

TABLE 1
SOIL SAMPLE ANALYTICAL AND FIELD RESULTS
NEWBY STATE 36N-4HZ HOT OILER
WELD COUNTY, COLORADO
KERR-MCGEE OIL & GAS ONSHORE, LP

Analyte	COGCC Table 915-1 Allowable Levels	BG01	SS01@2"	SS02@2"	B01@1.5'	B02@1.5'
		3/4/2021	3/4/2021	3/4/2021	3/26/2021	3/26/2021
Photoionization Detector Reading						
PID (ppm)	NA	NA	3.7	1.3	0.0	0.0
Total Petroleum Hydrocarbons by USEPA Method 8015D						
TPH-GRO* (mg/kg)	500	NA	0.654	0.385	NA	NA
TPH-DRO* (mg/kg)	500	NA	<25.0	<25.0	NA	NA
TPH-RRO* (mg/kg)	500	NA	<100	<100	NA	NA
Soil Suitability for Reclamation						
EC (mmhos/cm)	4	1.37	0.673	2.03	NA	NA
Sodium Adsorption Ratio (units)	6	2.33	6.01	1.82	2.17	NA
pH, Lab (pH units)	6-8.3	7.69	7.56	7.35	NA	NA
Boron (mg/L)	2	1.2	1.6	1.0	NA	NA
Soil Suitability for Reclamation (Residential Screening Levels)						
Benzene (mg/kg)	1.2	NA	0.00670	<0.00200	NA	NA
Toluene (mg/kg)	490	NA	0.0395	<0.00200	NA	NA
Ethylbenzene (mg/kg)	5.8	NA	0.00502	<0.00200	NA	NA
1,2,4-Trimethylbenzene (mg/kg)	30	NA	0.00484	0.00304	NA	NA
1,3,5-Trimethylbenzene (mg/kg)	27	NA	0.00228	<0.00200	NA	NA
Acenaphthene (mg/kg)	360	<0.00390	0.0346	<0.00390	NA	NA
Anthracene (mg/kg)	1800	<0.00390	<0.00403	<0.00390	NA	NA
Benzo (a) anthracene (mg/kg)	1.1	<0.00390	<0.00403	<0.00390	NA	NA
Benzo (b) fluoranthene (mg/kg)	1.1	0.00273	<0.00403	0.00234	NA	NA
Benzo (k) fluoranthene (mg/kg)	11	<0.00390	<0.00403	<0.00390	NA	NA
Benzo (a) pyrene (mg/kg)	0.11	<0.00390	<0.00403	<0.00390	NA	NA
Chrysene (mg/kg)	110	0.00195	<0.00403	0.00351	NA	NA
Fluoranthene (mg/kg)	240	0.00234	<0.00403	0.00312	NA	NA
Fluorene (mg/kg)	240	<0.00390	<0.00403	0.00624	NA	NA
Indeno (1,2,3-cd) pyrene (mg/kg)	1.1	<0.00390	<0.00403	<0.00390	NA	NA
1-Methylnaphthalene (mg/kg)	18	<0.00390	0.00886	0.0214	NA	NA
2-Methylnaphthalene (mg/kg)	24	<0.00390	0.0137	0.0406	NA	NA
Naphthalene (mg/kg)	2	<0.00390	<0.00403	0.00624	NA	NA
Pyrene (mg/kg)	180	0.00273	0.00201	0.00312	NA	NA
Metals in Soils (Residential Screening Levels)						
Arsenic (mg/kg)	0.68	6.04	6.26	6.07	3.8	3.68
Barium (mg/kg)	15000	174	194	168	NA	NA
Cadmium (mg/kg)	71	0.195	0.187	0.192	NA	NA
Copper (mg/kg)	3100	12.3	12.6	11.7	NA	NA
Lead (mg/kg)	400	13.6	13.5	13.2	NA	NA
Nickel (mg/kg)	1500	14.4	14.4	14.3	NA	NA
Selenium (mg/kg)	390	1.43	1.54	1.49	NA	NA
Silver (mg/kg)	390	<0.548	<0.554	<0.528	NA	NA

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SOIL SAMPLE ANALYTICAL AND FIELD RESULTS
NEWBY STATE 36N-4HZ HOT OILER
WELD COUNTY, COLORADO
KERR-MCGEE OIL & GAS ONSHORE, LP

Analyte	COGCC Table 915-1 Allowable Levels	BG01	SS01@2"	SS02@2"	B01@1.5'	B02@1.5'
		3/4/2021	3/4/2021	3/4/2021	3/26/2021	3/26/2021
Zinc (mg/kg)	23000	48.8	50.4	52.8	NA	NA

Notes:

COGCC - Colorado Oil and Gas Conservation Commission
mg/kg - milligrams per kilogram
PID - Photoionization Detector
ppm - parts per million
TPH - total petroleum hydrocarbons
GRO - gasoline range organics
DRO - diesel range organics
RRO - residual range organics

EC - electrical conductivity
SAR - sodium adsorption ratio
mmhos/cm - millimhos per centimeter
<0.00200 - less than laboratory reporting limit
NA - Not Applicable / Not Analyzed
Bold indicates exceeds allowable level
*Allowable level for TPH is 500 mg/kg for combined GRO,
DRO, and RRO

March 11, 2021

WSP USA

Brian Sulzberger

4600 W. 60th Ave.

Arvada

CO

80003

Project Name - KMG - Newby State 36N-4HZ Hot Oil **Project Number - [none]**

Attached are your analytical results for KMG - Newby State 36N-4HZ Hot Oil received by Origins Laboratory, Inc. March 04, 2021. This project is associated with Origins project number Y103096-01.

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



WSP USA

4600 W. 60th Ave.

Arvada

CO

80003

Brian Sulzberger

Project Number: [none]

Project: KMG - Newby State 36N-4HZ Hot Oil

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS01@2"	Y103096-01	Soil	March 4, 2021 13:45	03/04/2021 16:57
SS02@2"	Y103096-02	Soil	March 4, 2021 13:50	03/04/2021 16:57
BG01	Y103096-03	Soil	March 4, 2021 14:02	03/04/2021 16:57

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.

