



01761350

State of Colorado  
Oil and Gas Conservation Commission

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



#7367

FOR OGCC USE ONLY

RECEIVED

OCT 23 2012

COGCC

SITE INVESTIGATION AND REMEDIATION WORKPLAN

This form shall be submitted to the Director for approval prior to the initiation of site investigation and remediation activities. Form 27 is intended to be used whenever possible. Additional documentation will be required when large volumes of soil and groundwater have been impacted or involve large facilities with multiple source areas. See Rule 910. Attach as many pages as needed to fully describe the proposed work.

OGCC Employee:

Spill  Complaint  
 Inspection  NOAV

Tracking No: 1761350

CAUSE OF CONDITION BEING INVESTIGATED AND REMEDIATED

Spill or Release  Plug & Abandon  Central Facility Closure  Site/Facility Closure  Other (describe): Pit Closure

GENERAL INFORMATION

OGCC Operator Number: 7800	Contact Name and Telephone
Name of Operator: Beren Corporation	Name: Rodney Reynolds
Address: 2020 North Bramblewood Street	No: (316) 337-8340
City: Wichita State: KS Zip: 67206	Fax: (316) 681-4740
API/Facility No: 109554	County: Washington
Facility Name: Scott	Facility Number: 109554
Well Name: <del>NA</del> Scott (121-05184)	Well Number: <del>NA</del> 6
Location (QtrQtr, Sec, Twp, Rng, Meridian): NWNW 74S 53W 6 PM	Latitude: 39.722749 Longitude: -103.365932

TECHNICAL CONDITIONS

Type of Waste Causing Impact (crude oil, condensate, produced water, etc.): crude oil

Site Conditions: Is location within a sensitive area (according to Rule 901e)?  Y  N If yes, attach evaluation.

Adjacent land use (cultivated, irrigated, dry land farming, industrial, residential, etc.): Open Pasture

Soil type, if not previously identified on Form 2A or Federal Surface Use Plan: Norka-Colby loams, 3 to 5 percent slopes

Potential receptors (water wells within 1/4 mi, surface waters, etc.): Drainage is located 800' southeast of the site; a building is located 1,368' west of the site

Description of Impact (if previously provided, refer to that form or document):

Impacted Media (check):	Extent of Impact:	How Determined:
<input checked="" type="checkbox"/> Soils	80 feet x 20 feet (three pit bottoms)	Excavation, sampling, and laboratory analysis
<input type="checkbox"/> Vegetation		
<input type="checkbox"/> Groundwater		
<input type="checkbox"/> Surface water		

REMEDIATION WORKPLAN

Describe initial action taken (if previously provided, refer to that form or document):

NA

Describe how source is to be removed:

See Attached Letter

Describe how remediation of existing impacts is to be accomplished, including removal and disposal at an injection well or licensed facility, land treatment on site, removal of impacted groundwater, insitu bioremediation, burning of oily vegetation, etc.:

Approximately 1,000 yards of impacted soil was stockpiled and sampled to determine an effective and efficient remediation plan. A waste management plan will be submitted via Form 4 to lay out the plan for remediation of the remaining onsite stockpiled soil.

State of Colorado Oil and Gas Conservation Commission

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



Tracking Number: 1761350
Name of Operator: Beren Corporation
OGCC Operator No: 7800
Received Date: 10/23/12
Well Name & No: Scott 6
Facility Name & No.: Scott

REMEDIATION WORKPLAN (CONT.)

OGCC Employee: John Axelson

If groundwater has been impacted, describe proposed monitoring plan (# of wells or sample points, sampling schedule, analytical methods, etc.):
Groundwater was not encountered during excavation and sampling activities.

Describe reclamation plan. Discuss existing and new grade recontouring; method and testing of compaction alleviation; and reseeding program, including location of new seed, seed mix and noxious weed prevention. Attach diagram or drawing. Use additional sheet for description if required.
The pit will be backfilled with clean soil. The ground surface will be contoured to match the existing grade and reseeded.

Attach samples and analytical results taken to verify remediation of impacts. Show locations of samples on an onsite schematic or drawing.
Is further site investigation required? [ ] Y [X] N If yes, describe:
Analytical results for the oil skim pit bottoms indicate benzene, toluene, ethylbenzene, and total xylenes (BTEX) as well as total petroleum hydrocarbons (TPH) as gasoline range organics and diesel range organics were in compliance with Colorado Oil and Gas Conservation Commission (COGCC) Table 910-1 concentration levels.
As the oil skim pits have been remediated to meet cleanup levels specified in COGCC Table 910-1, Beren is requesting a No Further Action determination for the pit closures.

Final disposition of E&P waste (landtreated and disposed onsite, name of licensed disposal facility, recycling, reuse, etc.):
Approximately 1,000 yards of impacted soil was stockpiled and sampled to determine an effective and efficient remediation plan. A waste management plan will be submitted via Form 4 to lay out the plan for remediation of the remaining onsite stockpiled soil.

IMPLEMENTATION SCHEDULE

Table with 4 columns: Date Site Investigation Began, Date Site Investigation Completed, Remediation Plan Submitted, Remediation Start Date, Anticipated Completion Date, Actual Completion Date.

I hereby certify that the statements made in this form are, to the best of my knowledge, true, correct, and complete.

