



July 1, 2013

Mr. Paul Schneider
Senior Staff EHS Representative
Kerr-McGee Oil & Gas Onshore LP
1099 18th Street, Suite 1800
Denver, Colorado 80202

**Re: Sump Excavation Summary Letter Report
HSR-Underhill 5-17A, UPRR 42 PAN AM N True #1
API# 05-123-20433
NESE 17-T1N-R67W**

Dear Mr. Schneider:

LT Environmental, Inc. (LTE) was contracted by Kerr-McGee Oil & Gas Onshore LP (Kerr-McGee) to perform environmental oversight activities at the above referenced site. The oversight activities included collection of a confirmation soil sample from the sump excavation, documentation of field activities, and analytical results review.

The objective of the soil sampling was to determine if petroleum hydrocarbon impacts to subsurface soil resulted from Kerr-McGee operating a produced water sump at the site. The soil sampling activities, laboratory analytical results, and conclusions are summarized below. The general site layout, sump excavation dimensions, and soil sample location are shown on the attached hand-sketched map.

After removing the produced water sump, one representative confirmation soil sample (B01@4.5') was collected from the soil directly beneath the water sump. The soil sample was submitted for laboratory analysis of benzene, toluene, ethylbenzene, and total xylenes (BTEX) by Environmental Protection Agency (EPA) Method 8260B and total petroleum hydrocarbons (TPH) by EPA Methods 8015 and 8260B. The laboratory analytical results are summarized on Table 1 and the laboratory analytical report is attached.

The sump excavation measured approximately 15 feet north to south by 15 feet east to west to an approximate depth of 4.5 feet below ground surface. No indication of petroleum hydrocarbon impacts, including soil staining or odor, was observed beneath the water sump. In addition, TPH and BTEX concentrations were below Colorado Oil and Gas Conservation Commission allowable levels in soil sample B01@5'. Based on the field observations and analytical results, there is no indication of a petroleum



hydrocarbon release from the product water sump and no remedial action is required at this site.

Please call us at (303) 433-9788 if you have any questions regarding this Sump Excavation Summary Letter Report or if you require additional information.

Sincerely,
LT ENVIRONMENTAL, INC.

Reviewed by

A handwritten signature in black ink that reads "Jeremy Espinoza". The signature is written in a cursive style with large, flowing loops.

A handwritten signature in black ink that reads "Justin Solomon". The signature is written in a cursive style with a large initial "J" and a long horizontal stroke at the end.

Jeremy Espinoza
Staff Geologist

Justin Solomon
Project Environmental Scientist

Attachments



PROJECT HSR Underhill 5-17A
PROJECT MANAGER John Cocraft
JOB No. 042-13161
LOCATION WCR 10+17, S 1/2, W 3/4, S into