WSP USA
4600 W. 60th Ave.
Arvada CO 80003

Brian Sulzberger
Project Number: [none]
Project: KMG - Newby State 36N-4HZ Hot Oil

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page 1 of 1

ORIGINS
LABORATORY, INC

41030946

Client: WSP
Address: 4600 W 60th Ave Arvada
Project Manager: B. Sulzberger
Project Name: Newby State 36N-4HZ Hot Oil
Project Number: 41030946
Samples Collected By: D. J. Mathis
Telephone Number: 303.265.9645
Email Address: km@originslab.com

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

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative				Matrix		Analysis				Sample Instructions
				Unpreserved	HCl	HNO ₃	Other	Groundwater	Soil	Air Summa	Other	915 Methyl	915 (5P)	
SS01 (2")	3-1-21	1345	5	X				X						Presidential Standards
SS02 (2")	3-1-21	1350	5	X				X						
BE-01	3-1-21	1402	5	X				X						
														2
														3
														4
														5
														6
														7
														8
														9
														10

Relinquished By:	Date:	Time:	Received By:	Date:	Time:	Turnaround Time:
Jordan A. Merrill	3/4/21	1657	Jordan A. Merrill	3-4-21	1657	Same Day <input checked="" type="checkbox"/> 24 Hr <input type="checkbox"/>
						48 Hr <input type="checkbox"/> 72 Hr <input type="checkbox"/>
						Standard <input type="checkbox"/>

Date Results Needed

Temp Received: 4.9

Origins Laboratory, Inc.

Jordan A. Merrill

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WSP USA

4600 W. 60th Ave.

Arvada

CO

80003

Brian Sulzberger

Project Number: [none]

Project: KMG - Newby State 36N-4HZ Hot Oil

Origins Laboratory

Sample Receipt Checklist

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

Origins Work Order: Y103094

Client: WSP

Client Project ID: KMG - Newby State

Checklist Completed by: jm

Shipped Via: HD

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

Date/time completed: 3-4-21

Airbill #: N/A

Matrix(s) Received: (Check all that apply): ☒ Soil/Solid

☐ Water

☐ Other:

(Describe)

Cooler Number/Temperature: 14.9 °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 ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Is there ice present (document if blue ice is used)	<input checked="" type="checkbox"/>			
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)			<input checked="" 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 checked="" type="checkbox"/>	
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Are short holding time analytes or samples with HTs due within 48 hours present ⁽¹⁾ ?			<input checked="" type="checkbox"/>	
Is a chain-of-custody (COC) present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client with date and time recorded ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.			<input checked="" type="checkbox"/>	
Are samples preserved that require preservation and was it checked ⁽¹⁾ ? (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 ₃ , HCL, H ₂ SO ₄) / (pH >10 for samples preserved with NaAsO ₂ +NaOH, ZnAc+NaOH)			<input checked="" type="checkbox"/>	
Additional Comments (if any):				

⁽¹⁾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: jm (Project Manager)

Date/Time Reviewed: 3-4-21

Origins Laboratory, Inc.

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WSP USA
4600 W. 60th Ave.
Arvada CO 80003

Brian Sulzberger
Project Number: [none]
Project: KMG - Newby State 36N-4HZ Hot Oil

SS01@2"

3/4/2021 1:45:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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AAL, Inc.
Y103096-01 (Soil)

Boron (Sorbitol)

Boron	1.6		mg/L	1	[none]	03/08/2021	03/10/2021	
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DRO/ORO by EPA 8015D

Diesel (C10-C28)	ND	25.0	mg/kg	1	B1C0413	03/04/2021	03/04/2021	Ua
Residual Range Organics (C28-C40)	ND	100	"	"	"	"	"	Ua

Surrogate: o-Terphenyl	63.5 %	50-150			"	"	"
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GBTEX+TMBs

1,2,4-Trimethylbenzene	0.00484	0.00200	mg/kg	1	B1C0412	03/04/2021	03/04/2021
1,3,5-Trimethylbenzene	0.00228	0.00200	"	"	"	"	"
Benzene	0.00670	0.00200	"	"	"	"	"
Ethylbenzene	0.00502	0.00200	"	"	"	"	"
m,p-Xylene	0.0384	0.00400	"	"	"	"	"
o-Xylene	0.0103	0.00200	"	"	"	"	"
Toluene	0.0395	0.00200	"	"	"	"	"
Gasoline Range Hydrocarbons	0.654	0.200	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	105 %	70-130			"	"	"
Surrogate: Toluene-d8	95.7 %	70-130			"	"	"

Origins Laboratory, Inc.

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WSP USA
4600 W. 60th Ave.
Arvada CO 80003

Brian Sulzberger
Project Number: [none]
Project: KMG - Newby State 36N-4HZ Hot Oil

SS01@2"

3/4/2021 1:45:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y103096-01 (Soil)

GBTEX+TMBs

Surrogate: 4-Bromofluorobenzene	91.5 %	70-130	B1C04 12	03/04/2021	03/04/2021
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Metals (Saturated Paste Prep)

Calcium	2.48	me/L	1	[none]	03/08/2021	03/10/2021
Magnesium	1.36	"	"	"	"	"
Sodium	8.33	"	"	"	"	"

PAH by EPA 8270D SIM

1-Methylnaphthalene	0.00886	0.00133	0.00403	mg/kg dry	1	2100479	03/09/2021	03/10/2021	
2-Methylnaphthalene	0.0137	0.00133	0.00403	"	"	"	"	"	
Acenaphthene	0.0346	0.00133	0.00403	"	"	"	"	"	
Anthracene	ND	0.00133	0.00403	"	"	"	"	"	U
Benzo(a)anthracene	ND	0.00133	0.00403	"	"	"	"	"	U
Benzo(a)pyrene	ND	0.00133	0.00403	"	"	"	"	"	U
Benzo(b)fluoranthene	ND	0.00133	0.00403	"	"	"	"	"	U
Benzo(k)fluoranthene	ND	0.00133	0.00403	"	"	"	"	"	U
Chrysene	ND	0.00133	0.00403	"	"	"	"	"	U
Dibenzo(a,h)anthracene	ND	0.00133	0.00403	"	"	"	"	"	U
Fluoranthene	ND	0.00133	0.00403	"	"	"	"	"	U
Fluorene	ND	0.00133	0.00403	"	"	"	"	"	U

Origins Laboratory, Inc.

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WSP USA
4600 W. 60th Ave.
Arvada CO 80003

Brian Sulzberger
Project Number: [none]
Project: KMG - Newby State 36N-4HZ Hot Oil

SS01@2"

3/4/2021 1:45:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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GEL Laboratories, LLC
Y103096-01 (Soil)

PAH by EPA 8270D SIM

Indeno(1,2,3-cd)pyrene	ND	0.00133	0.00403	mg/kg dry	1	2100479	03/09/2021	03/10/2021	U
Naphthalene	ND	0.00133	0.00403	"	"	"	"	"	U
Pyrene	0.00201	0.00133	0.00403	"	"	"	"	"	J

Surrogate: 5-alpha-Androstane 76 % 25-121 " " "

pH in Soil by EPA 9045D

pH	7.56			pH Units	1	B1C0507	03/05/2021	03/05/2021	
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SAR by 20B Saturated Paste

SAR	6.01				1	[none]	03/08/2021	03/10/2021	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.673		0.00500	mmhos/cm	1	B1C0508	03/05/2021	03/05/2021	
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Total Metals by EPA 6020A

Zinc	50.4	0.961	4.81	mg/kg dry	2	2101133	03/10/2021	03/11/2021	
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Total Metals by EPA 6010C

Origins Laboratory, Inc.



