



June 04, 2015

LT Environmental, Inc.

Justin Solomon

4600 West 60th Avenue

Arvada CO 80003

Project Name - KMG - Aggregate 13N-16Hz

Project Number - 014211290

Attached are your analytical results for KMG - Aggregate 13N-16Hz received by Origins Laboratory, Inc. May 28, 2015. This project is associated with Origins project number X505298-01.

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

Justin Solomon
Project Number: 014211290
Project: KMG - Aggregate 13N-16Hz

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Off S	X505298-01	Soil	May 28, 2015 13:45	05/28/2015 16:30
Off E	X505298-02	Soil	May 28, 2015 13:55	05/28/2015 16:30
Off N	X505298-03	Soil	May 28, 2015 14:05	05/28/2015 16:30
Off W	X505298-04	Soil	May 28, 2015 14:15	05/28/2015 16:30
Off Comp	X505298-05	Soil	May 28, 2015 14:20	05/28/2015 16:30
Pad Comp	X505298-06	Soil	May 28, 2015 14:25	05/28/2015 16:30

Origins Laboratory, Inc.



Jen Pellegrini For Noelle Doyle Mathis, President

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Justin Solomon
Project Number: 014211290
Project: KMG - Aggregate 13N-16Hz

ORIGINS	X505298	page 1 of 1
L.T. Environmental Inc.	Project Manager:	Justin Solomon
Client:	Project Name:	KMG - Aggregrade 13 N-16 HZ
Address:	Project Number:	014211290-
Telephone Number:	Samples Collected By:	RZ
303.433.7988		
Email Address:		
solomon@ltenv.com		

[illegible]

Date Results Needed

Jeff Pellgrini

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

Justin Solomon
Project Number: 014211290
Project: KMG - Aggregate 13N-16Hz

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: X505298

Client: LTE

Client Project ID: KMG - Aggregate 13N-16

Checklist Completed by: Jen Pellegrini

Shipped Via: HIP

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

Date/time completed: 6/29/15

Airbill #: NA

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

Cooler Number/Temperature: 1 / 11.4 °C 1 / _____ °C 1 / _____ °C (Describe)

Thermometer ID: TU03

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>Sampled 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"/>	<input checked="" type="checkbox"/>		<u>pH</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)

5/29/15
Date/Time Reviewed

Origins Laboratory, Inc.

Jen Pellegrini

Jen Pellegrini For Noelle Doyle Mathis, President

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

Justin Solomon
Project Number: 014211290
Project: KMG - Aggregate 13N-16Hz

Off S

5/28/2015 1:45:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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GEL Laboratories, LLC
X505298-01 (Soil)

Metals by SW846 3050B/6010C

Arsenic	8.00	0.497	2.98	mg/kg dry	1	1482248	06/01/2015	06/01/2015	
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Origins Laboratory, Inc.



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Justin Solomon
Project Number: 014211290
Project: KMG - Aggregate 13N-16Hz

Off E

5/28/2015 1:55:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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GEL Laboratories, LLC
X505298-02 (Soil)

Metals by SW846 3050B/6010C

Arsenic	4.86	0.555	3.33	mg/kg dry	1	1482248	06/01/2015	06/01/2015	
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Origins Laboratory, Inc.



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4600 West 60th Avenue
Arvada CO 80003

Justin Solomon
Project Number: 014211290
Project: KMG - Aggregate 13N-16Hz

Off N

5/28/2015 2:05:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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GEL Laboratories, LLC
X505298-03 (Soil)

Metals by SW846 3050B/6010C

Arsenic	3.11	0.516	3.10	mg/kg dry	1	1482248	06/01/2015	06/01/2015	
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4600 West 60th Avenue
Arvada CO 80003

Justin Solomon
Project Number: 014211290
Project: KMG - Aggregate 13N-16Hz

Off W

5/28/2015 2:15:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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GEL Laboratories, LLC
X505298-04 (Soil)

Metals by SW846 3050B/6010C

Arsenic	6.98	0.509	3.06	mg/kg dry	1	1482248	06/01/2015	06/01/2015	
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Project Number: 014211290
Project: KMG - Aggregate 13N-16Hz

Off Comp

5/28/2015 2:20:00PM

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

X505298-05 (Soil)

