

State of Colorado
Oil and Gas Conservation Commission

1120 Lincoln Street, Suite 801, Denver, Colorado 80203 Phone: (303)894-2100 Fax: (303)894-2109



FOR OGCC USE ONLY

RECEIVED
7/17/2012

SPILL/RELEASE REPORT

This form is to be submitted by the party responsible for the oil and gas spill or release. Any spill or release which may impact waters of the State must be reported as soon as practicable; any spill over 20 bbls must be reported within 24 hours and all spills over five bbls must be reported within ten days. Submit a Site Investigation and Remediation

Spill report taken by:

FACILITY ID:

OPERATOR INFORMATION

Name of Operator: <u>Petroleum Development Corporation</u>	OGCC Operator No: <u>69175</u>	Phone Numbers
Address: <u>1775 Sherman Street, Suite 3000</u>		No: <u>(303) 860-5800</u>
City: <u>Denver</u>	State: <u>CO</u> Zip: <u>80203</u>	Fax: <u>(303) 860-5838</u>
Contact Person: <u>Brandon Bruns</u>		Email: <u>bbruns@petd.com</u>

DESCRIPTION OF SPILL OR RELEASE

Date of Incident: <u>12/06/2011</u>	Facility Name & No: <u>Clark 11, 12-27</u>	County: <u>Weld</u>
Type of Facility (well, tank battery, flow line, pit): <u>Tank Battery</u>		QtrQtr: <u>NWNW</u> Section: <u>27</u>
Well Name and Number: <u>Clark 11-27</u>		Township: <u>7N</u> Range: <u>65W</u>
API Number: <u>05-123-22756</u>		Meridian: <u>6th</u>

Specify volume spilled and recovered (in bbls) for the following materials:

Oil spilled: Unknown Oil recov'd: 0 Water spilled: Unknown Water recov'd: 0 Other spilled: 0 Other recov'd 0

Ground Water impacted? ☒ Yes ☐ No Surface Water impacted? ☐ Yes ☒ No

Contained within berm? ☐ Yes ☒ No Area and vertical extent of spill: 18' N-S x 25' E-W x 4' depth

Current land use: Oil and Gas Production Facility/Agriculture Weather conditions: 0-10 degrees Fahrenheit

Soil/geology description: Haverson loam, 1 to 3 percent slopes

IF LESS THAN A MILE, report distance IN FEET to nearest ... Surface water: 90' SW Wetlands: NA Buildings: 215' SW

Livestock: Unknown Water wells: 545' NW Depth to shallowest ground water: 4'

Cause of spill (e.g. equipment failure, human error, etc.): Equipment failure Detailed description of the spill/release incident:

Release occurred at the tank battery related to the Clark 11-27 (API 05-123-22756) and Clark 12-27 (API 05-123-23100). The tank battery is located in the NWNW of Sec. 27 as depicted on Figure 1. During equipment upgrades at the facility, PDC discovered a leak in the dump lines that released an unknown quantity of condensate and produced water to the subsurface.

CORRECTIVE ACTION

Describe immediate response (how stopped, contained and recovered):

PDC shut in the wells feeding the battery. Once the dump lines were removed, approximately 67 cubic yards of impacted soil above COGCC Table 910-1 Concentration Levels were excavated and transported offsite for disposal. Soil samples were collected from the extent of the excavation and were submitted for laboratory analysis of benzene, toluene, ethylbenzene, and total xylenes (BTEX), total petroleum hydrocarbons (TPH) - gasoline range organics (GRO), and naphthalene by EPA Method 8260B, and TPH - diesel range organics (DRO) by EPA Method 8015. Impacted water was recovered from the excavation by a vacuum truck and transported to a licensed disposal facility. Groundwater samples were collected from the excavation and a downgradient pothole and were submitted for laboratory analysis of BTEX by EPA Method 8260B. A topographic site location map and site map are provided as Figures 1 and 2.

Describe any emergency pits constructed: NA

How was the extent of contamination determined?

Laboratory analytical results for soil indicate the BTEX, TPH, and naphthalene concentrations for samples SS01 through SS04 are in compliance with COGCC Table 910-1. Soil analytical results are summarized in Table 1.

Laboratory analytical results for groundwater indicated the benzene concentration for the initial groundwater sample collected from the excavation (GW01) on December 6, 2011, was not in compliance with the Colorado Department of Public Health and Environment (CDPHE) Water Quality Control Commission (WQCC) Regulation 41 (Reg 41) standard. Following recovery of impacted groundwater from the excavation, additional groundwater samples were collected from the excavation (GW01) and a downgradient pothole (GW02) on December 12, 2011. Laboratory analytical results indicated GW01 exhibited BTEX levels in compliance with CDPHE WQCC Reg 41 and GW02 exhibited a benzene level that was not in compliance with CDPHE WQCC Reg 41. Groundwater analytical results are summarized in Table 2.

Further remediation activities proposed (attach separate sheet if needed):

Approximately 67 cubic yards of impacted soil exceeding COGCC Table 910-1 Concentration Levels have been transported to the Waste Management Landfill in Ault, Colorado, for disposal. Activated carbon was applied as an amendment to treat residual impacts frozen in groundwater and was mixed in with the exposed smear zone soils in the excavation before it was backfilled. PDC scheduled installation of monitoring wells to delineate groundwater impact at the site. Results will be submitted in a future Form 27.