Print Name: Rodney Reynolds

Signed: [Signature] Title: Division Engineer Date: 10/23/2012

OGCC Approved: [Signature] Title: EPS Date: 10/24/12

See conditions of approval. [Signature]

Note: Lat/Long of middle skim pit center from COGCC GIS Online is: 39.723905, -103.365759

Beren Corporation - #7800  
Scott Skim Pit Facility #109554  
Scott #6, API #121-05184  
Form 27 – Document #1761350

#### Skim Pit Closure – Conditions of Approval

The Form 27 documenting skim pit closure and remediation at the referenced facility is approved with the following conditions:

- Based on the confirmation sample results, the skim pits can be backfilled with clean fill material and the surface restored. However, should future conditions at the site indicate contaminant concentrations in soils exceeding COGCC standards or if ground water is found to be impacted, then further investigation and/or remediation may be required.
- Provide a detailed remediation plan no later than December 31, 2012, to properly treat or dispose the estimated 1,000 cubic yards of impacted material excavated from the skim pits.
- Until such time as remediation of the 1,000 cubic yards of impacted material begins, the stockpile(s) shall be properly maintained to prevent contamination of stormwater runoff, ground water or surface water.
- The Form 27 (document #1761350) shall remain open until the 1,000 cubic yards of impacted material is properly treated or disposed and sufficient documentation is provided to verify completion.



October 23, 2012

Mr. John Axelson  
Northeast Region Environmental Protection Specialist  
Colorado Oil and Gas Conservation Commission  
1120 Lincoln Street, Suite 801  
Denver, Colorado 80203

**RE: No Further Action Request  
Beren Corporation  
Scott Oil Skim Pit Closure  
Facility ID: 109554  
NWNW Sec. 7 4S 53W, 6th Principal Meridian  
Washington County, Colorado**

Dear Mr. Axelson:

LT Environmental, Inc. (LTE), under the direction of Beren Corporation (Beren), conducted environmental remediation and sampling activities following the identification of petroleum hydrocarbon impacted soil during oil skim pit closure activities at the Scott Tank Battery (Site). The Site is located 0.1 miles east of the intersection of County Road (CR) U and CR 11 in Washington County, Colorado (Figure 1).

On October 1, 2012, LTE personnel were on site to oversee final excavation activities, field screen soil, document site activities, conduct health and safety monitoring, and collect confirmation samples for laboratory analysis. Composite soil samples were collected from the excavation and were field screened for volatile organic compounds and total petroleum hydrocarbons (TPH) with a photo-ionization detector and a PetroFLAG TPH screening kit to evaluate if additional excavation was required. Once field screening indicated all the impacted soil had been removed from the oil skim pit, confirmation samples OS-01, OS-02, & OS-03 were collected from the pit as illustrated in Figure 2. Samples were submitted to Summit Scientific (Summit) of Golden, Colorado, for analysis of benzene, toluene, ethylbenzene, and total xylenes (BTEX), and TPH as gasoline range organics (GRO) by United States Environmental Protection Agency (EPA) Method 8260B, and TPH as diesel range organics (DRO) by United States Environmental Protection Agency (EPA) Modified Method 8015. Samples were also analyzed for pH by EPA Method 9045, specific conductance (EC) by Standard Method 2510B, and sodium adsorption ratio (SAR) by the United States Department of Agriculture Handbook 60 Method.

Soil analytical results from the pit closure sampling indicated samples OS-01, OS-02, & OS-03 were in compliance with the Colorado Oil and Gas Conservation Commission (COGCC) Table 910-1 Concentration Levels with the exception of pH. Sample OS-03 slightly exceeds the required pH range of 6-9 at 9.1. However, the sample was collected at a depth of four feet, which is below the root zone. This slight exceedance of pH at depth will not affect surface reclamation. Analytical results are summarized in Table 1. The laboratory analytical report is



attached. As soil has now been remediated to achieve COGCC cleanup goals, Beren is requesting a No Further Action determination for the pit closure activities.

On October 3, 2012, LTE personnel returned to the Site to collect composite samples (SP-01, SP-02, & SP-03) from the three onsite impacted soil stock piles depicted on Figure 2. There are approximately 1,000 cubic yards of impacted soil currently stockpiled at the Site. The stockpile samples were collected to characterize the impacted soil removed from the excavation and determine which onsite remediation options best fit the stockpiled soil. Samples were submitted to Summit for analysis of BTEX, TPH-GRO, TPH-DRO, pH, EC, and SAR. Analytical results indicated TPH concentrations exceeded the COGCC Table 910-1 Concentration Level ranging between 1,500 and 3,200 milligrams per kilogram.

LTE is currently designing the best fit remedial option for the three stockpiles. A waste management plan will be prepared and submitted with a Form 4 to layout the stockpile remediation plan and future confirmation data submittals.

Please call LTE at 303-433-9788 if you have any questions or comments regarding this report.

Sincerely,

LT ENVIRONMENTAL, INC.

Michael Wicker  
Staff Geologist

Brian Dodek, P.G.  
Client Manager/Senior Geologist

#### Attachments

- Figure 1 Site Location Map
- Figure 2 Site Map
- Table 1 Soil Analytical Results
- Attachment 1 Laboratory Analytical Reports