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WSP USA
4600 W. 60th Ave.
Arvada CO 80003

Brian Sulzberger
Project Number: [none]
Project: KMG - Newby State 36N-4HZ Hot Oil

SS01@2"

3/4/2021 1:45:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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GEL Laboratories, LLC
Y103096-01 (Soil)

Total Metals by EPA 6010C

Silver	ND	0.111	0.554	mg/kg dry	1	2100194	03/08/2021	03/09/2021	U
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Total Metals by EPA 6020A

Arsenic	6.26	0.380	1.12	mg/kg dry	2	2100198	"	03/09/2021	
Barium	194	0.112	0.900	"	"	"	"	"	
Cadmium	0.187	0.0225	0.225	"	"	"	"	"	J
Copper	12.6	0.0742	0.450	"	"	"	"	"	
Lead	13.5	0.112	0.450	"	"	"	"	"	
Nickel	14.4	0.112	0.450	"	"	"	"	"	
Selenium	1.54	0.405	1.12	"	"	"	"	"	

Total Metals by EPA 7196A

Hexavalent Chromium	0.219	0.185	0.462	mg/kg dry	1	2099153	03/10/2021	03/11/2021	J
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Origins Laboratory, Inc.



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WSP USA
4600 W. 60th Ave.
Arvada CO 80003

Brian Sulzberger
Project Number: [none]
Project: KMG - Newby State 36N-4HZ Hot Oil

SS02@2"

3/4/2021 1:50:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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AAL, Inc. Y103096-02 (Soil)

Boron (Sorbitol)

Boron	1.0		mg/L	1	[none]	03/08/2021	03/10/2021	
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DRO/ORO by EPA 8015D

Diesel (C10-C28)	ND	25.0	mg/kg	1	B1C0413	03/04/2021	03/04/2021	Ua
Residual Range Organics (C28-C40)	ND	100	"	"	"	"	"	Ua

Surrogate: o-Terphenyl	62.9 %	50-150			"	"	"	
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GBTEX+TMBs

1,2,4-Trimethylbenzene	0.00304	0.00200	mg/kg	1	B1C0412	03/04/2021	03/04/2021	
1,3,5-Trimethylbenzene	ND	0.00200	"	"	"	"	"	Ua
Benzene	ND	0.00200	"	"	"	"	"	Ua
Ethylbenzene	ND	0.00200	"	"	"	"	"	Ua
m,p-Xylene	ND	0.00400	"	"	"	"	"	Ua
o-Xylene	ND	0.00200	"	"	"	"	"	Ua
Toluene	ND	0.00200	"	"	"	"	"	Ua
Gasoline Range Hydrocarbons	0.385	0.200	"	"	"	"	"	

Origins Laboratory, Inc.



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WSP USA
4600 W. 60th Ave.
Arvada CO 80003

Brian Sulzberger
Project Number: [none]
Project: KMG - Newby State 36N-4HZ Hot Oil

SS02@2"

3/4/2021 1:50:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y103096-02 (Soil)

GBTEX+TMBs

Surrogate: 1,2-Dichloroethane-d4	110 %		70-130			B1C04 12	03/04/2021	03/04/2021	
Surrogate: Toluene-d8	93.6 %		70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	93.5 %		70-130			"	"	"	

Metals (Saturated Paste Prep)

Calcium	9.76			me/L	1	[none]	03/08/2021	03/10/2021	
Magnesium	5.06			"	"	"	"	"	
Sodium	4.96			"	"	"	"	"	

PAH by EPA 8270D SIM

1-Methylnaphthalene	0.0214	0.00129	0.00390	mg/kg dry	1	2100479	03/09/2021	03/10/2021	
2-Methylnaphthalene	0.0406	0.00129	0.00390	"	"	"	"	"	
Acenaphthene	ND	0.00129	0.00390	"	"	"	"	"	U
Anthracene	ND	0.00129	0.00390	"	"	"	"	"	U
Benzo(a)anthracene	ND	0.00129	0.00390	"	"	"	"	"	U
Benzo(a)pyrene	ND	0.00129	0.00390	"	"	"	"	"	U
Benzo(b)fluoranthene	0.00234	0.00129	0.00390	"	"	"	"	"	J
Benzo(k)fluoranthene	ND	0.00129	0.00390	"	"	"	"	"	U
Chrysene	0.00351	0.00129	0.00390	"	"	"	"	"	J
Dibenzo(a,h)anthracene	ND	0.00129	0.00390	"	"	"	"	"	U
Fluoranthene	0.00312	0.00129	0.00390	"	"	"	"	"	J

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.

WSP USA
4600 W. 60th Ave.
Arvada CO 80003

Brian Sulzberger
Project Number: [none]
Project: KMG - Newby State 36N-4HZ Hot Oil

SS02@2"

3/4/2021 1:50:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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GEL Laboratories, LLC
Y103096-02 (Soil)

PAH by EPA 8270D SIM

Fluorene	0.00624	0.00129	0.00390	mg/kg dry	1	2100479	03/09/2021	03/10/2021	
Indeno(1,2,3-cd)pyrene	ND	0.00129	0.00390	"	"	"	"	"	U
Naphthalene	0.00624	0.00129	0.00390	"	"	"	"	"	
Pyrene	0.00312	0.00129	0.00390	"	"	"	"	"	J

Surrogate: 5-alpha-Androstane 79 % 25-121 " " "

pH in Soil by EPA 9045D

pH	7.35			pH Units	1	B1C0507	03/05/2021	03/05/2021	
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SAR by 20B Saturated Paste

SAR	1.82				1	[none]	03/08/2021	03/10/2021	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	2.03		0.00500	mmhos/cm	1	B1C0508	03/05/2021	03/05/2021	
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Total Metals by EPA 6020A

Zinc	52.8	0.850	4.25	mg/kg dry	2	2101133	03/10/2021	03/11/2021	
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Total Metals by EPA 6010C

Origins Laboratory, Inc.



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WSP USA
4600 W. 60th Ave.
Arvada CO 80003

Brian Sulzberger
Project Number: [none]
Project: KMG - Newby State 36N-4HZ Hot Oil

SS02@2"

3/4/2021 1:50:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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GEL Laboratories, LLC
Y103096-02 (Soil)

Total Metals by EPA 6010C

Silver	ND	0.106	0.528	mg/kg dry	1	2100194	03/08/2021	03/09/2021	U
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Total Metals by EPA 6020A

Arsenic	6.07	0.350	1.04	mg/kg dry	2	2100198	"	03/09/2021	
Barium	168	0.104	0.829	"	"	"	"	"	
Cadmium	0.192	0.0207	0.207	"	"	"	"	"	J
Copper	11.7	0.0684	0.415	"	"	"	"	"	
Lead	13.2	0.104	0.415	"	"	"	"	"	
Nickel	14.3	0.104	0.415	"	"	"	"	"	
Selenium	1.49	0.373	1.04	"	"	"	"	"	

Total Metals by EPA 7196A

Hexavalent Chromium	ND	0.170	0.424	mg/kg dry	1	2099153	03/10/2021	03/11/2021	U
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Origins Laboratory, Inc.



