

June 24, 2015

LT Environmental, Inc.

Eric Lang

4600 West 60th Avenue

Arvada CO 80003

Project Name - Emerald Unit

Project Number - [none]

Attached are your analytical results for Emerald Unit received by Origins Laboratory, Inc. June 19, 2015. This project is associated with Origins project number X506263-01.

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

Eric Lang
Project Number: [none]
Project: Emerald Unit

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
PE-SS01 @ Surface	X506263-01	Soil	June 19, 2015 9:45	06/19/2015 14:15

Origins Laboratory, Inc.



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

Eric Lang
 Project Number: [none]
 Project: Emerald Unit

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: XSOL263 Client: LTE
 Client Project ID: Emerald Unit
 Checklist Completed by: Jen Pellegrini Shipped Via: HD
 Date/time completed: 6/19/15 (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 / 11.9 °C 1 °C 1 °C (Describe)
 Thermometer ID: TOB

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"/>	<u>6/23/15</u>		<u>PH</u>
Is a chain-of-custody (COC) present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<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.

Jen Pellegrini Reviewed by (Project Manager) 6/23/15 Date/Time Reviewed

Origins Laboratory, Inc.



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

Eric Lang
 Project Number: [none]
 Project: Emerald Unit

PE-SS01 @ Surface
6/19/2015 9:45:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X506263-01 (Soil)

Diesel Range Organics (DRO/TEPH) by EPA 8015C

Diesel (C10-C28)	58.4	50.0	mg/kg	1	5F22007	06/22/2015	06/23/2015
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<i>Surrogate: o-Terphenyl</i>	93.3 %	59-131			"	"	"
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GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	5F22008	06/22/2015	06/22/2015
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Benzene	ND	0.002	"	"	"	"	"
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Toluene	0.002	0.002	"	"	"	"	"
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Ethylbenzene	ND	0.002	"	"	"	"	"
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Xylenes, total	ND	0.002	"	"	"	"	"
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<i>Surrogate: 1,2-Dichloroethane-d4</i>	105 %	70-130			"	"	"
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<i>Surrogate: Toluene-d8</i>	97.2 %	70-130			"	"	"
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<i>Surrogate: 4-Bromofluorobenzene</i>	103 %	70-130			"	"	"
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Metals by SW846 3050B/6010C

Calcium	2910	26.3	mg/kg dry	1	1487363	06/22/2015	06/22/2015
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Magnesium	1480	31.6	"	"	"	"	"
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Sodium	262	26.3	"	"	"	"	"
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pH in Soil by EPA 9045D

pH	8.11		pH Units	1	5F22005	06/22/2015	06/22/2015
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4600 West 60th Avenue
Arvada CO 80003

Eric Lang
Project Number: [none]
Project: Emerald Unit

PE-SS01 @ Surface
6/19/2015 9:45:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X506263-01 (Soil)

Sodium Adsorption Ratio

Sodium Adsorption Ratio	0.985		none	1	1487963		06/23/2015	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.114		mmhos/cm	1	5F22006	06/22/2015	06/22/2015	
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LT Environmental, Inc.
 4600 West 60th Avenue
 Arvada CO 80003

Eric Lang
 Project Number: [none]
 Project: Emerald Unit

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 5F22008 - EPA 5030 (soil)

Blank (5F22008-BLK1)

Prepared: 06/22/2015 Analyzed: 06/22/2015

Gasoline Range Hydrocarbons	ND	0.200	mg/kg							
Benzene	ND	0.002	"							
Toluene	ND	0.002	"							
Ethylbenzene	ND	0.002	"							
Xylenes, total	ND	0.002	"							
Surrogate: 1,2-Dichloroethane-d4	64.4		ug/kg	62.5		103	70-130			
Surrogate: Toluene-d8	61.1		"	62.5		97.7	70-130			
Surrogate: 4-Bromofluorobenzene	61.5		"	62.5		98.4	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 5F22008 - EPA 5030 (soil)

LCS (5F22008-BS1)

Prepared: 06/22/2015 Analyzed: 06/22/2015

Benzene	0.098	0.002	mg/kg	0.100		98.2	77.1-124			
Toluene	0.095	0.002	"	0.100		95.1	74.5-128			
Ethylbenzene	0.094	0.002	"	0.100		94.2	66.4-127			
m,p-Xylene	0.191	0.004	"	0.200		95.6	76.6-124			
o-Xylene	0.094	0.002	"	0.100		94.2	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	59.3		ug/kg	62.5		94.9	70-130			
Surrogate: Toluene-d8	60.9		"	62.5		97.5	70-130			
Surrogate: 4-Bromofluorobenzene	61.6		"	62.5		98.6	70-130			

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 Project Number: [none]
 Project: Emerald Unit

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 5F22008 - EPA 5030 (soil)

