

FORM 19
Rev 6/99

**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
2/20/2012

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

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>12/9/2012</u> Facility Name & No: <u>Olson 13, 14, 23, 24-29</u>	County: <u>Weld</u>
Type of Facility (well, tank battery, flow line, pit): <u>Tank Battery</u>	QtrQtr: <u>SESW</u> Section: <u>29</u>
Well Name and Number: <u>Olson 13, 14, 23, 24-29</u>	Township: <u>4N</u> Range: <u>67W</u>
API Number: <u>331189</u>	Meridian: <u>6th</u>

Specify volume spilled and recovered (in bbls) for the following materials:
 Oil spilled: Unk Oil recov'd: 0 Water spilled: 0 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: <900 ft² x ~19' bgs

Current land use: Oil and Gas Production Facility/Agriculture Weather conditions: Low 40s

Soil/geology description: Sands and silty sands

IF LESS THAN A MILE, report distance **IN FEET** to nearest ... Surface water: ~2,800' S Wetlands: NA Buildings: 215' SW
 Livestock: NA Water wells: ~400' SW Depth to shallowest ground water: >21' bgs

Cause of spill (e.g. equipment failure, human error, etc.): Equipment failure Detailed description of the spill/release incident:
 During re-racking operations at the facility, subsurface impacts were discovered below the southern separator within the bermed containment area. A topographic map of the site is included as Figure 1.

CORRECTIVE ACTION

Describe immediate response (how stopped, contained and recovered):
 On December 9, 2011 PDC shut-in the wells feeding the tank battery and evacuated the transfer lines via a vacuum truck. The earthen berm was removed and approximately 100 cubic yards (cy) of impacted material was removed and transported to the Waste Management Facility in Ault, Colorado. The location and extent of the excavation is illustrated on Figure 2. Groundwater was not impacted at the facility.

Describe any emergency pits constructed: NA

How was the extent of contamination determined?
 On December 9, 2011 six soil samples were collected within the excavation footprint at depths ranging between 9 and 10 feet below ground surface (bgs). Soil samples were collected from the northwest wall (SS01), the southwest wall (SS02), the north wall (SS04), the southeast wall (SS05), and the northeast wall (SS06). Additionally, one soil sample was collected approximately 10 feet bgs from the center of the excavation area (SS03). A photoionization detector (PID) was used during sample collection to determine volatile organic compound (VOC) impacts within the soil. On January 23, 2012, direct push drilling activities were conducted at the Site to further delineate the lateral and vertical extents of the impacts. Seven Geoprobe boring locations were completed at locations surrounding the excavation area to depths ranging from 20 to 22 feet bgs. PID readings were recorded from soil cores and utilized to delineate the area of impacts beyond the limits of the former excavation. Temporary wells were installed at two of the borehole locations (BH-03 and BH-06) for future in-situ remediation activities. Soil sample analytical and PID results from the excavation and Geoprobe borings are summarized in Table 1. The laboratory analytical reports are included as Attachment A. The extent of the excavation and soil and boring locations are illustrated on Figure 2.

Further remediation activities proposed (attach separate sheet if needed):
 PDC is currently evaluating in-situ remediation strategies to address soil impacts and will summarize this in a subsequent Form 27.

Describe measures taken to prevent problem from reoccurring:
 PDC replaced dump and flow lines at the facility and will continue with annual pressure testing.

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: 2222956

TABLE 1
OLSON 13, 14, 23, 24-29
SOIL ANALYTICAL RESULTS TABLE

Sample ID	Date Sampled	Depth (Feet bgs)	PID Readings (ppm)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzne (mg/kg)	Total Xylenes (mg/kg)	Napthalene (mg/kg)	TPH ⁽²⁾ (mg/kg)
SS01	12/9/2011	9	230	0.013	0.031	0.015	0.75	0.02	132
SS02	12/9/2011	9	20	ND	ND	ND	ND	ND	ND
SS03	12/9/2011	10	1006	0.038	ND	0.4	1.58	0.16	850
SS04	12/9/2011	9	165	ND	ND	ND	ND	ND	ND
SS05	12/9/2011	9	1110	9.3	0.078	6.1	38	1.5	2,710
SS06	12/9/2011	9	1030	0.5	ND	1.9	12.7	0.36	1,030
BH03-19.5	1/23/2012	19.5	3048	ND	ND	ND	ND	ND	ND
BH06-17.5-18.5	1/23/2012	17.5-18.5	4300	0.024	0.59	0.3	7.3	0.89	1,160
COGCC standards for Soil (mg/kg) ⁽¹⁾				0.17	85	100	175	23	500

Notes:

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

2). TPH - Total volatile and extractable petroleum hydrocarbons. Value calculated by adding GRO and DRO concentrations.

