



February 18, 2015

LT Environmental, Inc.

Justin Solomon

4600 West 60th Avenue

Arvada CO 80003

Project Name - KMG - NRC 3C-8Hz

Project Number - 014211290-376

Attached are your analytical results for KMG - NRC 3C-8Hz received by Origins Laboratory, Inc. February 11, 2015. This project is associated with Origins project number X502134-01.

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: 014211290-376  
Project: KMG - NRC 3C-8Hz

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Off S	X502134-01	Soil	February 9, 2015 16:25	02/11/2015 16:05
Off E	X502134-02	Soil	February 9, 2015 16:30	02/11/2015 16:05
Off N	X502134-03	Soil	February 9, 2015 16:35	02/11/2015 16:05
Off W	X502134-04	Soil	February 9, 2015 16:40	02/11/2015 16:05
Off Comp	X502134-05	Soil	February 9, 2015 16:45	02/11/2015 16:05
Pad Comp	X502134-06	Soil	February 9, 2015 16:50	02/11/2015 16:05

Origins Laboratory, Inc.



Jen Pellegrini For Noelle Doyle Mathis, President

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 Project Number: 014211290-376  
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Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: XS02134

Client: LTE

Client Project ID: NRC 3C-PH

Checklist Completed by: Jefe Smith

Shipped Via: H/D  
 (UPS, FedEx, Hand Delivered, Pick-up, etc.)

Date/time completed: 2/11/15

Airbill #: NA

Matrix(s) Received: (Check all that apply):  Soil/Solid  Water  Other: \_\_\_\_\_

Cooler Number/Temperature: 1 / 5.4 °C \_\_\_\_\_ / \_\_\_\_\_ °C \_\_\_\_\_ / \_\_\_\_\_ °C (Describe)

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 <sup>(1)</sup> ?	<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 <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Are short holding time analytes or samples with HTs due within 48 hours present <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			PH
Is a chain-of-custody (COC) present and filled out completely <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client with date and time recorded <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
For volatiles in water – is there headspace (> ¼ inch bubble) present? <b>If yes, contact client and note in narrative.</b>			<input checked="" type="checkbox"/>	
Are samples preserved that require preservation and was it checked <sup>(1)</sup> ? (note ID of confirmation instrument used in comments) / (preservation is not confirmed for subcontracted analyses in order to insure sample integrity)/(pH <2 for samples preserved with HNO3, HCL, H2SO4) / (pH >10 for samples preserved with NaAsO2+NaOH, ZnAc+NaOH)			<input checked="" type="checkbox"/>	
Additional Comments (if any):				

<sup>(1)</sup>If NO, then contact the client before proceeding with analysis and note date/time and person contacted as well as the corrective action to in the additional comments (above) and the case narrative.

Jefe Smith  
 Reviewed by (Project Manager)

02-13-15  
 Date/Time Reviewed

Origins Laboratory, Inc.



Jen Pellegrini For Noelle Doyle Mathis, President

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Justin Solomon  
Project Number: 014211290-376  
Project: KMG - NRC 3C-8Hz

**Off S**

**2/9/2015 4:25:00PM**

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**GEL Laboratories, LLC**  
**X502134-01 (Soil)**

**Total Metals by SW846 3050B/6010C**

Arsenic	6.46	0.564	3.39	mg/kg dry	1	1457784	02/13/2015	02/17/2015	
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Origins Laboratory, Inc.



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**Off E**

**2/9/2015 4:30:00PM**

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**GEL Laboratories, LLC**  
**X502134-02 (Soil)**

**Total Metals by SW846 3050B/6010C**

Arsenic	7.29	0.567	3.40	mg/kg dry	1	1457784	02/13/2015	02/17/2015	
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Project Number: 014211290-376  
Project: KMG - NRC 3C-8Hz

Off N

2/9/2015 4:35:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**GEL Laboratories, LLC**  
X502134-03 (Soil)

**Total Metals by SW846 3050B/6010C**

Arsenic	8.48	0.575	3.45	mg/kg dry	1	1457784	02/13/2015	02/17/2015	
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Project Number: 014211290-376  
Project: KMG - NRC 3C-8Hz

**Off W**  
**2/9/2015 4:40:00PM**

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**GEL Laboratories, LLC**  
**X502134-04 (Soil)**