Describe measures taken to prevent problem from reoccurring:

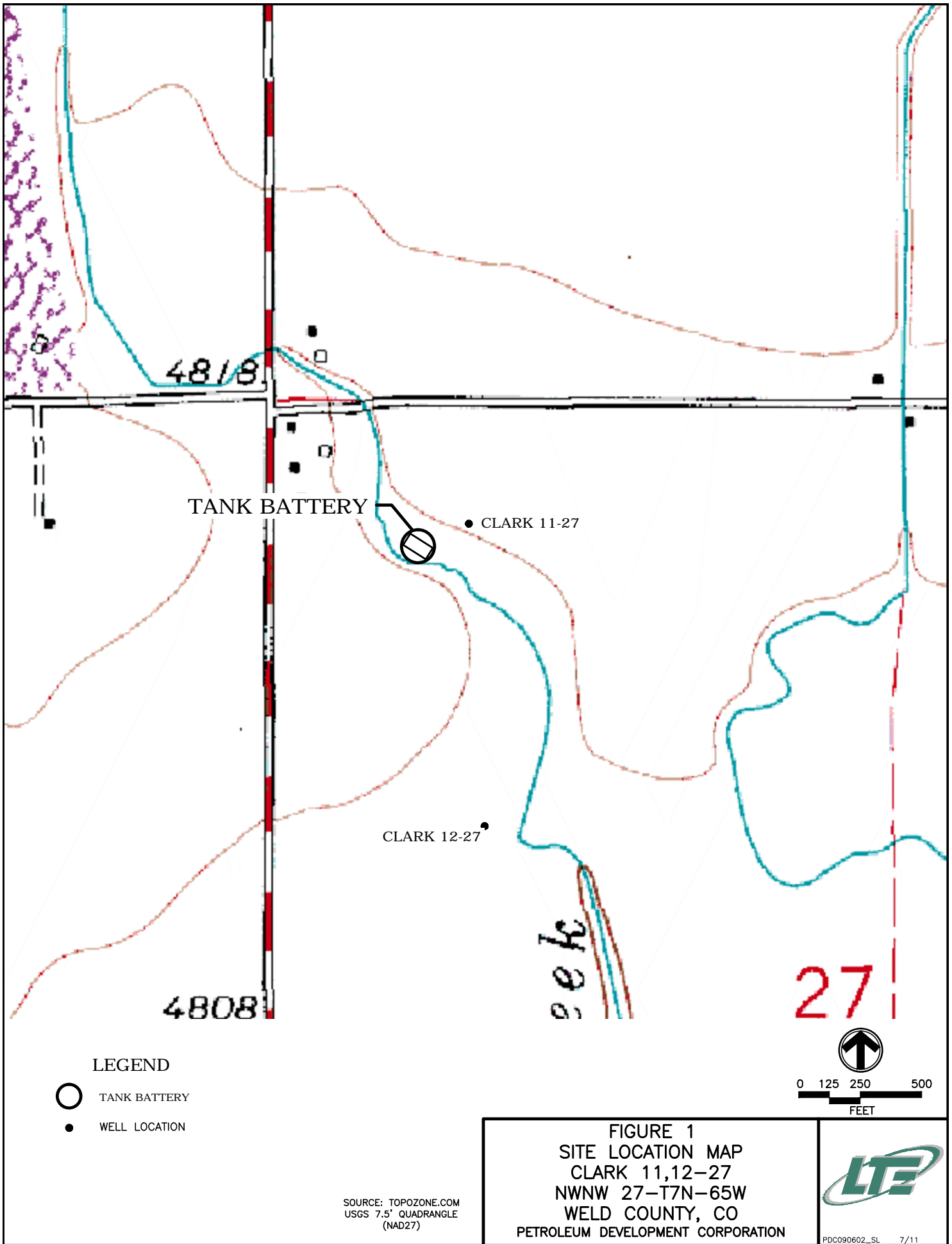
PDC replaced the leaking dump lines.