**FIGURE**



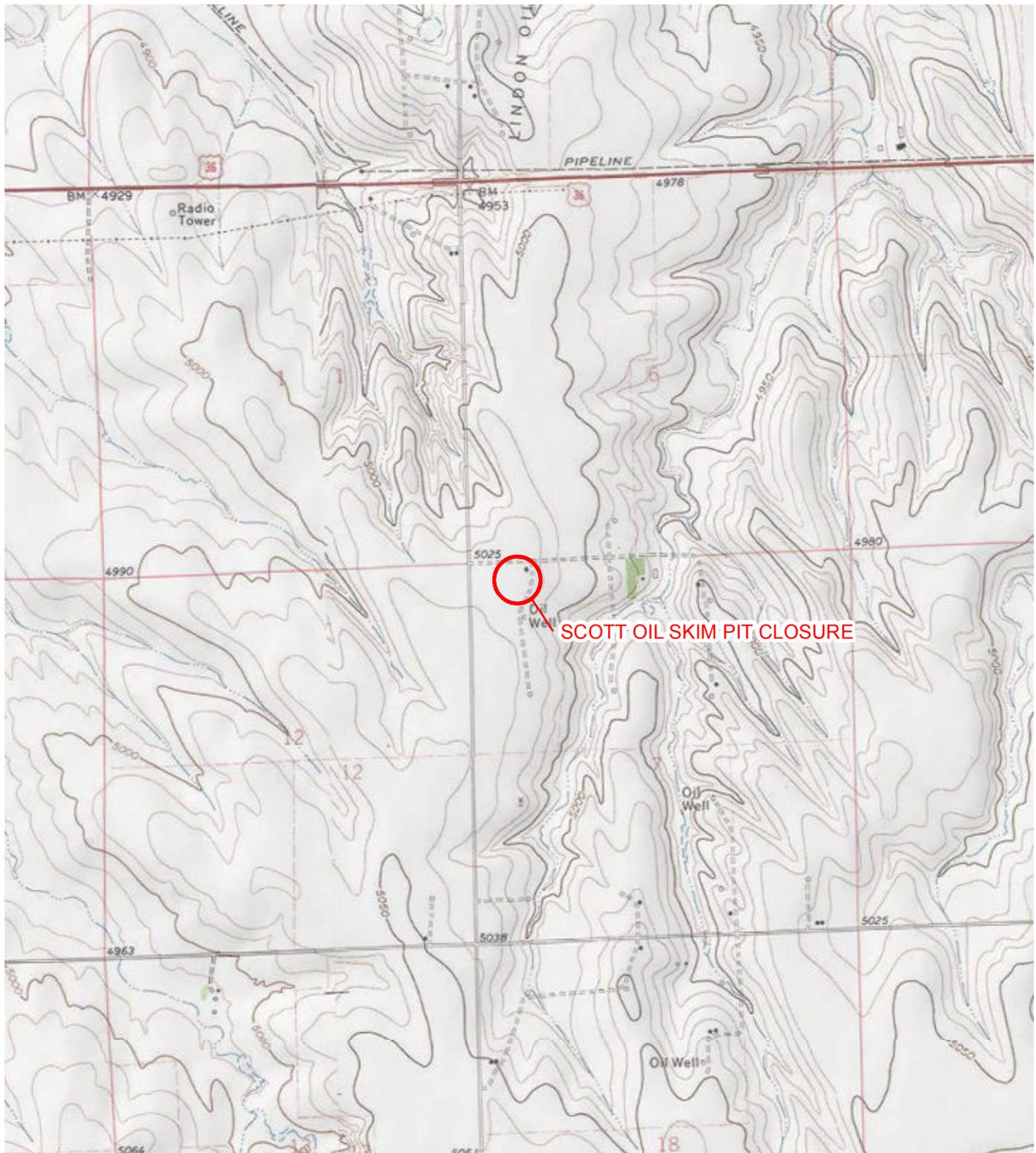
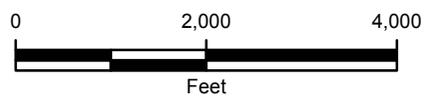


IMAGE COURTESY OF ESRI/BING MAPS

**LEGEND**

 SITE LOCATION



**FIGURE 1**  
**SITE LOCATION MAP**  
**SCOTT OIL SKIM PIT CLOSURE**  
**WASHINGTON COUNTY, COLORADO**



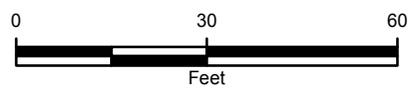
**BEREN CORPORATION**



IMAGE COURTESY OF ESRI/BING MAPS

**LEGEND**

- OIL SKIM SAMPLE
- STOCK PILE SAMPLE
- OIL SKIM PIT
- STOCK PILE



**FIGURE 2**  
**SITE MAP**  
**SCOTT OIL SKIM PIT CLOSURE**  
**WASHINGTON COUNTY, COLORADO**



**BEREN CORPORATION**

**TABLE**



**TABLE 1**  
**SOIL ANALYTICAL RESULTS**  
**SCOTT PIT COMPLEX**  
**WASHINGTON COUNTY, COLORADO**  
**BEREN CORPORATION**

Parameter	COGCC Table 910-1 Concentration Level	Units	OS-01	OS-02	OS-03	SP-01	SP-02	SP-03
Sample Date			10/1/2012	10/1/2012	10/1/2012	10/3/2012	10/3/2012	10/3/2012
TPH-GRO		mg/kg	<0.50	<0.50	<0.50	250	480	120
TPH-DRO		mg/kg	<50	<50	<50	2,900	1,100	1,800
Total TPH	500	mg/kg	<50	<50	<50	<b>3,150</b>	<b>1,580</b>	<b>1,920</b>
Benzene	0.17	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Toluene	85	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Ethylbenzene	100	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0072	<0.0050
Total Xylenes	175	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.022	<0.0050
EC	4	mmhos/cm	0.858	0.596	0.701	0.605		
SAR	12	unitless	3.83	1.67	1.89	1.79		
pH	6-9	SU	8.8	9.0	<b>9.1</b>	8.7		

**NOTES:**

COGCC - Colorado Oil and Gas Conservation Commission

TPH-GRO - Total Petroleum Hydrocarbons-Gasoline Range Organics

TPH-DRO - Total Petroleum Hydrocarbons-Diesel Range Organics

mg/kg - milligrams per kilograms

mmhos/cm - millimhos per centimeter

< - less than the stated laboratory method reporting limit

SU - standard unit



**ATTACHMENT 1**  
**LABORATORY ANALYTICAL REPORTS**



# Summit Scientific

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741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

