

Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

August 16, 2016

Brett Forkner

LT Environmental, Inc.

4600 West 60th Avenue

Arvada, CO 80003

RE: Preset Surface Casing-Ray Ranch 0780 3&4-16H

Enclosed are the results of analyses for samples received by Summit Scientific on 08/11/16 16:20. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in dark ink, appearing to read "M Clements", with a stylized flourish at the end.

Michelle Clements For Paul Shrewsbury
President



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

Project: Preset Surface Casing-Ray Ranch 0780 3&4-16H

Project Number: 065815003.0008
Project Manager: Brett Forkner

Reported:
08/16/16 16:34

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
RR-3-4-16H-CB	1608093-01	Soil	08/11/16 07:07	08/11/16 16:20

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A handwritten signature in black ink, appearing to read 'M. Clement'.

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

Project: Preset Surface Casing-Ray Ranch 0780 3&4-16H
Project Number: 065815003.0008
Project Manager: Brett Forkner

Reported:
08/16/16 16:34

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S₂

1608093

741 Corporate Circle, Suite J • Golden, Colorado 80401
303-277-9310 • 303-374-5933

Page 1 of 1

Client: LTE Project Manager: BRETT FORKNER
Address: 4600 W 60th Ave E-Mail: bforkner@ltenv.com
City/State/Zip: ARVADA CO 80003
Phone: _____ Fax: _____ Project Name: PRESET SURFACE CASING - RAY RANCH 0780 3&4-16H
Sampler Name: ERIC Project Number: 065815003.0008

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested				Special Instructions
					HCl	HNO ₃	None	Other (Specify)	Groundwater	Soil	Air-Canister #	Other (Specify)	CO ₂ (g)	PM ₁₀ (g)	PM _{2.5} (g)		
1	RA-3-4-16H-CB	8/11/16	09:07	2			X			X			X				
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Relinquished by: <u>BF</u>	Date/Time: <u>8/11/16 1620</u>	Received by: <u>MF</u>	Date/Time: <u>8/11/16 1620</u>	Turn Around Time (Check)	Notes: <u>on file</u>
Relinquished by: <u>MA</u>	Date/Time: <u>8/11/16 1720</u>	Received by: <u>Thom</u>	Date/Time: <u>8/11/16 1720</u>	Same Day <u>—</u> 72 hours <u>X</u>	
				24 hours <u>—</u> Standard <u>—</u>	
				48 hours <u>—</u>	
Relinquished by: _____	Date/Time: _____	Received by: _____	Date/Time: _____	Sample Integrity: _____	
				Temperature Upon Receipt: <u>68°C</u>	
				Intact: <u>Yes</u> No	

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M Clements

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Project: Preset Surface Casing-Ray Ranch 0780 3&4-16H
Project Number: 065815003.0008
Project Manager: Brett Forkner

Reported:
08/16/16 16:34

Sample Receipt Checklist

S2 Work Order: 1608093
Client: LIE Client Project ID: Preset Surface Casing - Ray Ranch 0780 3&4-16H
Shipped Via: PIU (UPS, FedEx, Hand Delivered, Pick-up, etc.) Airbill #: _____
Matrix (check all that apply): ☐ Air ☒ Soil/Solid ☐ Water ☐ Other: _____ (Describe)

Cooler ID					
Temp (°C)	<u>6.8</u>				

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature just above 0°C to ≤ 6°C ⁽¹⁾ ?		<input checked="" type="checkbox"/>		
NOTE: If samples are delivered the same day of sampling, this requirement is waived provided that there is evidence that cooling has begun.				
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
If custody seals are present, are they intact ⁽¹⁾ ?			<input checked="" type="checkbox"/>	
Are short holding time analytes or samples with HTs due within 48 hours present?			<input checked="" type="checkbox"/>	
Is a chain-of-custody (COC) form 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 w/ date and time recorded ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.			<input checked="" type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ?			<input checked="" type="checkbox"/>	
Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect			<input checked="" type="checkbox"/>	
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ?			<input checked="" type="checkbox"/>	
Record the pH in Comments.			<input checked="" type="checkbox"/>	
If dissolved metals are requested, were samples field filtered?			<input checked="" type="checkbox"/>	
Additional Comments (if any):				

⁽¹⁾ If NO, then contact the client before proceeding with analysis and note in case narrative.