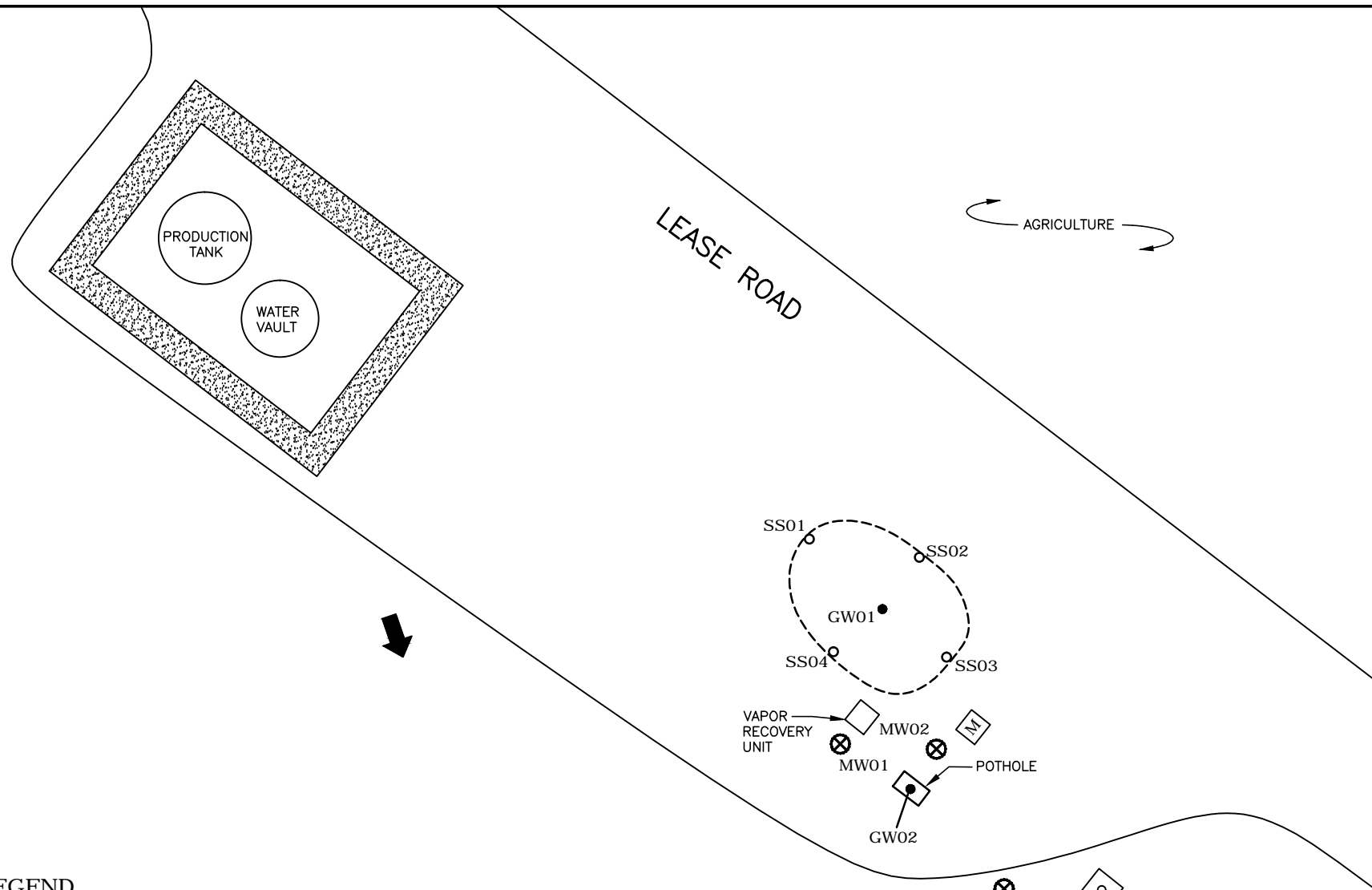
OTHER NOTIFICATIONS

List the parties and agencies notified (County, BLM, EPA, DOT, Local Emergency Planning Coordinator or other).








Date	Agency	Contact	Phone	Response

Spill/Release Tracking No: 2229647





LEGEND

-  MONITORING WELL
-  SOIL SAMPLE
-  GROUNDWATER SAMPLE
-  METER HOUSE
-  BERM
-  EXTENT OF EXCAVATION
-  ESTIMATED GROUNDWATER FLOW DIRECTION

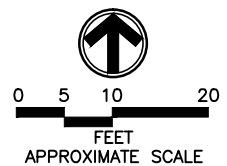


FIGURE 2
SITE MAP
CLARK 11,12-27
NWNW 27-T7N-65W
WELD COUNTY, COLORADO
PETROLEUM DEVELOPMENT CORPORATION



TABLE 1
SOIL SAMPLE ANALYTICAL RESULTS
CLARK 11, 12-27 (API No. 05-123-22756)
WELD COUNTY, COLORADO
PETROLEUM DEVELOPMENT CORPORATION

Sample ID	Depth (ft bgs)	Date Sampled	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl- benzene (mg/kg)	Total Xylenes (mg/kg)	Naph- thalene (mg/kg)	TPH (mg/kg)
SS01	3	12/12/2011	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<50.5
SS02	3	12/12/2011	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<50.5
SS03	3	12/12/2011	<0.0050	<0.0050	<0.0050	<0.015	<0.0050	<50.5
SS04	3	12/12/2011	<0.0050	<0.0050	<0.0050	<0.060	<0.0050	84
Basic Standards for Soil			0.17	85	100	175	23	500

Notes:

API - American Petroleum Institute

mg/kg - milligrams per kilogram

TPH - total petroleum hydrocarbons (C6-C28)

ft bgs - feet below ground surface

NA - not analyzed

< - less than stated laboratory reporting limit

Basic Standards for Soil are taken from 2 CCR 404-1, Table 910-1, effective April 1, 2009.

Bold indicates result equaled or exceeded standard.



TABLE 2
GROUNDWATER ANALYTICAL RESULTS AND FIELD PARAMETERS
CLARK 11, 12-27 (API No. 05-123-22756)
WELD COUNTY, COLORADO
PETROLEUM DEVELOPMENT CORPORATION

Sample ID	Date Sampled	Benzene (ug/L)	Toluene (ug/L)	Ethyl-benzene (ug/L)	Total Xylenes (ug/L)	Depth to Water (ft btoc)
GW01	12/06/2011	13	6.5	<1.0	27	NM
	12/12/2011	<1.0	<1.0	<1.0	<1.0	NM
GW02	12/12/2011	22	<1.0	<1.0	<1.0	NM
Basic Standards for Groundwater:		5	560	700	1400	

Notes:

API - American Petroleum Institute

NA - not analyzed/not available

ug/L - micrograms per Liter

ft btoc - feet below top of casing

NM - not measured

< - less than

Basic Standards for Ground Water are from the Colorado Department of Health and Environment -
Water Quality Control Commission Regulation 41, effective 4/1/2009.

Bold indicates result equaled or exceeded standard.



Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

December 19, 2011

Brian Dodek
LT Environmental, Inc.
4600 West 60th Avenue
Arvada, CO 80003
RE: PDC - Clark 11, 12-27

Enclosed are the results of analyses for samples received by Summit Scientific on 12/12/11 16:55. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Paul Shrewsbury For Ben Shrewsbury
President / Laboratory Director



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

Project: PDC - Clark 11, 12-27

Project Number: PDC 09006
Project Manager: Brian Dodek

Reported:
12/19/11 17:42

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
GW01	R112083-01	Water	12/12/11 09:05	12/12/11 16:55
GW02	R112083-02	Water	12/12/11 09:10	12/12/11 16:55
SS01	R112083-03	Soil	12/12/11 08:50	12/12/11 16:55
SS02	R112083-04	Soil	12/12/11 08:55	12/12/11 16:55
SS03	R112083-05	Soil	12/12/11 08:45	12/12/11 16:55
SS04	R112083-06	Soil	12/12/11 09:00	12/12/11 16:55

Summit Scientific

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

Project: PDC - Clark 11, 12-27

Project Number: PDC 09006
Project Manager: Brian Dodek

Reported:
12/19/11 17:42

GW01
R112083-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 12/12/11 09:05

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1121605	12/16/11	12/18/11	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: 12/12/11 09:05

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		98.8 %	57.9-139		"	"	"	"	
Surrogate: Toluene-d8		95.9 %	83.1-115		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.6 %	80.8-120		"	"	"	"	

Summit Scientific

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

Project: PDC - Clark 11, 12-27

Project Number: PDC 09006
Project Manager: Brian Dodek

Reported:
12/19/11 17:42

GW02
R112083-02 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 12/12/11 09:10

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	22	1.0	ug/l	1	1121605	12/16/11	12/18/11	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: 12/12/11 09:10

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		101 %	57.9-139		"	"	"	"	
Surrogate: Toluene-d8		97.9 %	83.1-115		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.9 %	80.8-120		"	"	"	"	

Summit Scientific

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

Project: PDC - Clark 11, 12-27

Project Number: PDC 09006
Project Manager: Brian Dodek

Reported:
12/19/11 17:42

SS01
R112083-03 (Soil)

Summit Scientific

Total Petroleum Hydrocarbons by 8015

Date Sampled: 12/12/11 08:50

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1121306	12/13/11	12/14/11	8015 DRO	

Date Sampled: 12/12/11 08:50

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		92.7 %	88.8-124		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 12/12/11 08:50

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.0050	mg/kg	1	1121406	12/14/11	12/17/11	EPA 8260B	
Benzene	ND	0.0050	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
m,p-Xylene	ND	0.010	"	"	"	"	"	"	
o-Xylene	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: 12/12/11 08:50

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		98.6 %	67.4-143		"	"	"	"	
Surrogate: Toluene-d8		97.8 %	77.3-114		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.6 %	78.4-125		"	"	"	"	

Summit Scientific

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

Project: PDC - Clark 11, 12-27

Project Number: PDC 09006
Project Manager: Brian Dodek

Reported:
12/19/11 17:42

SS02
R112083-04 (Soil)

Summit Scientific

Total Petroleum Hydrocarbons by 8015

Date Sampled: 12/12/11 08:55

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1121306	12/13/11	12/14/11	8015 DRO	

Date Sampled: 12/12/11 08:55

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		99.0 %	88.8-124		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 12/12/11 08:55

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.0050	mg/kg	1	1121406	12/14/11	12/17/11	EPA 8260B	
Benzene	ND	0.0050	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
m,p-Xylene	ND	0.010	"	"	"	"	"	"	
o-Xylene	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: 12/12/11 08:55

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		106 %	67.4-143		"	"	"	"	
Surrogate: Toluene-d8		97.6 %	77.3-114		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		96.4 %	78.4-125		"	"	"	"	

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4600 West 60th Avenue
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Project: PDC - Clark 11, 12-27

Project Number: PDC 09006
Project Manager: Brian Dodek

Reported:
12/19/11 17:42

SS03
R112083-05 (Soil)

Summit Scientific

Total Petroleum Hydrocarbons by 8015

Date Sampled: 12/12/11 08:45

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1121306	12/13/11	12/14/11	8015 DRO	

Date Sampled: 12/12/11 08:45

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		93.2 %	88.8-124		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 12/12/11 08:45

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.0050	mg/kg	1	1121406	12/14/11	12/17/11	EPA 8260B	
Benzene	ND	0.0050	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
m,p-Xylene	ND	0.010	"	"	"	"	"	"	
o-Xylene	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: 12/12/11 08:45

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		103 %	67.4-143		"	"	"	"	
Surrogate: Toluene-d8		99.2 %	77.3-114		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		95.0 %	78.4-125		"	"	"	"	

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4600 West 60th Avenue
Arvada CO, 80003

Project: PDC - Clark 11, 12-27

Project Number: PDC 09006
Project Manager: Brian Dodek

Reported:
12/19/11 17:42

SS04
R112083-06 (Soil)

Summit Scientific

Total Petroleum Hydrocarbons by 8015

Date Sampled: 12/12/11 09:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	68	50	mg/kg	1	1121306	12/13/11	12/14/11	8015 DRO	

Date Sampled: 12/12/11 09:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		93.3 %	88.8-124		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 12/12/11 09:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.0050	mg/kg	1	1121406	12/14/11	12/17/11	EPA 8260B	
Benzene	ND	0.0050	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
m,p-Xylene	ND	0.010	"	"	"	"	"	"	
o-Xylene	ND	0.050	"	10	"	"	12/17/11	"	
Gasoline Range Hydrocarbons	16	5.0	"	"	"	"	12/17/11	"	