October 08, 2012

Brian Dodek  
LT Environmental, Inc.  
4600 West 60th Avenue  
Arvada, CO 80003  
RE: BNC - Scott Pit Closure

Enclosed are the results of analyses for samples received by Summit Scientific on 10/01/12 17:05. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Joseph J Egry IV For Ben Shrewsbury  
President / Laboratory Manager



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

Project: BNC - Scott Pit Closure

Project Number: 0415-12003  
Project Manager: Brian Dodek

**Reported:**  
10/08/12 10:38

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
OS-01	R210007-01	Soil	10/01/12 11:00	10/01/12 17:05
OS-02	R210007-02	Soil	10/01/12 11:30	10/01/12 17:05
OS-03	R210007-03	Soil	10/01/12 12:00	10/01/12 17:05

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: BNC - Scott Pit Closure

Project Number: 0415-12003  
Project Manager: Brian Dodek

Reported:  
10/08/12 10:38

**OS-01**  
**R210007-01 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: 10/01/12 11:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (TEPH-DRO)	ND	50	mg/kg	1	2100207	10/02/12	10/02/12	8015 Full Carbon Chain	
C28-C36 (TEPH-ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: 10/01/12 11:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		73.8 %	30-150		"	"	"	"	

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: 10/01/12 11:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0050	mg/kg	1	2100206	10/02/12	10/03/12	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: 10/01/12 11:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		96.9 %	30-150		"	"	"	"	
Surrogate: Toluene-d8		97.2 %	30-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		96.5 %	30-150		"	"	"	"	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: 10/01/12 11:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Summit Scientific

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

Project: BNC - Scott Pit Closure

Project Number: 0415-12003  
Project Manager: Brian Dodek

**Reported:**  
10/08/12 10:38

**OS-01**  
**R210007-01 (Soil)**

**Summit Scientific**

**Physical Parameters by APHA/ASTM/EPA Methods**

**Specific Conductance (EC)**                      **0.858**                      0.00100 mmhos/cm                      1                      2100106                      10/01/12                      10/03/12                      SM 2510B

Date Sampled: **10/01/12 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>pH</b>	<b>8.8</b>		pH Units	"	2100107	10/01/12	10/03/12	EPA 9045B	

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

Date Sampled: **10/01/12 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Calcium</b>	<b>828</b>	2.50	mg/kg	1	2100303	10/03/12	10/05/12	EPA 6020/Mod. USDA60 6(2, 3A)	
<b>Magnesium</b>	<b>118</b>	1.00	"	"	"	"	"	"	
<b>Sodium</b>	<b>445</b>	5.00	"	"	"	"	"	"	

Date Sampled: **10/01/12 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Sodium Adsorption Ratio</b>	<b>3.83</b>		units	"	2100209	10/02/12	10/08/12	"	

Summit Scientific

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

Project: BNC - Scott Pit Closure

Project Number: 0415-12003  
Project Manager: Brian Dodek

Reported:  
10/08/12 10:38

**OS-02**  
**R210007-02 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **10/01/12 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (TEPH-DRO)	ND	50	mg/kg	1	2100207	10/02/12	10/03/12	8015 Full Carbon Chain	
C28-C36 (TEPH-ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **10/01/12 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		75.5 %	30-150		"	"	"	"	

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **10/01/12 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0050	mg/kg	1	2100206	10/02/12	10/03/12	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **10/01/12 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		91.4 %	30-150		"	"	"	"	
Surrogate: Toluene-d8		97.1 %	30-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		96.5 %	30-150		"	"	"	"	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **10/01/12 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Specific Conductance (EC)</b>	<b>0.596</b>	0.00100	mmhos/cm	1	2100106	10/01/12	10/03/12	SM 2510B	

Summit Scientific

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

Project: BNC - Scott Pit Closure

Project Number: 0415-12003  
Project Manager: Brian Dodek

**Reported:**  
10/08/12 10:38

**OS-02**  
**R210007-02 (Soil)**

**Summit Scientific**

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **10/01/12 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>pH</b>	<b>9.0</b>		pH Units	1	2100107	10/01/12	10/03/12	EPA 9045B	

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

Date Sampled: **10/01/12 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Calcium</b>	<b>604</b>	2.50	mg/kg	1	2100303	10/03/12	10/05/12	EPA 6020/Mod. USDA60 6(2, 3A)	
<b>Magnesium</b>	<b>108</b>	1.00	"	"	"	"	"	"	
<b>Sodium</b>	<b>170</b>	5.00	"	"	"	"	"	"	

Date Sampled: **10/01/12 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Sodium Adsorption Ratio</b>	<b>1.67</b>		units	"	2100209	10/02/12	10/08/12	"	

Summit Scientific

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

Project: BNC - Scott Pit Closure

Project Number: 0415-12003  
Project Manager: Brian Dodek

Reported:  
10/08/12 10:38

**OS-03**  
**R210007-03 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **10/01/12 12:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (TEPH-DRO)	ND	50	mg/kg	1	2100207	10/02/12	10/03/12	8015 Full Carbon Chain	
C28-C36 (TEPH-ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **10/01/12 12:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		75.7 %	30-150		"	"	"	"	

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **10/01/12 12:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0050	mg/kg	1	2100206	10/02/12	10/03/12	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **10/01/12 12:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		93.6 %	30-150		"	"	"	"	
Surrogate: Toluene-d8		96.5 %	30-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		96.1 %	30-150		"	"	"	"	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **10/01/12 12:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Specific Conductance (EC)</b>	<b>0.701</b>	0.00100	mmhos/cm	1	2100106	10/01/12	10/03/12	SM 2510B	

