

April 10, 2015

LT Environmental, Inc.

Justin Solomon

4600 West 60th Avenue

Arvada CO 80003

Project Name - KMG - Gwardar 1N-22Hz

Project Number - 014211290-370

Attached are your analytical results for KMG - Gwardar 1N-22Hz received by Origins Laboratory, Inc. April 02, 2015. This project is associated with Origins project number X504036-01.

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



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

Justin Solomon  
Project Number: 014211290-370  
Project: KMG - Gwardar 1N-22Hz

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Off S	X504036-01	Soil	March 31, 2015 13:00	04/02/2015 17:05
Off E	X504036-02	Soil	March 31, 2015 13:10	04/02/2015 17:05
Off N	X504036-03	Soil	March 31, 2015 13:20	04/02/2015 17:05
Off W	X504036-04	Soil	March 31, 2015 13:30	04/02/2015 17:05
Off Comp	X504036-05	Soil	March 31, 2015 13:35	04/02/2015 17:05
Pad Comp	X504036-06	Soil	March 31, 2015 13:45	04/02/2015 17:05

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Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: X5040316 Client: LTE  
 Client Project ID: KMG-Gwardar 1N-22Hz  
 Checklist Completed by: Jen Pellegrini Shipped Via: Pickup  
 Date/time completed: 4/2/15 (UPS, FedEx, Hand Delivered, Pick-up, etc.)  
 Airbill #: N/A  
 Matrix(s) Received: (Check all that apply):  Soil/Solid \_\_\_\_\_ Water \_\_\_\_\_ Other: \_\_\_\_\_  
 Cooler Number/Temperature: 1 / 3.9 °C \_\_\_\_\_ °C \_\_\_\_\_ °C (Describe) \_\_\_\_\_ °C  
 Thermometer ID: T02B

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"/>			
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? If yes, contact client and note in narrative.			<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 HNO <sub>3</sub> , HCl, H <sub>2</sub> SO <sub>4</sub> ) / (pH >10 for samples preserved with NaAsO <sub>2</sub> +NaOH, ZnAc+NaOH)			<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.

Jen Pellegrini Reviewed by (Project Manager) 4/6/15 Date/Time Reviewed

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Justin Solomon  
Project Number: 014211290-370  
Project: KMG - Gwardar 1N-22Hz

**Off S**

**3/31/2015 1:00:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**GEL Laboratories, LLC**  
**X504036-01 (Soil)**

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

Arsenic	1.99	2.92	mg/kg dry	1	1468812	04/06/2015	04/09/2015	J
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Origins Laboratory, Inc.



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**Off E**

**3/31/2015 1:10:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**GEL Laboratories, LLC**  
**X504036-02 (Soil)**

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

Arsenic	1.76	2.86	mg/kg dry	1	1468812	04/06/2015	04/09/2015	J
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Origins Laboratory, Inc.



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**Off N**  
**3/31/2015 1:20:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**GEL Laboratories, LLC**  
**X504036-03 (Soil)**

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

Arsenic	1.73	3.18	mg/kg dry	1	1468812	04/06/2015	04/09/2015	J
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**Off W**

**3/31/2015 1:30:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**GEL Laboratories, LLC**  
**X504036-04 (Soil)**

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

Arsenic	2.20	2.81	mg/kg dry	1	1468812	04/06/2015	04/09/2015	J
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**Off Comp**  
**3/31/2015 1:35:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**GEL Laboratories, LLC**  
**X504036-05 (Soil)**

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

Arsenic	2.27	2.99	mg/kg dry	1	1468812	04/06/2015	04/09/2015	J
Barium	24.3	0.499	"	"	"	"	"	

**pH in Soil by EPA 9045D**

pH	6.62		pH Units	1	5D06008	04/06/2015	04/07/2015	
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**SAR Metals by SW846 3050B/6010C**

Calcium	1090	25.0	mg/kg dry	1	1468813	04/06/2015	04/09/2015	
Magnesium	911	29.9	"	"	"	"	"	
Sodium	20.3	25.0	"	"	"	"	"	J