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WSP USA
4600 W. 60th Ave.
Arvada CO 80003

Brian Sulzberger
Project Number: [none]
Project: KMG - Newby State 36N-4HZ Hot Oil

BG01

3/4/2021 2:02:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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AAL, Inc. Y103096-03 (Soil)

Boron (Sorbitol)

Boron	1.2		mg/L	1	[none]	03/08/2021	03/10/2021
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Metals (Saturated Paste Prep)

Calcium	9.69		me/L	1	[none]	"	03/10/2021
Magnesium	5.70		"	"	"	"	"
Sodium	6.47		"	"	"	"	"

PAH by EPA 8270D SIM

1-Methylnaphthalene	ND	0.00129	0.00390	mg/kg dry	1	2100479	03/09/2021	03/10/2021	U
2-Methylnaphthalene	ND	0.00129	0.00390	"	"	"	"	"	U
Acenaphthene	ND	0.00129	0.00390	"	"	"	"	"	U
Anthracene	ND	0.00129	0.00390	"	"	"	"	"	U
Benzo(a)anthracene	ND	0.00129	0.00390	"	"	"	"	"	U
Benzo(a)pyrene	ND	0.00129	0.00390	"	"	"	"	"	U
Benzo(b)fluoranthene	0.00273	0.00129	0.00390	"	"	"	"	"	J
Benzo(k)fluoranthene	ND	0.00129	0.00390	"	"	"	"	"	U
Chrysene	0.00195	0.00129	0.00390	"	"	"	"	"	J
Dibenzo(a,h)anthracene	ND	0.00129	0.00390	"	"	"	"	"	U
Fluoranthene	0.00234	0.00129	0.00390	"	"	"	"	"	J
Fluorene	ND	0.00129	0.00390	"	"	"	"	"	U
Indeno(1,2,3-cd)pyrene	ND	0.00129	0.00390	"	"	"	"	"	U

Origins Laboratory, Inc.

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WSP USA
4600 W. 60th Ave.
Arvada CO 80003

Brian Sulzberger
Project Number: [none]
Project: KMG - Newby State 36N-4HZ Hot Oil

BG01

3/4/2021 2:02:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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GEL Laboratories, LLC

Y103096-03 (Soil)

PAH by EPA 8270D SIM

Naphthalene	ND	0.00129	0.00390	mg/kg dry	1	2100479	03/09/2021	03/10/2021	U
Pyrene	0.00273	0.00129	0.00390	"	"	"	"	"	J

Surrogate: 5-alpha-Androstane	85 %		25-121			"	"	"	
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pH in Soil by EPA 9045D

pH	7.69			pH Units	1	B1C0507	03/05/2021	03/05/2021	
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SAR by 20B Saturated Paste

SAR	2.33				1	[none]	03/08/2021	03/10/2021	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	1.37		0.00500	mmhos/cm	1	B1C0508	03/05/2021	03/05/2021	
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Total Metals by EPA 6020A

Zinc	48.8	0.820	4.10	mg/kg dry	2	2101133	03/10/2021	03/11/2021	
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Total Metals by EPA 6010C

Silver	ND	0.110	0.548	mg/kg dry	1	2100194	03/08/2021	03/09/2021	U
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Origins Laboratory, Inc.



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WSP USA
4600 W. 60th Ave.
Arvada CO 80003

Brian Sulzberger
Project Number: [none]
Project: KMG - Newby State 36N-4HZ Hot Oil

BG01

3/4/2021 2:02:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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GEL Laboratories, LLC
Y103096-03 (Soil)

Total Metals by EPA 6020A

Arsenic	6.04	0.359	1.06	mg/kg dry	2	2100198	"	03/09/2021	
Barium	174	0.106	0.849	"	"	"	"	"	
Cadmium	0.195	0.0212	0.212	"	"	"	"	"	J
Copper	12.3	0.0701	0.425	"	"	"	"	"	
Lead	13.6	0.106	0.425	"	"	"	"	"	
Nickel	14.4	0.106	0.425	"	"	"	"	"	
Selenium	1.43	0.382	1.06	"	"	"	"	"	

Total Metals by EPA 7196A

Hexavalent Chromium	ND	0.181	0.453	mg/kg dry	1	2099153	03/10/2021	03/11/2021	U
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Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

WSP USA

4600 W. 60th Ave.

Arvada CO 80003

Brian Sulzberger

Project Number: [none]

Project: KMG - Newby State 36N-4HZ Hot Oil

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 B1C0412 - EPA 5030 (soil)

Blank (B1C0412-BLK1)

Prepared: 03/04/2021 Analyzed: 03/04/2021

1,2,4-Trimethylbenzene	ND	0.00200	mg/kg							Ua
Naphthalene	ND	0.0100	"							Ua
1,3,5-Trimethylbenzene	ND	0.00200	"							Ua
Benzene	ND	0.00200	"							Ua
Ethylbenzene	ND	0.00200	"							Ua
m,p-Xylene	ND	0.00400	"							Ua
o-Xylene	ND	0.00200	"							Ua
Toluene	ND	0.00200	"							Ua
Gasoline Range Hydrocarbons	ND	0.200	"							Ua
Surrogate: 1,2-Dichloroethane-d4	0.12		"	0.125		96.4	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		98.5	70-130			
Surrogate: 4-Bromofluorobenzene	0.11		"	0.125		89.6	70-130			

Origins Laboratory, Inc.

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WSP USA

4600 W. 60th Ave.

Arvada CO 80003

Brian Sulzberger

Project Number: [none]

Project: KMG - Newby State 36N-4HZ Hot Oil

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 B1C0412 - EPA 5030 (soil)

LCS (B1C0412-BS1)

Prepared: 03/04/2021 Analyzed: 03/04/2021

1,2,4-Trimethylbenzene	0.0565	0.00200	mg/kg	0.0500		113	70-130			
Naphthalene	0.0518	0.0100	"	0.0500		104	70-130			
1,3,5-Trimethylbenzene	0.0570	0.00200	"	0.0500		114	70-130			
Benzene	0.0559	0.00200	"	0.0500		112	70-130			
Ethylbenzene	0.0530	0.00200	"	0.0500		106	70-130			
m,p-Xylene	0.108	0.00400	"	0.100		108	70-130			
o-Xylene	0.0511	0.00200	"	0.0500		102	70-130			
Toluene	0.0554	0.00200	"	0.0500		111	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.12		"	0.125		95.0	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		97.0	70-130			
Surrogate: 4-Bromofluorobenzene	0.11		"	0.125		89.6	70-130			

Origins Laboratory, Inc.



