	"							U
Benzo (g,h,i) perylene	ND	0.020	"							U
Benzo (k) fluoranthene	ND	0.020	"							U
Chrysene	ND	0.020	"							U
Dibenz (a,h) anthracene	ND	0.020	"							U
Fluoranthene	ND	0.020	"							U
Fluorene	ND	0.020	"							U
Indeno (1,2,3-cd) pyrene	ND	0.020	"							U
Naphthalene	ND	0.002	"							U
Phenanthrene	ND	0.020	"							U
Pyrene	ND	0.020	"							U

Surrogate: Fluorene-d10	200		ug/kg	200	101	60-130
Surrogate: Anthracene-d10	190		"	200	93.0	60-130
Surrogate: Pyrene-d10	190		"	200	96.5	60-130
Surrogate: Benzo (a) pyrene-d12	200		"	200	99.2	60-130

**LCS (B4J3145-BS1)**

Prepared: 10/31/2024 Analyzed: 11/06/2024

1-Methylnaphthalene	0.193	0.002	mg/kg	0.200	96.7	70-130
2-Methylnaphthalene	0.193	0.002	"	0.200	96.5	70-130
Acenaphthene	0.198	0.020	"	0.200	99.0	70-130
Anthracene	0.190	0.020	"	0.200	94.8	70-130

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## EPA 8270E (SW846) - Semivolatile Organic Compounds - Quality Control Origins Laboratory

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B4J3145 - EPA 3580**

**LCS (B4J3145-BS1)**

Prepared: 10/31/2024 Analyzed: 11/06/2024

Benzo (a) anthracene	0.213	0.005	mg/kg	0.200		107	70-130			
Benzo (a) pyrene	0.219	0.020	"	0.200		109	70-130			
Benzo (b) fluoranthene	0.199	0.020	"	0.200		99.6	70-130			
Benzo (g,h,i) perylene	0.202	0.020	"	0.200		101	70-130			
Benzo (k) fluoranthene	0.196	0.020	"	0.200		97.8	70-130			
Chrysene	0.189	0.020	"	0.200		94.5	70-130			
Dibenz (a,h) anthracene	0.226	0.020	"	0.200		113	70-130			
Fluoranthene	0.201	0.020	"	0.200		100	70-130			
Fluorene	0.198	0.020	"	0.200		99.2	70-130			
Indeno (1,2,3-cd) pyrene	0.227	0.020	"	0.200		114	70-130			
Naphthalene	0.197	0.002	"	0.200		98.6	70-130			
Phenanthrene	0.194	0.020	"	0.200		97.2	70-130			
Pyrene	0.195	0.020	"	0.200		97.3	70-130			
Surrogate: Fluorene-d10	210		ug/kg	200		104	60-130			
Surrogate: Anthracene-d10	190		"	200		96.4	60-130			
Surrogate: Pyrene-d10	190		"	200		95.1	60-130			
Surrogate: Benzo (a) pyrene-d12	200		"	200		98.6	60-130			

**Matrix Spike (B4J3145-MS1)**

**Source: E4J0016-01**

Prepared: 10/31/2024 Analyzed: 11/06/2024

1-Methylnaphthalene	0.232	0.002	mg/kg	0.200	0.010	111	70-130			
2-Methylnaphthalene	0.282	0.002	"	0.200	0.023	129	70-130			
Acenaphthene	0.210	0.020	"	0.200	0.002	104	70-130			
Anthracene	0.204	0.020	"	0.200	0.005	99.9	70-130			
Benzo (a) anthracene	0.194	0.005	"	0.200	0.007	93.5	70-130			
Benzo (a) pyrene	0.210	0.020	"	0.200	0.006	102	70-130			
Benzo (b) fluoranthene	0.210	0.020	"	0.200	0.008	101	70-130			
Benzo (g,h,i) perylene	0.213	0.020	"	0.200	0.008	103	70-130			

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**EPA 8270E (SW846) - Semivolatile Organic Compounds - Quality Control**  
**Origins Laboratory**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B4J3145 - EPA 3580**