Summit Scientific

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

Project: BNC - Scott Pit Closure

Project Number: 0415-12003  
Project Manager: Brian Dodek

Reported:  
10/08/12 10:38

**OS-03**  
**R210007-03 (Soil)**

**Summit Scientific**

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: 10/01/12 12:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>pH</b>	<b>9.1</b>		pH Units	1	2100107	10/01/12	10/03/12	EPA 9045B	

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

Date Sampled: 10/01/12 12:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Calcium</b>	<b>1110</b>	2.50	mg/kg	1	2100303	10/03/12	10/05/12	EPA 6020/Mod. USDA60 6(2, 3A)	
<b>Magnesium</b>	<b>122</b>	1.00	"	"	"	"	"	"	
<b>Sodium</b>	<b>248</b>	5.00	"	"	"	"	"	"	

Date Sampled: 10/01/12 12:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Sodium Adsorption Ratio</b>	<b>1.89</b>		units	"	2100209	10/02/12	10/08/12	"	

Summit Scientific

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

Project: BNC - Scott Pit Closure

Project Number: 0415-12003  
Project Manager: Brian Dodek

Reported:  
10/08/12 10:38

**Extractable Petroleum Hydrocarbons by 8015 - Quality Control**  
**Summit Scientific**

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

**Batch 2100207 - EPA 3550A**

**Blank (2100207-BLK1)**

Prepared & Analyzed: 10/02/12

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

**LCS (2100207-BS1)**

Prepared & Analyzed: 10/02/12

C10-C28 (TEPH-DRO)	601	50	mg/kg	501	120	73-134					
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**LCS Dup (2100207-BSD1)**

Prepared & Analyzed: 10/02/12

C10-C28 (TEPH-DRO)	597	50	mg/kg	501	119	73-134	0.653	11			
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**Matrix Spike (2100207-MS1)**

Source: R210014-02

Prepared & Analyzed: 10/02/12

C10-C28 (TEPH-DRO)	548	50	mg/kg	472	40.9	108	50-148				
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**Matrix Spike Dup (2100207-MSD1)**

Source: R210014-02

Prepared & Analyzed: 10/02/12

C10-C28 (TEPH-DRO)	596	50	mg/kg	492	40.9	113	50-148	8.33	13		
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Summit Scientific

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

Project: BNC - Scott Pit Closure

Project Number: 0415-12003  
Project Manager: Brian Dodek

Reported:  
10/08/12 10:38

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

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

**Batch 2100206 - EPA 5030 Soil MS**

**Blank (2100206-BLK1)**

Prepared & Analyzed: 10/02/12

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>0.0355</i>		<i>"</i>	<i>0.0397</i>	<i>89.5</i>	<i>30-150</i>				
<i>Surrogate: Toluene-d8</i>	<i>0.0389</i>		<i>"</i>	<i>0.0400</i>	<i>97.3</i>	<i>30-150</i>				
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0393</i>		<i>"</i>	<i>0.0400</i>	<i>98.2</i>	<i>30-150</i>				

**LCS (2100206-BS1)**

Prepared & Analyzed: 10/02/12

Benzene	0.0974	0.0050	mg/kg	0.100	97.4	58-130				
Toluene	0.104	0.0050	"	0.100	104	61-134				
Ethylbenzene	0.104	0.0050	"	0.100	104	74-139				
m,p-Xylene	0.212	0.010	"	0.200	106	73-137				
o-Xylene	0.102	0.0050	"	0.100	102	73-141				
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0357</i>		<i>"</i>	<i>0.0397</i>	<i>90.0</i>	<i>30-150</i>				
<i>Surrogate: Toluene-d8</i>	<i>0.0393</i>		<i>"</i>	<i>0.0400</i>	<i>98.2</i>	<i>30-150</i>				
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0374</i>		<i>"</i>	<i>0.0400</i>	<i>93.4</i>	<i>30-150</i>				

**LCS Dup (2100206-BSD1)**

Prepared & Analyzed: 10/02/12

Benzene	0.108	0.0050	mg/kg	0.100	108	58-130	10.6	13		
Toluene	0.114	0.0050	"	0.100	114	61-134	9.83	16		
Ethylbenzene	0.121	0.0050	"	0.100	121	74-139	15.3	12		
m,p-Xylene	0.244	0.010	"	0.200	122	73-137	14.3	14		
o-Xylene	0.120	0.0050	"	0.100	120	73-141	16.3	12		
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0364</i>		<i>"</i>	<i>0.0397</i>	<i>91.6</i>	<i>30-150</i>				
<i>Surrogate: Toluene-d8</i>	<i>0.0389</i>		<i>"</i>	<i>0.0400</i>	<i>97.2</i>	<i>30-150</i>				
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0392</i>		<i>"</i>	<i>0.0400</i>	<i>97.9</i>	<i>30-150</i>				

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

Project: BNC - Scott Pit Closure

Project Number: 0415-12003  
Project Manager: Brian Dodek

Reported:  
10/08/12 10:38

**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 2100206 - EPA 5030 Soil MS**

<b>Matrix Spike (2100206-MS1)</b>	<b>Source: R210014-02</b>			<b>Prepared &amp; Analyzed: 10/02/12</b>						
Benzene	0.103	0.0050	mg/kg	0.0998	ND	103	30-131			
Toluene	0.107	0.0050	"	0.0998	ND	108	30-134			
Ethylbenzene	0.110	0.0050	"	0.0998	ND	110	22-153			
m,p-Xylene	0.224	0.010	"	0.200	ND	112	10-159			
o-Xylene	0.109	0.0050	"	0.0998	ND	110	31-151			
Surrogate: 1,2-Dichloroethane-d4	0.0382		"	0.0396		96.4	30-150			
Surrogate: Toluene-d8	0.0390		"	0.0399		97.6	30-150			
Surrogate: 4-Bromofluorobenzene	0.0389		"	0.0399		97.4	30-150			