Metals by SW846 3050B/6010C

Arsenic	5.63	0.563	3.38	mg/kg dry	1	1482248	06/01/2015	06/01/2015	
Barium	89.3	0.113	0.563	"	"	"	"	"	
Calcium	2650	9.00	28.1	"	"	"	"	"	
Magnesium	1650	9.57	33.8	"	"	"	"	"	
Sodium	63.3	7.88	28.1	"	"	"	"	"	

pH in Soil by EPA 9045D

pH	8.00			pH Units	1	5F01006	06/01/2015	06/01/2015	
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Sodium Adsorption Ratio

Sodium Adsorption Ratio	0.238			none	1	1483073		06/03/2015	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.0770			mmhos/cm	1	5F01007	06/01/2015	06/01/2015	
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Arvada CO 80003

Justin Solomon
Project Number: 014211290
Project: KMG - Aggregate 13N-16Hz

Pad Comp

5/28/2015 2:25:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc. X505298-06 (Soil)

BTEX by EPA 8260C

Benzene	ND	0.002	mg/kg	1	5F01005	06/01/2015	06/01/2015
Toluene	ND	0.002	"	"	"	"	"
Ethylbenzene	ND	0.002	"	"	"	"	"
Xylenes, total	ND	0.002	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	110 %	70-130	"	"	"
Surrogate: Toluene-d8	97.0 %	70-130	"	"	"
Surrogate: 4-Bromofluorobenzene	103 %	70-130	"	"	"

Metals by SW846 3050B/6010C

Arsenic	6.85	0.526	3.16	mg/kg dry	1	1482248	06/01/2015	06/01/2015
Barium	3000	0.526	2.63	"	5	"	"	"
Calcium	39100	8.41	26.3	"	1	"	"	"
Magnesium	4350	8.94	31.6	"	"	"	"	"
Sodium	658	7.36	26.3	"	"	"	"	"

pH in Soil by EPA 9045D

pH	8.27	pH Units	1	5F01006	06/01/2015	06/01/2015
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Sodium Adsorption Ratio

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Project: KMG - Aggregate 13N-16Hz

Pad Comp**5/28/2015 2:25:00PM**

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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GEL Laboratories, LLC
X505298-06 (Soil)**Sodium Adsorption Ratio**

Sodium Adsorption Ratio	0.843			none	1	1483073		06/03/2015	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.104			mmhos/cm	1	5F01007	06/01/2015	06/01/2015	
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TCLP Metals by 1311/3010A/6010C

Arsenic	ND	0.050	0.300	mg/L	1	1482607	06/02/2015	06/02/2015	U
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TPH-Carbon Chain by EPA Method 8015C

Gasoline (C6-C10)	ND	17	50	mg/kg	1	5F01010	06/01/2015	06/01/2015	
Diesel (C10-C28)	20	13	50	"	"	"	"	"	
Residual Range Organics (C28-C36)	ND	4.6	200	"	"	"	"	"	

Surrogate: o-Terphenyl	82.3 %		65-146			"	"	"	
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Volatile Organic Compounds by GC/MS SW846 8260C - 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 5F01005 - EPA 5030 (soil)

Blank (5F01005-BLK1)

Prepared: 06/01/2015 Analyzed: 06/01/2015

Benzene	ND	0.002	mg/kg							
Toluene	ND	0.002	"							
Ethylbenzene	ND	0.002	"							
Xylenes, total	ND	0.002	"							
Surrogate: 1,2-Dichloroethane-d4	65		ug/kg	62.5		105	70-130			
Surrogate: Toluene-d8	60		"	62.5		95.7	70-130			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		101	70-130			

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Justin Solomon
Project Number: 014211290
Project: KMG - Aggregate 13N-16Hz

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 5F01005 - EPA 5030 (soil)										
LCS (5F01005-BS1)					Prepared: 06/01/2015 Analyzed: 06/01/2015					
Benzene	0.102	0.002	mg/kg	0.100		102	77.1-124			
Toluene	0.096	0.002	"	0.100		95.9	74.5-128			
Ethylbenzene	0.095	0.002	"	0.100		94.6	66.4-127			
m,p-Xylene	0.189	0.004	"	0.200		94.5	76.6-124			
o-Xylene	0.099	0.002	"	0.100		98.6	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	61		ug/kg	62.5		97.3	70-130			
Surrogate: Toluene-d8	60		"	62.5		96.6	70-130			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		98.8	70-130			

