

TABLE 1
GROUNDWATER ANALYTICAL AND FIELD RESULTS
CAMP 13-19A
WELD COUNTY, COLORADO
KERR-MCGEE OIL & GAS ONSHORE, LP

Well Name	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Depth to Water/ (Product Thickness) (ft bgs)
COGCC Allowable Levels		5	560	700	1400	
GW01	12/10/2019	37.8	<4.00	4.44	<4.00	5.00
GW02	12/13/2019	<4.00	<4.00	<4.00	<4.00	5.00

Notes: COGCC - Colorado Oil and Gas Conservation Commission
ft bgs - feet below ground surface
NA - not analyzed/not available
NM - not measured

µg/L - micrograms per liter
< - less than laboratory reporting limit
Bold indicates result exceeds allowable level
Excavation groundwater depth is approximate



TABLE 2
SOIL SAMPLE ANALYTICAL RESULTS
CAMP 13-19A
WELD COUNTY, COLORADO
KERR-MCGEE OIL & GAS ONSHORE, LP

				Organics (mg/kg)										
COGCC Allowable Concentration (Soil) -->				500			0.17	85	100	175	23	4	(6-9)	12
Sample ID:	Sample Date:	Sample Depth (feet bgs):	Photoionization Detector Reading (ppm):	TPH-GRO (C6-C10) Low Fraction	TPH-DRO (C10-C28) High Fraction	TPH-RRO (C28-C40) High Fraction	Benzene	Toluene	Ethylbenzene	Xylenes - total	Naphthalene	EC (<4 mmhos/cm or 2x background)	pH (unit)	SAR
B01@5'	12/10/2019	5'	256	522	1070	341	0.083	0.077	0.075	<0.050	0.972	0.189	7.70	5.46
E01@4'	12/10/2019	4'	7.5	31.7	<25.0	<100	0.129	<0.050	<0.050	<0.050	0.223	NA	NA	NA
N01@4'	12/10/2019	4'	96.4	546	1150	292	0.096	<0.050	0.188	0.245	0.580	NA	NA	NA
S01@4'	12/10/2019	4'	0.0	18.7	228	<100	<0.050	<0.050	<0.050	<0.050	<0.200	NA	NA	NA
W01@4'	12/10/2019	4'	0.0	<5.00	<25.0	<100	<0.050	<0.050	<0.050	<0.050	<0.200	NA	NA	NA
B02@6.5'	12/13/2019	6.5'	2.2	<5.00	<25.0	<100	<0.050	<0.050	<0.050	<0.050	<0.200	0.0599	7.46	3.18
B03@6.5'	12/13/2019	6.5'	2.0	<5.00	<25.0	<100	<0.050	<0.050	<0.050	<0.050	<0.200	0.0370	8.86	2.80
E02@4'	12/13/2019	4'	3.0	<5.00	<25.0	<100	<0.050	<0.050	<0.050	<0.050	<0.200	NA	NA	NA
N02@4'	12/13/2019	4'	530.2	55.0	471	111	<0.050	<0.050	<0.050	<0.050	0.416	NA	NA	NA
W02@4'	12/13/2019	4'	90.8	99.4	333	<100	<0.050	<0.050	<0.050	<0.050	<0.200	NA	NA	NA
N03@4'	12/16/2019	4'	0.4	<5.00	<25.0	<100	<0.050	<0.050	<0.050	<0.050	<0.200	NA	NA	NA

Notes: mg/kg - milligrams per kilogram
COGCC - Colorado Oil and Gas Conservation Commission
bgs - below ground surface
ppm - parts per million
TPH - total petroleum hydrocarbons
GRO - gasoline range organics
DRO - diesel range organics

RRO - residual range organics
EC - Specific Conductance
mmhos/cm - millimhos per centimeter
SAR - Sodium Adsorption Ratio
NA - not analyzed
Bold indicates result exceeds allowable level





December 16, 2019

LT Environmental, Inc.

Brian Sulzberger

4600 West 60th Avenue

Arvada

CO 80003

Project Name - KMG - Camp 13-19A (Dumpline)

Project Number - 014219247

Attached are your analytical results for KMG - Camp 13-19A (Dumpline) received by Origins Laboratory, Inc. December 10, 2019. This project is associated with Origins project number Y912144-01.

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

LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

Brian Sulzberger
Project Number: 014219247
Project: KMG - Camp 13-19A (Dumpline)

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
B01@5'	Y912144-01	Soil	December 10, 2019 8:10	12/10/2019 16:00
N01@4'	Y912144-02	Soil	December 10, 2019 8:20	12/10/2019 16:00
E01@4'	Y912144-03	Soil	December 10, 2019 8:30	12/10/2019 16:00
S01@4'	Y912144-04	Soil	December 10, 2019 8:40	12/10/2019 16:00
W01@4'	Y912144-05	Soil	December 10, 2019 8:50	12/10/2019 16:00
GW01	Y912144-06	Water	December 10, 2019 8:05	12/10/2019 16:00

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.

Brian Sulzberger
Project Number: 014219247
Project: KMG - Camp 13-19A (Dumpline)

ORIGINS

LABORATORY, INC

www.originslaboratory.com

91244

page 1 of 1

Client: LTE
 Address: 4600 W. 60th Ave
Arvada, CO 80003
 Telephone Number: 303 - 433-9788
 Email Address: KMG Team

Project Manager: Brian Sulzberger
 Project Name: Camp 1319A (Disposal)
 Project Number: 014219217
 Samples Collected By: Jeff Brondau

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative			Matrix			Analysis					Sample Instructions				
				Unpreserved	HCl	HNO ₃	Other	Groundwater	Soil	Air Summ #	Other	GTX+N	TPH	(Org. Doc)		P#	EC	SAR	BTEX
Bales	12-10-19	0810	2	X					X				X	X	X	X	X		1
N104		0820	1	X					X					X					2
E0104		0830	1	X					X				X	X					3
S0104		0840	1	X					X				X	X					4
W0104		0850	1	X					X				X	X					5
G001		0855	2	X					X								X		6
																			7
																			8
																			9
																			10

Relinquished By:	Date:	Time:	Received By:	Date:	Time:	Turnaround Time:	
						Same Day <input checked="" type="checkbox"/>	24 Hr <input type="checkbox"/>
<i>[Signature]</i>	12-10-19	1600	<i>[Signature]</i>	12-10-19	1600	48 Hr <input type="checkbox"/>	72 Hr <input type="checkbox"/>
<i>[Signature]</i>			<i>[Signature]</i>			Standard <input type="checkbox"/>	

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

Origins Laboratory, Inc.

Jeff Pellgrini

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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

Brian Sulzberger
Project Number: 014219247
Project: KMG - Camp 13-19A (Dumpline)

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: 4912144

Client: LRE

Client Project ID: KMG - Camp 13-19A (Dumpline)

Checklist Completed by: D. Lee

Shipped Via: HD
(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Date/time completed: 12-10-19

Airbill #: N/A

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

Cooler Number/Temperature: ☒ / 4.1 °C ☐ / _____ °C ☐ / _____ °C ☐ / _____ °C

Thermometer ID: 1003

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"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is there ice present (document if blue ice is used)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are short holding time analytes or samples with HTs due within 48 hours present ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>p4</u>
Is a chain-of-custody (COC) present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client with date and time recorded ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input 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 type="checkbox"/>	<input type="checkbox"/>	<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) [Signature]

Date/Time Reviewed 12-10-19

Origins Laboratory, Inc.