**Total Metals by SW846 3050B/6010C**

Arsenic	9.30	0.550	3.30	mg/kg dry	1	1457784	02/13/2015	02/17/2015	
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 Project Number: 014211290-376  
 Project: KMG - NRC 3C-8Hz

**Off Comp**  
**2/9/2015 4:45:00PM**

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X502134-05 (Soil)**

**pH in Soil by EPA 9045D**

pH	8.38			pH Units	1	5B12007	02/12/2015	02/13/2015	
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**SAR Metals by SW846 3050B/6010C**

Calcium	17400	8.81	27.5	mg/kg dry	1	1457783	02/13/2015	02/17/2015	
Magnesium	5710	9.36	33.0	"	"	"	"	"	
Sodium	175	7.71	27.5	"	"	"	"	"	

**Sodium Adsorption Ratio**

Sodium Adsorption Ratio	0.295			none	1	1458674		02/18/2015	
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**Specific Conductance by Modified 9050A**

Specific Conductance (EC)	0.124			mmhos/cm	1	5B12008	02/12/2015	02/13/2015	
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**Total Metals by SW846 3050B/6010C**

Arsenic	20.0	2.75	16.5	mg/kg dry	5	1457784	02/13/2015	02/17/2015	
Barium	180	0.551	2.75	"	"	"	"	"	

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**Pad Comp**

**2/9/2015 4:50:00PM**

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X502134-06 (Soil)**

**BTEX by EPA 8260C**

Benzene	ND		0.002	mg/kg	1	5B12010	02/12/2015	02/13/2015	
Toluene	ND		0.002	"	"	"	"	"	
Ethylbenzene	ND		0.002	"	"	"	"	"	
Xylenes, total	ND		0.002	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	112 %		70-130			"	"	"	
Surrogate: Toluene-d8	101 %		70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	98.3 %		70-130			"	"	"	

**pH in Soil by EPA 9045D**

pH	8.59			pH Units	1	5B12007	02/12/2015	02/13/2015	
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**SAR Metals by SW846 3050B/6010C**

Calcium	29500	9.39	29.3	mg/kg dry	1	1457783	02/13/2015	02/17/2015	
Magnesium	6130	9.97	35.2	"	"	"	"	"	
Sodium	1030	8.21	29.3	"	"	"	"	"	

**Sodium Adsorption Ratio**

Sodium Adsorption Ratio	1.43			none	1	1458674		02/18/2015	
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**Pad Comp**  
**2/9/2015 4:50:00PM**

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X502134-06 (Soil)**

**Specific Conductance by Modified 9050A**

Specific Conductance (EC)	0.394			mmhos/cm	1	5B12008	02/12/2015	02/13/2015	
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**TCLP Metals by 1311/3010A/6010C**

Arsenic	ND	0.050	0.300	mg/L	1	1458310	02/17/2015	02/17/2015	U
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**Total Metals by SW846 3050B/6010C**

Arsenic	7.80	0.587	3.52	mg/kg dry	1	1457784	02/13/2015	02/17/2015	
Barium	2630	0.587	2.93	"	5	"	"	"	

**TPH-Carbon Chain by EPA Method 8015C**

Gasoline (C6-C10)	ND	17	50	mg/kg	1	5B12009	02/12/2015	02/12/2015	
Diesel (C10-C28)	53	13	50	"	"	"	"	"	
Residual Range Organics (C28-C36)	ND	4.6	200	"	"	"	"	"	

Surrogate: o-Terphenyl	76.3 %		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 5B12010 - EPA 5030 (soil)**

**Blank (5B12010-BLK1)**

Prepared: 02/12/2015 Analyzed: 02/12/2015

Benzene	ND	0.002	mg/kg							
Toluene	ND	0.002	"							
Ethylbenzene	ND	0.002	"							
Xylenes, total	ND	0.002	"							
Surrogate: 1,2-Dichloroethane-d4	81		ug/kg	62.5		130	70-130			
Surrogate: Toluene-d8	64		"	62.5		103	70-130			
Surrogate: 4-Bromofluorobenzene	69		"	62.5		111	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 5B12010 - EPA 5030 (soil)**