Custodian Printed Name: Nakita Signature or Initials of Custodian: MA Date/Time: 8/16/16 1720

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RR-3-4-16H-CB
1608093-01 (Soil)

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Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **08/11/16 07:07**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1608136	08/12/16	08/12/16	8015M	

Date Sampled: **08/11/16 07:07**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		92.1 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **08/11/16 07:07**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	0.010	0.0020	mg/kg	1	1608135	08/12/16	08/13/16	EPA 8260B	
Toluene	0.0095	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.012	0.0050	"	"	"	"	"	"	
Xylenes (total)	0.025	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	0.82	0.50	"	"	"	"	"	"	

Date Sampled: **08/11/16 07:07**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		105 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		85.7 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		95.5 %	21-167		"	"	"	"	

Semivolatile Organic Compounds by EPA Method 8270D SIM

Date Sampled: **08/11/16 07:07**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	0.00536	0.00500	mg/kg	1	1608142	08/12/16	08/13/16	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	

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1608093-01 (Soil)

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Semivolatile Organic Compounds by EPA Method 8270D SIM

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzo (a) anthracene	ND	0.00500	mg/kg	1	1608142	08/12/16	08/13/16	EPA 8270D SIM	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Naphthalene	0.0140	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **08/11/16 07:07**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		71.3 %	30-150		"	"	"	"	
Surrogate: Fluoranthene-d10		61.1 %	30-150		"	"	"	"	

Total Metals by EPA Method 6020 - Dry Weight Basis

Date Sampled: **08/11/16 07:07**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	ND	0.287	mg/kg dry	1	1608129	08/12/16	08/15/16	EPA 6020A	
Barium	422	0.573	"	"	"	"	"	"	
Cadmium	0.311	0.143	"	"	"	"	"	"	
Chromium	21.3	0.716	"	"	"	"	"	"	
Copper	36.5	0.716	"	"	"	"	"	"	
Lead	18.3	0.287	"	"	"	"	"	"	
Nickel	23.9	0.143	"	"	"	"	"	"	
Selenium	0.813	0.573	"	"	"	"	"	"	
Silver	ND	0.143	"	"	"	"	"	"	
Zinc	88.3	14.3	"	"	"	"	"	"	

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RR-3-4-16H-CB
1608093-01 (Soil)

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Total Mercury by EPA Method 7471

Date Sampled: **08/11/16 07:07**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Mercury	ND	0.0716	mg/kg dry	1	1608128	08/12/16	08/16/16	EPA 7471	

Hexavalent Chromium by EPA 7196

Date Sampled: **08/11/16 07:07**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.300	mg/kg dry	1	1608101	08/12/16	08/12/16	EPA 7196	

Soluble Nutrients by EPA 6020/Mod. USDA60 6(2, 3A) - Dry Weight Basis

Date Sampled: **08/11/16 07:07**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	435	14.3	mg/kg dry	1	1608143	08/15/16	08/16/16	EPA 6020/Mod. USDA60 6(2, 3A)	
Magnesium	200	7.16	"	"	"	"	"	"	
Sodium	651	7.16	"	"	"	"	"	"	

Date Sampled: **08/11/16 07:07**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	6.48		units	"	1608158	08/16/16	08/16/16	"	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **08/11/16 07:07**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	1.30	0.0100	mmhos/cm	1	1608145	08/15/16	08/16/16	SM 2510B	

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Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **08/11/16 07:07**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	9.90	0.100	pH Units	1	1608144	08/15/16	08/16/16	EPA 9045	

Date Sampled: **08/11/16 07:07**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	69.8		%	"	1608139	08/12/16	08/15/16	% calculation	

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Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

Analyte	Reporting			Spike	Source		%REC		RPD	
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