Jefe Pellegrini

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.

LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

Brian Sulzberger
Project Number: 014219247
Project: KMG - Camp 13-19A (Dumpline)

B01@5'

12/10/2019 8:10:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y912144-01 (Soil)

DRO/ORO by EPA 8015D

Diesel (C10-C28)	1070	25.0	mg/kg	1	B9L1005	TEM	12/10/2019	12/10/2019	
Residual Range Organics (C28-C40)	341	100	"	"	"	TEM	"	"	

Surrogate: o-Terphenyl 96.4 % 50-150 " " "

GBTEX + Naphthalene by EPA 8260D

Gasoline Range Hydrocarbons	522	50.0	mg/kg	250	B9L1004	KDK	12/10/2019	12/10/2019	
Benzene	0.083	0.050	"	25	"	KDK	"	12/11/2019	
Toluene	0.077	0.050	"	"	"	KDK	"	"	
Ethylbenzene	0.075	0.050	"	"	"	KDK	"	"	
Xylenes, total	ND	0.050	"	"	"	KDK	"	"	U
Naphthalene	0.972	0.200	"	"	"	KDK	"	"	

Surrogate: 1,2-Dichloroethane-d4 86.5 % 70-130 " " "

Surrogate: Toluene-d8 106 % 70-130 " " 12/10/2019

Surrogate: 4-Bromofluorobenzene 95.9 % 70-130 " " 12/11/2019

Metals (Saturated Paste Prep)

Calcium	1.79		me/L	1	[none]		12/11/2019	12/13/2019	
Magnesium	0.99		"	"	"		"	"	
Sodium	6.44		"	"	"		"	"	

pH in Soil by EPA 9045D

Origins Laboratory, Inc.



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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

Brian Sulzberger
Project Number: 014219247
Project: KMG - Camp 13-19A (Dumpline)

B01@5'

12/10/2019 8:10:00AM

Analyte	Result	Reporting		Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
		Limit								

Origins Laboratory, Inc.
Y912144-01 (Soil)

pH in Soil by EPA 9045D

pH	7.70	pH Units	1	B9L1006	DJL	12/10/2019	12/10/2019
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SAR by 20B Saturated Paste

SAR	5.46		1	[none]		12/11/2019	12/13/2019
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.189	0.00500	mmhos/cm	1	B9L1007	DJL	12/10/2019	12/10/2019
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Origins Laboratory, Inc.



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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

Brian Sulzberger
Project Number: 014219247
Project: KMG - Camp 13-19A (Dumpline)

N01@4'

12/10/2019 8:20:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y912144-02 (Soil)

DRO/ORO by EPA 8015D

Diesel (C10-C28)	1150	25.0	mg/kg	1	B9L1005	TEM	12/10/2019	12/10/2019	
Residual Range Organics (C28-C40)	292	100	"	"	"	TEM	"	"	

Surrogate: o-Terphenyl 93.5 % 50-150 " " "

GBTEX + Naphthalene by EPA 8260D

Gasoline Range Hydrocarbons	546	50.0	mg/kg	250	B9L1004	KDK	12/10/2019	12/10/2019	
Benzene	0.096	0.050	"	25	"	KDK	"	12/11/2019	
Toluene	ND	0.050	"	"	"	KDK	"	"	U
Ethylbenzene	0.188	0.050	"	"	"	KDK	"	"	
Xylenes, total	0.245	0.050	"	"	"	KDK	"	"	
Naphthalene	0.580	0.200	"	"	"	KDK	"	"	

Surrogate: 1,2-Dichloroethane-d4 85.5 % 70-130 " " "
Surrogate: Toluene-d8 112 % 70-130 " " "
Surrogate: 4-Bromofluorobenzene 95.6 % 70-130 " " "

Origins Laboratory, Inc.



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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

Brian Sulzberger
Project Number: 014219247
Project: KMG - Camp 13-19A (Dumpline)

E01@4'

12/10/2019 8:30:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y912144-03 (Soil)

DRO/ORO by EPA 8015D

Diesel (C10-C28)	ND	25.0	mg/kg	1	B9L1005	TEM	12/10/2019	12/10/2019	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	TEM	"	"	U

Surrogate: o-Terphenyl 76.0 % 50-150 " " "

GBTEX + Naphthalene by EPA 8260D

Gasoline Range Hydrocarbons	31.7	5.00	mg/kg	25	B9L1004	KDK	12/10/2019	12/10/2019	
Benzene	0.129	0.050	"	"	"	KDK	"	"	
Toluene	ND	0.050	"	"	"	KDK	"	"	U
Ethylbenzene	ND	0.050	"	"	"	KDK	"	"	U
Xylenes, total	ND	0.050	"	"	"	KDK	"	"	U
Naphthalene	0.223	0.200	"	"	"	KDK	"	"	

Surrogate: 1,2-Dichloroethane-d4 87.5 % 70-130 " " "
Surrogate: Toluene-d8 97.5 % 70-130 " " "
Surrogate: 4-Bromofluorobenzene 94.1 % 70-130 " " "

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.

LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

Brian Sulzberger
Project Number: 014219247
Project: KMG - Camp 13-19A (Dumpline)

S01@4'

12/10/2019 8:40:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y912144-04 (Soil)

DRO/ORO by EPA 8015D

Diesel (C10-C28)	228	25.0	mg/kg	1	B9L1005	TEM	12/10/2019	12/10/2019	
Residual Range Organics (C28-C40)	ND	100	"	"	"	TEM	"	"	U

Surrogate: o-Terphenyl 82.4 % 50-150 " " "

GBTEX + Naphthalene by EPA 8260D

Gasoline Range Hydrocarbons	18.7	5.00	mg/kg	25	B9L1004	KDK	12/10/2019	12/10/2019	
Benzene	ND	0.050	"	"	"	KDK	"	"	U
Toluene	ND	0.050	"	"	"	KDK	"	"	U
Ethylbenzene	ND	0.050	"	"	"	KDK	"	"	U
Xylenes, total	ND	0.050	"	"	"	KDK	"	"	U
Naphthalene	ND	0.200	"	"	"	KDK	"	"	U

Surrogate: 1,2-Dichloroethane-d4 90.3 % 70-130 " " "
Surrogate: Toluene-d8 97.8 % 70-130 " " "
Surrogate: 4-Bromofluorobenzene 92.7 % 70-130 " " "

Origins Laboratory, Inc.



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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

Brian Sulzberger
Project Number: 014219247
Project: KMG - Camp 13-19A (Dumpline)

W01@4'

12/10/2019 8:50:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y912144-05 (Soil)

DRO/ORO by EPA 8015D

Diesel (C10-C28)	ND	25.0	mg/kg	1	B9L1005	TEM	12/10/2019	12/10/2019	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	TEM	"	"	U

Surrogate: o-Terphenyl 81.6 % 50-150 " " "

GBTEX + Naphthalene by EPA 8260D

Gasoline Range Hydrocarbons	ND	5.00	mg/kg	25	B9L1004	KDK	12/10/2019	12/10/2019	U
Benzene	ND	0.050	"	"	"	KDK	"	"	U
Toluene	ND	0.050	"	"	"	KDK	"	"	U
Ethylbenzene	ND	0.050	"	"	"	KDK	"	"	U
Xylenes, total	ND	0.050	"	"	"	KDK	"	"	U
Naphthalene	ND	0.200	"	"	"	KDK	"	"	U

Surrogate: 1,2-Dichloroethane-d4 88.0 % 70-130 " " "
Surrogate: Toluene-d8 98.4 % 70-130 " " "
Surrogate: 4-Bromofluorobenzene 93.7 % 70-130 " " "

Origins Laboratory, Inc.