**LCS (5B12010-BS1)**

Prepared: 02/12/2015 Analyzed: 02/12/2015

Benzene	0.108	0.002	mg/kg	0.100		108	77.1-124			
Toluene	0.106	0.002	"	0.100		106	74.5-128			
Ethylbenzene	0.112	0.002	"	0.100		112	66.4-127			
m,p-Xylene	0.231	0.004	"	0.200		116	76.6-124			
o-Xylene	0.111	0.002	"	0.100		111	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	77		ug/kg	62.5		123	70-130			
Surrogate: Toluene-d8	65		"	62.5		104	70-130			
Surrogate: 4-Bromofluorobenzene	69		"	62.5		110	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 5B12010 - EPA 5030 (soil)**

<b>Matrix Spike (5B12010-MS1)</b>	<b>Source: X502131-06</b>			<b>Prepared: 02/12/2015 Analyzed: 02/12/2015</b>						
Benzene	0.103	0.002	mg/kg	0.100	ND	103	71.8-126			
Toluene	0.102	0.002	"	0.100	ND	102	65.1-130			
Ethylbenzene	0.109	0.002	"	0.100	ND	109	62.2-130			
m,p-Xylene	0.221	0.004	"	0.200	ND	110	46.5-137			
o-Xylene	0.109	0.002	"	0.100	ND	109	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	78		ug/kg	62.5		125	70-130			
Surrogate: Toluene-d8	63		"	62.5		101	70-130			
Surrogate: 4-Bromofluorobenzene	68		"	62.5		109	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 5B12010 - EPA 5030 (soil)**

<b>Matrix Spike Dup (5B12010-MSD1)</b>	<b>Source: X502131-06</b>			<b>Prepared: 02/12/2015 Analyzed: 02/12/2015</b>						
Benzene	0.099	0.002	mg/kg	0.100	ND	98.9	71.8-126	3.71	11.3	
Toluene	0.097	0.002	"	0.100	ND	97.5	65.1-130	4.83	15.4	
Ethylbenzene	0.102	0.002	"	0.100	ND	102	62.2-130	6.64	19.6	
m,p-Xylene	0.215	0.004	"	0.200	ND	108	46.5-137	2.50	19.2	
o-Xylene	0.103	0.002	"	0.100	ND	103	54.2-134	6.47	17.9	
Surrogate: 1,2-Dichloroethane-d4	78		ug/kg	62.5		124	70-130			
Surrogate: Toluene-d8	66		"	62.5		105	70-130			
Surrogate: 4-Bromofluorobenzene	68		"	62.5		109	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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**Extractable Petroleum Hydrocarbons by 8015M - 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 5B12009 - EPA 3580**

**Blank (5B12009-BLK1)**

Prepared: 02/12/2015 Analyzed: 02/12/2015

Gasoline (C6-C10)	36	50	mg/kg							
Diesel (C10-C28)	19	50	"							
Residual Range Organics (C28-C36)	ND	200	"							
Surrogate: o-Terphenyl	60.1		"	50.0		120	65-146			

**LCS (5B12009-BS1)**

Prepared: 02/12/2015 Analyzed: 02/12/2015

Gasoline (C6-C10)	970	50	mg/kg	1000		96.5	66.7-119			
Diesel (C10-C28)	960	50	"	1000		96.2	70.1-127			
Residual Range Organics (C28-C36)	1100	200	"	1000		111	54.5-139			
Surrogate: o-Terphenyl	51.6		"	50.0		103	65-146			

**Matrix Spike (5B12009-MS1)**

Source: X502131-06

Prepared: 02/12/2015 Analyzed: 02/12/2015

Gasoline (C6-C10)	990	50	mg/kg	1000	ND	99.4	56.4-132			
Diesel (C10-C28)	1000	50	"	1000	26	97.2	57.4-138			
Residual Range Organics (C28-C36)	1100	200	"	1000	ND	113	47.7-129			
Surrogate: o-Terphenyl	44.0		"	50.0		88.1	65-146			

**Matrix Spike Dup (5B12009-MSD1)**

Source: X502131-06

Prepared: 02/12/2015 Analyzed: 02/12/2015

Gasoline (C6-C10)	1000	50	mg/kg	1000	ND	101	56.4-132	1.56	22	
Diesel (C10-C28)	1000	50	"	1000	26	102	57.4-138	4.86	18.3	
Residual Range Organics (C28-C36)	1100	200	"	1000	ND	115	47.7-129	1.56	30.1	
Surrogate: o-Terphenyl	43.7		"	50.0		87.4	65-146			