<b>Matrix Spike Dup (2100206-MSD1)</b>	<b>Source: R210014-02</b>			<b>Prepared &amp; Analyzed: 10/02/12</b>						
Benzene	0.102	0.0050	mg/kg	0.0996	ND	102	30-131	0.873	34	
Toluene	0.108	0.0050	"	0.0996	ND	109	30-134	1.02	30	
Ethylbenzene	0.109	0.0050	"	0.0996	ND	109	22-153	0.555	24	
m,p-Xylene	0.220	0.010	"	0.199	ND	110	10-159	1.90	68	
o-Xylene	0.109	0.0050	"	0.0996	ND	109	31-151	0.639	38	
Surrogate: 1,2-Dichloroethane-d4	0.0378		"	0.0395		95.6	30-150			
Surrogate: Toluene-d8	0.0391		"	0.0398		98.2	30-150			
Surrogate: 4-Bromofluorobenzene	0.0386		"	0.0398		96.8	30-150			

Summit Scientific

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

Project: BNC - Scott Pit Closure

Project Number: 0415-12003  
 Project Manager: Brian Dodek

**Reported:**  
 10/08/12 10:38

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

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

**Batch 2100106 - General Preparation**

Duplicate (2100106-DUP1)	Source: R209211-01		Prepared: 10/01/12	Analyzed: 10/03/12
Specific Conductance (EC)	0.362	0.00100 mmhos/cm	0.355	1.84 15.5

**Batch 2100107 - General Preparation**

Duplicate (2100107-DUP1)	Source: R209211-01		Prepared: 10/01/12	Analyzed: 10/03/12
pH	8.9	pH Units	8.9	0.450 4.95

Summit Scientific

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

Project: BNC - Scott Pit Closure

Project Number: 0415-12003  
Project Manager: Brian Dodek

Reported:  
10/08/12 10:38

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

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

**Batch 2100303 - General Preparation**

**Blank (2100303-BLK1)**

Prepared: 10/03/12 Analyzed: 10/05/12

Calcium	ND	2.50	mg/kg							
Magnesium	ND	1.00	"							
Sodium	ND	5.00	"							

**LCS (2100303-BS1)**

Prepared: 10/03/12 Analyzed: 10/05/12

Calcium	421	2.50	mg/kg	400	105	77-118				
Magnesium	203	1.00	"	200	102	77-117				
Sodium	726	5.00	"	700	104	80-119				

**LCS Dup (2100303-BSD1)**

Prepared: 10/03/12 Analyzed: 10/05/12

Calcium	411	2.50	mg/kg	400	103	77-118	2.52	14		
Magnesium	197	1.00	"	200	98.7	77-117	2.86	12		
Sodium	712	5.00	"	700	102	80-119	2.03	14		

**Matrix Spike (2100303-MS1)**

Source: R210007-01

Prepared: 10/03/12 Analyzed: 10/05/12

Calcium	1490	2.50	mg/kg	365	828	181	13-170			QM-07
Magnesium	328	1.00	"	183	118	115	34-152			
Sodium	1100	5.00	"	639	445	103	43-155			

**Matrix Spike Dup (2100303-MSD1)**

Source: R210007-01

Prepared: 10/03/12 Analyzed: 10/05/12

Calcium	1730	2.50	mg/kg	359	828	252	13-170	15.2	37	QM-07
Magnesium	335	1.00	"	179	118	121	34-152	2.33	33	
Sodium	1040	5.00	"	628	445	94.8	43-155	5.75	25	

Summit Scientific

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

Project: BNC - Scott Pit Closure

Project Number: 0415-12003  
Project Manager: Brian Dodek

**Reported:**  
10/08/12 10:38

### Notes and Definitions

- 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.
- 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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741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

October 16, 2012

Brian Dodek  
LT Environmental, Inc.  
4600 West 60th Avenue  
Arvada, CO 80003  
RE: BNC - Scott Pit Closure

Enclosed are the results of analyses for samples received by Summit Scientific on 10/04/12 16:55. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Joseph J Egry IV  
Laboratory Director



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

Project: BNC - Scott Pit Closure

Project Number: 0415-12003  
Project Manager: Brian Dodek

**Reported:**  
10/16/12 15:22

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SP-01	R210041-01	Soil	10/03/12 12:20	10/04/12 16:55
SP-02	R210041-02	Soil	10/03/12 12:30	10/04/12 16:55
SP-03	R210041-03	Soil	10/03/12 12:40	10/04/12 16:55

Summit Scientific

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

Project: BNC - Scott Pit Closure

Project Number: 0415-12003  
Project Manager: Brian Dodek

Reported:  
10/16/12 15:22

**SP-01**  
**R210041-01 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: 10/03/12 12:20

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (TEPH-DRO)	2900	50	mg/kg	1	2100511	10/05/12	10/06/12	8015 Full Carbon Chain	

Date Sampled: 10/03/12 12:20

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		99.7 %	30-150		"	"	"	"	

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: 10/03/12 12:20

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0050	mg/kg	1	2100603	10/06/12	10/07/12	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	250	5.0	"	10	"	"	10/06/12	"	

Date Sampled: 10/03/12 12:20

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		102 %	30-150		"	"	10/07/12	"	
Surrogate: Toluene-d8		101 %	30-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		104 %	30-150		"	"	"	"	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: 10/03/12 12:20