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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

Brian Sulzberger
Project Number: 014219247
Project: KMG - Camp 13-19A (Dumpline)

GW01

12/10/2019 8:05:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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Origins Laboratory, Inc. Y912144-06 (Water)

BTEX by EPA 8260D

Benzene	37.8	4.00	ug/L	4	B9L0515	KDK	12/10/2019	12/11/2019	
Toluene	ND	4.00	"	"	"	KDK	"	"	U
Ethylbenzene	4.44	4.00	"	"	"	KDK	"	"	
Xylenes, total	ND	4.00	"	"	"	KDK	"	"	U

Surrogate: 1,2-Dichloroethane-d4	87.9 %	70-130			"	"	"
Surrogate: Toluene-d8	97.7 %	70-130			"	"	"
Surrogate: 4-Bromofluorobenzene	90.2 %	70-130			"	"	"

Origins Laboratory, Inc.



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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

Brian Sulzberger
Project Number: 014219247
Project: KMG - Camp 13-19A (Dumpline)

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 B9L0515 - EPA 5030B (Water)

Blank (B9L0515-BLK1)

Prepared: 12/05/2019 Analyzed: 12/10/2019

Benzene	ND	1.00	ug/L							U
Toluene	ND	1.00	"							U
Ethylbenzene	ND	1.00	"							U
Xylenes, total	ND	1.00	"							U
Surrogate: 1,2-Dichloroethane-d4	57		"	62.5	90.6		70-130			
Surrogate: Toluene-d8	60		"	62.5	95.2		70-130			
Surrogate: 4-Bromofluorobenzene	58		"	62.5	92.5		70-130			

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.

LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

Brian Sulzberger
Project Number: 014219247
Project: KMG - Camp 13-19A (Dumpline)

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 B9L0515 - EPA 5030B (Water)										
LCS (B9L0515-BS1)					Prepared: 12/05/2019 Analyzed: 12/10/2019					
Benzene	51.5	1.00	ug/L	50.0		103	70-130			
Toluene	48.6	1.00	"	50.0		97.2	70-130			
Ethylbenzene	48.0	1.00	"	50.0		95.9	70-130			
m,p-Xylene	93.6	2.00	"	100		93.6	70-130			
o-Xylene	48.0	1.00	"	50.0		96.1	70-130			
Surrogate: 1,2-Dichloroethane-d4	54		"	62.5		87.1	70-130			
Surrogate: Toluene-d8	60		"	62.5		96.3	70-130			
Surrogate: 4-Bromofluorobenzene	57		"	62.5		92.0	70-130			

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.

LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

Brian Sulzberger
Project Number: 014219247
Project: KMG - Camp 13-19A (Dumpline)

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 B9L0515 - EPA 5030B (Water)

Matrix Spike (B9L0515-MS1)		Source: Y912055-07			Prepared: 12/05/2019 Analyzed: 12/10/2019					
Benzene	110	1.00	ug/L	50.0	ND	219	70-130			QM-07
Toluene	44.1	1.00	"	50.0	ND	88.2	70-130			
Ethylbenzene	42.6	1.00	"	50.0	ND	85.2	70-130			
m,p-Xylene	83.6	2.00	"	100	ND	83.6	70-130			
o-Xylene	48.6	1.00	"	50.0	ND	97.2	70-130			
Surrogate: 1,2-Dichloroethane-d4	53		"	62.5		85.0	70-130			
Surrogate: Toluene-d8	61		"	62.5		98.0	70-130			
Surrogate: 4-Bromofluorobenzene	58		"	62.5		92.3	70-130			

Origins Laboratory, Inc.



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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

Brian Sulzberger
Project Number: 014219247
Project: KMG - Camp 13-19A (Dumpline)

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 B9L0515 - EPA 5030B (Water)

Matrix Spike Dup (B9L0515-MSD1)		Source: Y912055-07			Prepared: 12/05/2019 Analyzed: 12/10/2019					
Benzene	106	1.00	ug/L	50.0	ND	213	70-130	3.05	20	QM-07
Toluene	45.8	1.00	"	50.0	ND	91.5	70-130	3.74	20	
Ethylbenzene	43.8	1.00	"	50.0	ND	87.6	70-130	2.80	20	
m,p-Xylene	83.5	2.00	"	100	ND	83.5	70-130	0.0598	20	
o-Xylene	48.5	1.00	"	50.0	ND	97.0	70-130	0.185	20	
Surrogate: 1,2-Dichloroethane-d4	52		"	62.5		82.6	70-130			
Surrogate: Toluene-d8	60		"	62.5		96.6	70-130			
Surrogate: 4-Bromofluorobenzene	57		"	62.5		91.7	70-130			

Origins Laboratory, Inc.



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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

Brian Sulzberger
Project Number: 014219247
Project: KMG - Camp 13-19A (Dumpline)

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 B9L1004 - EPA 5030 (soil)										
Blank (B9L1004-BLK1)					Prepared: 12/10/2019 Analyzed: 12/10/2019					
Gasoline Range Hydrocarbons	ND	0.200	mg/kg							U
Benzene	ND	0.002	"							U
Toluene	ND	0.002	"							U
Ethylbenzene	ND	0.002	"							U
Xylenes, total	ND	0.002	"							U
Naphthalene	ND	0.008	"							U
Surrogate: 1,2-Dichloroethane-d4	0.11		"	0.125		88.7	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		97.0	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		94.1	70-130			

Origins Laboratory, Inc.



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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

Brian Sulzberger
Project Number: 014219247
Project: KMG - Camp 13-19A (Dumpline)

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 B9L1004 - EPA 5030 (soil)										
LCS (B9L1004-BS1)					Prepared: 12/10/2019 Analyzed: 12/10/2019					
Benzene	0.098	0.002	mg/kg	0.100		98.2	70-130			
Toluene	0.096	0.002	"	0.100		96.4	70-130			
Ethylbenzene	0.095	0.002	"	0.100		95.1	70-130			
m,p-Xylene	0.189	0.004	"	0.200		94.3	70-130			
o-Xylene	0.094	0.002	"	0.100		93.7	70-130			
Naphthalene	0.103	0.008	"	0.100		103	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.10		"	0.125		82.8	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		97.4	70-130			
Surrogate: 4-Bromofluorobenzene	0.11		"	0.125		90.4	70-130			

Origins Laboratory, Inc.