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 Project Number: 014211290-376  
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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
<b>Batch 5B12007 - NO PREP</b>										
<b>Duplicate (5B12007-DUP1)</b>		<b>Source: X502131-05</b>			Prepared: 02/12/2015 Analyzed: 02/12/2015					
pH	7.80		pH Units		7.83			0.384	25	
<b>Duplicate (5B12007-DUP2)</b>		<b>Source: X502131-06</b>			Prepared: 02/12/2015 Analyzed: 02/12/2015					
pH	8.77		pH Units		8.81			0.455	25	
<b>Batch 5B12008 - NO PREP</b>										
<b>Blank (5B12008-BLK1)</b>		Prepared: 02/12/2015 Analyzed: 02/12/2015								
Specific Conductance (EC)	0.00250		mmhos/cm							
<b>Blank (5B12008-BLK2)</b>		Prepared: 02/12/2015 Analyzed: 02/12/2015								
Specific Conductance (EC)	0.00310		mmhos/cm							
<b>Duplicate (5B12008-DUP1)</b>		<b>Source: X502131-05</b>			Prepared: 02/12/2015 Analyzed: 02/12/2015					
Specific Conductance (EC)	0.0293		mmhos/cm		0.0333			12.8	25	
<b>Duplicate (5B12008-DUP2)</b>		<b>Source: X502131-06</b>			Prepared: 02/12/2015 Analyzed: 02/12/2015					
Specific Conductance (EC)	0.111		mmhos/cm		0.107			3.21	25	

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

Justin Solomon  
 Project Number: 014211290-376  
 Project: KMG - NRC 3C-8Hz

**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
<b>Batch 1458310 - SW846 3010A</b>										
<b>MS (1203264605 S)</b>										
			<b>Source: 367132006</b>			Prepared: 02/17/2015 Analyzed: 02/17/2015				
Arsenic	4.21	0.300	mg/L	5.00	<0.050	84.2	75-125			
<b>TB (1203264606-BLK)</b>										
						Prepared: 02/17/2015 Analyzed: 02/17/2015				
Arsenic	ND	0.300	mg/L				-			U
<b>TB (1203265547-BLK)</b>										
						Prepared: 02/17/2015 Analyzed: 02/17/2015				
Arsenic	ND	0.300	mg/L				-			U
<b>BLANK (1203266167-BLK)</b>										
						Prepared: 02/17/2015 Analyzed: 02/17/2015				
Arsenic	ND	0.300	mg/L				-			U
<b>LCS (1203266168-BKS)</b>										
						Prepared: 02/17/2015 Analyzed: 02/17/2015				
Arsenic	4.92	0.300	mg/L	5.00		98.4	80-120			
<b>DUP (1203266169 D)</b>										
			<b>Source: 367132006</b>			Prepared: 02/17/2015 Analyzed: 02/17/2015				
Arsenic	ND	0.300	mg/L		<0.050		0-20	12.3	20	U

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**Total 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
<b>Batch 1457784 - SW846 3050B</b>										
<b>BLANK (1203264812-BLK)</b>										
					Prepared: 02/13/2015 Analyzed: 02/17/2015					
Barium	ND	0.496	mg/kg				-			U
Arsenic	ND	2.98	"				-			U
<b>LCS (1203264813-BKS)</b>										
					Prepared: 02/13/2015 Analyzed: 02/17/2015					
Arsenic	51.9	2.95	mg/kg	49.1		106	80-120			
Barium	51.1	0.491	"	49.1		104	80-120			
<b>DUP (1203264814 D)</b>										
					Source: 367167001 Prepared: 02/13/2015 Analyzed: 02/17/2015					
Arsenic	20.4	3.40	mg/kg dry		7.73		0-20	90.2		20
Barium	208	0.567	"		212		0-20	1.99		20
<b>MS (1203264815 S)</b>										
					Source: 367167001 Prepared: 02/13/2015 Analyzed: 02/17/2015					
Arsenic	65.1	3.39	mg/kg dry	56.5	7.73	102	75-125			
Barium	238	0.565	"	56.5	212	45.2	75-125			
<b>PS (1203266539 S)</b>										
					Source: 367167001 Prepared: 02/13/2015 Analyzed: 02/17/2015					
Barium	2.71	0.0058	mg/kg dry	500		96.3	80-120			

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**Notes and Definitions**

- U Result not detected above the detection 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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