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.605	0.00100	mmhos/cm	1	2100803	10/08/12	10/08/12	SM 2510B	

Summit Scientific

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

Project: BNC - Scott Pit Closure

Project Number: 0415-12003  
 Project Manager: Brian Dodek

**Reported:**  
 10/16/12 15:22

**SP-01**  
**R210041-01 (Soil)**

**Summit Scientific**

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **10/03/12 12:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>pH</b>	<b>8.7</b>		pH Units	1	2100804	10/08/12	10/08/12	EPA 9045B	

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

Date Sampled: **10/03/12 12:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Calcium</b>	<b>583</b>	2.50	mg/kg	1	2100505	10/06/12	10/06/12	EPA 6020/Mod. USDA60 6(2, 3A)	
<b>Magnesium</b>	<b>131</b>	1.00	"	"	"	"	"	"	
<b>Sodium</b>	<b>184</b>	5.00	"	"	"	"	"	"	

Date Sampled: **10/03/12 12:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Sodium Adsorption Ratio</b>	<b>1.79</b>		units	"	2100701	10/07/12	10/07/12	"	

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

Project: BNC - Scott Pit Closure

Project Number: 0415-12003  
Project Manager: Brian Dodek

Reported:  
10/16/12 15:22

**SP-02**  
**R210041-02 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: 10/03/12 12:30

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (TEPH-DRO)	1100	50	mg/kg	1	2100511	10/05/12	10/06/12	8015 Full Carbon Chain	

Date Sampled: 10/03/12 12:30

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		106 %	30-150		"	"	"	"	

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: 10/03/12 12:30

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0050	mg/kg	1	2100603	10/06/12	10/07/12	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.0072	0.0050	"	"	"	"	"	"	
Xylenes (total)	0.022	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	480	50	"	100	"	"	10/06/12	"	

Date Sampled: 10/03/12 12:30

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		106 %	30-150		"	"	10/07/12	"	
Surrogate: Toluene-d8		92.2 %	30-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		209 %	30-150		"	"	"	"	S-02

Summit Scientific

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

Project: BNC - Scott Pit Closure

Project Number: 0415-12003  
Project Manager: Brian Dodek

Reported:  
10/16/12 15:22

**SP-03**  
**R210041-03 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: 10/03/12 12:40

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (TEPH-DRO)	1800	50	mg/kg	1	2100511	10/05/12	10/06/12	8015 Full Carbon Chain	

Date Sampled: 10/03/12 12:40

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		88.6 %	30-150		"	"	"	"	

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: 10/03/12 12:40

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0050	mg/kg	1	2100603	10/06/12	10/06/12	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
<b>Gasoline Range Hydrocarbons</b>	<b>120</b>	5.0	"	10	"	"	"	"	

Date Sampled: 10/03/12 12:40

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		102 %	30-150		"	"	"	"	
Surrogate: Toluene-d8		87.8 %	30-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		277 %	30-150		"	"	"	"	S-02

Summit Scientific

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

Project: BNC - Scott Pit Closure

Project Number: 0415-12003  
Project Manager: Brian Dodek

**Reported:**  
10/16/12 15:22

**Extractable Petroleum Hydrocarbons by 8015 - Quality Control**  
**Summit Scientific**

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

**Batch 2100511 - EPA 3550A**

<b>Blank (2100511-BLK1)</b>				Prepared & Analyzed: 10/05/12							
C10-C28 (TEPH-DRO)	ND	50	mg/kg								
<b>LCS (2100511-BS1)</b>				Prepared & Analyzed: 10/05/12							
C10-C28 (TEPH-DRO)	522	50	mg/kg	501	104	73-134					
<b>LCS Dup (2100511-BSD1)</b>				Prepared & Analyzed: 10/05/12							
C10-C28 (TEPH-DRO)	511	50	mg/kg	501	102	73-134	1.99	11			
<b>Matrix Spike (2100511-MS1)</b>				<b>Source: R210047-01</b>		Prepared & Analyzed: 10/05/12					
C10-C28 (TEPH-DRO)	489	50	mg/kg	473	43.5	94.2	50-148				
<b>Matrix Spike Dup (2100511-MSD1)</b>				<b>Source: R210047-01</b>		Prepared & Analyzed: 10/05/12					
C10-C28 (TEPH-DRO)	452	50	mg/kg	476	43.5	85.9	50-148	7.68	13		

Summit Scientific

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

Project: BNC - Scott Pit Closure

Project Number: 0415-12003  
Project Manager: Brian Dodek

Reported:  
10/16/12 15:22

**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 2100603 - EPA 5030 Soil MS**

**Blank (2100603-BLK1)**

Prepared & Analyzed: 10/06/12

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	"							
Surrogate: 1,2-Dichloroethane-d4	0.0344		"	0.0397	86.7	30-150				
Surrogate: Toluene-d8	0.0382		"	0.0400	95.6	30-150				
Surrogate: 4-Bromofluorobenzene	0.0372		"	0.0400	93.0	30-150				

**LCS (2100603-BS1)**

Prepared & Analyzed: 10/06/12

Benzene	0.106	0.0050	mg/kg	0.100	106	58-130				
Toluene	0.115	0.0050	"	0.100	115	61-134				
Ethylbenzene	0.122	0.0050	"	0.100	122	74-139				
m,p-Xylene	0.251	0.010	"	0.200	125	73-137				
o-Xylene	0.119	0.0050	"	0.100	119	73-141				
Surrogate: 1,2-Dichloroethane-d4	0.0269		"	0.0397	67.7	30-150				
Surrogate: Toluene-d8	0.0389		"	0.0400	97.2	30-150				
Surrogate: 4-Bromofluorobenzene	0.0357		"	0.0400	89.2	30-150				