Batch 1608136 - EPA 3550A

Blank (1608136-BLK1)

Prepared & Analyzed: 08/12/16

C10-C28 (DRO)	ND	50	mg/kg							
Surrogate: o-Terphenyl	12.4		"	12.5		99.4	30-150			

LCS (1608136-BS1)

Prepared & Analyzed: 08/12/16

C10-C28 (DRO)	412	50	mg/kg	499		82.5	73-134			
Surrogate: o-Terphenyl	12.0		"	12.5		95.7	30-150			

Matrix Spike (1608136-MS1)

Source: 1608093-01

Prepared & Analyzed: 08/12/16

C10-C28 (DRO)	422	50	mg/kg	499	9.68	82.7	50-148			
Surrogate: o-Terphenyl	12.2		"	12.5		97.3	30-150			

Matrix Spike Dup (1608136-MSD1)

Source: 1608093-01

Prepared & Analyzed: 08/12/16

C10-C28 (DRO)	426	50	mg/kg	499	9.68	83.4	50-148	0.862	20	
Surrogate: o-Terphenyl	11.9		"	12.5		95.3	30-150			

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Reported:
08/16/16 16:34

Volatile Organic Compounds by EPA Method 8260B - Quality Control
Summit Scientific

Analyte	Reporting			Spike	Source		%REC		RPD	
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

Batch 1608135 - EPA 5030 Soil MS

Blank (1608135-BLK1)

Prepared: 08/12/16 Analyzed: 08/13/16

Benzene	ND	0.0020	mg/kg							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.0050	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
Surrogate: 1,2-Dichloroethane-d4	0.0388		"	0.0400		97.0	23-173			
Surrogate: Toluene-d8	0.0397		"	0.0400		99.2	20-170			
Surrogate: 4-Bromofluorobenzene	0.0398		"	0.0400		99.4	21-167			

LCS (1608135-BS1)

Prepared: 08/12/16 Analyzed: 08/13/16

Benzene	0.0818	0.0020	mg/kg	0.100		81.8	58-130			
Toluene	0.0867	0.0050	"	0.100		86.7	61-134			
Ethylbenzene	0.0848	0.0050	"	0.0992		85.4	74-139			
m,p-Xylene	0.170	0.010	"	0.200		85.1	73-137			
o-Xylene	0.0903	0.0050	"	0.0980		92.1	73-141			
Xylenes (total)	0.260	0.0050	"				30-150			
Gasoline Range Hydrocarbons	1.01	0.50	"				30-150			
Surrogate: 1,2-Dichloroethane-d4	0.0399		"	0.0400		99.8	23-173			
Surrogate: Toluene-d8	0.0413		"	0.0400		103	20-170			
Surrogate: 4-Bromofluorobenzene	0.0374		"	0.0400		93.6	21-167			

Matrix Spike (1608135-MS1)

Source: 1608093-01

Prepared: 08/12/16 Analyzed: 08/13/16

Benzene	0.0732	0.0020	mg/kg	0.100	0.0103	63.0	30-131			
Toluene	0.0492	0.0050	"	0.100	0.00948	39.7	30-134			
Ethylbenzene	0.0398	0.0050	"	0.0992	0.0123	27.7	22-153			
m,p-Xylene	0.0806	0.010	"	0.200	0.0131	33.8	10-159			
o-Xylene	0.0800	0.0050	"	0.0980	0.0118	69.6	31-151			
Xylenes (total)	0.161	0.0050	"		0.0249		30-150			
Gasoline Range Hydrocarbons	0.931	0.50	"		0.819		30-150			
Surrogate: 1,2-Dichloroethane-d4	0.0392		"	0.0400		98.1	23-173			
Surrogate: Toluene-d8	0.0399		"	0.0400		99.7	20-170			
Surrogate: 4-Bromofluorobenzene	0.0362		"	0.0400		90.4	21-167			

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08/16/16 16:34

Volatile Organic Compounds by EPA Method 8260B - Quality Control
Summit Scientific

Analyte	Reporting			Spike	Source		%REC		RPD	
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