Date Sampled: 12/12/11 09:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		103 %	67.4-143		"	"	"	"	
Surrogate: Toluene-d8		94.0 %	77.3-114		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		100 %	78.4-125		"	"	"	"	

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Arvada CO, 80003

Project: PDC - Clark 11, 12-27

Project Number: PDC 09006
Project Manager: Brian Dodek

Reported:
12/19/11 17:42

Total 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 1121306 - EPA 3550A

Blank (1121306-BLK1)

Prepared & Analyzed: 12/13/11

C10-C28 (DRO) ND 50 mg/kg

Surrogate: o-Terphenyl 11.6 " 12.5 92.6 88.8-124

LCS (1121306-BS1)

Prepared & Analyzed: 12/13/11

C10-C28 (DRO) 577 50 mg/kg 501 115 81.4-129 9.26

LCS Dup (1121306-BSD1)

Prepared & Analyzed: 12/13/11

C10-C28 (DRO) 555 50 mg/kg 501 111 81.4-129 3.89 9.26

Matrix Spike (1121306-MS1)

Source: R112073-01

Prepared: 12/13/11 Analyzed: 12/14/11

C10-C28 (DRO) 558 50 mg/kg 501 37.0 104 77.8-133 8.48

Matrix Spike Dup (1121306-MSD1)

Source: R112073-01

Prepared: 12/13/11 Analyzed: 12/14/11

C10-C28 (DRO) 539 50 mg/kg 501 37.0 100 77.8-133 3.55 8.48

Summit Scientific

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

Project: PDC - Clark 11, 12-27

Project Number: PDC 09006
Project Manager: Brian Dodek

Reported:
12/19/11 17:42

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 1121406 - EPA 5030 Soil MS

Blank (1121406-BLK1)

Prepared: 12/14/11 Analyzed: 12/15/11

Naphthalene	ND	0.0050	mg/kg							
Benzene	ND	0.0050	"							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
m,p-Xylene	ND	0.010	"							
o-Xylene	ND	0.0050	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
Surrogate: 1,2-Dichloroethane-d4	0.0361		"	0.0400		90.2	67.4-143			
Surrogate: Toluene-d8	0.0388		"	0.0400		97.1	77.3-114			
Surrogate: 4-Bromofluorobenzene	0.0383		"	0.0400		95.8	78.4-125			

LCS (1121406-BS1)

Prepared: 12/14/11 Analyzed: 12/15/11

Naphthalene	ND	0.0050	mg/kg				67.8-151		20	
Benzene	0.0717	0.0050	"	0.100		71.7	61-139		11.1	
Toluene	0.0769	0.0050	"	0.100		76.9	64-132		10.9	
Ethylbenzene	0.0764	0.0050	"	0.100		76.4	68.7-135		20	
m,p-Xylene	0.158	0.010	"	0.200		79.2	70.4-129		20	
o-Xylene	0.0788	0.0050	"	0.100		78.8	66.9-126		20	
Surrogate: 1,2-Dichloroethane-d4	0.0368		"	0.0400		92.0	67.4-143			
Surrogate: Toluene-d8	0.0389		"	0.0400		97.4	77.3-114			
Surrogate: 4-Bromofluorobenzene	0.0382		"	0.0400		95.6	78.4-125			

LCS Dup (1121406-BSD1)

Prepared: 12/14/11 Analyzed: 12/15/11

Naphthalene	ND	0.0050	mg/kg				67.8-151		20	
Benzene	0.0706	0.0050	"	0.100		70.6	61-139	1.52	11.1	
Toluene	0.0820	0.0050	"	0.100		82.0	64-132	6.42	10.9	
Ethylbenzene	0.0811	0.0050	"	0.100		81.1	68.7-135	5.94	20	
m,p-Xylene	0.167	0.010	"	0.200		83.4	70.4-129	5.16	20	
o-Xylene	0.0820	0.0050	"	0.100		82.0	66.9-126	4.07	20	
Surrogate: 1,2-Dichloroethane-d4	0.0333		"	0.0400		83.2	67.4-143			
Surrogate: Toluene-d8	0.0387		"	0.0400		96.8	77.3-114			
Surrogate: 4-Bromofluorobenzene	0.0368		"	0.0400		92.1	78.4-125			

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: PDC - Clark 11, 12-27

Project Number: PDC 09006
Project Manager: Brian Dodek

Reported:
12/19/11 17:42

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 1121406 - EPA 5030 Soil MS

Matrix Spike (1121406-MS1)

Source: R112082-01

Prepared: 12/14/11

Analyzed: 12/15/11

Naphthalene	ND	0.0050	mg/kg		0.00		26.4-144		20	
Benzene	0.0698	0.0050	"	0.100	0.00	69.8	42.9-137		17.9	
Toluene	0.0818	0.0050	"	0.100	0.00699	74.8	42.6-130		11.9	
Ethylbenzene	0.0740	0.0050	"	0.100	0.00	74.0	39-133		20	
m,p-Xylene	0.161	0.010	"	0.200	0.0143	73.5	34.7-134		20	
o-Xylene	0.0801	0.0050	"	0.100	0.00567	74.4	41.3-126		20	
Surrogate: 1,2-Dichloroethane-d4	0.0376		"	0.0400		94.0	67.4-143			
Surrogate: Toluene-d8	0.0395		"	0.0400		98.8	77.3-114			
Surrogate: 4-Bromofluorobenzene	0.0381		"	0.0400		95.2	78.4-125			

Matrix Spike Dup (1121406-MSD1)