<b>Matrix Spike (B4J3145-MS1)</b>	<b>Source: E4J0016-01</b>			<b>Prepared: 10/31/2024 Analyzed: 11/06/2024</b>						
Benzo (k) fluoranthene	0.213	0.020	mg/kg	0.200	0.005	104	70-130			
Chrysene	0.204	0.020	"	0.200	0.013	95.2	70-130			
Dibenz (a,h) anthracene	0.229	0.020	"	0.200	0.006	111	70-130			
Fluoranthene	0.195	0.020	"	0.200	0.007	94.2	70-130			
Fluorene	0.218	0.020	"	0.200	0.005	106	70-130			
Indeno (1,2,3-cd) pyrene	0.238	0.020	"	0.200	0.009	114	70-130			
Naphthalene	0.204	0.002	"	0.200	0.003	100	70-130			
Phenanthrene	0.219	0.020	"	0.200	0.011	104	70-130			
Pyrene	0.196	0.020	"	0.200	0.009	93.9	70-130			
Surrogate: Fluorene-d10	210		ug/kg	200		105	60-130			
Surrogate: Anthracene-d10	190		"	200		96.0	60-130			
Surrogate: Pyrene-d10	190		"	200		96.7	60-130			
Surrogate: Benzo (a) pyrene-d12	200		"	200		101	60-130			

<b>Matrix Spike Dup (B4J3145-MSD1)</b>	<b>Source: E4J0016-01</b>			<b>Prepared: 10/31/2024 Analyzed: 11/06/2024</b>						
1-Methylnaphthalene	0.206	0.002	mg/kg	0.200	0.010	97.9	70-130	11.7	20	
2-Methylnaphthalene	0.219	0.002	"	0.200	0.023	98.0	70-130	24.9	20	QR-02
Acenaphthene	0.199	0.020	"	0.200	0.002	98.7	70-130	5.16	20	
Anthracene	0.182	0.020	"	0.200	0.005	88.8	70-130	11.5	20	
Benzo (a) anthracene	0.214	0.005	"	0.200	0.007	104	70-130	10.1	20	
Benzo (a) pyrene	0.227	0.020	"	0.200	0.006	111	70-130	8.17	20	
Benzo (b) fluoranthene	0.217	0.020	"	0.200	0.008	104	70-130	3.08	20	
Benzo (g,h,i) perylene	0.200	0.020	"	0.200	0.008	96.0	70-130	6.32	20	
Benzo (k) fluoranthene	0.216	0.020	"	0.200	0.005	106	70-130	1.52	20	
Chrysene	0.219	0.020	"	0.200	0.013	103	70-130	7.43	20	
Dibenz (a,h) anthracene	0.223	0.020	"	0.200	0.006	108	70-130	2.71	20	
Fluoranthene	0.212	0.020	"	0.200	0.007	103	70-130	8.53	20	

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**EPA 8270E (SW846) - Semivolatile Organic Compounds - Quality Control**  
**Origins Laboratory**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B4J3145 - EPA 3580**

<b>Matrix Spike Dup (B4J3145-MSD1)</b>	<b>Source: E4J0016-01</b>			<b>Prepared: 10/31/2024 Analyzed: 11/06/2024</b>						
Fluorene	0.194	0.020	mg/kg	0.200	0.005	94.8	70-130	11.4	20	
Indeno (1,2,3-cd) pyrene	0.232	0.020	"	0.200	0.009	112	70-130	2.50	20	
Naphthalene	0.197	0.002	"	0.200	0.003	96.9	70-130	3.47	20	
Phenanthrene	0.213	0.020	"	0.200	0.011	101	70-130	2.65	20	
Pyrene	0.210	0.020	"	0.200	0.009	101	70-130	6.61	20	
Surrogate: Fluorene-d10	200		ug/kg	200		98.5	60-130			
Surrogate: Anthracene-d10	190		"	200		93.4	60-130			
Surrogate: Pyrene-d10	190		"	200		97.5	60-130			
Surrogate: Benzo (a) pyrene-d12	200		"	200		102	60-130			

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**Classical Chemistry Parameters - Quality Control**  
**Origins Laboratory**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B4K0605 - DTPA Sorbitol Preparation</b>										
<b>Blank (B4K0605-BLK1)</b>					Prepared: 11/06/2024 Analyzed: 11/07/2024					
Boron	ND	0.100	mg/L							
<b>Duplicate (B4K0605-DUP1)</b>					Source: E4J0020-01 Prepared: 11/06/2024 Analyzed: 11/07/2024					
Boron	0.233	0.0987	mg/L		0.145			46.3	50	

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**Saturated Paste - Quality Control**  
**Origins Laboratory**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B4K0428 - Saturated Paste pH/EC**

Duplicate (B4K0428-DUP1)	Source: E4J0019-02	Prepared: 11/04/2024	Analyzed: 11/05/2024		
pH	8.26	pH Units	8.19	0.851	25

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### Notes and Definitions

U Sample is Non-Detect.

QR-DUP RPD exceeds QC acceptance criteria, this indicates source sample is not homogenous.

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-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 on a wet weight basis.

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