GRO - Gasoline range organics.

DRO - Diesel range organics.

mg/kg= Milligrams per kilogram.

bgs - Below ground surface.

ppm - Parts per million

ND- Not Detected

Bold red values indicate an exceedance of the COGCC soil standards for the Site.

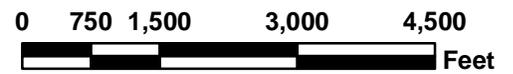
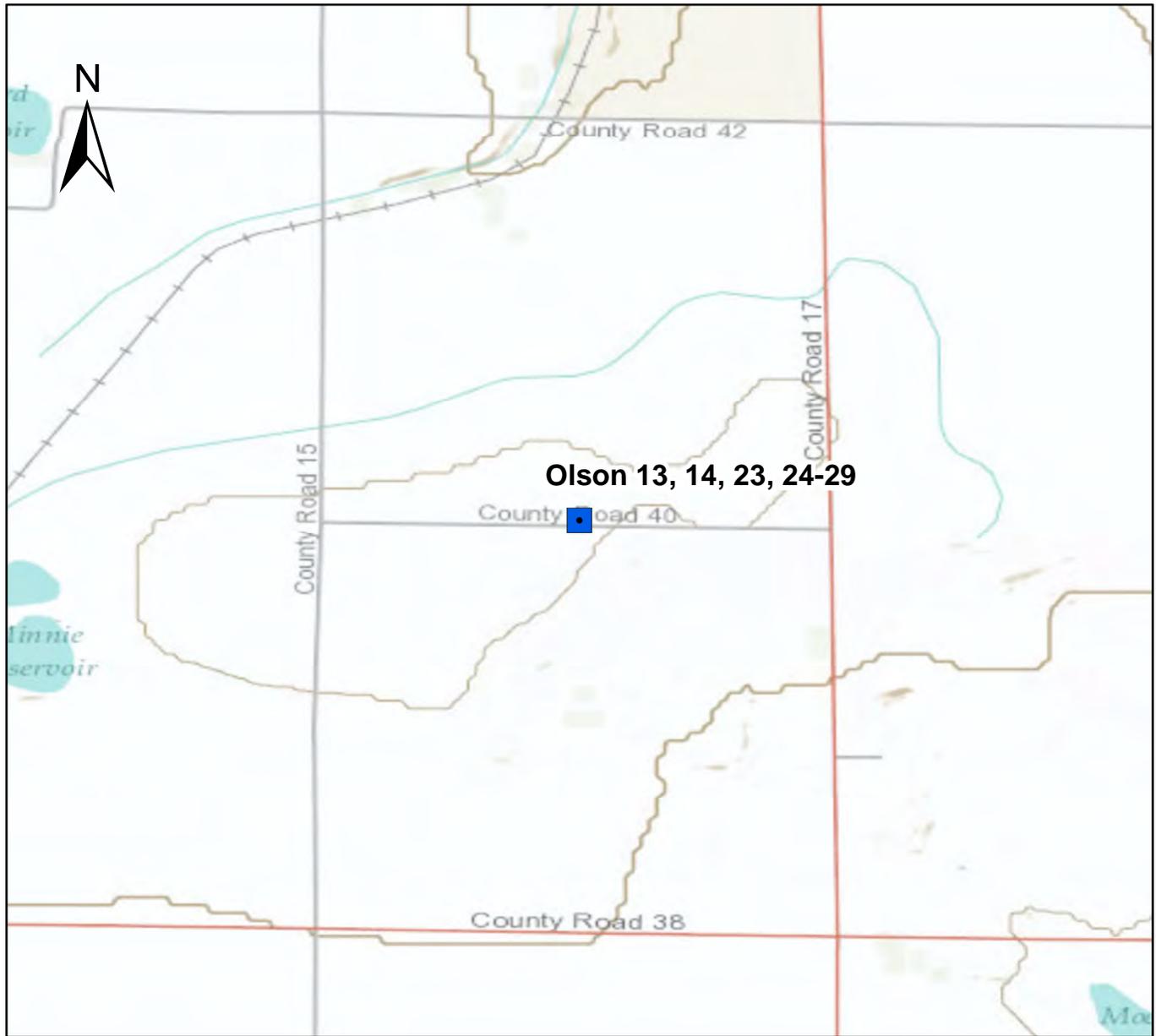