Source: R112082-01

Prepared: 12/14/11

Analyzed: 12/15/11

Naphthalene	ND	0.0050	mg/kg		0.00		26.4-144		20	
Benzene	0.0667	0.0050	"	0.100	0.00	66.7	42.9-137	4.57	17.9	
Toluene	0.0843	0.0050	"	0.100	0.00699	77.3	42.6-130	2.93	11.9	
Ethylbenzene	0.0792	0.0050	"	0.100	0.00	79.2	39-133	6.70	20	
m,p-Xylene	0.173	0.010	"	0.200	0.0143	79.2	34.7-134	6.82	20	
o-Xylene	0.0854	0.0050	"	0.100	0.00567	79.8	41.3-126	6.45	20	
Surrogate: 1,2-Dichloroethane-d4	0.0359		"	0.0400		89.8	67.4-143			
Surrogate: Toluene-d8	0.0391		"	0.0400		97.6	77.3-114			
Surrogate: 4-Bromofluorobenzene	0.0382		"	0.0400		95.6	78.4-125			

Batch 1121605 - EPA 5030 Water MS

Blank (1121605-BLK1)

Prepared: 12/16/11

Analyzed: 12/17/11

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	12.7		"	13.2		95.7	57.9-139			
Surrogate: Toluene-d8	12.8		"	13.3		95.7	83.1-115			
Surrogate: 4-Bromofluorobenzene	12.5		"	13.3		93.9	80.8-120			

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

Project: PDC - Clark 11, 12-27

Project Number: PDC 09006
Project Manager: Brian Dodek

Reported:
12/19/11 17:42

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 1121605 - EPA 5030 Water MS

Blank (1121605-BLK2)

Prepared: 12/16/11 Analyzed: 12/17/11

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	12.3		"	13.2		92.7	57.9-139			
Surrogate: Toluene-d8	12.8		"	13.3		96.4	83.1-115			
Surrogate: 4-Bromofluorobenzene	12.9		"	13.3		96.6	80.8-120			

LCS (1121605-BS1)

Prepared: 12/16/11 Analyzed: 12/17/11

Benzene	25.5	1.0	ug/l	33.3		76.6	60.1-131		10.9	
Toluene	25.5	1.0	"	33.3		76.6	65.9-127		11.3	
Ethylbenzene	29.9	1.0	"	33.3		89.6	65.1-129		20	
m,p-Xylene	59.5	2.0	"	66.7		89.2	66.8-127		20	
o-Xylene	28.7	1.0	"	33.3		86.1	61.2-120		20	
Surrogate: 1,2-Dichloroethane-d4	12.7		"	13.2		96.1	57.9-139			
Surrogate: Toluene-d8	13.4		"	13.3		100	83.1-115			
Surrogate: 4-Bromofluorobenzene	12.4		"	13.3		93.0	80.8-120			

LCS (1121605-BS2)

Prepared: 12/16/11 Analyzed: 12/17/11

Benzene	26.7	1.0	ug/l	33.3		80.1	60.1-131		10.9	
Toluene	26.6	1.0	"	33.3		79.7	65.9-127		11.3	
Ethylbenzene	31.5	1.0	"	33.3		94.4	65.1-129		20	
m,p-Xylene	61.3	2.0	"	66.7		91.9	66.8-127		20	
o-Xylene	30.1	1.0	"	33.3		90.2	61.2-120		20	
Surrogate: 1,2-Dichloroethane-d4	13.0		"	13.2		98.4	57.9-139			
Surrogate: Toluene-d8	13.3		"	13.3		99.8	83.1-115			
Surrogate: 4-Bromofluorobenzene	12.4		"	13.3		93.3	80.8-120			

Summit Scientific

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

Project: PDC - Clark 11, 12-27

Project Number: PDC 09006
Project Manager: Brian Dodek

Reported:
12/19/11 17:42

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 1121605 - EPA 5030 Water MS

LCS Dup (1121605-BSD1)

Prepared: 12/16/11 Analyzed: 12/17/11

Benzene	26.2	1.0	ug/l	33.3		78.5	60.1-131	2.55	10.9	
Toluene	26.0	1.0	"	33.3		78.0	65.9-127	1.90	11.3	
Ethylbenzene	30.3	1.0	"	33.3		91.0	65.1-129	1.53	20	
m,p-Xylene	59.0	2.0	"	66.7		88.6	66.8-127	0.709	20	
o-Xylene	29.1	1.0	"	33.3		87.4	61.2-120	1.49	20	
Surrogate: 1,2-Dichloroethane-d4	12.8		"	13.2		97.1	57.9-139			
Surrogate: Toluene-d8	13.5		"	13.3		101	83.1-115			
Surrogate: 4-Bromofluorobenzene	12.6		"	13.3		94.2	80.8-120			

LCS Dup (1121605-BSD2)

Prepared: 12/16/11 Analyzed: 12/17/11

Benzene	26.9	1.0	ug/l	33.3		80.7	60.1-131	0.672	10.9	
Toluene	26.5	1.0	"	33.3		79.4	65.9-127	0.302	11.3	
Ethylbenzene	30.7	1.0	"	33.3		92.1	65.1-129	2.51	20	
m,p-Xylene	60.0	2.0	"	66.7		90.0	66.8-127	2.11	20	
o-Xylene	29.2	1.0	"	33.3		87.5	61.2-120	3.04	20	
Surrogate: 1,2-Dichloroethane-d4	13.0		"	13.2		98.2	57.9-139			
Surrogate: Toluene-d8	13.2		"	13.3		98.6	83.1-115			
Surrogate: 4-Bromofluorobenzene	12.0		"	13.3		90.2	80.8-120			