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WSP USA

4600 W. 60th Ave.

Arvada CO 80003

Brian Sulzberger

Project Number: [none]

Project: KMG - Newby State 36N-4HZ Hot Oil

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 B1C0412 - EPA 5030 (soil)

Matrix Spike (B1C0412-MS1)		Source: Y103089-01			Prepared: 03/04/2021 Analyzed: 03/04/2021					
1,2,4-Trimethylbenzene	0.0471	0.00200	mg/kg	0.0500	0.00230	89.5	70-130			
Naphthalene	0.0454	0.0100	"	0.0500	0.00162	87.6	70-130			
1,3,5-Trimethylbenzene	0.0477	0.00200	"	0.0500	0.00148	92.4	70-130			
Benzene	0.0488	0.00200	"	0.0500	0.00398	89.6	70-130			
Ethylbenzene	0.0449	0.00200	"	0.0500	0.000620	88.6	70-130			
m,p-Xylene	0.0911	0.00400	"	0.100	0.00976	81.3	70-130			
o-Xylene	0.0436	0.00200	"	0.0500	0.00296	81.2	70-130			
Toluene	0.0476	0.00200	"	0.0500	0.0120	71.2	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.12		"	0.125		96.7	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		96.7	70-130			
Surrogate: 4-Bromofluorobenzene	0.11		"	0.125		89.7	70-130			

Origins Laboratory, Inc.



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WSP USA

4600 W. 60th Ave.

Arvada CO 80003

Brian Sulzberger

Project Number: [none]

Project: KMG - Newby State 36N-4HZ Hot Oil

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 B1C0412 - EPA 5030 (soil)

Matrix Spike Dup (B1C0412-MSD1)		Source: Y103089-01			Prepared: 03/04/2021 Analyzed: 03/04/2021					
1,2,4-Trimethylbenzene	0.0476	0.00200	mg/kg	0.0500	0.00230	90.6	70-130	1.18	20	
Naphthalene	0.0472	0.0100	"	0.0500	0.00162	91.1	70-130	3.76	20	
1,3,5-Trimethylbenzene	0.0482	0.00200	"	0.0500	0.00148	93.4	70-130	1.04	20	
Benzene	0.0492	0.00200	"	0.0500	0.00398	90.4	70-130	0.816	20	
Ethylbenzene	0.0454	0.00200	"	0.0500	0.000620	89.5	70-130	1.02	20	
m,p-Xylene	0.0920	0.00400	"	0.100	0.00976	82.2	70-130	0.961	20	
o-Xylene	0.0441	0.00200	"	0.0500	0.00296	82.4	70-130	1.28	20	
Toluene	0.0478	0.00200	"	0.0500	0.0120	71.6	70-130	0.419	20	
Surrogate: 1,2-Dichloroethane-d4	0.12		"	0.125		96.7	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		96.2	70-130			
Surrogate: 4-Bromofluorobenzene	0.11		"	0.125		91.2	70-130			

Origins Laboratory, Inc.



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WSP USA

4600 W. 60th Ave.

Arvada CO 80003

Brian Sulzberger

Project Number: [none]

Project: KMG - Newby State 36N-4HZ Hot Oil

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
Batch B1C0413 - EPA 3550B										
Blank (B1C0413-BLK1)					Prepared: 03/04/2021 Analyzed: 03/04/2021					
Diesel (C10-C28)	ND	25.0	mg/kg							Ua
Residual Range Organics (C28-C40)	ND	100	"							Ua
Surrogate: o-Terphenyl	17		"	25.0		66.7	50-150			

Origins Laboratory, Inc.



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WSP USA
4600 W. 60th Ave.
Arvada CO 80003

Brian Sulzberger
Project Number: [none]
Project: KMG - Newby State 36N-4HZ Hot Oil

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 B1C0413 - EPA 3550B

LCS (B1C0413-BS1)

Prepared: 03/04/2021 Analyzed: 03/04/2021

Diesel (C10-C28)	1100	50.0	mg/kg	1000		110	70-130			
Residual Range Organics (C28-C40)	1100	200	"	1000		110	70-130			
Surrogate: o-Terphenyl	47		"	50.0		93.8	50-150			

Origins Laboratory, Inc.



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WSP USA

4600 W. 60th Ave.

Arvada CO 80003

Brian Sulzberger

Project Number: [none]

Project: KMG - Newby State 36N-4HZ Hot Oil

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 B1C0413 - EPA 3550B

Matrix Spike (B1C0413-MS1)		Source: Y103089-01			Prepared: 03/04/2021 Analyzed: 03/04/2021					
Diesel (C10-C28)	914	50.0	mg/kg	1000	ND	91.4	70-130			
Residual Range Organics (C28-C40)	913	200	"	1000	ND	91.3	70-130			
Surrogate: o-Terphenyl	37		"	50.0		73.1	50-150			

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.

WSP USA

4600 W. 60th Ave.

Arvada CO 80003

Brian Sulzberger

Project Number: [none]

Project: KMG - Newby State 36N-4HZ Hot Oil

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 B1C0413 - EPA 3550B

Matrix Spike Dup (B1C0413-MSD1)		Source: Y103089-01			Prepared: 03/04/2021 Analyzed: 03/04/2021					
Diesel (C10-C28)	958	50.0	mg/kg	1000	ND	95.8	70-130	4.76	35	
Residual Range Organics (C28-C40)	960	200	"	1000	ND	96.0	70-130	5.02	35	
Surrogate: o-Terphenyl	40		"	50.0		79.3	50-150			

Origins Laboratory, Inc.



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WSP USA
4600 W. 60th Ave.
Arvada CO 80003

Brian Sulzberger
Project Number: [none]
Project: KMG - Newby State 36N-4HZ Hot Oil

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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Saturated Paste - 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 B1C0507 - NO PREP

Duplicate (B1C0507-DUP1)		Source: Y103073-01		Prepared: 03/05/2021 Analyzed: 03/05/2021						
pH	7.10		pH Units		7.16			0.842	25	

Batch B1C0508 - NO PREP

Blank (B1C0508-BLK1)		Prepared: 03/05/2021 Analyzed: 03/05/2021								
Specific Conductance (EC)	0.00470	0.00500	mmhos/cm							
Duplicate (B1C0508-DUP1)		Source: Y103073-01		Prepared: 03/05/2021 Analyzed: 03/05/2021						
Specific Conductance (EC)	0.956	0.00500	mmhos/cm		1.16			19.4	25	

Origins Laboratory, Inc.