Figure 1

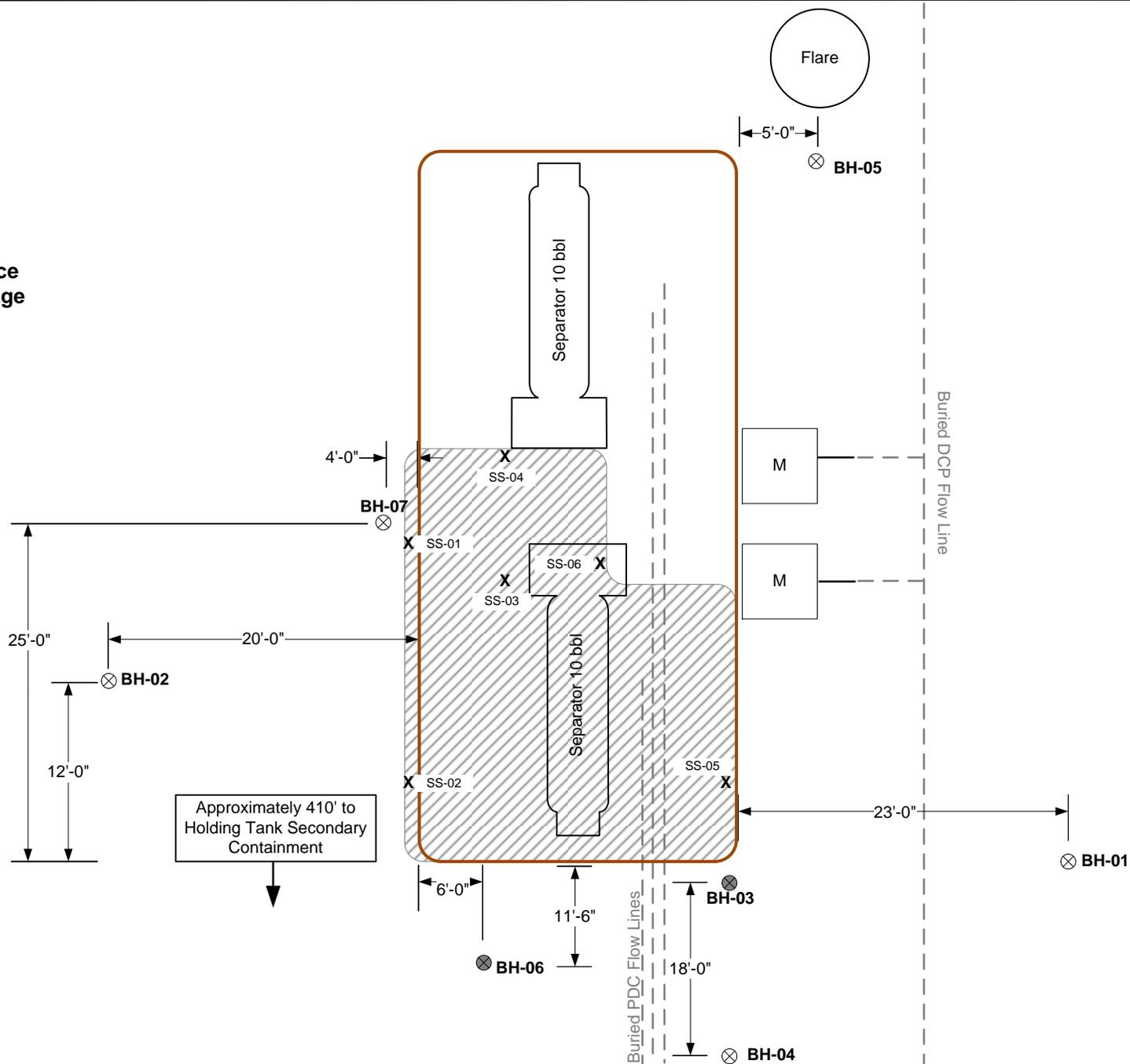
Site Location Map
 Olson 13 14, 23, 24-29
 SESW S29 T4N R67W
 Weld County, Colorado

Drawn By: CAW
 Date: 02/20/2012





↑
Surface
Drainage



PROJECT NO:	
DRAWN BY:	BDH
DATE:	1/30/12

Facility Diagram
 PDC Energy – DJ Basin
 Olson 13, 14, 23, 24-29
 T4N R67W S29
 Weld County, CO