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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

Brian Sulzberger
Project Number: 014219247
Project: KMG - Camp 13-19A (Dumpline)

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 B9L1004 - EPA 5030 (soil)

Matrix Spike (B9L1004-MS1)		Source: Y912137-05			Prepared: 12/10/2019 Analyzed: 12/10/2019					
Benzene	0.103	0.002	mg/kg	0.100	ND	103	70-130			
Toluene	0.097	0.002	"	0.100	ND	97.4	70-130			
Ethylbenzene	0.095	0.002	"	0.100	0.005	89.9	70-130			
m,p-Xylene	0.190	0.004	"	0.200	0.004	92.7	70-130			
o-Xylene	0.097	0.002	"	0.100	ND	96.6	70-130			
Naphthalene	0.108	0.008	"	0.100	0.021	87.1	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.11		"	0.125		85.9	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		97.8	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		93.5	70-130			

Origins Laboratory, Inc.



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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

Brian Sulzberger
Project Number: 014219247
Project: KMG - Camp 13-19A (Dumpline)

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 B9L1004 - EPA 5030 (soil)										
Matrix Spike Dup (B9L1004-MSD1)		Source: Y912137-05			Prepared: 12/10/2019 Analyzed: 12/10/2019					
Benzene	0.094	0.002	mg/kg	0.100	ND	94.0	70-130	9.33	20	
Toluene	0.088	0.002	"	0.100	ND	88.0	70-130	10.1	20	
Ethylbenzene	0.086	0.002	"	0.100	0.005	81.1	70-130	9.81	20	
m,p-Xylene	0.171	0.004	"	0.200	0.004	83.2	70-130	10.5	20	
o-Xylene	0.088	0.002	"	0.100	ND	88.4	70-130	8.88	20	
Naphthalene	0.108	0.008	"	0.100	0.021	87.5	70-130	0.295	20	
Surrogate: 1,2-Dichloroethane-d4	0.11		"	0.125		86.6	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		96.7	70-130			
Surrogate: 4-Bromofluorobenzene	0.11		"	0.125		91.0	70-130			

Origins Laboratory, Inc.



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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

Brian Sulzberger
Project Number: 014219247
Project: KMG - Camp 13-19A (Dumpline)

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 B9L1005 - EPA 3580										
Blank (B9L1005-BLK1)					Prepared: 12/10/2019 Analyzed: 12/10/2019					
Diesel (C10-C28)	ND	25.0	mg/kg							U
Residual Range Organics (C28-C40)	ND	100	"							U
Surrogate: o-Terphenyl	21		"	25.0		83.1	50-150			

Origins Laboratory, Inc.



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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

Brian Sulzberger
Project Number: 014219247
Project: KMG - Camp 13-19A (Dumpline)

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 B9L1005 - EPA 3580

LCS (B9L1005-BS1)

Prepared: 12/10/2019 Analyzed: 12/10/2019

Diesel (C10-C28)	924	50.0	mg/kg	1000		92.4	70-130			
Residual Range Organics (C28-C40)	833	200	"	1000		83.3	70-130			
Surrogate: o-Terphenyl	49		"	50.0		97.3	50-150			

Origins Laboratory, Inc.



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Jen Pellegrini For Noelle Doyle Mathis, President

LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

Brian Sulzberger
Project Number: 014219247
Project: KMG - Camp 13-19A (Dumpline)

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 B9L1005 - EPA 3580

Matrix Spike (B9L1005-MS1)		Source: Y912137-05			Prepared: 12/10/2019 Analyzed: 12/10/2019					
Diesel (C10-C28)	965	50.0	mg/kg	1000	ND	96.5	70-130			
Residual Range Organics (C28-C40)	876	200	"	1000	ND	87.6	70-130			
Surrogate: o-Terphenyl	47		"	50.0		94.3	50-150			

Origins Laboratory, Inc.



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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

Brian Sulzberger
Project Number: 014219247
Project: KMG - Camp 13-19A (Dumpline)

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 B9L1005 - EPA 3580

Matrix Spike Dup (B9L1005-MSD1)		Source: Y912137-05			Prepared: 12/10/2019 Analyzed: 12/10/2019					
Diesel (C10-C28)	1150	50.0	mg/kg	1000	ND	115	70-130	17.7	35	
Residual Range Organics (C28-C40)	1020	200	"	1000	ND	102	70-130	14.8	35	
Surrogate: o-Terphenyl	52		"	50.0		104	50-150			

Origins Laboratory, Inc.



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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

Brian Sulzberger
Project Number: 014219247
Project: KMG - Camp 13-19A (Dumpline)

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 B9L1006 - NO PREP

Duplicate (B9L1006-DUP1)		Source: Y912134-04			Prepared: 12/10/2019 Analyzed: 12/10/2019					
pH	8.15		pH Units		7.95			2.48	25	

Batch B9L1007 - NO PREP

Blank (B9L1007-BLK1)		Prepared: 12/10/2019 Analyzed: 12/10/2019								
Specific Conductance (EC)	0.00230	0.00500	mmhos/cm							
Duplicate (B9L1007-DUP1)		Source: Y912134-04			Prepared: 12/10/2019 Analyzed: 12/10/2019					
Specific Conductance (EC)	0.285	0.00500	mmhos/cm		0.232			20.8	25	

Origins Laboratory, Inc.



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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

Brian Sulzberger
Project Number: 014219247
Project: KMG - Camp 13-19A (Dumpline)

Notes and Definitions

U Sample is Non-Detect.

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

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported at a wet weight basis.

Origins Laboratory, Inc.



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December 17, 2019

LT Environmental, Inc.

Brian Sulzberger

4600 West 60th Avenue

Arvada

CO 80003

Project Name - KMG - Camp 13-19A

Project Number - 014219247

Attached are your analytical results for KMG - Camp 13-19A received by Origins Laboratory, Inc. December 16, 2019. This project is associated with Origins project number Y912264-01.

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

LT Environmental, Inc.

4600 West 60th Avenue

Arvada CO 80003

Brian Sulzberger

Project Number: 014219247

Project: KMG - Camp 13-19A

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
N03@4'	Y912264-01	Soil	December 16, 2019 15:20	12/16/2019 16:25

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.

Brian Sulzberger
Project Number: 014219247
Project: KMG - Camp 13-19A

ORIGINS

LABORATORY, INC

www.originslaboratory.com

Y912664

page 1 of 1

Client: LT Environmental
 Address: 4600 Wilson Ave
Ardenwood 88003
 Telephone Number: 303-933-9188
 Email Address: hmk@ltenv.com

Project Manager: B. Gutberg
 Project Name: Comp 13-19A
 Project Number: 014219247
 Samples Collected By: Heather Gilbert

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative				Matrix			Analysis			Sample Instructions
				Unpreserved	HCl	HNO ₃	Other	Groundwater	Soil	Air Summa Canister #	Other	Gravel	TPC, DTP	
N2304	12/16/19	1525	1	X				X				X		1
														2
														3
														4
														5
														6
														7
														8
														9
														10
Relinquished By: <u>[Signature]</u>	Date: 12/16/19	Time: 1105	Received By: <u>[Signature]</u>				Date: 12-16-19	Time: 1627	Turnaround Time: 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"/>					
Relinquished By: <u>[Signature]</u>	Date:	Time:	Received By:				Date:	Time:						

Fax: 303.265.9645

Phone: 303.433.1322

Denver, CO 80211

1725 Elk Place

Temp Received: 5.1

Date Results Needed

Origins Laboratory, Inc.

Jeff Pellipini

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.

LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

Brian Sulzberger
Project Number: 014219247
Project: KMG - Camp 13-19A

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: Y9 12664

Client: LTE

Client Project ID: Camp 13-19A

Checklist Completed by: JK KOK

Shipped Via: HD

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

Date/time completed: 12 / 16 / 2019

Airbill #: N/A

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

Cooler Number/Temperature: 1 / 5.1 °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"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is there ice present (document if blue ice is used)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)	<input type="checkbox"/>	<input type="checkbox"/>	<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 type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are short holding time analytes or samples with HTs due within 48 hours present ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is a chain-of-custody (COC) present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client with date and time recorded ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples preserved that require preservation and was it checked ⁽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 type="checkbox"/>	<input type="checkbox"/>	<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) [Signature]

Date/Time Reviewed 12-16-19

Origins Laboratory, Inc.

Jefe Pellegrini

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.

LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

Brian Sulzberger
Project Number: 014219247
Project: KMG - Camp 13-19A

N03@4'

12/16/2019 3:20:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y912264-01 (Soil)

DRO/ORO by EPA 8015D

Diesel (C10-C28)	ND	25.0	mg/kg	1	B9L1602	KDK	12/16/2019	12/16/2019	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	KDK	"	"	U

Surrogate: o-Terphenyl 82.5 % 50-150 " " "

GBTEX + Naphthalene by EPA 8260D

Gasoline Range Hydrocarbons	ND	5.00	mg/kg	25	B9L1601	ZZZ	12/16/2019	12/16/2019	U
Benzene	ND	0.050	"	"	"	ZZZ	"	"	U
Toluene	ND	0.050	"	"	"	ZZZ	"	"	U
Ethylbenzene	ND	0.050	"	"	"	ZZZ	"	"	U
Xylenes, total	ND	0.050	"	"	"	ZZZ	"	"	U
Naphthalene	ND	0.200	"	"	"	ZZZ	"	"	U

Surrogate: 1,2-Dichloroethane-d4 98.7 % 70-130 " " "
Surrogate: Toluene-d8 98.5 % 70-130 " " "
Surrogate: 4-Bromofluorobenzene 101 % 70-130 " " "

Origins Laboratory, Inc.



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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

Brian Sulzberger
Project Number: 014219247
Project: KMG - Camp 13-19A

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 B9L1601 - EPA 5030 (soil)										
Blank (B9L1601-BLK1)					Prepared: 12/16/2019 Analyzed: 12/16/2019					
Gasoline Range Hydrocarbons	ND	0.200	mg/kg							U
Benzene	ND	0.002	"							U
Toluene	ND	0.002	"							U
Ethylbenzene	ND	0.002	"							U
Xylenes, total	ND	0.002	"							U
Naphthalene	ND	0.008	"							U
Surrogate: 1,2-Dichloroethane-d4	0.13		"	0.125		102	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		99.3	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		102	70-130			

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.

LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

Brian Sulzberger
Project Number: 014219247
Project: KMG - Camp 13-19A

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 B9L1601 - EPA 5030 (soil)										
LCS (B9L1601-BS1)					Prepared: 12/16/2019 Analyzed: 12/16/2019					
Benzene	0.100	0.002	mg/kg	0.100		99.9	70-130			
Toluene	0.103	0.002	"	0.100		103	70-130			
Ethylbenzene	0.107	0.002	"	0.100		107	70-130			
m,p-Xylene	0.211	0.004	"	0.200		106	70-130			
o-Xylene	0.108	0.002	"	0.100		108	70-130			
Naphthalene	0.108	0.008	"	0.100		108	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.13		"	0.125		101	70-130			
Surrogate: Toluene-d8	0.13		"	0.125		100	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		101	70-130			

Origins Laboratory, Inc.



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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

Brian Sulzberger
Project Number: 014219247
Project: KMG - Camp 13-19A

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 B9L1601 - EPA 5030 (soil)

Matrix Spike (B9L1601-MS1)		Source: Y912244-02			Prepared: 12/16/2019 Analyzed: 12/16/2019					
Benzene	0.090	0.002	mg/kg	0.100	ND	90.3	70-130			
Toluene	0.089	0.002	"	0.100	ND	89.1	70-130			
Ethylbenzene	0.088	0.002	"	0.100	ND	88.0	70-130			
m,p-Xylene	0.178	0.004	"	0.200	ND	89.0	70-130			
o-Xylene	0.092	0.002	"	0.100	ND	91.6	70-130			
Naphthalene	0.099	0.008	"	0.100	ND	98.7	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.13		"	0.125		104	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		97.8	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		99.8	70-130			

Origins Laboratory, Inc.



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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

Brian Sulzberger
Project Number: 014219247
Project: KMG - Camp 13-19A

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 B9L1601 - EPA 5030 (soil)										
Matrix Spike Dup (B9L1601-MSD1)		Source: Y912244-02			Prepared: 12/16/2019 Analyzed: 12/16/2019					
Benzene	0.101	0.002	mg/kg	0.100	ND	101	70-130	11.7	20	
Toluene	0.097	0.002	"	0.100	ND	97.4	70-130	8.92	20	
Ethylbenzene	0.098	0.002	"	0.100	ND	97.5	70-130	10.2	20	
m,p-Xylene	0.199	0.004	"	0.200	ND	99.3	70-130	10.9	20	
o-Xylene	0.099	0.002	"	0.100	ND	98.8	70-130	7.56	20	
Naphthalene	0.097	0.008	"	0.100	ND	97.1	70-130	1.65	20	
Surrogate: 1,2-Dichloroethane-d4	0.14		"	0.125		110	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		96.2	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		98.6	70-130			

Origins Laboratory, Inc.



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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

Brian Sulzberger
Project Number: 014219247
Project: KMG - Camp 13-19A

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 B9L1602 - EPA 3580										
Blank (B9L1602-BLK1)					Prepared: 12/16/2019 Analyzed: 12/16/2019					
Diesel (C10-C28)	ND	25.0	mg/kg							U
Residual Range Organics (C28-C40)	ND	100	"							U
Surrogate: o-Terphenyl	21		"	25.0		83.3	50-150			

Origins Laboratory, Inc.



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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

Brian Sulzberger
Project Number: 014219247
Project: KMG - Camp 13-19A

Extractable Petroleum Hydrocarbons by 8015D - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B9L1602 - EPA 3580										
LCS (B9L1602-BS1)					Prepared: 12/16/2019 Analyzed: 12/16/2019					
Diesel (C10-C28)	964	50.0	mg/kg	1000		96.4	70-130			
Residual Range Organics (C28-C40)	875	200	"	1000		87.5	70-130			
Surrogate: o-Terphenyl	44		"	50.0		87.7	50-150			

Origins Laboratory, Inc.



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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

Brian Sulzberger
Project Number: 014219247
Project: KMG - Camp 13-19A

Extractable Petroleum Hydrocarbons by 8015D - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B9L1602 - EPA 3580										
Matrix Spike (B9L1602-MS1)		Source: Y912244-02			Prepared: 12/16/2019 Analyzed: 12/16/2019					
Diesel (C10-C28)	1020	50.0	mg/kg	1000	ND	102	70-130			
Residual Range Organics (C28-C40)	926	200	"	1000	ND	92.6	70-130			
Surrogate: o-Terphenyl	48		"	50.0		96.5	50-150			

Origins Laboratory, Inc.