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WSP USA
4600 W. 60th Ave.
Arvada CO 80003

Brian Sulzberger
Project Number: [none]
Project: KMG - Newby State 36N-4HZ Hot Oil

PAH by EPA 8270D SIM - 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 2100479 - SW846 3541

BLANK (1204768903-BLK)

Prepared: 03/09/2021 Analyzed: 03/09/2021

2-Methylnaphthalene	ND	0.00323	mg/kg				-			U
Chrysene	ND	0.00323	"				-			U
Benzo(k)fluoranthene	ND	0.00323	"				-			U
Benzo(b)fluoranthene	ND	0.00323	"				-			U
Benzo(a)pyrene	ND	0.00323	"				-			U
Benzo(a)anthracene	ND	0.00323	"				-			U
Anthracene	ND	0.00323	"				-			U
Pyrene	ND	0.00323	"				-			U
Dibenzo(a,h)anthracene	ND	0.00323	"				-			U
1-Methylnaphthalene	ND	0.00323	"				-			U
Acenaphthene	ND	0.00323	"				-			U
Fluorene	ND	0.00323	"				-			U
Indeno(1,2,3-cd)pyrene	ND	0.00323	"				-			U
Naphthalene	ND	0.00323	"				-			U
Fluoranthene	ND	0.00323	"				-			U

Surrogate: 5-alpha-Androstane

0.150

"

0.162

93

25-121

LCS (1204768904-BKS)

Prepared: 03/09/2021 Analyzed: 03/09/2021

Chrysene	0.287	0.00325	mg/kg	0.325		88	53-108
Pyrene	0.269	0.00325	"	0.325		83	42-114
Naphthalene	0.247	0.00325	"	0.325		76	52-106
Indeno(1,2,3-cd)pyrene	0.244	0.00325	"	0.325		75	40-132
Fluorene	0.268	0.00325	"	0.325		82	42-113
1-Methylnaphthalene	0.245	0.00325	"	0.325		75	50-109
Dibenzo(a,h)anthracene	0.269	0.00325	"	0.325		83	40-137
Benzo(k)fluoranthene	0.278	0.00325	"	0.325		86	39-119
2-Methylnaphthalene	0.248	0.00325	"	0.325		76	50-109

Origins Laboratory, Inc.

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WSP USA
4600 W. 60th Ave.
Arvada CO 80003

Brian Sulzberger
Project Number: [none]
Project: KMG - Newby State 36N-4HZ Hot Oil

PAH by EPA 8270D SIM - 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 2100479 - SW846 3541

LCS (1204768904-BKS)

Prepared: 03/09/2021 Analyzed: 03/09/2021

Benzo(a)pyrene	0.294	0.00325	mg/kg	0.325		90	42-123			
Benzo(a)anthracene	0.253	0.00325	"	0.325		78	51-118			
Anthracene	0.269	0.00325	"	0.325		83	49-113			
Acenaphthene	0.256	0.00325	"	0.325		79	48-107			
Benzo(b)fluoranthene	0.296	0.00325	"	0.325		91	42-119			
Fluoranthene	0.273	0.00325	"	0.325		84	43-116			
Surrogate: 5-alpha-Androstane	0.156		"	0.163		96	25-121			

LCSD (1204768905-BKSD)

Prepared: 03/09/2021 Analyzed: 03/09/2021

Chrysene	0.304	0.00328	mg/kg	0.328		93	53-108	6	30	
Pyrene	0.355	0.00328	"	0.328		108	42-114	28	30	
Dibenzo(a,h)anthracene	0.279	0.00328	"	0.328		85	40-137	4	30	
Fluoranthene	0.269	0.00328	"	0.328		82	43-116	1	30	
Fluorene	0.283	0.00328	"	0.328		86	42-113	5	30	
Naphthalene	0.265	0.00328	"	0.328		81	52-106	7	30	
Benzo(a)anthracene	0.267	0.00328	"	0.328		81	51-118	5	30	
Indeno(1,2,3-cd)pyrene	0.259	0.00328	"	0.328		79	40-132	6	30	
Benzo(a)pyrene	0.303	0.00328	"	0.328		92	42-123	3	30	
Anthracene	0.281	0.00328	"	0.328		86	49-113	4	30	
Acenaphthene	0.275	0.00328	"	0.328		84	48-107	7	30	
2-Methylnaphthalene	0.267	0.00328	"	0.328		81	50-109	7	30	
1-Methylnaphthalene	0.264	0.00328	"	0.328		81	50-109	7	30	
Benzo(b)fluoranthene	0.315	0.00328	"	0.328		96	42-119	6	30	
Benzo(k)fluoranthene	0.298	0.00328	"	0.328		91	39-119	7	30	
Surrogate: 5-alpha-Androstane	0.163		"	0.164		100	25-121			

MS (1204768906 S)

Source: 537019001

Prepared: 03/09/2021 Analyzed: 03/09/2021

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.

WSP USA
4600 W. 60th Ave.
Arvada CO 80003

Brian Sulzberger
Project Number: [none]
Project: KMG - Newby State 36N-4HZ Hot Oil

PAH by EPA 8270D SIM - 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 2100479 - SW846 3541

MS (1204768906 S)

Source: 537019001

Prepared: 03/09/2021 Analyzed: 03/09/2021

Pyrene	0.266	0.00347	mg/kg dry	0.347	<0.00115	77	19-139
Dibenzo(a,h)anthracene	0.279	0.00347	"	0.347	<0.00115	80	16-139
Fluoranthene	0.264	0.00347	"	0.347	<0.00115	76	21-122
Fluorene	0.264	0.00347	"	0.347	0.00170	76	26-123
Chrysene	0.279	0.00347	"	0.347	<0.00115	80	31-119
Naphthalene	0.239	0.00347	"	0.347	<0.00115	69	29-122
Acenaphthene	0.249	0.00347	"	0.347	<0.00115	72	29-118
Indeno(1,2,3-cd)pyrene	0.277	0.00347	"	0.347	<0.00115	80	14-132
Benzo(k)fluoranthene	0.269	0.00347	"	0.347	<0.00115	78	26-130
Benzo(b)fluoranthene	0.278	0.00347	"	0.347	<0.00115	80	22-130
Benzo(a)pyrene	0.286	0.00347	"	0.347	<0.00115	82	24-129
Anthracene	0.262	0.00347	"	0.347	<0.00115	75	29-127
2-Methylnaphthalene	0.244	0.00347	"	0.347	<0.00115	70	23-124
1-Methylnaphthalene	0.242	0.00347	"	0.347	<0.00115	70	30-129
Benzo(a)anthracene	0.244	0.00347	"	0.347	<0.00115	70	31-124

Surrogate: 5-alpha-Androstane

0.149

"

0.174

0.172 86

25-121

MSD (1204768907 SD)

Source: 537019001

Prepared: 03/09/2021 Analyzed: 03/09/2021

Fluorene	0.278	0.00345	mg/kg dry	0.345	0.00170	80	26-123	5	30
Fluoranthene	0.281	0.00345	"	0.345	<0.00114	82	21-122	6	30
Acenaphthene	0.266	0.00345	"	0.345	<0.00114	77	29-118	6	30
Anthracene	0.280	0.00345	"	0.345	<0.00114	81	29-127	7	30
Benzo(a)anthracene	0.263	0.00345	"	0.345	<0.00114	76	31-124	7	30
Benzo(b)fluoranthene	0.297	0.00345	"	0.345	<0.00114	86	22-130	7	30
1-Methylnaphthalene	0.254	0.00345	"	0.345	<0.00114	74	30-129	5	30
Benzo(k)fluoranthene	0.288	0.00345	"	0.345	<0.00114	84	26-130	7	30
2-Methylnaphthalene	0.259	0.00345	"	0.345	<0.00114	75	23-124	6	30

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.