Tasman Geosciences

5690 Webster Avenue
 Arvada CO 80002

LEGEND	
	Earthen Berm
	Bore Hole Location
	Bore Hole Location With Temporary Well Installed
	Approximate Extent of Excavation
	Excavation Soil Sample
	Meter Shed

FIGURE 2

Not to Scale

Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

December 13, 2011

Brian Dodek
LT Environmental, Inc.
4600 West 60th Avenue
Arvada, CO 80003
RE: PDC - Olson 13-23,29

Enclosed are the results of analyses for samples received by Summit Scientific on 12/09/11 17:15. 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 - Olson 13-23,29

Project Number: 0188-11090
Project Manager: Brian Dodek

Reported:
12/13/11 08:30

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS01	R112063-01	Soil	12/09/11 13:25	12/09/11 17:15
SS02	R112063-02	Soil	12/09/11 13:30	12/09/11 17:15
SS03	R112063-03	Soil	12/09/11 13:35	12/09/11 17:15
SS04	R112063-04	Soil	12/09/11 13:40	12/09/11 17:15
SS05	R112063-05	Soil	12/09/11 13:45	12/09/11 17:15
SS06	R112063-06	Soil	12/09/11 13:50	12/09/11 17:15

Summit Scientific

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

Project: PDC - Olson 13-23,29

Project Number: 0188-11090
Project Manager: Brian Dodek

Reported:
12/13/11 08:30

SS01
R112063-01 (Soil)

Summit Scientific

Total Petroleum Hydrocarbons by 8015

Date Sampled: 12/09/11 13:25

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	120	50	mg/kg	1	1121008	12/10/11	12/11/11	8015 DRO	

Date Sampled: 12/09/11 13:25

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		99.9 %	88.8-124		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 12/09/11 13:25

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	0.020	0.0050	mg/kg	1	1121009	12/10/11	12/11/11	EPA 8260B	
Benzene	0.013	0.0050	"	"	"	"	"	"	
Toluene	0.031	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.015	0.0050	"	"	"	"	"	"	
m,p-Xylene	0.47	0.010	"	"	"	"	"	"	
o-Xylene	0.28	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	12	0.50	"	"	"	"	"	"	

Date Sampled: 12/09/11 13:25

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		91.1 %	67.4-143		"	"	"	"	
Surrogate: Toluene-d8		101 %	77.3-114		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		109 %	78.4-125		"	"	"	"	

Summit Scientific

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

Project: PDC - Olson 13-23,29

Project Number: 0188-11090
Project Manager: Brian Dodek

Reported:
12/13/11 08:30

SS02
R112063-02 (Soil)

Summit Scientific

Total Petroleum Hydrocarbons by 8015

Date Sampled: 12/09/11 13:30

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1121008	12/10/11	12/11/11	8015 DRO	

Date Sampled: 12/09/11 13:30

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		98.9 %	88.8-124		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 12/09/11 13:30

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.0050	mg/kg	1	1121009	12/10/11	12/11/11	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: 12/09/11 13:30

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		99.9 %	67.4-143		"	"	"	"	
Surrogate: Toluene-d8		99.8 %	77.3-114		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		95.3 %	78.4-125		"	"	"	"	

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Arvada CO, 80003

Project: PDC - Olson 13-23,29

Project Number: 0188-11090
Project Manager: Brian Dodek

Reported:
12/13/11 08:30

SS03
R112063-03 (Soil)

Summit Scientific

Total Petroleum Hydrocarbons by 8015

Date Sampled: 12/09/11 13:35

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	690	50	mg/kg	1	1121008	12/10/11	12/11/11	8015 DRO	

Date Sampled: 12/09/11 13:35

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		104 %	88.8-124		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 12/09/11 13:35

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	0.16	0.0050	mg/kg	1	1121009	12/10/11	12/11/11	EPA 8260B	
Benzene	0.038	0.0050	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.40	0.0050	"	"	"	"	"	"	
m,p-Xylene	0.78	0.010	"	"	"	"	"	"	
o-Xylene	0.80	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	160	5.0	"	10	"	"	"	"	

Date Sampled: 12/09/11 13:35

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		103 %	67.4-143		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		101 %	77.3-114		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		105 %	78.4-125		"	"	"	"	

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Project: PDC - Olson 13-23,29

Project Number: 0188-11090
Project Manager: Brian Dodek

Reported:
12/13/11 08:30

SS04
R112063-04 (Soil)

Summit Scientific

Total Petroleum Hydrocarbons by 8015

Date Sampled: 12/09/11 13:40

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1121008	12/10/11	12/11/11	8015 DRO	