Batch 1608135 - EPA 5030 Soil MS

Matrix Spike Dup (1608135-MSD1)		Source: 1608093-01			Prepared: 08/12/16		Analyzed: 08/13/16			
Benzene	0.0704	0.0020	mg/kg	0.100	0.0103	60.1	30-131	3.97	34	
Toluene	0.0562	0.0050	"	0.100	0.00948	46.8	30-134	13.4	30	
Ethylbenzene	0.0575	0.0050	"	0.0992	0.0123	45.5	22-153	36.3	24	S-02
m,p-Xylene	0.100	0.010	"	0.200	0.0131	43.6	10-159	21.6	68	
o-Xylene	0.0820	0.0050	"	0.0980	0.0118	71.6	31-151	2.41	38	
Xylenes (total)	0.182	0.0050	"		0.0249		30-150	12.5	20	
Gasoline Range Hydrocarbons	1.47	0.50	"		0.819		30-150	44.7	20	QM-07
Surrogate: 1,2-Dichloroethane-d4	0.0405		"	0.0400		101	23-173			
Surrogate: Toluene-d8	0.0393		"	0.0400		98.2	20-170			
Surrogate: 4-Bromofluorobenzene	0.0335		"	0.0400		83.7	21-167			

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Semivolatile Organic Compounds by EPA Method 8270D SIM - Quality Control
Summit Scientific

Analyte	Reporting			Spike	Source		%REC		RPD	
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

Batch 1608142 - EPA 5030 Soil MS

Blank (1608142-BLK1)

Prepared: 08/12/16 Analyzed: 08/13/16

Acenaphthene	ND	0.00500	mg/kg
Anthracene	ND	0.00500	"
Benzo (a) anthracene	ND	0.00500	"
Benzo (b) fluoranthene	ND	0.00500	"
Benzo (k) fluoranthene	ND	0.00500	"
Benzo (a) pyrene	ND	0.00500	"
Chrysene	ND	0.00500	"
Dibenz (a,h) anthracene	ND	0.00500	"
Fluoranthene	ND	0.00500	"
Fluorene	ND	0.00500	"
Indeno (1,2,3-cd) pyrene	ND	0.00500	"
Naphthalene	ND	0.00500	"
Pyrene	ND	0.00500	"

Surrogate: 2-Methylnaphthalene-d10	0.0268		"	0.0331	80.9	30-150
Surrogate: Fluoranthene-d10	0.0277		"	0.0331	83.7	30-150

LCS (1608142-BS1)

Prepared: 08/12/16 Analyzed: 08/13/16

Acenaphthene	0.0277	0.00500	mg/kg	0.0331	83.8	48-131
Anthracene	0.0293	0.00500	"	0.0331	88.4	48-135
Benzo (a) anthracene	0.0332	0.00500	"	0.0331	100	37-142
Benzo (b) fluoranthene	0.0376	0.00500	"	0.0331	114	35-139
Benzo (k) fluoranthene	0.0350	0.00500	"	0.0331	106	30-139
Benzo (a) pyrene	0.0368	0.00500	"	0.0331	111	41-132
Chrysene	0.0306	0.00500	"	0.0331	92.3	30-136
Dibenz (a,h) anthracene	0.0412	0.00500	"	0.0331	125	24-127
Fluoranthene	0.0295	0.00500	"	0.0331	89.1	50-139
Fluorene	0.0278	0.00500	"	0.0331	83.8	50-130
Indeno (1,2,3-cd) pyrene	0.0305	0.00500	"	0.0331	92.0	26-139
Naphthalene	0.0323	0.00500	"	0.0331	97.5	40-135
Pyrene	0.0315	0.00500	"	0.0331	95.1	39-141

Surrogate: 2-Methylnaphthalene-d10	0.0352		"	0.0331	106	50-150
Surrogate: Fluoranthene-d10	0.0253		"	0.0331	76.4	50-150

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Project Number: 065815003.0008
Project Manager: Brett Forkner

Reported:
08/16/16 16:34

Semivolatile Organic Compounds by EPA Method 8270D SIM - Quality Control
Summit Scientific