**Sodium Adsorption Ratio**

Sodium Adsorption Ratio	0.110		none	1	1470687		04/10/2015	
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**Specific Conductance by Modified 9050A**

Specific Conductance (EC)	0.0492		mmhos/cm	1	5D06009	04/06/2015	04/07/2015	
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**Pad Comp**  
**3/31/2015 1:45:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X504036-06 (Soil)**

**BTEX by EPA 8260C**

Benzene	ND	0.002	mg/kg	1	5D03007	04/03/2015	04/03/2015	
Toluene	ND	0.002	"	"	"	"	"	
Ethylbenzene	ND	0.002	"	"	"	"	"	
Xylenes, total	ND	0.002	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	105 %	70-130			"	"	"	
Surrogate: Toluene-d8	99.5 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	105 %	70-130			"	"	"	

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

Arsenic	<b>1.89</b>	2.86	mg/kg dry	1	1468812	04/06/2015	04/09/2015	J
Barium	<b>1180</b>	2.39	"	5	"	"	04/10/2015	

**pH in Soil by EPA 9045D**

pH	<b>8.73</b>		pH Units	1	5D06008	04/06/2015	04/07/2015	
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**SAR Metals by SW846 3050B/6010C**

Calcium	<b>3550</b>	23.9	mg/kg dry	1	1468813	04/06/2015	04/09/2015	
Magnesium	<b>1130</b>	28.6	"	"	"	"	"	
Sodium	<b>324</b>	23.9	"	"	"	"	"	

**Sodium Adsorption Ratio**

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**Pad Comp**

**3/31/2015 1:45:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**GEL Laboratories, LLC**  
**X504036-06 (Soil)**

**Sodium Adsorption Ratio**

Sodium Adsorption Ratio	1.21		none	1	1470687		04/10/2015	
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**Specific Conductance by Modified 9050A**

Specific Conductance (EC)	0.247		mmhos/cm	1	5D06009	04/06/2015	04/07/2015	
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**TCLP Metals by 1311/3010A/6010C**

Arsenic	ND	0.300	mg/L	1	1469320	04/07/2015	04/07/2015	U
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**TPH-Carbon Chain by EPA Method 8015C**

Gasoline (C6-C10)	ND	50	mg/kg	1	5D03008	04/03/2015	04/08/2015	
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Diesel (C10-C28)	660	50	"	"	"	"	"	
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Residual Range Organics (C28-C36)	ND	200	"	"	"	"	"	
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Surrogate: o-Terphenyl	87.6 %	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 5D03007 - EPA 5030 (soil)**

**Blank (5D03007-BLK1)**

Prepared: 04/03/2015 Analyzed: 04/03/2015

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	62		"	62.5		99.3	70-130			
Surrogate: 4-Bromofluorobenzene	65		"	62.5		104	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 5D03007 - EPA 5030 (soil)**

**LCS (5D03007-BS1)**

Prepared: 04/03/2015 Analyzed: 04/03/2015

Benzene	0.096	0.002	mg/kg	0.100		95.8	77.1-124			
Toluene	0.094	0.002	"	0.100		94.1	74.5-128			
Ethylbenzene	0.095	0.002	"	0.100		94.6	66.4-127			
m,p-Xylene	0.190	0.004	"	0.200		94.9	76.6-124			
o-Xylene	0.097	0.002	"	0.100		97.2	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	64		ug/kg	62.5		102	70-130			
Surrogate: Toluene-d8	62		"	62.5		99.1	70-130			
Surrogate: 4-Bromofluorobenzene	64		"	62.5		103	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 5D03007 - EPA 5030 (soil)