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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

Brian Sulzberger
Project Number: 014219247
Project: KMG - Camp 13-19A

Extractable Petroleum Hydrocarbons by 8015D - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B9L1602 - EPA 3580										
Matrix Spike Dup (B9L1602-MSD1)		Source: Y912244-02			Prepared: 12/16/2019 Analyzed: 12/16/2019					
Diesel (C10-C28)	972	50.0	mg/kg	1000	ND	97.2	70-130	4.38	35	
Residual Range Organics (C28-C40)	871	200	"	1000	ND	87.1	70-130	6.14	35	
Surrogate: o-Terphenyl	46		"	50.0		92.5	50-150			

Origins Laboratory, Inc.



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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

Brian Sulzberger
Project Number: 014219247
Project: KMG - Camp 13-19A

Notes and Definitions

U Sample is Non-Detect.

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported at a wet weight basis.

Origins Laboratory, Inc.



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



December 19, 2019

LT Environmental, Inc.

Brian Sulzberger

4600 West 60th Avenue

Arvada

CO 80003

Project Name - KMG - Camp 13-19A (Dumpline)

Project Number - 014219247

Attached are your analytical results for KMG - Camp 13-19A (Dumpline) received by Origins Laboratory, Inc. December 13, 2019. This project is associated with Origins project number Y912234-01.

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

LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

Brian Sulzberger
Project Number: 014219247
Project: KMG - Camp 13-19A (Dumpline)

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
B02@6.5'	Y912234-01	Soil	December 13, 2019 14:53	12/13/2019 16:45
B03@6.5'	Y912234-02	Soil	December 13, 2019 14:46	12/13/2019 16:45
N02@4'	Y912234-03	Soil	December 13, 2019 15:08	12/13/2019 16:45
W02@4'	Y912234-04	Soil	December 13, 2019 15:11	12/13/2019 16:45
E02@4'	Y912234-05	Soil	December 13, 2019 14:50	12/13/2019 16:45
GW02	Y912234-06	Water	December 13, 2019 15:15	12/13/2019 16:45

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.

LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

Brian Sulzberger
Project Number: 014219247
Project: KMG - Camp 13-19A (Dumpline)

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: 4912734 Client: LTE
Client Project ID: Camp 13-19A (Dumpline)
Checklist Completed by: JBK Shipped Via: HD
(UPS, FedEx, Hand Delivered, Pick-up, etc.)
Date/time completed: 12-13-19 11:53 Airbill #: _____
Matrix(s) Received: (Check all that apply): ☒ Soil/Solid ☒ Water _____ Other: _____
(Describe)
Cooler Number/Temperature: 1, 6.6°C _____ °C _____ °C
Thermometer ID: 5003

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"/>		<u>same day</u>
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"/>			<u>PH STR</u>
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 (Project Manager)

12-13-19
Date/Time Reviewed

Origins Laboratory, Inc.

Jefe Pellegrini

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.

LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

Brian Sulzberger
Project Number: 014219247
Project: KMG - Camp 13-19A (Dumpline)

B02@6.5'

12/13/2019 2:53:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y912234-01 (Soil)

DRO/ORO by EPA 8015D

Diesel (C10-C28)	ND	25.0	mg/kg	1	B9L1313	KDK	12/13/2019	12/13/2019	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	KDK	"	"	U

Surrogate: o-Terphenyl 81.7 % 50-150 " " "

GBTEX + Naphthalene by EPA 8260D

Gasoline Range Hydrocarbons	ND	5.00	mg/kg	25	B9L1310	KDK	12/13/2019	12/13/2019	U
Benzene	ND	0.050	"	"	"	KDK	"	"	U
Toluene	ND	0.050	"	"	"	KDK	"	"	U
Ethylbenzene	ND	0.050	"	"	"	KDK	"	"	U
Xylenes, total	ND	0.050	"	"	"	KDK	"	"	U
Naphthalene	ND	0.200	"	"	"	KDK	"	"	U

Surrogate: 1,2-Dichloroethane-d4 102 % 70-130 " " "
Surrogate: Toluene-d8 100 % 70-130 " " "
Surrogate: 4-Bromofluorobenzene 99.6 % 70-130 " " "

Metals (Saturated Paste Prep)

Calcium	1.27	me/L	1	[none]		12/16/2019	12/19/2019
Magnesium	0.65	"	"	"		"	"
Sodium	3.12	"	"	"		"	"

Origins Laboratory, Inc.



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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

Brian Sulzberger
Project Number: 014219247
Project: KMG - Camp 13-19A (Dumpline)

B02@6.5'

12/13/2019 2:53:00PM

Analyte	Result	Reporting		Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
		Limit								

Origins Laboratory, Inc.
Y912234-01 (Soil)

pH in Soil by EPA 9045D

pH	7.46	pH Units	1	B9L1311	DJL	12/13/2019	12/13/2019
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SAR by 20B Saturated Paste

SAR	3.18		1	[none]		12/16/2019	12/19/2019
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.0599	0.00500	mmhos/cm	1	B9L1312	DJL	12/13/2019	12/13/2019
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Origins Laboratory, Inc.



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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

Brian Sulzberger
Project Number: 014219247
Project: KMG - Camp 13-19A (Dumpline)

B03@6.5'

12/13/2019 2:46:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y912234-02 (Soil)

DRO/ORO by EPA 8015D

Diesel (C10-C28)	ND	25.0	mg/kg	1	B9L1313	KDK	12/13/2019	12/13/2019	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	KDK	"	"	U

Surrogate: o-Terphenyl 90.0 % 50-150 " " "

GBTEX + Naphthalene by EPA 8260D

Gasoline Range Hydrocarbons	ND	5.00	mg/kg	25	B9L1310	KDK	12/13/2019	12/13/2019	U
Benzene	ND	0.050	"	"	"	KDK	"	"	U
Toluene	ND	0.050	"	"	"	KDK	"	"	U
Ethylbenzene	ND	0.050	"	"	"	KDK	"	"	U
Xylenes, total	ND	0.050	"	"	"	KDK	"	"	U
Naphthalene	ND	0.200	"	"	"	KDK	"	"	U

Surrogate: 1,2-Dichloroethane-d4 104 % 70-130 " " "
Surrogate: Toluene-d8 100 % 70-130 " " "
Surrogate: 4-Bromofluorobenzene 98.9 % 70-130 " " "

Metals (Saturated Paste Prep)

Calcium	0.82	me/L	1	[none]	12/16/2019	12/19/2019
Magnesium	0.44	"	"	"	"	"
Sodium	2.22	"	"	"	"	"

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.

LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

Brian Sulzberger
Project Number: 014219247
Project: KMG - Camp 13-19A (Dumpline)

B03@6.5'

12/13/2019 2:46:00PM

Analyte	Result	Reporting		Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
		Limit								

Origins Laboratory, Inc.
Y912234-02 (Soil)

pH in Soil by EPA 9045D

pH	8.86	pH Units	1	B9L1311	DJL	12/13/2019	12/13/2019
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SAR by 20B Saturated Paste

SAR	2.80		1	[none]		12/16/2019	12/19/2019
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.0370	0.00507	mmhos/cm	1	B9L1312	DJL	12/13/2019	12/13/2019
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Origins Laboratory, Inc.