Analyte	Reporting			Spike	Source		%REC		RPD	
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

Batch 1608142 - EPA 5030 Soil MS

Matrix Spike (1608142-MS1)		Source: 1608080-01			Prepared: 08/12/16		Analyzed: 08/13/16		
Acenaphthene	0.0218	0.00500	mg/kg	0.0330	0.0320	NR	27-140		
Anthracene	0.0425	0.00500	"	0.0330	0.117	NR	23-144		
Benzo (a) anthracene	0.217	0.00500	"	0.0330	0.657	NR	12-168		
Benzo (b) fluoranthene	0.330	0.00500	"	0.0330	1.09	NR	10-170		
Benzo (k) fluoranthene	0.133	0.00500	"	0.0330	0.411	NR	11-150		
Benzo (a) pyrene	0.265	0.00500	"	0.0330	0.794	NR	11-162		
Chrysene	0.240	0.00500	"	0.0330	0.673	NR	10-167		
Dibenz (a,h) anthracene	0.0389	0.00500	"	0.0330	0.0859	NR	10-128		
Fluoranthene	0.228	0.00500	"	0.0330	0.641	NR	18-157		
Fluorene	0.0179	0.00500	"	0.0330	0.0426	NR	37-133		
Indeno (1,2,3-cd) pyrene	0.150	0.00500	"	0.0330	0.378	NR	10-161		
Naphthalene	0.0455	0.00500	"	0.0330	0.0363	27.8	10-157		
Pyrene	0.356	0.00500	"	0.0330	1.18	NR	10-166		
Surrogate: 2-Methylnaphthalene-d10	0.00840		"	0.0330		25.5	50-150		
Surrogate: Fluoranthene-d10	0.00796		"	0.0330		24.1	50-150		

Matrix Spike Dup (1608142-MSD1)		Source: 1608080-01			Prepared: 08/12/16		Analyzed: 08/13/16		
Acenaphthene	0.0178	0.00500	mg/kg	0.0329	0.0320	NR	27-140	20.0	15
Anthracene	0.0609	0.00500	"	0.0329	0.117	NR	23-144	35.5	29
Benzo (a) anthracene	0.322	0.00500	"	0.0329	0.657	NR	12-168	39.1	65
Benzo (b) fluoranthene	0.505	0.00500	"	0.0329	1.09	NR	10-170	41.8	18
Benzo (k) fluoranthene	0.192	0.00500	"	0.0329	0.411	NR	11-150	36.5	32
Benzo (a) pyrene	0.388	0.00500	"	0.0329	0.794	NR	11-162	37.6	27
Chrysene	0.347	0.00500	"	0.0329	0.673	NR	10-167	36.4	88
Dibenz (a,h) anthracene	0.0439	0.00500	"	0.0329	0.0859	NR	10-128	11.9	20
Fluoranthene	0.317	0.00500	"	0.0329	0.641	NR	18-157	32.7	31
Fluorene	0.0243	0.00500	"	0.0329	0.0426	NR	37-133	30.2	16
Indeno (1,2,3-cd) pyrene	0.193	0.00500	"	0.0329	0.378	NR	10-161	25.5	22
Naphthalene	0.0344	0.00500	"	0.0329	0.0363	NR	10-157	27.7	24
Pyrene	0.523	0.00500	"	0.0329	1.18	NR	10-166	38.1	57
Surrogate: 2-Methylnaphthalene-d10	0.00796		"	0.0329		24.2	50-150		
Surrogate: Fluoranthene-d10	0.00816		"	0.0329		24.8	50-150		

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

Project: Preset Surface Casing-Ray Ranch 0780 3&4-16H
Project Number: 065815003.0008
Project Manager: Brett Forkner

Reported:
08/16/16 16:34

Total Metals by EPA Method 6020 - Dry Weight Basis - Quality Control
Summit Scientific

Analyte	Reporting			Spike	Source		%REC		RPD	
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

Batch 1608129 - EPA 3050B

Blank (1608129-BLK1)