DATE 6/26/13
CONT. No. _____
BY Jeremy Espinoza CHK'D _____
SHEET No. 1 OF 1

95L10038 10/1987

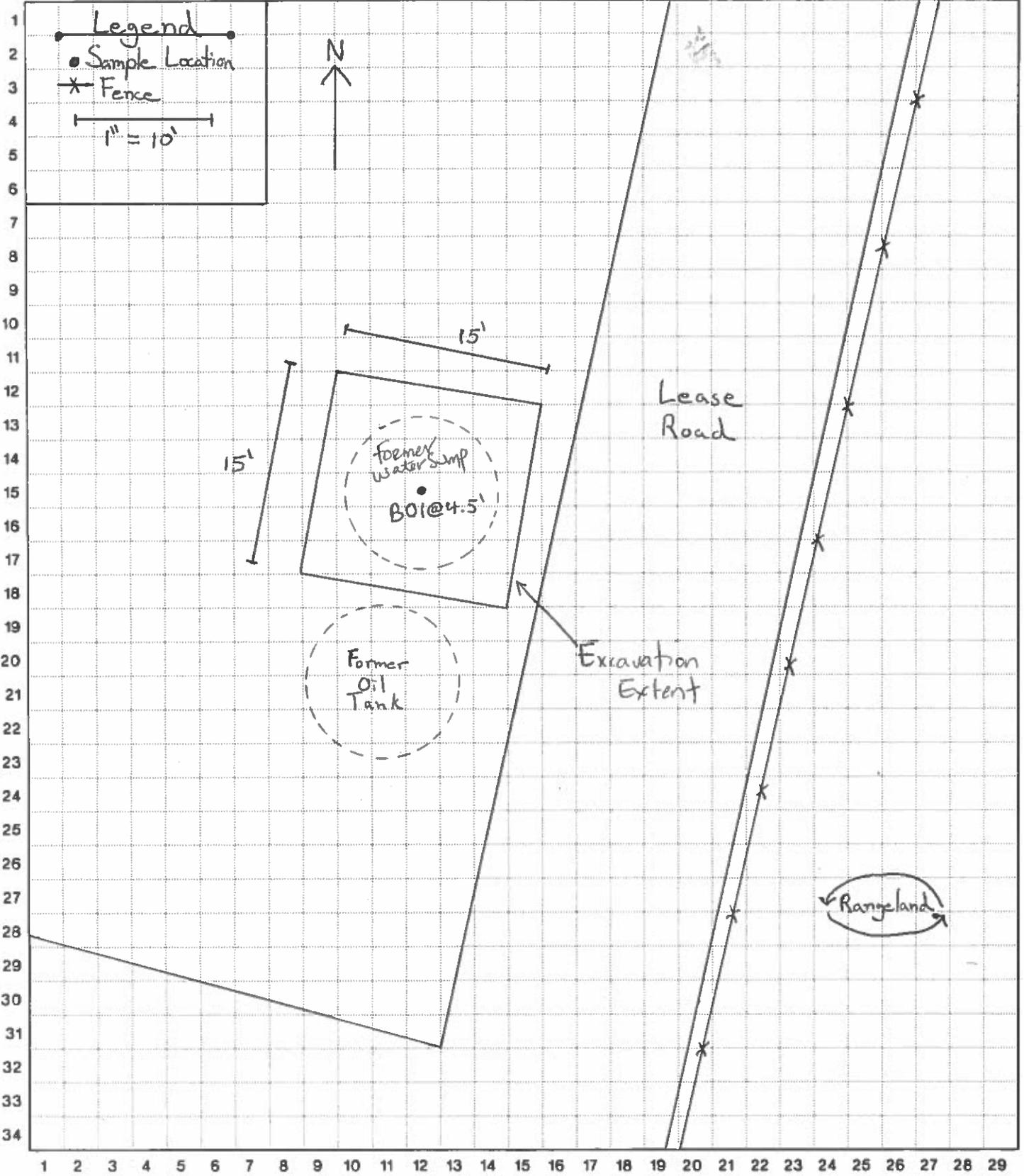


TABLE 1
SOIL SAMPLE ANALYTICAL RESULTS
HSR-UNDERHILL 5-17A, UPRR 42 PAN AM N TRUE #1
WELD COUNTY, COLORADO
KERR-MCGEE OIL & GAS ONSHORE LP

Soil Sample ID	Depth (bgs)	Date	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	DRO (mg/kg)	GRO (mg/kg)	ORO (mg/kg)
B01@4.5'	4.5'	06/20/2013	<0.0050	<0.0050	<0.0050	<0.0050	<50	<0.50	<50
COGCC Standards			0.17	85	100	175	500*	500*	500*

Notes: bgs - below ground surface

< - less than

DRO - Diesel Range Organics

ORO - Oil Range Organics

GRO - Gasoline Range Organics

* - Standard applies to combined DRO-GRO-ORO

mg/kg - milligrams per kilogram

NA - Not Analyzed/Not Available

Bold numbers indicate result equaled or exceeded standard.

COGCC - Colorado Oil and Gas Conservation Commission



Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

June 21, 2013

John Cocroft

LT Environmental, Inc.

4600 West 60th Avenue

Arvada, CO 80003

RE: KMG - HSR-Underhill 15-17A

Enclosed are the results of analyses for samples received by Summit Scientific on 06/20/13 17:00. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Paul Shrewsbury For Ben Shrewsbury
President / Laboratory Manager



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

Project: KMG - HSR-Underhill 15-17A

Project Number: 0142-13161
Project Manager: John Cocroft

Reported:
06/21/13 06:37

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
B01@4.5'	R306156-01	Soil	06/20/13 13:40	06/20/13 17:00