WSP USA
4600 W. 60th Ave.
Arvada CO 80003

Brian Sulzberger
Project Number: [none]
Project: KMG - Newby State 36N-4HZ Hot Oil

PAH by EPA 8270D SIM - Quality Control
GEL Laboratories, LLC

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2100479 - SW846 3541										
MSD (1204768907 SD)		Source: 537019001			Prepared: 03/09/2021 Analyzed: 03/09/2021					
Dibenzo(a,h)anthracene	0.307	0.00345	mg/kg dry	0.345	<0.00114	89	16-139	10	30	
Benzo(a)pyrene	0.308	0.00345	"	0.345	<0.00114	89	24-129	7	30	
Indeno(1,2,3-cd)pyrene	0.307	0.00345	"	0.345	<0.00114	89	14-132	10	30	
Naphthalene	0.253	0.00345	"	0.345	<0.00114	73	29-122	6	30	
Pyrene	0.293	0.00345	"	0.345	<0.00114	85	19-139	9	30	
Chrysene	0.303	0.00345	"	0.345	<0.00114	88	31-119	8	30	
Surrogate: 5-alpha-Androstane	0.158		"	0.172	0.172	92	25-121			

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.

WSP USA
4600 W. 60th Ave.
Arvada CO 80003

Brian Sulzberger
Project Number: [none]
Project: KMG - Newby State 36N-4HZ Hot Oil

Total Metals by EPA 6020A - Quality Control GEL Laboratories, LLC

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2101133 - SW846 3050B										
BLANK (1204770084-BLK)					Prepared: 03/10/2021 Analyzed: 03/11/2021					
Zinc	ND	3.69	mg/kg				-			U
LCS (1204770085-BKS)					Prepared: 03/10/2021 Analyzed: 03/11/2021					
Zinc	4.15	3.75	mg/kg	4.69		88.5	80-120			
DUP (1204770086 D)					Prepared: 03/10/2021 Analyzed: 03/11/2021					
		Source: Y103096-01								
Zinc	52.0	4.86	mg/kg dry		50.4		0-20	2.97	20	
MS (1204770087 S)					Prepared: 03/10/2021 Analyzed: 03/11/2021					
		Source: Y103096-01								
Zinc	56.9	4.88	mg/kg dry	6.10	50.4	0	75-125			

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.

WSP USA
4600 W. 60th Ave.
Arvada CO 80003

Brian Sulzberger
Project Number: [none]
Project: KMG - Newby State 36N-4HZ Hot Oil

Total Metals by EPA 6010C - Quality Control GEL Laboratories, LLC

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2100194 - SW846 3050B										
BLANK (1204768168-BLK)					Prepared: 03/08/2021 Analyzed: 03/09/2021					
Silver	ND	0.470	mg/kg				-			U
LCS (1204768169-BKS)					Prepared: 03/08/2021 Analyzed: 03/09/2021					
Silver	9.54	0.491	mg/kg	9.82		97.2	80-120			
DUP (1204768170 D)					Prepared: 03/08/2021 Analyzed: 03/09/2021					
		Source: 537035001								
Silver	1.42	0.519	mg/kg dry		0.994		0-20	35.4	20	
MS (1204768171 S)					Prepared: 03/08/2021 Analyzed: 03/09/2021					
		Source: 537035001								
Silver	10.8	0.517	mg/kg dry	10.3	0.994	94.8	75-125			

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.

WSP USA
4600 W. 60th Ave.
Arvada CO 80003

Brian Sulzberger
Project Number: [none]
Project: KMG - Newby State 36N-4HZ Hot Oil

Total Metals by EPA 6020A - 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 2100198 - SW846 3050B

BLANK (1204768178-BLK)

Prepared: 03/08/2021 Analyzed: 03/09/2021

Nickel	ND	0.377	mg/kg				-			U
Lead	0.117	0.377	"				-			J
Copper	ND	0.377	"				-			U
Cadmium	ND	0.189	"				-			U
Barium	ND	0.755	"				-			U
Arsenic	ND	0.943	"				-			U
Selenium	ND	0.943	"				-			U

LCS (1204768179-BKS)

Prepared: 03/08/2021 Analyzed: 03/09/2021

Nickel	4.77	0.375	mg/kg	4.68		102	80-120			
Selenium	4.06	0.936	"	4.68		86.7	80-120			
Lead	4.82	0.375	"	4.68		103	80-120			
Copper	4.78	0.375	"	4.68		102	80-120			
Cadmium	4.27	0.187	"	4.68		91.2	80-120			
Barium	4.77	0.749	"	4.68		102	80-120			
Arsenic	4.08	0.936	"	4.68		87.2	80-120			

DUP (1204768180 D)

Source: Y103096-01

Prepared: 03/08/2021 Analyzed: 03/09/2021

Nickel	14.3	0.477	mg/kg dry		14.4	0-20	0.511	20		
Lead	13.4	0.477	"		13.5	0-20	0.898	20		
Copper	12.4	0.477	"		12.6	0-20	1.61	20		
Cadmium	0.194	0.238	"		0.187	0-20	3.72	20		J
Selenium	1.53	1.19	"		1.54	0-20	0.659	20		
Barium	176	0.954	"		194	0-20	9.74	20		
Arsenic	7.17	1.19	"		6.26	0-20	13.5	20		

MS (1204768181 S)

Source: Y103096-01

Prepared: 03/08/2021 Analyzed: 03/09/2021

Origins Laboratory, Inc.



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WSP USA
4600 W. 60th Ave.
Arvada CO 80003

Brian Sulzberger
Project Number: [none]
Project: KMG - Newby State 36N-4HZ Hot Oil

Total Metals by EPA 6020A - 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 2100198 - SW846 3050B

MS (1204768181 S)

Source: Y103096-01

Prepared: 03/08/2021 Analyzed: 03/09/2021

Barium	206	0.959	mg/kg dry	5.99	194	0	75-125			
Cadmium	5.49	0.240	"	5.99	0.187	88.4	75-125			
Copper	18.2	0.480	"	5.99	12.6	92.9	75-125			
Lead	20.3	0.480	"	5.99	13.5	115	75-125			
Nickel	20.7	0.480	"	5.99	14.4	106	75-125			
Selenium	6.43	1.20	"	5.99	1.54	81.6	75-125			
Arsenic	12.2	1.20	"	5.99	6.26	99.4	75-125			

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.