Date Sampled: 12/09/11 13:40

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		98.9 %	88.8-124		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 12/09/11 13:40

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.0050	mg/kg	1	1121009	12/10/11	12/11/11	EPA 8260B	
Benzene	ND	0.0050	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
m,p-Xylene	ND	0.010	"	"	"	"	"	"	
<i>o</i> -Xylene	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: 12/09/11 13:40

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane- <i>d</i> 4		93.5 %	67.4-143		"	"	"	"	
Surrogate: Toluene- <i>d</i> 8		99.2 %	77.3-114		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		92.9 %	78.4-125		"	"	"	"	

Summit Scientific

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Project: PDC - Olson 13-23,29

Project Number: 0188-11090
Project Manager: Brian Dodek

Reported:
12/13/11 08:30

SS05
R112063-05 (Soil)

Summit Scientific

Total Petroleum Hydrocarbons by 8015

Date Sampled: 12/09/11 13:45

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	910	50	mg/kg	1	1121008	12/10/11	12/11/11	8015 DRO	

Date Sampled: 12/09/11 13:45

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		103 %	88.8-124		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 12/09/11 13:45

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	1.5	0.050	mg/kg	10	1121009	12/10/11	12/12/11	EPA 8260B	
Benzene	9.3	0.050	"	"	"	"	"	"	
Toluene	0.078	0.050	"	"	"	"	"	"	
Ethylbenzene	6.1	0.050	"	"	"	"	"	"	
m,p-Xylene	26	0.10	"	"	"	"	"	"	
o-Xylene	12	0.050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	1800	50	"	100	"	"	"	"	

Date Sampled: 12/09/11 13:45

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		87.4 %	67.4-143		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		100 %	77.3-114		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		101 %	78.4-125		"	"	"	"	

Summit Scientific

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Project: PDC - Olson 13-23,29

Project Number: 0188-11090
Project Manager: Brian Dodek

Reported:
12/13/11 08:30

SS06
R112063-06 (Soil)

Summit Scientific

Total Petroleum Hydrocarbons by 8015

Date Sampled: 12/09/11 13:50

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	860	50	mg/kg	1	1121008	12/10/11	12/11/11	8015 DRO	

Date Sampled: 12/09/11 13:50

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		106 %	88.8-124		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 12/09/11 13:50

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	0.36	0.0050	mg/kg	1	1121009	12/10/11	12/11/11	EPA 8260B	
Benzene	0.50	0.050	"	10	"	"	"	"	
Toluene	ND	0.0050	"	1	"	"	"	"	
Ethylbenzene	1.9	0.050	"	10	"	"	"	"	
m,p-Xylene	9.0	0.10	"	"	"	"	"	"	
o-Xylene	3.7	0.050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	170	5.0	"	"	"	"	"	"	

Date Sampled: 12/09/11 13:50

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		90.4 %	67.4-143		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		105 %	77.3-114		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		115 %	78.4-125		"	"	"	"	

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4600 West 60th Avenue
Arvada CO, 80003

Project: PDC - Olson 13-23,29

Project Number: 0188-11090
Project Manager: Brian Dodek

Reported:
12/13/11 08:30

Total 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 1121008 - EPA 3550A

Blank (1121008-BLK1)			Prepared: 12/10/11 Analyzed: 12/11/11								
C10-C28 (DRO)	ND	50	mg/kg								
<i>Surrogate: o-Terphenyl</i>	12.2		"	12.5		97.8	88.8-124				
LCS (1121008-BS1)			Prepared: 12/10/11 Analyzed: 12/11/11								
C10-C28 (DRO)	569	50	mg/kg	501		114	81.4-129			9.26	
LCS Dup (1121008-BSD1)			Prepared: 12/10/11 Analyzed: 12/11/11								
C10-C28 (DRO)	569	50	mg/kg	501		114	81.4-129	0.0968		9.26	
Matrix Spike (1121008-MS1)			Source: R112063-01			Prepared: 12/10/11 Analyzed: 12/11/11					
C10-C28 (DRO)	580	50	mg/kg	501	125	90.9	77.8-133			8.48	
Matrix Spike Dup (1121008-MSD1)			Source: R112063-01			Prepared: 12/10/11 Analyzed: 12/11/11					
C10-C28 (DRO)	579	50	mg/kg	501	125	90.6	77.8-133	0.278		8.48	