Summit Scientific
 R306156

741 Corporate Circle Suite 1 • Golden, Colorado 80401
 303-277-9310 • 303-277-9331 Fax

Client: LT Environmental, Inc. Project Manager: John Cocroft
 Address: 4600 West 60th Avenue E-Mail: jccroft@ltenv.com
 City/State/Zip: Arvada, CO 80003 Project Name: HSR Underhill 15-17A
 Phone: (303) 433-9788 Fax: (303) 433-1432 Project Number: 0142-13161
 Sampler Name: Crew, Elyse

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative		Matrix	Analyze For:	Special Instructions	Notes		
				HCl	HNO ₃						
B01@4.5'	6/20/13	1340	1			Soil	<input checked="" type="checkbox"/> BTX <input checked="" type="checkbox"/> GATEX <input checked="" type="checkbox"/> DR/ORO Other (Specify)	HPA HPA HPA HPA			
B01@4'	6/20/13	1345	1			Soil	<input checked="" type="checkbox"/> BTX <input checked="" type="checkbox"/> GATEX <input checked="" type="checkbox"/> DR/ORO Other (Specify)	HPA HPA HPA HPA			
B01@4'	6/20/13	1350	1			Soil	<input checked="" type="checkbox"/> BTX <input checked="" type="checkbox"/> GATEX <input checked="" type="checkbox"/> DR/ORO Other (Specify)	HPA HPA HPA HPA			
B01@4'	6/20/13	1355	1			Soil	<input checked="" type="checkbox"/> BTX <input checked="" type="checkbox"/> GATEX <input checked="" type="checkbox"/> DR/ORO Other (Specify)	HPA HPA HPA HPA			
B01@4.5'	6/20/13	1400	1			Soil	<input checked="" type="checkbox"/> BTX <input checked="" type="checkbox"/> GATEX <input checked="" type="checkbox"/> DR/ORO Other (Specify)	HPA HPA HPA HPA			
Requisitioned by: <i>[Signature]</i>	Date Time: 6/20/13 1700	Received by: <i>[Signature]</i>	Date Time: 6/20/13 1700	Turn Around Time (Check):	<input type="checkbox"/> Same Day <input checked="" type="checkbox"/> 24 Hours <input type="checkbox"/> 48 Hours <input type="checkbox"/> 72 Hours <input type="checkbox"/> Standard	Sample Integrity:	<input checked="" type="checkbox"/> Temperature <input type="checkbox"/> Receipt Intact (Yes/No)	Requisitioned by: <i>[Signature]</i>	Date Time: 6/20/13 1700	Received in Lab by: <i>[Signature]</i>	Date Time: 6/20/13 1700



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

Project: KMG - HSR-Underhill 15-17A

Project Number: 0142-13161
Project Manager: John Cocroft

Reported:
06/21/13 06:37

B01@4.5'
R306156-01 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **06/20/13 13:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (TEPH-DRO)	ND	50	mg/kg	1	3062006	06/20/13	06/20/13	8015M	
C28-C36 (TEPH-ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **06/20/13 13:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		95.9 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/20/13 13:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0050	mg/kg	1	3062005	06/20/13	06/20/13	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **06/20/13 13:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		114 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.3 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		97.8 %	21-167		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



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

Project: KMG - HSR-Underhill 15-17A

Project Number: 0142-13161
 Project Manager: John Cocroft

Reported:
 06/21/13 06:37

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch 3062006 - EPA 3550A

Blank (3062006-BLK1)

Prepared & Analyzed: 06/20/13

C10-C28 (TEPH-DRO)	ND	50	mg/kg							
C28-C36 (TEPH-ORO)	ND	50	"							

LCS (3062006-BS1)

Prepared & Analyzed: 06/20/13

C10-C28 (TEPH-DRO)	569	50	mg/kg	501	114	73-134				
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LCS Dup (3062006-BSD1)

Prepared & Analyzed: 06/20/13

C10-C28 (TEPH-DRO)	603	50	mg/kg	501	120	73-134	5.83	11		
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Matrix Spike (3062006-MS1)

Source: R306149-01

Prepared: 06/20/13 Analyzed: 06/21/13

C10-C28 (TEPH-DRO)	588	50	mg/kg	501	ND	117	50-148			
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Matrix Spike Dup (3062006-MSD1)

Source: R306149-01

Prepared: 06/20/13 Analyzed: 06/21/13

C10-C28 (TEPH-DRO)	581	50	mg/kg	501	ND	116	50-148	1.18	13	
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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO, 80003