WSP USA
4600 W. 60th Ave.
Arvada CO 80003

Brian Sulzberger
Project Number: [none]
Project: KMG - Newby State 36N-4HZ Hot Oil

Total Metals by EPA 7196A - Quality Control GEL Laboratories, LLC

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2099153 - SW846 3060A										
BLANK (1204765963-BLK)					Prepared: 03/10/2021 Analyzed: 03/11/2021					
Hexavalent Chromium	ND	0.379	mg/kg				-			U
LCS (1204765964-BKS)					Prepared: 03/10/2021 Analyzed: 03/11/2021					
Hexavalent Chromium	4.00	0.365	mg/kg	3.65		109	80-120			
ILCS (1204765965-ILCS)					Prepared: 03/10/2021 Analyzed: 03/11/2021					
Hexavalent Chromium	9.26	0.391	mg/kg	7.83		118	80-120			
DUP (1204765966 D)					Prepared: 03/10/2021 Analyzed: 03/11/2021					
		Source: 535784004								
Hexavalent Chromium	ND	0.454	mg/kg dry		<0.182		0-50	96.2	50	U
MS (1204765967 S)					Prepared: 03/10/2021 Analyzed: 03/11/2021					
		Source: 535784004								
Hexavalent Chromium	4.46	0.422	mg/kg dry	4.22	<0.169	105	75-125			

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.

WSP USA

4600 W. 60th Ave.

Arvada CO 80003

Brian Sulzberger

Project Number: [none]

Project: KMG - Newby State 36N-4HZ Hot Oil

Notes and Definitions

Ua Sample is Non-Detect.

U Result not detected above the detection limit

J Greater than the detection limit but less than the reporting limit

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported on 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.



April 05, 2021

WSP USA

Brian Sulzberger

4600 W. 60th Ave.

Arvada

CO

80003

**Project Name - KMG - Newby State 36N-4HZ Hot
Oiler**

Project Number - TE105720050

Attached are your analytical results for KMG - Newby State 36N-4HZ Hot Oiler received by Origins Laboratory, Inc. March 26, 2021. This project is associated with Origins project number Y103470-01.

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

WSP USA

4600 W. 60th Ave.

Arvada CO 80003

Brian Sulzberger

Project Number: TE105720050

Project: KMG - Newby State 36N-4HZ Hot Oiler

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
B01@1.5'	Y103470-01	Soil	March 26, 2021 0:00	03/26/2021 17:25
B02@1.5'	Y103470-02	Soil	March 26, 2021 0:00	03/26/2021 17:25

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

WSP USA

4600 W. 60th Ave.

Arvada

CO

80003

Brian Sulzberger

Project Number: TE105720050

Project: KMG - Newby State 36N-4HZ Hot Oiler

Origins Laboratory

Sample Receipt Checklist

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

Origins Work Order: Y103470

Client: WSP

Client Project ID: KMG-Newby

Checklist Completed by: dm

Shipped Via: HD

Date/time completed: 3-29-21

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

Airbill #: 1122

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

Cooler Number/Temperature: 1 5.0 °C / _____ °C / _____ °C (Describe) _____ °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 ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Is there ice present (document if blue ice is used)?	<input checked="" type="checkbox"/>			
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)		<input checked="" 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 checked="" type="checkbox"/>		
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Are short holding time analytes or samples with HTs due within 48 hours present ⁽¹⁾ ?		<input checked="" type="checkbox"/>		
Is a chain-of-custody (COC) present and filled out completely ⁽¹⁾ ?		<input checked="" type="checkbox"/>		<u>no sample times</u>
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client with date and time recorded ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.			<input checked="" type="checkbox"/>	
Are samples preserved that require preservation and was it checked ⁽¹⁾ ? (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 ₃ , HCL, H ₂ SO ₄) / (pH > 10 for samples preserved with NaAsO ₂ +NaOH, ZnAc+NaOH)			<input checked="" type="checkbox"/>	
Additional Comments (if any):				

⁽¹⁾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) dm

3/30/21
Date/Time Reviewed

Origins Laboratory, Inc.

Jordan A. Merrill

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.

WSP USA

4600 W. 60th Ave.

Arvada CO 80003

Brian Sulzberger

Project Number: TE105720050

Project: KMG - Newby State 36N-4HZ Hot Oiler

B01@1.5'

3/26/2021 12:00:00AM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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AAL, Inc.

Y103470-01 (Soil)

Metals (Saturated Paste Prep)

Calcium	3.96			me/L	1	[none]	03/30/2021	04/01/2021	
Magnesium	2.70			"	"	"	"	"	
Sodium	3.96			"	"	"	"	"	

SAR by 20B Saturated Paste

SAR	2.17				1	[none]	"	04/01/2021	
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Total Metals by 6020B

Arsenic	3.8	0.0433	0.25	mg/Kg	5	L544975	04/01/2021	04/02/2021	
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Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

WSP USA

4600 W. 60th Ave.

Arvada CO 80003

Brian Sulzberger

Project Number: TE105720050

Project: KMG - Newby State 36N-4HZ Hot Oiler

B02@1.5'

3/26/2021 12:00:00AM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Waypoint Analytical, LLC.

Y103470-02 (Soil)

Total Metals by 6020B

Arsenic	3.68	0.0433	0.25	mg/Kg	5	L544975	04/01/2021	04/02/2021	
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Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

WSP USA
4600 W. 60th Ave.
Arvada CO 80003

Brian Sulzberger
Project Number: TE105720050
Project: KMG - Newby State 36N-4HZ Hot Oiler

Total Metals by 6020B - Quality Control Waypoint Analytical, LLC.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch L544975 - 3050B										
MSD (L 86192-MSD-L544975)			Source: 86192		Prepared: 04/01/2021 Analyzed: 04/02/2021					
Arsenic	2.64	0.0433	mg/Kg	2.46	0.456	89	75-125	1.8	80	
MS (L 86192-MS-L544975)			Source: 86192		Prepared: 04/01/2021 Analyzed: 04/02/2021					
Arsenic	2.69	0.0433	mg/Kg	2.48	0.456	90	75-125			
LCS (LCS-L544975)			Prepared: 04/01/2021 Analyzed: 04/02/2021							
Arsenic	2.53	0.0433	mg/Kg	2.5		101	80-120			
LRB (LRB-L544975)			Prepared: 04/01/2021 Analyzed: 04/02/2021							
Arsenic	ND	0.25	mg/Kg							

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.

WSP USA

4600 W. 60th Ave.

Arvada CO 80003

Brian Sulzberger

Project Number: TE105720050

Project: KMG - Newby State 36N-4HZ Hot Oiler

Notes and Definitions

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported on 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.