Matrix Spike (5D03007-MS1)	Source: X504031-01			Prepared: 04/03/2015 Analyzed: 04/03/2015						
Benzene	0.109	0.002	mg/kg	0.100	ND	109	71.8-126			
Toluene	0.109	0.002	"	0.100	ND	109	65.1-130			
Ethylbenzene	0.097	0.002	"	0.100	ND	96.9	62.2-130			
m,p-Xylene	0.268	0.004	"	0.200	0.034	117	46.5-137			
o-Xylene	0.288	0.002	"	0.100	0.163	125	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	63		ug/kg	62.5		101	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 5D03007 - EPA 5030 (soil)**

<b>Matrix Spike Dup (5D03007-MSD1)</b>	<b>Source: X504031-01</b>			<b>Prepared: 04/03/2015 Analyzed: 04/03/2015</b>						
Benzene	0.109	0.002	mg/kg	0.100	ND	109	71.8-126	0.606	11.3	
Toluene	0.102	0.002	"	0.100	ND	102	65.1-130	5.94	15.4	
Ethylbenzene	0.056	0.002	"	0.100	ND	55.8	62.2-130	53.8	19.6	QM-07
m,p-Xylene	0.254	0.004	"	0.200	0.034	110	46.5-137	5.37	19.2	
o-Xylene	0.265	0.002	"	0.100	0.163	102	54.2-134	8.34	17.9	
Surrogate: 1,2-Dichloroethane-d4	64		ug/kg	62.5		103	70-130			
Surrogate: Toluene-d8	63		"	62.5		102	70-130			
Surrogate: 4-Bromofluorobenzene	66		"	62.5		106	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 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 5D03008 - EPA 3580**

**Blank (5D03008-BLK1)**

Prepared: 04/03/2015 Analyzed: 04/03/2015

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

Surrogate: o-Terphenyl 51.3 " 50.0 103 65-146

**LCS (5D03008-BS1)**

Prepared: 04/03/2015 Analyzed: 04/03/2015

Gasoline (C6-C10)	1200	50	mg/kg	1000		116	66.7-119			
Diesel (C10-C28)	1100	50	"				70.1-127			
Residual Range Organics (C28-C36)	850	200	"	1000		84.7	54.5-139			

Surrogate: o-Terphenyl 47.5 " 50.0 95.1 65-146

**Matrix Spike (5D03008-MS1)**

Source: X504031-01

Prepared: 04/03/2015 Analyzed: 04/03/2015

Gasoline (C6-C10)	1200	50	mg/kg	1000	61	119	56.4-132			
Diesel (C10-C28)	1400	50	"		250		57.4-138			
Residual Range Organics (C28-C36)	940	200	"	1000	48	89.2	47.7-129			

Surrogate: o-Terphenyl 45.6 " 50.0 91.3 65-146

**Matrix Spike Dup (5D03008-MSD1)**

Source: X504031-01

Prepared: 04/03/2015 Analyzed: 04/03/2015

Gasoline (C6-C10)	1200	50	mg/kg	1000	61	115	56.4-132	2.54	22	
Diesel (C10-C28)	1300	50	"		250		57.4-138	5.45	18.3	
Residual Range Organics (C28-C36)	890	200	"	1000	48	84.4	47.7-129	5.27	30.1	