Project: KMG - HSR-Underhill 15-17A

Project Number: 0142-13161
Project Manager: John Cocroft

Reported:
06/21/13 06:37

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

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

Batch 3062005 - EPA 5030 Soil MS

Blank (3062005-BLK1)

Prepared & Analyzed: 06/20/13

Benzene	ND	0.0050	mg/kg							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.0050	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0349</i>		<i>"</i>	<i>0.0397</i>		<i>88.0</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0393</i>		<i>"</i>	<i>0.0400</i>		<i>98.2</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0354</i>		<i>"</i>	<i>0.0400</i>		<i>88.6</i>	<i>21-167</i>			

LCS (3062005-BS1)

Prepared & Analyzed: 06/20/13

Benzene	0.0948	0.0050	mg/kg	0.100		94.8	58-130			
Toluene	0.0984	0.0050	"	0.100		98.4	61-134			
Ethylbenzene	0.101	0.0050	"	0.100		101	74-139			
m,p-Xylene	0.210	0.010	"	0.200		105	73-137			
o-Xylene	0.105	0.0050	"	0.100		105	73-141			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0403</i>		<i>"</i>	<i>0.0397</i>		<i>102</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0399</i>		<i>"</i>	<i>0.0400</i>		<i>99.8</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0379</i>		<i>"</i>	<i>0.0400</i>		<i>94.7</i>	<i>21-167</i>			

LCS Dup (3062005-BSD1)

Prepared & Analyzed: 06/20/13

Benzene	0.103	0.0050	mg/kg	0.100		103	58-130	8.17	13	
Toluene	0.0989	0.0050	"	0.100		98.9	61-134	0.517	16	
Ethylbenzene	0.109	0.0050	"	0.100		109	74-139	6.83	12	
m,p-Xylene	0.223	0.010	"	0.200		111	73-137	5.92	14	
o-Xylene	0.111	0.0050	"	0.100		111	73-141	5.40	12	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0437</i>		<i>"</i>	<i>0.0397</i>		<i>110</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0366</i>		<i>"</i>	<i>0.0400</i>		<i>91.4</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0382</i>		<i>"</i>	<i>0.0400</i>		<i>95.6</i>	<i>21-167</i>			

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Project: KMG - HSR-Underhill 15-17A

Project Number: 0142-13161
Project Manager: John Cocroft

Reported:
06/21/13 06:37

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

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

Batch 3062005 - EPA 5030 Soil MS

Matrix Spike (3062005-MS1)	Source: R306149-01			Prepared & Analyzed: 06/20/13						
Benzene	0.0839	0.0050	mg/kg	0.100	ND	83.9	30-131			
Toluene	0.0894	0.0050	"	0.100	ND	89.4	30-134			
Ethylbenzene	0.0902	0.0050	"	0.100	ND	90.2	22-153			
m,p-Xylene	0.184	0.010	"	0.200	ND	91.8	10-159			
o-Xylene	0.0899	0.0050	"	0.100	ND	89.9	31-151			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0413</i>		<i>"</i>	<i>0.0397</i>		<i>104</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0400</i>		<i>"</i>	<i>0.0400</i>		<i>100</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0379</i>		<i>"</i>	<i>0.0400</i>		<i>94.6</i>	<i>21-167</i>			

Matrix Spike Dup (3062005-MSD1)	Source: R306149-01			Prepared: 06/20/13 Analyzed: 06/21/13						
Benzene	0.0889	0.0050	mg/kg	0.100	ND	88.9	30-131	5.76	34	
Toluene	0.0917	0.0050	"	0.100	ND	91.7	30-134	2.55	30	
Ethylbenzene	0.0923	0.0050	"	0.100	ND	92.3	22-153	2.40	24	
m,p-Xylene	0.187	0.010	"	0.200	ND	93.7	10-159	2.04	68	
o-Xylene	0.0922	0.0050	"	0.100	ND	92.2	31-151	2.54	38	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0441</i>		<i>"</i>	<i>0.0397</i>		<i>111</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0412</i>		<i>"</i>	<i>0.0400</i>		<i>103</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0388</i>		<i>"</i>	<i>0.0400</i>		<i>96.9</i>	<i>21-167</i>			

Summit Scientific

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

Project: KMG - HSR-Underhill 15-17A

Project Number: 0142-13161
Project Manager: John Cocroft

Reported:
06/21/13 06:37

Notes and Definitions

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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