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Arvada CO, 80003

Project: PDC - Olson 13-23,29

Project Number: 0188-11090
Project Manager: Brian Dodek

Reported:
12/13/11 08:30

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 1121009 - EPA 5030 Soil MS

Blank (1121009-BLK1)

Prepared: 12/10/11 Analyzed: 12/11/11

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	"							
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0386</i>		<i>"</i>	<i>0.0400</i>		<i>96.4</i>	<i>67.4-143</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0393</i>		<i>"</i>	<i>0.0400</i>		<i>98.2</i>	<i>77.3-114</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0381</i>		<i>"</i>	<i>0.0400</i>		<i>95.2</i>	<i>78.4-125</i>			

LCS (1121009-BS1)

Prepared: 12/10/11 Analyzed: 12/11/11

Naphthalene	ND	0.0050	mg/kg				67.8-151		20	
Benzene	0.0864	0.0050	"	0.100		86.4	61-139	4.91	11.1	
Toluene	0.0896	0.0050	"	0.100		89.6	64-132	8.12	10.9	
Ethylbenzene	0.0931	0.0050	"	0.100		93.1	68.7-135	12.5	20	
m,p-Xylene	0.189	0.010	"	0.200		94.4	70.4-129	14.5	20	
o-Xylene	0.0932	0.0050	"	0.100		93.2	66.9-126	14.1	20	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0392</i>		<i>"</i>	<i>0.0400</i>		<i>97.9</i>	<i>67.4-143</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0399</i>		<i>"</i>	<i>0.0400</i>		<i>99.8</i>	<i>77.3-114</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0384</i>		<i>"</i>	<i>0.0400</i>		<i>96.1</i>	<i>78.4-125</i>			

LCS Dup (1121009-BSD1)

Prepared: 12/10/11 Analyzed: 12/11/11

Naphthalene	ND	0.0050	mg/kg				67.8-151		20	
Benzene	0.0822	0.0050	"	0.100		82.2	61-139	4.91	11.1	
Toluene	0.0826	0.0050	"	0.100		82.6	64-132	8.12	10.9	
Ethylbenzene	0.106	0.0050	"	0.100		106	68.7-135	12.5	20	
m,p-Xylene	0.218	0.010	"	0.200		109	70.4-129	14.5	20	
o-Xylene	0.107	0.0050	"	0.100		107	66.9-126	14.1	20	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0416</i>		<i>"</i>	<i>0.0400</i>		<i>104</i>	<i>67.4-143</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0391</i>		<i>"</i>	<i>0.0400</i>		<i>97.6</i>	<i>77.3-114</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0442</i>		<i>"</i>	<i>0.0400</i>		<i>111</i>	<i>78.4-125</i>			

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 - Olson 13-23,29

Project Number: 0188-11090
Project Manager: Brian Dodek

Reported:
12/13/11 08:30

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 1121009 - EPA 5030 Soil MS

Matrix Spike (1121009-MS1)

Source: R112049-01

Prepared: 12/10/11

Analyzed: 12/11/11

Naphthalene	ND	0.0050	mg/kg	0.00	0.00		26.4-144		20	
Benzene	0.0855	0.0050	"	0.100	0.00	85.5	42.9-137		17.9	
Toluene	0.0888	0.0050	"	0.100	0.00	88.8	42.6-130		11.9	
Ethylbenzene	0.0901	0.0050	"	0.100	0.00	90.1	39-133		20	
m,p-Xylene	0.185	0.010	"	0.200	0.00	92.3	34.7-134		20	
o-Xylene	0.0902	0.0050	"	0.100	0.00	90.2	41.3-126		20	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0412</i>		<i>"</i>	<i>0.0400</i>		<i>103</i>	<i>67.4-143</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0392</i>		<i>"</i>	<i>0.0400</i>		<i>98.1</i>	<i>77.3-114</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0386</i>		<i>"</i>	<i>0.0400</i>		<i>96.4</i>	<i>78.4-125</i>			

Matrix Spike Dup (1121009-MSD1)

Source: R112049-01

Prepared: 12/10/11

Analyzed: 12/11/11

Naphthalene	ND	0.0050	mg/kg	0.00	0.00		26.4-144		20	
Benzene	0.0890	0.0050	"	0.100	0.00	89.0	42.9-137	3.95	17.9	
Toluene	0.0913	0.0050	"	0.100	0.00	91.3	42.6-130	2.77	11.9	
Ethylbenzene	0.0927	0.0050	"	0.100	0.00	92.7	39-133	2.89	20	
m,p-Xylene	0.190	0.010	"	0.200	0.00	95.1	34.7-134	3.01	20	
o-Xylene	0.0920	0.0050	"	0.100	0.00	92.0	41.3-126	1.97	20	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0420</i>		<i>"</i>	<i>0.0400</i>		<i>105</i>	<i>67.4-143</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0400</i>		<i>"</i>	<i>0.0400</i>		<i>100</i>	<i>77.3-114</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0382</i>		<i>"</i>	<i>0.0400</i>		<i>95.5</i>	<i>78.4-125</i>			

Summit Scientific

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

Project: PDC - Olson 13-23,29

Project Number: 0188-11090
Project Manager: Brian Dodek

Reported:
12/13/11 08:30

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

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.

Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

January 25, 2012

Brian Humphrey
Tasman Geosciences
5690 Webster Street
Arvada, CO 80002

RE: PDC - Olson 13,14,23,24-29

Enclosed are the results of analyses for samples received by Summit Scientific on 01/23/12 17:55. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Paul Shrewsbury For Ben Shrewsbury
President / Laboratory Director



Tasman Geosciences
5690 Webster Street
Arvada CO, 80002

Project: PDC - Olson 13,14,23,24-29

Project Number: [none]
Project Manager: Brian Humphrey

Reported:
01/25/12 15:57

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH03-19.5	R201147-01	Soil	01/23/12 10:35	01/23/12 17:55
BH06-17.5-18.5	R201147-02	Soil	01/23/12 12:30	01/23/12 17:55

Summit Scientific

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Tasman Geosciences
5690 Webster Street
Arvada CO, 80002

Project: PDC - Olson 13,14,23,24-29

Project Number: [none]
Project Manager: Brian Humphrey

Reported:
01/25/12 15:57

BH03-19.5
R201147-01 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/23/12 10:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	2012303	01/23/12	01/23/12	8015 Full Carbon Chain	

Date Sampled: **01/23/12 10:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		94.2 %	80-124		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/23/12 10:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.0050	mg/kg	1	2012302	01/23/12	01/25/12	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: **01/23/12 10:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		73.1 %	67.4-143		"	"	"	"	
Surrogate: Toluene-d8		91.8 %	77.3-114		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		81.8 %	78.4-125		"	"	"	"	

Summit Scientific

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Tasman Geosciences
5690 Webster Street
Arvada CO, 80002

Project: PDC - Olson 13,14,23,24-29

Project Number: [none]
Project Manager: Brian Humphrey

Reported:
01/25/12 15:57

BH06-17.5-18.5
R201147-02 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/23/12 12:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	890	50	mg/kg	1	2012303	01/23/12	01/23/12	8015 Full Carbon Chain	

Date Sampled: **01/23/12 12:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		101 %	80-124		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/23/12 12:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	0.89	0.050	mg/kg	10	2012302	01/23/12	01/25/12	EPA 8260B	
Benzene	0.024	0.0050	"	1	"	"	"	"	
Toluene	0.59	0.050	"	10	"	"	"	"	
Ethylbenzene	0.30	0.0050	"	1	"	"	"	"	
m,p-Xylene	5.1	0.10	"	10	"	"	"	"	
o-Xylene	2.2	0.050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	270	5.0	"	"	"	"	"	"	

Date Sampled: **01/23/12 12:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		90.5 %	67.4-143		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		113 %	77.3-114		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		99.3 %	78.4-125		"	"	"	"	

Summit Scientific

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Tasman Geosciences
5690 Webster Street
Arvada CO, 80002

Project: PDC - Olson 13,14,23,24-29

Project Number: [none]
Project Manager: Brian Humphrey

Reported:
01/25/12 15:57

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch 2012302 - EPA 5030 Soil MS

Blank (2012302-BLK1)

Prepared: 01/23/12 Analyzed: 01/25/12

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	"								
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0368</i>		<i>"</i>	<i>0.0397</i>	<i>92.8</i>	<i>67.4-143</i>					
<i>Surrogate: Toluene-d8</i>	<i>0.0397</i>		<i>"</i>	<i>0.0400</i>	<i>99.2</i>	<i>77.3-114</i>					
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0415</i>		<i>"</i>	<i>0.0400</i>	<i>104</i>	<i>78.4-125</i>					

LCS (2012302-BS1)