**LCS Dup (2100603-BSD1)**

Prepared & Analyzed: 10/06/12

Benzene	0.101	0.0050	mg/kg	0.100	101	58-130	5.37	13		
Toluene	0.108	0.0050	"	0.100	108	61-134	6.20	16		
Ethylbenzene	0.113	0.0050	"	0.100	113	74-139	7.85	12		
m,p-Xylene	0.232	0.010	"	0.200	116	73-137	8.01	14		
o-Xylene	0.113	0.0050	"	0.100	113	73-141	5.04	12		
Surrogate: 1,2-Dichloroethane-d4	0.0349		"	0.0397	87.8	30-150				
Surrogate: Toluene-d8	0.0388		"	0.0400	97.1	30-150				
Surrogate: 4-Bromofluorobenzene	0.0376		"	0.0400	94.0	30-150				

Summit Scientific

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

Project: BNC - Scott Pit Closure

Project Number: 0415-12003  
Project Manager: Brian Dodek

Reported:  
10/16/12 15:22

**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 2100603 - EPA 5030 Soil MS**

**Matrix Spike (2100603-MS1)**

Source: R210043-01

Prepared & Analyzed: 10/06/12

Benzene	0.101	0.0050	mg/kg	0.0996	ND	101	30-131			
Toluene	0.109	0.0050	"	0.0996	ND	109	30-134			
Ethylbenzene	0.112	0.0050	"	0.0996	ND	113	22-153			
m,p-Xylene	0.229	0.010	"	0.199	ND	115	10-159			
o-Xylene	0.112	0.0050	"	0.0996	ND	113	31-151			
Surrogate: 1,2-Dichloroethane-d4	0.0373		"	0.0395		94.3	30-150			
Surrogate: Toluene-d8	0.0380		"	0.0398		95.4	30-150			
Surrogate: 4-Bromofluorobenzene	0.0380		"	0.0398		95.5	30-150			

**Matrix Spike Dup (2100603-MSD1)**

Source: R210043-01

Prepared & Analyzed: 10/06/12

Benzene	0.0931	0.0050	mg/kg	0.0969	ND	96.1	30-131	8.12	34	
Toluene	0.101	0.0050	"	0.0969	ND	104	30-134	7.22	30	
Ethylbenzene	0.103	0.0050	"	0.0969	ND	106	22-153	8.53	24	
m,p-Xylene	0.210	0.010	"	0.194	ND	108	10-159	8.84	68	
o-Xylene	0.103	0.0050	"	0.0969	ND	107	31-151	8.27	38	
Surrogate: 1,2-Dichloroethane-d4	0.0366		"	0.0385		95.2	30-150			
Surrogate: Toluene-d8	0.0377		"	0.0388		97.4	30-150			
Surrogate: 4-Bromofluorobenzene	0.0359		"	0.0388		92.6	30-150			

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Project Number: 0415-12003  
 Project Manager: Brian Dodek

**Reported:**  
 10/16/12 15:22

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

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

**Batch 2100803 - General Preparation**

<b>Duplicate (2100803-DUP1)</b>	<b>Source: R210041-01</b>		<b>Prepared &amp; Analyzed: 10/08/12</b>								
Specific Conductance (EC)	0.628	0.00100	mmhos/cm		0.605				3.65	15.5	

**Batch 2100804 - General Preparation**

<b>Duplicate (2100804-DUP1)</b>	<b>Source: R210041-01</b>		<b>Prepared &amp; Analyzed: 10/08/12</b>								
pH	8.7		pH Units		8.7				0.459	4.95	

Summit Scientific

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Arvada CO, 80003

Project: BNC - Scott Pit Closure

Project Number: 0415-12003  
Project Manager: Brian Dodek

Reported:  
10/16/12 15:22

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

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

**Batch 2100505 - General Preparation**

**Blank (2100505-BLK1)**

Prepared & Analyzed: 10/06/12

Calcium	ND	2.50	mg/kg							
Magnesium	ND	1.00	"							
Sodium	ND	5.00	"							

**LCS (2100505-BS1)**

Prepared & Analyzed: 10/06/12

Calcium	382	2.50	mg/kg	400		95.5	77-118			
Magnesium	194	1.00	"	200		97.2	77-117			
Sodium	650	5.00	"	700		92.8	80-119			

**LCS Dup (2100505-BSD1)**

Prepared & Analyzed: 10/06/12

Calcium	381	2.50	mg/kg	400	763	95.3	77-118	0.269	14	
Magnesium	193	1.00	"	200	250	96.7	77-117	0.498	12	
Sodium	648	5.00	"	700	35.8	92.6	80-119	0.243	14	

**Matrix Spike (2100505-MS1)**

Source: R210030-01

Prepared & Analyzed: 10/06/12

Calcium	1170	2.50	mg/kg	253	763	160	13-170			
Magnesium	379	1.00	"	126	250	102	34-152			
Sodium	400	5.00	"	442	35.8	82.4	43-155			

**Matrix Spike Dup (2100505-MSD1)**

Source: R210030-01

Prepared & Analyzed: 10/06/12

Calcium	1410	2.50	mg/kg	282	763	229	13-170	18.8	37	QM-07
Magnesium	451	1.00	"	141	250	142	34-152	17.3	33	
Sodium	469	5.00	"	494	35.8	87.7	43-155	15.8	25	

Summit Scientific

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4600 West 60th Avenue  
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Project: BNC - Scott Pit Closure

Project Number: 0415-12003  
Project Manager: Brian Dodek

**Reported:**  
10/16/12 15:22

### 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.
- 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.
- 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