Matrix Spike (1121605-MS1)

Source: R112067-01

Prepared: 12/16/11 Analyzed: 12/17/11

Benzene	27.3	1.0	ug/l	33.3	ND	81.9	52.7-130		19.3	
Toluene	27.1	1.0	"	33.3	ND	81.3	57-127		18.7	
Ethylbenzene	31.5	1.0	"	33.3	ND	94.5	59.2-127		20	
m,p-Xylene	62.2	2.0	"	66.7	ND	93.3	53.2-132		20	
o-Xylene	30.4	1.0	"	33.3	ND	91.4	56.3-117		20	
Surrogate: 1,2-Dichloroethane-d4	13.1		"	13.2		98.7	57.9-139			
Surrogate: Toluene-d8	13.3		"	13.3		99.9	83.1-115			
Surrogate: 4-Bromofluorobenzene	12.1		"	13.3		90.6	80.8-120			

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

Project: PDC - Clark 11, 12-27

Project Number: PDC 09006
Project Manager: Brian Dodek

Reported:
12/19/11 17:42

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 1121605 - EPA 5030 Water MS

Matrix Spike (1121605-MS2)				Source: R112067-03		Prepared: 12/16/11		Analyzed: 12/17/11		
Benzene	26.6	1.0	ug/l	33.3	ND	79.8	52.7-130		19.3	
Toluene	26.4	1.0	"	33.3	ND	79.1	57-127		18.7	
Ethylbenzene	30.7	1.0	"	33.3	ND	92.2	59.2-127		20	
m,p-Xylene	60.4	2.0	"	66.7	ND	90.6	53.2-132		20	
o-Xylene	29.5	1.0	"	33.3	ND	88.6	56.3-117		20	
Surrogate: 1,2-Dichloroethane-d4	13.2		"	13.2		99.4	57.9-139			
Surrogate: Toluene-d8	13.1		"	13.3		98.2	83.1-115			
Surrogate: 4-Bromofluorobenzene	12.4		"	13.3		92.7	80.8-120			

Matrix Spike Dup (1121605-MSD1)				Source: R112067-01		Prepared: 12/16/11		Analyzed: 12/17/11		
Benzene	27.6	1.0	ug/l	33.3	ND	82.9	52.7-130	1.27	19.3	
Toluene	27.6	1.0	"	33.3	ND	82.7	57-127	1.61	18.7	
Ethylbenzene	31.4	1.0	"	33.3	ND	94.2	59.2-127	0.318	20	
m,p-Xylene	61.6	2.0	"	66.7	ND	92.3	53.2-132	1.05	20	
o-Xylene	30.0	1.0	"	33.3	ND	90.1	56.3-117	1.36	20	
Surrogate: 1,2-Dichloroethane-d4	13.1		"	13.2		99.3	57.9-139			
Surrogate: Toluene-d8	13.4		"	13.3		101	83.1-115			
Surrogate: 4-Bromofluorobenzene	12.3		"	13.3		92.4	80.8-120			

Matrix Spike Dup (1121605-MSD2)				Source: R112067-03		Prepared: 12/16/11		Analyzed: 12/17/11		
Benzene	26.6	1.0	ug/l	33.3	ND	79.9	52.7-130	0.0376	19.3	
Toluene	26.8	1.0	"	33.3	ND	80.5	57-127	1.69	18.7	
Ethylbenzene	31.0	1.0	"	33.3	ND	93.0	59.2-127	0.875	20	
m,p-Xylene	60.8	2.0	"	66.7	ND	91.2	53.2-132	0.627	20	
o-Xylene	29.6	1.0	"	33.3	ND	88.8	56.3-117	0.271	20	
Surrogate: 1,2-Dichloroethane-d4	13.0		"	13.2		98.4	57.9-139			
Surrogate: Toluene-d8	13.3		"	13.3		99.7	83.1-115			
Surrogate: 4-Bromofluorobenzene	12.4		"	13.3		93.2	80.8-120			

Summit Scientific

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

Project: PDC - Clark 11, 12-27

Project Number: PDC 09006
Project Manager: Brian Dodek

Reported:
12/19/11 17:42

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

A handwritten signature in black ink, appearing to be 'MSM'.

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Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

December 07, 2011

Brian Dodek
LT Environmental, Inc.
4600 West 60th Avenue
Arvada, CO 80003
RE: PDC - Clark 11, 12-27

Enclosed are the results of analyses for samples received by Summit Scientific on 12/06/11 16:15. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Paul Shrewsbury For Ben Shrewsbury
President / Laboratory Director



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

Project: PDC - Clark 11, 12-27

Project Number: PDC 09006.005
Project Manager: Brian Dodek

Reported:
12/07/11 09:33

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
GW01	R112026-01	Water	12/06/11 12:50	12/06/11 16:15

Summit Scientific R112026

S₂

741 Corporate Circle Suite 1 • Golden, Colorado 80401
303-277-9310 • 303-277-9531 Fax

Page 1 of 1

Client: LT Environmental, Inc.
Address: 4600 West 60th Avenue
City/State/Zip: Arvada, CO 80003
Phone: (303) 433-9788
Sample Name: D. Burns
Project Manager: Brian Dodek
E-Mail: dburns@ltenv.com
Project Name: CLARK 11, 12-27
Project Number: PDC 09006.005