Prepared: 08/12/16 Analyzed: 08/15/16

Arsenic	ND	0.200	mg/kg wet
Barium	ND	0.400	"
Cadmium	ND	0.100	"
Chromium	ND	0.500	"
Copper	ND	0.500	"
Lead	ND	0.200	"
Nickel	ND	0.100	"
Selenium	ND	0.400	"
Silver	ND	0.100	"
Zinc	ND	10.0	"

LCS (1608129-BS1)

Prepared: 08/12/16 Analyzed: 08/15/16

Arsenic	113	0.500	mg/kg wet	132	85.5	82.6-117
Barium	196	1.00	"	228	86.1	72.8-127
Cadmium	109	0.250	"	122	88.9	80.3-120
Chromium	49.3	1.25	"	63.2	78.1	74.7-125
Copper	183	1.25	"	212	86.5	85.4-115
Lead	98.6	0.500	"	108	91.3	81.1-119
Nickel	267	0.250	"	284	94.0	88-112
Selenium	69.2	1.00	"	80.5	85.9	73.7-127
Silver	64.1	0.250	"	73.5	87.3	69.8-130
Zinc	187	25.0	"	203	92.1	77.8-122

Duplicate (1608129-DUP1)

Source: 1608077-01

Prepared: 08/12/16 Analyzed: 08/15/16

Arsenic	1.83	0.213	mg/kg dry	1.70	7.27	20	
Barium	140	0.426	"	218	43.2	20	QR-03
Cadmium	0.157	0.106	"	0.252	46.5	20	QR-03
Chromium	4.43	0.532	"	6.65	40.0	20	QR-03
Copper	5.88	0.532	"	9.09	43.0	20	QR-03
Lead	11.7	0.213	"	18.2	43.5	20	QR-03
Nickel	3.73	0.106	"	5.71	42.0	20	QR-03
Selenium	0.140	0.426	"	0.204	36.9	20	QR-03
Silver	0.0133	0.106	"	0.0253	62.3	20	QR-03
Zinc	20.2	10.6	"	29.6	37.6	20	QR-03

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

Project: Preset Surface Casing-Ray Ranch 0780 3&4-16H
Project Number: 065815003.0008
Project Manager: Brett Forkner

Reported:
08/16/16 16:34

Total Metals by EPA Method 6020 - Dry Weight Basis - Quality Control
Summit Scientific

Analyte	Reporting			Spike	Source		%REC		RPD	
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

Batch 1608129 - EPA 3050B

Matrix Spike (1608129-MS1)		Source: 1608077-01			Prepared: 08/12/16		Analyzed: 08/15/16			
Arsenic	11.5	0.213	mg/kg dry	42.2	1.70	23.2	75-125			QM-05
Barium	184	0.426	"	42.2	218	NR	75-125			QM-05
Cadmium	1.95	0.106	"	2.11	0.252	80.4	75-125			
Chromium	40.1	0.532	"	42.2	6.65	79.4	75-125			
Copper	40.4	0.532	"	42.2	9.09	74.2	75-125			QM-05
Lead	27.8	0.213	"	21.1	18.2	45.4	75-125			QM-05
Nickel	38.9	0.106	"	42.2	5.71	78.6	75-125			
Selenium	3.30	0.426	"	4.22	0.204	73.3	75-125			QM-05
Silver	1.75	0.106	"	2.11	0.0253	81.9	75-125			
Zinc	56.6	10.6	"	42.2	29.6	64.0	75-125			QM-05