Prepared: 01/23/12 Analyzed: 01/25/12

Naphthalene	ND	0.0050	mg/kg			67.8-151			20		
Benzene	0.0889	0.0050	"	0.100	88.9	61-139			11.1		
Toluene	0.0965	0.0050	"	0.100	96.5	64-132			10.9		
Ethylbenzene	0.107	0.0050	"	0.100	107	68.7-135			20		
m,p-Xylene	0.250	0.010	"	0.200	125	70.4-129			20		
o-Xylene	0.107	0.0050	"	0.100	107	66.9-126			20		
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0477</i>		<i>"</i>	<i>0.0397</i>	<i>120</i>	<i>67.4-143</i>					
<i>Surrogate: Toluene-d8</i>	<i>0.0410</i>		<i>"</i>	<i>0.0400</i>	<i>103</i>	<i>77.3-114</i>					
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0408</i>		<i>"</i>	<i>0.0400</i>	<i>102</i>	<i>78.4-125</i>					

LCS Dup (2012302-BSD1)

Prepared: 01/23/12 Analyzed: 01/25/12

Naphthalene	ND	0.0050	mg/kg			67.8-151			20		
Benzene	0.0817	0.0050	"	0.100	81.7	61-139	8.44		11.1		
Toluene	0.0929	0.0050	"	0.100	92.9	64-132	3.86		10.9		
Ethylbenzene	0.103	0.0050	"	0.100	103	68.7-135	4.32		20		
m,p-Xylene	0.238	0.010	"	0.200	119	70.4-129	4.93		20		
o-Xylene	0.104	0.0050	"	0.100	104	66.9-126	2.99		20		
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0455</i>		<i>"</i>	<i>0.0397</i>	<i>115</i>	<i>67.4-143</i>					
<i>Surrogate: Toluene-d8</i>	<i>0.0415</i>		<i>"</i>	<i>0.0400</i>	<i>104</i>	<i>77.3-114</i>					
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0408</i>		<i>"</i>	<i>0.0400</i>	<i>102</i>	<i>78.4-125</i>					

Summit Scientific

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Tasman Geosciences
5690 Webster Street
Arvada CO, 80002

Project: PDC - Olson 13,14,23,24-29

Project Number: [none]
Project Manager: Brian Humphrey

Reported:
01/25/12 15:57

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 2012302 - EPA 5030 Soil MS

Matrix Spike (2012302-MS1)	Source: R201126-01			Prepared: 01/23/12		Analyzed: 01/25/12				
Naphthalene	ND	0.0050	mg/kg	0.00	0.00	26.4	144	20		
Benzene	0.0760	0.0050	"	0.100	0.00	76.0	42.9-137	17.9		
Toluene	0.0768	0.0050	"	0.100	0.00	76.8	42.6-130	11.9		
Ethylbenzene	0.0684	0.0050	"	0.100	0.00	68.4	39-133	20		
m,p-Xylene	0.139	0.010	"	0.200	0.00	69.3	34.7-134	20		
o-Xylene	0.0733	0.0050	"	0.100	0.00	73.3	41.3-126	20		
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0393</i>		<i>"</i>	<i>0.0397</i>		<i>99.1</i>	<i>67.4-143</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0410</i>		<i>"</i>	<i>0.0400</i>		<i>102</i>	<i>77.3-114</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0414</i>		<i>"</i>	<i>0.0400</i>		<i>103</i>	<i>78.4-125</i>			

Matrix Spike Dup (2012302-MSD1)	Source: R201126-01			Prepared: 01/23/12		Analyzed: 01/25/12				
Naphthalene	ND	0.0050	mg/kg	0.00	0.00	26.4	144	20		
Benzene	0.0728	0.0050	"	0.100	0.00	72.8	42.9-137	4.23	17.9	
Toluene	0.0772	0.0050	"	0.100	0.00	77.2	42.6-130	0.507	11.9	
Ethylbenzene	0.0740	0.0050	"	0.100	0.00	74.0	39-133	7.88	20	
m,p-Xylene	0.158	0.010	"	0.200	0.00	78.9	34.7-134	13.0	20	
o-Xylene	0.0792	0.0050	"	0.100	0.00	79.2	41.3-126	7.67	20	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0341</i>		<i>"</i>	<i>0.0397</i>		<i>85.9</i>	<i>67.4-143</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0398</i>		<i>"</i>	<i>0.0400</i>		<i>99.4</i>	<i>77.3-114</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0360</i>		<i>"</i>	<i>0.0400</i>		<i>90.1</i>	<i>78.4-125</i>			

Summit Scientific

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Tasman Geosciences
5690 Webster Street
Arvada CO, 80002

Project: PDC - Olson 13,14,23,24-29

Project Number: [none]
Project Manager: Brian Humphrey

Reported:
01/25/12 15:57

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

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.