Surrogate: o-Terphenyl 41.6 " 50.0 83.2 65-146

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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 5D06008 - NO PREP</b>										
<b>Duplicate (5D06008-DUP1)</b>		<b>Source: X504060-01</b>			Prepared: 04/06/2015 Analyzed: 04/07/2015					
pH	8.99		pH Units		8.76			2.59	25	
<b>Duplicate (5D06008-DUP2)</b>		<b>Source: X504059-01</b>			Prepared: 04/06/2015 Analyzed: 04/07/2015					
pH	8.70		pH Units		8.77			0.801	25	
<b>Duplicate (5D06008-DUP3)</b>		<b>Source: X504064-01</b>			Prepared: 04/06/2015 Analyzed: 04/07/2015					
pH	8.39		pH Units		8.36			0.358	25	
<b>Batch 5D06009 - NO PREP</b>										
<b>Blank (5D06009-BLK1)</b>					Prepared: 04/06/2015 Analyzed: 04/07/2015					
Specific Conductance (EC)	0.00290		mmhos/cm							
<b>Blank (5D06009-BLK2)</b>					Prepared: 04/06/2015 Analyzed: 04/07/2015					
Specific Conductance (EC)	0.00250		mmhos/cm							
<b>Blank (5D06009-BLK3)</b>					Prepared: 04/06/2015 Analyzed: 04/07/2015					
Specific Conductance (EC)	0.00370		mmhos/cm							
<b>Duplicate (5D06009-DUP1)</b>		<b>Source: X504064-01</b>			Prepared: 04/06/2015 Analyzed: 04/07/2015					
Specific Conductance (EC)	1.25		mmhos/cm		1.27			1.35	25	
<b>Duplicate (5D06009-DUP2)</b>		<b>Source: X504059-01</b>			Prepared: 04/06/2015 Analyzed: 04/07/2015					
Specific Conductance (EC)	0.0303		mmhos/cm		0.0276			9.33	25	
<b>Duplicate (5D06009-DUP3)</b>		<b>Source: X504060-01</b>			Prepared: 04/06/2015 Analyzed: 04/07/2015					
Specific Conductance (EC)	0.0490		mmhos/cm		0.0524			6.71	25	

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

Justin Solomon  
 Project Number: 014211290-370  
 Project: KMG - Gwardar 1N-22Hz

**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 1468812 - SW846 3050B**

**BLANK (1203293110-BLK)**

Prepared: 04/06/2015 Analyzed: 04/09/2015

Arsenic	ND	2.99	mg/kg				-			U
Barium	ND	0.498	"				-			U

**LCS (1203293111-BKS)**

Prepared: 04/06/2015 Analyzed: 04/09/2015

Barium	48.3	0.474	mg/kg	47.4		102	80-120			
Arsenic	50.2	2.85	"	47.4		106	80-120			

**DUP (1203293112 D)**

**Source: 370092001**

Prepared: 04/06/2015 Analyzed: 04/09/2015

Arsenic	3.31	3.15	mg/kg dry		3.24		0-20	2.04	20	
Barium	53.2	0.524	"		50.6		0-20	4.99	20	

**MS (1203293113 S)**

**Source: 370092001**

Prepared: 04/06/2015 Analyzed: 04/09/2015

Arsenic	54.5	3.04	mg/kg dry	50.6	3.24	101	75-125			
Barium	108	0.506	"	50.6	50.6	113	75-125			

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**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 1469320 - SW846 3010A</b>										
<b>MS (1203293177 S)</b>										
			<b>Source: 370092006</b>			Prepared: 04/07/2015 Analyzed: 04/07/2015				
Arsenic	4.96	0.300	mg/L	5.00	<0.050	98.5	75-125			
<b>TB (1203293178-BLK)</b>										
						Prepared: 04/07/2015 Analyzed: 04/07/2015				
Arsenic	ND	0.300	mg/L				-			U
<b>BLANK (1203294364-BLK)</b>										
						Prepared: 04/07/2015 Analyzed: 04/07/2015				
Arsenic	ND	0.300	mg/L				-			U
<b>LCS (1203294365-BKS)</b>										
						Prepared: 04/07/2015 Analyzed: 04/07/2015				
Arsenic	4.93	0.300	mg/L	5.00		98.6	80-120			
<b>DUP (1203294366 D)</b>										
			<b>Source: 370092006</b>			Prepared: 04/07/2015 Analyzed: 04/07/2015				
Arsenic	0.0673	0.300	mg/L		<0.050		0-20	53.2	20	J

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LT Environmental, Inc.  
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Arvada CO 80003

Justin Solomon  
Project Number: 014211290-370  
Project: KMG - Gwardar 1N-22Hz

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**Notes and Definitions**

U Result not detected above the detection limit

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

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 at a wet weight basis.

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Jen Pellegrini For Noelle Doyle Mathis, President