Matrix Spike (5F22008-MS1)	Source: X506263-01			Prepared: 06/22/2015 Analyzed: 06/22/2015						
Benzene	0.106	0.002	mg/kg	0.100	ND	106	71.8-126			
Toluene	0.101	0.002	"	0.100	0.002	99.1	65.1-130			
Ethylbenzene	0.102	0.002	"	0.100	ND	102	62.2-130			
m,p-Xylene	0.204	0.004	"	0.200	0.001	101	46.5-137			
o-Xylene	0.101	0.002	"	0.100	ND	101	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	60.0		ug/kg	62.5		96.0	70-130			
Surrogate: Toluene-d8	61.7		"	62.5		98.7	70-130			
Surrogate: 4-Bromofluorobenzene	64.4		"	62.5		103	70-130			

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 Project Number: [none]
 Project: Emerald Unit

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 5F22008 - EPA 5030 (soil)

Matrix Spike Dup (5F22008-MSD1)	Source: X506263-01			Prepared: 06/22/2015 Analyzed: 06/22/2015						
Benzene	0.104	0.002	mg/kg	0.100	ND	104	71.8-126	1.52	11.3	
Toluene	0.100	0.002	"	0.100	0.002	98.2	65.1-130	0.934	15.4	
Ethylbenzene	0.101	0.002	"	0.100	ND	101	62.2-130	1.64	19.6	
m,p-Xylene	0.203	0.004	"	0.200	0.001	101	46.5-137	0.747	19.2	
o-Xylene	0.099	0.002	"	0.100	ND	99.5	54.2-134	1.26	17.9	
Surrogate: 1,2-Dichloroethane-d4	61.7		ug/kg	62.5		98.8	70-130			
Surrogate: Toluene-d8	61.0		"	62.5		97.6	70-130			
Surrogate: 4-Bromofluorobenzene	64.3		"	62.5		103	70-130			

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 Project: Emerald Unit

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 5F22007 - EPA 3580

Blank (5F22007-BLK1)

Prepared: 06/22/2015 Analyzed: 06/22/2015

Diesel (C10-C28)	ND	50.0	mg/kg							
Surrogate: o-Terphenyl	41		"	50.0		82.6	59-131			

LCS (5F22007-BS1)

Prepared: 06/22/2015 Analyzed: 06/22/2015

Diesel (C10-C28)	930	50.0	mg/kg	1000		93.0	64-121			
Surrogate: o-Terphenyl	50		"	50.0		99.9	59-131			

Matrix Spike (5F22007-MS1)

Source: X506263-01

Prepared: 06/22/2015 Analyzed: 06/22/2015

Diesel (C10-C28)	887	50.0	mg/kg	1000	58.4	82.8	53-125			
Surrogate: o-Terphenyl	40		"	50.0		80.6	59-131			

Matrix Spike Dup (5F22007-MSD1)

Source: X506263-01

Prepared: 06/22/2015 Analyzed: 06/22/2015

Diesel (C10-C28)	857	50.0	mg/kg	1000	58.4	79.8	53-125	3.44	20	
Surrogate: o-Terphenyl	40		"	50.0		79.2	59-131			

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 Project: Emerald Unit

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 5F22005 - NO PREP										
Duplicate (5F22005-DUP1)		Source: X506263-01			Prepared: 06/22/2015 Analyzed: 06/22/2015					
pH	8.12		pH Units		8.11			0.123	25	
Batch 5F22006 - NO PREP										
Blank (5F22006-BLK1)		Prepared: 06/22/2015 Analyzed: 06/22/2015								
Specific Conductance (EC)	0.00270		mmhos/cm							
Duplicate (5F22006-DUP1)		Source: X506263-01			Prepared: 06/22/2015 Analyzed: 06/22/2015					
Specific Conductance (EC)	0.107		mmhos/cm		0.114			6.14	25	

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 Project: Emerald Unit

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
Batch 1487363 - SW846 3050B										
BLANK (1203341000-BLK)					Prepared: 06/22/2015 Analyzed: 06/22/2015					
Calcium	ND	24.7	mg/kg				-			U
Sodium	ND	24.7	"				-			U
Magnesium	ND	29.6	"				-			U
LCS (1203341001-BKS)					Prepared: 06/22/2015 Analyzed: 06/22/2015					
Magnesium	505	29.9	mg/kg	499		101	80-120			
Sodium	495	25.0	"	499		99.2	80-120			
Calcium	507	25.0	"	499		102	80-120			
DUP (1203341002 D)					Source: 375476001 Prepared: 06/22/2015 Analyzed: 06/22/2015					
Magnesium	2340	33.1	mg/kg dry		1740		0-20	29.4	20	
Sodium	451	27.6	"		295		0-20	41.8	20	
Calcium	7650	27.6	"		4440		0-20	53.0	20	
MS (1203341003 S)					Source: 375476001 Prepared: 06/22/2015 Analyzed: 06/22/2015					
Sodium	882	27.6	mg/kg dry	551	295	107	75-125			
Magnesium	2830	33.1	"	551	1740	199	75-125			
Calcium	5450	27.6	"	551	4440	183	75-125			
PS (1203341900 S)					Source: 375476001 Prepared: 06/22/2015 Analyzed: 06/22/2015					
Magnesium	22.3	0.336	mg/kg dry	5000		88	80-120			

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4600 West 60th Avenue
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Eric Lang
Project Number: [none]
Project: Emerald Unit

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 at a wet weight basis.

Origins Laboratory, Inc.



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Jen Pellegrini For Noelle Doyle Mathis, President