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative	Matrix	Analyze For:	Special Instructions
GW01	12/6/11	12:50	3	HCl None HNO ₃ Other (Specify)	Groundwater Soil Air - Canister Serial #	DRO ORO GBTEX BTEX	
Relinquished by:	Date/Time: 12/6/11 16:15	Received by:	Date/Time:	Turn Around Time (Check)		Notes:	
Relinquished by:	Date/Time:	Received by:	Date/Time:	Same Day 24 Hours 48 Hours 72 Hours Standard			
Relinquished by:	Date/Time:	Received by:	Date/Time:	Sample Integrity: Temperature Upon Receipt: 51 Intact: <input checked="" type="checkbox"/> No			

www.s2scientific.com

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

Project: PDC - Clark 11, 12-27

Project Number: PDC 09006.005
Project Manager: Brian Dodek

Reported:
12/07/11 09:33

GW01
R112026-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 12/06/11 12:50

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	13	1.0	ug/l	1	1120609	12/06/11	12/07/11	EPA 8260B	
Toluene	6.5	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	27	1.0	"	"	"	"	"	"	

Date Sampled: 12/06/11 12:50

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		107 %	57.9-139		"	"	"	"	
Surrogate: Toluene-d8		95.9 %	83.1-115		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		104 %	80.8-120		"	"	"	"	

Summit Scientific

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

Project: PDC - Clark 11, 12-27

Project Number: PDC 09006.005
Project Manager: Brian Dodek

Reported:
12/07/11 09:33

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 1120609 - EPA 5030 Water MS

Blank (1120609-BLK1)

Prepared & Analyzed: 12/06/11

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	14.1		"	13.3		105	57.9-139			
Surrogate: Toluene-d8	12.4		"	13.3		93.4	83.1-115			
Surrogate: 4-Bromofluorobenzene	13.2		"	13.3		99.2	80.8-120			

LCS (1120609-BS1)

Prepared & Analyzed: 12/06/11

Benzene	33.0	1.0	ug/l	33.3		99.1	60.1-131		10.9	
Toluene	33.4	1.0	"	33.3		100	65.9-127		11.3	
Ethylbenzene	32.9	1.0	"	33.3		98.8	65.1-129		20	
m,p-Xylene	63.9	2.0	"	66.7		95.8	66.8-127		20	
o-Xylene	31.2	1.0	"	33.3		93.5	61.2-120		20	
Surrogate: 1,2-Dichloroethane-d4	14.4		"	13.3		108	57.9-139			
Surrogate: Toluene-d8	13.3		"	13.3		99.5	83.1-115			
Surrogate: 4-Bromofluorobenzene	12.0		"	13.3		90.3	80.8-120			

LCS Dup (1120609-BSD1)

Prepared & Analyzed: 12/06/11

Benzene	33.2	1.0	ug/l	33.3		99.5	60.1-131	0.483	10.9	
Toluene	34.2	1.0	"	33.3		103	65.9-127	2.54	11.3	
Ethylbenzene	34.8	1.0	"	33.3		104	65.1-129	5.61	20	
m,p-Xylene	67.8	2.0	"	66.7		102	66.8-127	5.97	20	
o-Xylene	34.4	1.0	"	33.3		103	61.2-120	9.79	20	
Surrogate: 1,2-Dichloroethane-d4	14.2		"	13.3		106	57.9-139			
Surrogate: Toluene-d8	13.4		"	13.3		100	83.1-115			
Surrogate: 4-Bromofluorobenzene	13.2		"	13.3		99.0	80.8-120			

Summit Scientific

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

Project: PDC - Clark 11, 12-27
Project Number: PDC 09006.005
Project Manager: Brian Dodek

Reported:
12/07/11 09:33

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 1120609 - EPA 5030 Water MS

Matrix Spike (1120609-MS1)				Source: R112020-05		Prepared: 12/06/11		Analyzed: 12/07/11		
Benzene	35.1	1.0	ug/l	33.3	ND	105	52.7-130		19.3	
Toluene	36.6	1.0	"	33.3	ND	110	57-127		18.7	
Ethylbenzene	35.4	1.0	"	33.3	ND	106	59.2-127		20	
m,p-Xylene	68.8	2.0	"	66.7	ND	103	53.2-132		20	
o-Xylene	34.1	1.0	"	33.3	ND	102	56.3-117		20	
Surrogate: 1,2-Dichloroethane-d4	14.9		"	13.3		112	57.9-139			
Surrogate: Toluene-d8	14.1		"	13.3		106	83.1-115			
Surrogate: 4-Bromofluorobenzene	13.8		"	13.3		103	80.8-120			
Matrix Spike Dup (1120609-MSD1)				Source: R112020-05		Prepared: 12/06/11		Analyzed: 12/07/11		
Benzene	34.8	1.0	ug/l	33.3	ND	104	52.7-130	1.03	19.3	
Toluene	35.3	1.0	"	33.3	ND	106	57-127	3.39	18.7	
Ethylbenzene	35.8	1.0	"	33.3	ND	107	59.2-127	1.21	20	
m,p-Xylene	69.2	2.0	"	66.7	ND	104	53.2-132	0.594	20	
o-Xylene	34.8	1.0	"	33.3	ND	104	56.3-117	1.98	20	
Surrogate: 1,2-Dichloroethane-d4	14.1		"	13.3		106	57.9-139			
Surrogate: Toluene-d8	13.6		"	13.3		102	83.1-115			
Surrogate: 4-Bromofluorobenzene	12.4		"	13.3		92.9	80.8-120			

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: PDC - Clark 11, 12-27

Project Number: PDC 09006.005
Project Manager: Brian Dodek

Reported:
12/07/11 09:33

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

A handwritten signature in black ink, appearing to be 'MSM'.

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.