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Volatile Organic Compounds by GC/MS SW846 8260C - 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 5F01005 - EPA 5030 (soil)

Matrix Spike (5F01005-MS1)		Source: X505309-01			Prepared: 06/01/2015 Analyzed: 06/01/2015					
Benzene	0.103	0.002	mg/kg	0.100	ND	103	71.8-126			
Toluene	0.099	0.002	"	0.100	ND	98.7	65.1-130			
Ethylbenzene	0.098	0.002	"	0.100	ND	97.6	62.2-130			
m,p-Xylene	0.195	0.004	"	0.200	ND	97.7	46.5-137			
o-Xylene	0.101	0.002	"	0.100	ND	101	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	61		ug/kg	62.5		97.8	70-130			
Surrogate: Toluene-d8	61		"	62.5		97.5	70-130			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		99.1	70-130			

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Project Number: 014211290
Project: KMG - Aggregate 13N-16Hz

Volatile Organic Compounds by GC/MS SW846 8260C - 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 5F01005 - EPA 5030 (soil)

Matrix Spike Dup (5F01005-MSD1)		Source: X505309-01			Prepared: 06/01/2015 Analyzed: 06/01/2015					
Benzene	0.091	0.002	mg/kg	0.100	ND	91.4	71.8-126	11.7	11.3	QR-02
Toluene	0.083	0.002	"	0.100	ND	83.2	65.1-130	17.0	15.4	QR-02
Ethylbenzene	0.075	0.002	"	0.100	ND	74.9	62.2-130	26.3	19.6	QR-02
m,p-Xylene	0.150	0.004	"	0.200	ND	74.8	46.5-137	26.6	19.2	QR-02
o-Xylene	0.079	0.002	"	0.100	ND	78.8	54.2-134	25.1	17.9	QR-02
Surrogate: 1,2-Dichloroethane-d4	61		ug/kg	62.5		97.7	70-130			
Surrogate: Toluene-d8	61		"	62.5		97.8	70-130			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		101	70-130			

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Justin Solomon
Project Number: 014211290
Project: KMG - Aggregate 13N-16Hz

Volatile Organic Compounds by GC/MS SW846 8260C - 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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Extractable Petroleum Hydrocarbons by 8015C - 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 5F01010 - EPA 3580

Blank (5F01010-BLK1)

Prepared: 06/01/2015 Analyzed: 06/01/2015

Gasoline (C6-C10)	ND	50	mg/kg
Diesel (C10-C28)	ND	50	"
Residual Range Organics (C28-C36)	ND	200	"

Surrogate: o-Terphenyl

45.6

"

50.0

91.1

65-146

LCS (5F01010-BS1)

Prepared: 06/01/2015 Analyzed: 06/01/2015

Gasoline (C6-C10)	880	50	mg/kg	1000		88.1	66.7-119
Diesel (C10-C28)	880	50	"				70.1-127
Residual Range Organics (C28-C36)	970	200	"	1000		96.9	54.5-139

Surrogate: o-Terphenyl

47.9

"

50.0

95.8

65-146

Matrix Spike (5F01010-MS1)

Source: X505297-06

Prepared: 06/01/2015 Analyzed: 06/01/2015

Gasoline (C6-C10)	930	50	mg/kg	1000	ND	92.6	56.4-132
Diesel (C10-C28)	930	50	"		15		57.4-138
Residual Range Organics (C28-C36)	1100	200	"	1000	ND	111	47.7-129

Surrogate: o-Terphenyl

50.8

"

50.0

102

65-146

Matrix Spike Dup (5F01010-MSD1)

Source: X505297-06

Prepared: 06/01/2015 Analyzed: 06/01/2015

Gasoline (C6-C10)	950	50	mg/kg	1000	ND	94.6	56.4-132	2.14	22
Diesel (C10-C28)	970	50	"		15		57.4-138	4.23	18.3
Residual Range Organics (C28-C36)	1100	200	"	1000	ND	106	47.7-129	4.37	30.1

Surrogate: o-Terphenyl

49.8

"