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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

Brian Sulzberger
Project Number: 014219247
Project: KMG - Camp 13-19A (Dumpline)

N02@4'

12/13/2019 3:08:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y912234-03 (Soil)

DRO/ORO by EPA 8015D

Diesel (C10-C28)	471	25.0	mg/kg	1	B9L1313	KDK	12/13/2019	12/13/2019	
Residual Range Organics (C28-C40)	111	100	"	"	"	KDK	"	"	

Surrogate: o-Terphenyl	76.4 %	50-150			"	"	"	
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GBTEX + Naphthalene by EPA 8260D

Gasoline Range Hydrocarbons	55.0	50.0	mg/kg	250	B9L1310	KDK	12/13/2019	12/13/2019	
Benzene	ND	0.050	"	25	"	KDK	"	"	U
Toluene	ND	0.050	"	"	"	KDK	"	"	U
Ethylbenzene	ND	0.050	"	"	"	KDK	"	12/14/2019	U
Xylenes, total	ND	0.050	"	"	"	KDK	"	12/13/2019	U
Naphthalene	0.416	0.200	"	"	"	KDK	"	12/14/2019	

Surrogate: 1,2-Dichloroethane-d4	102 %	70-130			"	"	"	
Surrogate: Toluene-d8	103 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	99.8 %	70-130			"	"	"	

Origins Laboratory, Inc.



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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

Brian Sulzberger
Project Number: 014219247
Project: KMG - Camp 13-19A (Dumpline)

W02@4'

12/13/2019 3:11:00PM

Analyte	Result	Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y912234-04 (Soil)

DRO/ORO by EPA 8015D

Diesel (C10-C28)	333	25.0	mg/kg	1	B9L1313	KDK	12/13/2019	12/13/2019	
Residual Range Organics (C28-C40)	ND	100	"	"	"	KDK	"	"	U

Surrogate: o-Terphenyl 80.5 % 50-150 " " "

GBTEX + Naphthalene by EPA 8260D

Gasoline Range Hydrocarbons	99.4	5.00	mg/kg	25	B9L1310	KDK	12/13/2019	12/14/2019	
Benzene	ND	0.050	"	"	"	KDK	"	"	U
Toluene	ND	0.050	"	"	"	KDK	"	"	U
Ethylbenzene	ND	0.050	"	"	"	KDK	"	"	U
Xylenes, total	ND	0.050	"	"	"	KDK	"	"	U
Naphthalene	ND	0.200	"	"	"	KDK	"	"	U

Surrogate: 1,2-Dichloroethane-d4 99.3 % 70-130 " " "
Surrogate: Toluene-d8 111 % 70-130 " " "
Surrogate: 4-Bromofluorobenzene 99.3 % 70-130 " " "

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.

LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

Brian Sulzberger
Project Number: 014219247
Project: KMG - Camp 13-19A (Dumpline)

E02@4'

12/13/2019 2:50:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y912234-05 (Soil)

DRO/ORO by EPA 8015D

Diesel (C10-C28)	ND	25.0	mg/kg	1	B9L1313	KDK	12/13/2019	12/13/2019	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	KDK	"	"	U

Surrogate: o-Terphenyl 81.7 % 50-150 " " "

GBTEX + Naphthalene by EPA 8260D

Gasoline Range Hydrocarbons	ND	5.00	mg/kg	25	B9L1310	KDK	12/13/2019	12/13/2019	U
Benzene	ND	0.050	"	"	"	KDK	"	"	U
Toluene	ND	0.050	"	"	"	KDK	"	"	U
Ethylbenzene	ND	0.050	"	"	"	KDK	"	"	U
Xylenes, total	ND	0.050	"	"	"	KDK	"	"	U
Naphthalene	ND	0.200	"	"	"	KDK	"	"	U

Surrogate: 1,2-Dichloroethane-d4 92.6 % 70-130 " " "
Surrogate: Toluene-d8 93.1 % 70-130 " " "
Surrogate: 4-Bromofluorobenzene 92.8 % 70-130 " " "

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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

Brian Sulzberger
Project Number: 014219247
Project: KMG - Camp 13-19A (Dumpline)

GW02

12/13/2019 3:15:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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Origins Laboratory, Inc. Y912234-06 (Water)

BTEX by EPA 8260D

Benzene	ND	4.00	ug/L	4	B9L0911	ZZZ	12/13/2019	12/13/2019	U
Toluene	ND	4.00	"	"	"	ZZZ	"	"	U
Ethylbenzene	ND	4.00	"	"	"	ZZZ	"	"	U
Xylenes, total	ND	4.00	"	"	"	ZZZ	"	"	U

Surrogate: 1,2-Dichloroethane-d4	126 %	70-130	"	"	"
Surrogate: Toluene-d8	101 %	70-130	"	"	"
Surrogate: 4-Bromofluorobenzene	88.3 %	70-130	"	"	"

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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

Brian Sulzberger
Project Number: 014219247
Project: KMG - Camp 13-19A (Dumpline)

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 B9L0911 - EPA 5030B (Water)

Blank (B9L0911-BLK1)

Prepared: 12/09/2019 Analyzed: 12/12/2019

Benzene	ND	1.00	ug/L							U
Toluene	ND	1.00	"							U
Ethylbenzene	ND	1.00	"							U
Xylenes, total	ND	1.00	"							U
Surrogate: 1,2-Dichloroethane-d4	72		"	62.5	116		70-130			
Surrogate: Toluene-d8	63		"	62.5	101		70-130			
Surrogate: 4-Bromofluorobenzene	55		"	62.5	88.7		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 B9L0911 - EPA 5030B (Water)

LCS (B9L0911-BS1)

Prepared: 12/09/2019 Analyzed: 12/12/2019

Benzene	46.3	1.00	ug/L	50.0		92.6	70-130			
Toluene	49.1	1.00	"	50.0		98.3	70-130			
Ethylbenzene	50.8	1.00	"	50.0		102	70-130			
m,p-Xylene	104	2.00	"	100		104	70-130			
o-Xylene	51.6	1.00	"	50.0		103	70-130			
Surrogate: 1,2-Dichloroethane-d4	71		"	62.5		114	70-130			
Surrogate: Toluene-d8	63		"	62.5		101	70-130			
Surrogate: 4-Bromofluorobenzene	56		"	62.5		89.6	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 B9L0911 - EPA 5030B (Water)

Matrix Spike (B9L0911-MS1)		Source: Y912116-01			Prepared: 12/09/2019 Analyzed: 12/12/2019					
Benzene	70.3	1.00	ug/L	50.0	ND	141	70-130			QM-07
Toluene	72.3	1.00	"	50.0	ND	145	70-130			QM-07
Ethylbenzene	74.6	1.00	"	50.0	ND	149	70-130			QM-07
m,p-Xylene	152	2.00	"	100	ND	152	70-130			QM-07
o-Xylene	77.4	1.00	"	50.0	ND	155	70-130			QM-07
Surrogate: 1,2-Dichloroethane-d4	79		"	62.5		126	70-130			
Surrogate: Toluene-d8	62		"	62.5		99.4	70-130			
Surrogate: 4-Bromofluorobenzene	55		"	62.5		87.2	70-130			

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Project: KMG - Camp 13-19A (Dumpline)