Matrix Spike Dup (1608129-MSD1)		Source: 1608077-01			Prepared: 08/12/16		Analyzed: 08/15/16			
Arsenic	11.4	0.213	mg/kg dry	42.6	1.70	22.8	75-125	0.767	25	QM-05
Barium	178	0.426	"	42.6	218	NR	75-125	3.34	25	QM-05
Cadmium	1.99	0.106	"	2.13	0.252	81.9	75-125	2.25	25	
Chromium	42.2	0.532	"	42.6	6.65	83.5	75-125	4.89	25	
Copper	42.1	0.532	"	42.6	9.09	77.5	75-125	4.06	25	
Lead	29.0	0.213	"	21.3	18.2	50.7	75-125	4.27	25	QM-05
Nickel	40.5	0.106	"	42.6	5.71	81.7	75-125	4.01	25	
Selenium	3.44	0.426	"	4.26	0.204	76.2	75-125	4.39	25	
Silver	1.77	0.106	"	2.13	0.0253	81.8	75-125	0.668	25	
Zinc	58.6	10.6	"	42.6	29.6	68.2	75-125	3.49	25	QM-05

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

Project: Preset Surface Casing-Ray Ranch 0780 3&4-16H
Project Number: 065815003.0008
Project Manager: Brett Forkner

Reported:
08/16/16 16:34

Total Mercury by EPA Method 7471 - Quality Control
Summit Scientific

Analyte	Reporting			Spike	Source	%REC		RPD		
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

Batch 1608128 - EPA 7471A

Blank (1608128-BLK1)				Prepared: 08/12/16 Analyzed: 08/16/16							
Mercury	ND	0.0500	mg/kg wet								
LCS (1608128-BS1)				Prepared: 08/12/16 Analyzed: 08/16/16							
Mercury	0.499	0.0500	mg/kg wet	0.500		99.7	80-120				
Duplicate (1608128-DUP1)				Source: 1608092-01		Prepared: 08/12/16 Analyzed: 08/16/16					
Mercury	0.0201	0.0692	mg/kg dry		0.0225			11.3	20		
Matrix Spike (1608128-MS1)				Source: 1608092-01		Prepared: 08/12/16 Analyzed: 08/16/16					
Mercury	0.692	0.0692	mg/kg dry	0.678	0.0225	98.7	80-120				
Matrix Spike Dup (1608128-MSD1)				Source: 1608092-01		Prepared: 08/12/16 Analyzed: 08/16/16					
Mercury	0.732	0.0692	mg/kg dry	0.692	0.0225	103	80-120	5.64	20		

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LT Environmental, Inc.
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Arvada CO, 80003

Project: Preset Surface Casing-Ray Ranch 0780 3&4-16H
Project Number: 065815003.0008
Project Manager: Brett Forkner

Reported:
08/16/16 16:34

Hexavalent Chromium by EPA 7196 - Quality Control
Summit Scientific

Analyte	Reporting			Spike	Source		%REC		RPD	
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

Batch 1608101 - 3060A_Mod

Blank (1608101-BLK1)					Prepared: 08/11/16 Analyzed: 08/12/16					
Chromium, Hexavalent	ND	0.300	mg/kg wet							
LCS (1608101-BS1)					Prepared: 08/11/16 Analyzed: 08/12/16					
Chromium, Hexavalent	19.3	0.300	mg/kg wet	19.9	96.9	85-115				
Duplicate (1608101-DUP1)					Source: 1608070-01 Prepared: 08/11/16 Analyzed: 08/12/16					
Chromium, Hexavalent	ND	0.300	mg/kg dry	ND					20	
Matrix Spike (1608101-MS1)					Source: 1608070-01 Prepared: 08/11/16 Analyzed: 08/12/16					
Chromium, Hexavalent	ND	0.300	mg/kg dry	28.7	ND	85-115				QM-07
Matrix Spike (1608101-MS2)					Source: 1608093-01 Prepared: 08/11/16 Analyzed: 08/12/16					
Chromium, Hexavalent	7.22	0.300	mg/kg dry	287	ND	2.52	85-115			QM-07
Post Spike (1608101-PS1)					Source: 1608070-01 Prepared: 08/11/16 Analyzed: 08/12/16					
Chromium, Hexavalent	0.0770		mg/kg	0.498	0.00	15.4	85-115			QM-07

Summit Scientific

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

Project: Preset Surface Casing-Ray Ranch 0780 3&4-16H
Project Number: 065815003.0008
Project Manager: Brett Forkner