50.0

99.6

65-146

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

Justin Solomon
Project Number: 014211290
Project: KMG - Aggregate 13N-16Hz

Classical Chemistry Parameters - Quality Control Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 5F01006 - NO PREP										
Duplicate (5F01006-DUP1)		Source: X505297-05			Prepared: 06/01/2015 Analyzed: 06/01/2015					
pH	6.64		pH Units		6.58			0.908	25	
Batch 5F01007 - NO PREP										
Blank (5F01007-BLK1)		Prepared: 06/01/2015 Analyzed: 06/01/2015								
Specific Conductance (EC)	0.00280		mmhos/cm							
Duplicate (5F01007-DUP1)		Source: X505297-05			Prepared: 06/01/2015 Analyzed: 06/01/2015					
Specific Conductance (EC)	0.00820		mmhos/cm		0.00790			3.73	25	

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Justin Solomon
Project Number: 014211290
Project: KMG - Aggregate 13N-16Hz

Metals by SW846 3050B/6010C - 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 1482248 - SW846 3050B

BLANK (1203328055-BLK)

Prepared: 06/01/2015 Analyzed: 06/01/2015

Barium	ND	0.478	mg/kg				-			U
Calcium	ND	23.9	"				-			U
Magnesium	ND	28.7	"				-			U
Sodium	9.51	23.9	"				-			J
Arsenic	ND	2.87	"				-			U

LCS (1203328056-BKS)

Prepared: 06/01/2015 Analyzed: 06/01/2015

Arsenic	48.0	2.97	mg/kg	49.5		96.9	80-120			
Barium	49.3	0.495	"	49.5		99.6	80-120			
Calcium	519	24.8	"	495		105	80-120			
Magnesium	522	29.7	"	495		106	80-120			
Sodium	511	24.8	"	495		103	80-120			

DUP (1203328057 D)

Source: 374068001

Prepared: 06/01/2015 Analyzed: 06/01/2015

Barium	21.3	0.510	mg/kg dry		22.7		0-20	6.34	20	
Sodium	24.8	25.5	"		22.2		0-20	11.0	20	J
Calcium	560	25.5	"		604		0-20	7.59	20	
Arsenic	1.88	3.06	"		2.26		0-20	18.6	20	J
Magnesium	533	30.6	"		531		0-20	0.406	20	

MS (1203328058 S)

Source: 374068001

Prepared: 06/01/2015 Analyzed: 06/01/2015

Arsenic	49.9	3.08	mg/kg dry	51.3	2.26	92.8	75-125			
Barium	72.9	0.513	"	51.3	22.7	97.9	75-125			
Calcium	1120	25.6	"	513	604	100	75-125			
Magnesium	1170	30.8	"	513	531	124	75-125			
Sodium	542	25.6	"	513	22.2	101	75-125			

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Jen Pellegrini For Noelle Doyle Mathis, President

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

Justin Solomon
Project Number: 014211290
Project: KMG - Aggregate 13N-16Hz

TCLP Metals by 1311/3010A/6010C - Quality Control
GEL Laboratories, LLC

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1482607 - SW846 3010A										
MS (1203327343 S)	Source: 373945006				Prepared: 06/02/2015 Analyzed: 06/02/2015					
Arsenic	4.07	0.300	mg/L	5.00	<0.050	81.4	75-125			
TB (1203327344-BLK)	Prepared: 06/02/2015 Analyzed: 06/02/2015									
Arsenic	ND	0.300	mg/L				-			U
TB (1203328689-BLK)	Prepared: 06/02/2015 Analyzed: 06/02/2015									
Arsenic	ND	0.300	mg/L				-			U
BLANK (1203329062-BLK)	Prepared: 06/02/2015 Analyzed: 06/02/2015									
Arsenic	ND	0.300	mg/L				-			U
LCS (1203329063-BKS)	Prepared: 06/02/2015 Analyzed: 06/02/2015									
Arsenic	4.85	0.300	mg/L	5.00		97.1	80-120			
DUP (1203329064 D)	Source: 373945006				Prepared: 06/02/2015 Analyzed: 06/02/2015					
Arsenic	ND	0.300	mg/L		<0.050		0-20	154	20	U

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Notes and Definitions

U Result not detected above the detection limit

QR-02 The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data.

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.

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