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 B9L0911 - EPA 5030B (Water)										
Matrix Spike Dup (B9L0911-MSD1)	Source: Y912116-01				Prepared: 12/09/2019 Analyzed: 12/12/2019					
Benzene	44.3	1.00	ug/L	50.0	ND	88.7	70-130	45.3	20	QR-03
Toluene	46.9	1.00	"	50.0	ND	93.8	70-130	42.6	20	QR-03
Ethylbenzene	48.7	1.00	"	50.0	ND	97.5	70-130	42.0	20	QR-03
m,p-Xylene	99.4	2.00	"	100	ND	99.4	70-130	41.6	20	QR-03
o-Xylene	51.7	1.00	"	50.0	ND	103	70-130	39.8	20	QR-03
Surrogate: 1,2-Dichloroethane-d4	77		"	62.5		123	70-130			
Surrogate: Toluene-d8	65		"	62.5		104	70-130			
Surrogate: 4-Bromofluorobenzene	53		"	62.5		84.8	70-130			

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Project: KMG - Camp 13-19A (Dumpline)

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 B9L1310 - EPA 5030 (soil)										
Blank (B9L1310-BLK1)					Prepared: 12/13/2019 Analyzed: 12/13/2019					
Gasoline Range Hydrocarbons	ND	0.200	mg/kg							U
Benzene	ND	0.002	"							U
Toluene	ND	0.002	"							U
Ethylbenzene	ND	0.002	"							U
Xylenes, total	ND	0.002	"							U
Naphthalene	ND	0.008	"							U
Surrogate: 1,2-Dichloroethane-d4	0.13		"	0.125		104	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		99.4	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		99.4	70-130			

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Brian Sulzberger
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Project: KMG - Camp 13-19A (Dumpline)

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 B9L1310 - EPA 5030 (soil)										
LCS (B9L1310-BS1)					Prepared: 12/13/2019 Analyzed: 12/13/2019					
Benzene	0.104	0.002	mg/kg	0.100		104	70-130			
Toluene	0.104	0.002	"	0.100		104	70-130			
Ethylbenzene	0.100	0.002	"	0.100		99.7	70-130			
m,p-Xylene	0.200	0.004	"	0.200		99.8	70-130			
o-Xylene	0.101	0.002	"	0.100		101	70-130			
Naphthalene	0.098	0.008	"	0.100		97.9	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.12		"	0.125		96.1	70-130			
Surrogate: Toluene-d8	0.13		"	0.125		101	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		99.3	70-130			

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B9L1310 - EPA 5030 (soil)										
Matrix Spike (B9L1310-MS1)		Source: Y912233-01			Prepared: 12/13/2019 Analyzed: 12/13/2019					
Benzene	0.103	0.002	mg/kg	0.100	ND	103	70-130			
Toluene	0.101	0.002	"	0.100	ND	101	70-130			
Ethylbenzene	0.098	0.002	"	0.100	ND	97.8	70-130			
m,p-Xylene	0.198	0.004	"	0.200	ND	98.9	70-130			
o-Xylene	0.101	0.002	"	0.100	ND	101	70-130			
Naphthalene	0.098	0.008	"	0.100	0.017	81.3	70-130			QM-07
Surrogate: 1,2-Dichloroethane-d4	0.12		"	0.125		97.7	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		99.9	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		98.1	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
Batch B9L1310 - EPA 5030 (soil)										
Matrix Spike Dup (B9L1310-MSD1)					Source: Y912233-01					
										Prepared: 12/13/2019 Analyzed: 12/13/2019
Benzene	0.101	0.002	mg/kg	0.100	ND	101	70-130	1.80	20	
Toluene	0.101	0.002	"	0.100	ND	101	70-130	0.714	20	
Ethylbenzene	0.098	0.002	"	0.100	ND	98.0	70-130	0.225	20	
m,p-Xylene	0.197	0.004	"	0.200	ND	98.5	70-130	0.486	20	
o-Xylene	0.102	0.002	"	0.100	ND	102	70-130	0.592	20	
Naphthalene	0.097	0.008	"	0.100	0.017	79.7	70-130	1.56	20	QM-07
Surrogate: 1,2-Dichloroethane-d4	0.12		"	0.125		95.9	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		98.9	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		101	70-130			

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Project: KMG - Camp 13-19A (Dumpline)

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 B9L1313 - EPA 3580										
Blank (B9L1313-BLK1)					Prepared: 12/13/2019 Analyzed: 12/13/2019					
Diesel (C10-C28)	ND	25.0	mg/kg							U
Residual Range Organics (C28-C40)	ND	100	"							U
Surrogate: o-Terphenyl	23		"	25.0		93.1	50-150			

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Brian Sulzberger
Project Number: 014219247
Project: KMG - Camp 13-19A (Dumpline)

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 B9L1313 - EPA 3580

LCS (B9L1313-BS1)

Prepared: 12/13/2019 Analyzed: 12/13/2019

Diesel (C10-C28)	923	50.0	mg/kg	1000		92.3	70-130			
Residual Range Organics (C28-C40)	835	200	"	1000		83.5	70-130			
Surrogate: o-Terphenyl	46		"	50.0		91.3	50-150			

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Brian Sulzberger
Project Number: 014219247
Project: KMG - Camp 13-19A (Dumpline)

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 B9L1313 - EPA 3580

Matrix Spike (B9L1313-MS1)		Source: Y912234-01			Prepared: 12/13/2019 Analyzed: 12/13/2019					
Diesel (C10-C28)	988	50.0	mg/kg	1000	ND	98.8	70-130			
Residual Range Organics (C28-C40)	881	200	"	1000	ND	88.1	70-130			
Surrogate: o-Terphenyl	47		"	50.0		94.0	50-150			

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Brian Sulzberger
Project Number: 014219247
Project: KMG - Camp 13-19A (Dumpline)

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 B9L1313 - EPA 3580

Matrix Spike Dup (B9L1313-MSD1)		Source: Y912234-01			Prepared: 12/13/2019 Analyzed: 12/13/2019					
Diesel (C10-C28)	973	50.0	mg/kg	1000	ND	97.3	70-130	1.52	35	
Residual Range Organics (C28-C40)	823	200	"	1000	ND	82.3	70-130	6.74	35	
Surrogate: o-Terphenyl	47		"	50.0		93.9	50-150			

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Project: KMG - Camp 13-19A (Dumpline)

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 B9L1311 - NO PREP

Duplicate (B9L1311-DUP1)		Source: Y912233-01			Prepared: 12/13/2019 Analyzed: 12/13/2019					
pH	7.75		pH Units		7.31			5.84	25	

Batch B9L1312 - NO PREP

Blank (B9L1312-BLK1)		Prepared: 12/13/2019 Analyzed: 12/13/2019								
Specific Conductance (EC)	0.00440	0.00500	mmhos/cm							
Duplicate (B9L1312-DUP1)		Source: Y912233-01			Prepared: 12/13/2019 Analyzed: 12/13/2019					
Specific Conductance (EC)	0.237	0.00500	mmhos/cm		0.248			4.49	25	

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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

Brian Sulzberger
Project Number: 014219247
Project: KMG - Camp 13-19A (Dumpline)

Notes and Definitions

U Sample is Non-Detect.

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

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

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported at a wet weight basis.

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