Reported:
08/16/16 16:34

Soluble Nutrients by EPA 6020/Mod. USDA60 6(2, 3A) - Dry Weight Basis - Quality Control
Summit Scientific

Analyte	Reporting			Spike	Source		%REC		RPD	
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

Batch 1608143 - General Preparation

Blank (1608143-BLK1)

Prepared: 08/15/16 Analyzed: 08/16/16

Calcium	ND	10.0	mg/kg wet
Magnesium	ND	5.00	"
Sodium	ND	5.00	"

LCS (1608143-BS1)

Prepared: 08/15/16 Analyzed: 08/16/16

Calcium	520	10.0	mg/kg wet	481	108	82.9-118
Magnesium	477	5.00	"	481	99.1	77.1-123
Sodium	477	5.00	"	481	99.2	71-129

Duplicate (1608143-DUP1)

Source: 1608093-01

Prepared: 08/15/16 Analyzed: 08/16/16

Calcium	437	14.3	mg/kg dry	435	0.398	200
Magnesium	207	7.16	"	200	3.88	200
Sodium	691	7.16	"	651	5.99	200

Matrix Spike (1608143-MS1)

Source: 1608093-01

Prepared: 08/15/16 Analyzed: 08/16/16

Calcium	1110	14.3	mg/kg dry	689	435	98.6	75-125
Magnesium	839	7.16	"	689	200	92.8	75-125
Sodium	1330	7.16	"	689	651	98.1	75-125

Matrix Spike Dup (1608143-MSD1)

Source: 1608093-01

Prepared: 08/15/16 Analyzed: 08/16/16

Calcium	1080	14.3	mg/kg dry	689	435	93.8	75-125	3.02	25
Magnesium	778	7.16	"	689	200	84.0	75-125	7.52	25
Sodium	1260	7.16	"	689	651	88.0	75-125	5.42	25

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

Project: Preset Surface Casing-Ray Ranch 0780 3&4-16H
Project Number: 065815003.0008
Project Manager: Brett Forkner

Reported:
08/16/16 16:34

Physical Parameters by APHA/ASTM/EPA Methods - Quality Control
Summit Scientific

Analyte	Reporting			Spike	Source		%REC		RPD	
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

Batch 1608139 - General Preparation

Duplicate (1608139-DUP1) **Source: 1608077-01** Prepared: 08/12/16 Analyzed: 08/15/16

% Solids	94.3		%		94.0			0.319	20	
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Batch 1608144 - General Preparation

LCS (1608144-BS1) Prepared: 08/15/16 Analyzed: 08/16/16

pH	8.02	0.100	pH Units	8.00	100	95-105				
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Duplicate (1608144-DUP1) **Source: 1608093-01** Prepared: 08/15/16 Analyzed: 08/16/16

pH	9.85	0.100	pH Units	9.90			0.506	20		
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Batch 1608145 - General Preparation

Blank (1608145-BLK1) Prepared: 08/15/16 Analyzed: 08/16/16

Specific Conductance (EC)	ND	0.0100	mmhos/cm							
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LCS (1608145-BS1) Prepared: 08/15/16 Analyzed: 08/16/16

Specific Conductance (EC)	0.498	0.0100	mmhos/cm	0.500	99.6	90-110				
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Duplicate (1608145-DUP1) **Source: 1608093-01** Prepared: 08/15/16 Analyzed: 08/16/16

Specific Conductance (EC)	1.34	0.0100	mmhos/cm	1.30			3.00	20		
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Summit Scientific

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

Project: Preset Surface Casing-Ray Ranch 0780 3&4-16H

Project Number: 065815003.0008
Project Manager: Brett Forkner

Reported:
08/16/16 16:34

Notes and Definitions

- S-02 The surrogate recovery for this sample cannot be accurately quantified due to interference from coeluting organic compounds present in the sample extract.
- 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/LCSD recovery.
- QM-05 The spike recovery was outside acceptance limits for the MS and/or MSD due to matrix interference. The associated LCS and/or LCSD were within acceptance limits, therefore the data are considered valid.
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference

Summit Scientific

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