

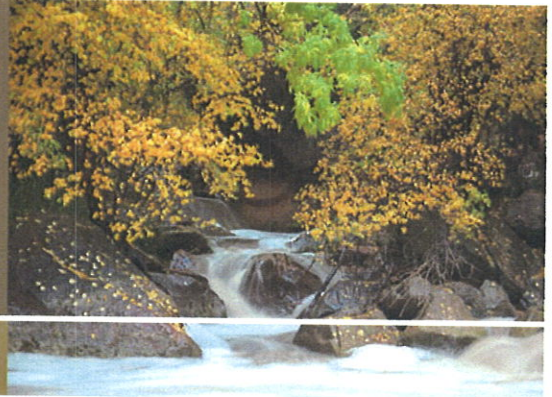
SHARP



ENVIRONMENTAL

CECIL LAKE CO-OPERATIVE & GAS STATION

*A report prepared for Mr. Craig Neudorf and Mrs. Vicki Hess*



by  
SHARP Environmental (2000) Ltd.  
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November 11, 2007

## INTRODUCTION

On behalf of Mr. Craig Neudorf and Mrs. Vicki Hess, SHARP Environmental (2000) Ltd. (SHARP Environmental) has completed a limited environmental site investigation to assess the soil quality within specific boreholes at the Cecil Lake Co-operative and Gas Station (Cecil Lake Store). The following report presents a summary of the field activities and results of chemical analyses.

### History

The Cecil Lake Store is located at Lot 1, Section 23, Township 84, Range 17 West of the 6<sup>th</sup> Meridian, Peace River District (Plan Number 11545). Based upon the information obtained from informal interviews, former correspondence, draft reports and lab analyses, SHARP Environmental was able to gain a limited understanding regarding the history of the site.

The site is currently being used as a fuel dispensing location with an above ground storage tank for both diesel and gasoline. Somewhere between the years 1986 and 2001, there were underground gasoline and diesel tanks placed onsite (north and west of the store, respectively) for storage and sale distribution. Prior to 1986, the Cecil Lake Store was used as a small depot for bulk sales of oil, kerosene and varsol. A copy of the original survey plan is located in Appendix A.

In May of 2001, the Cecil Lake Co-operative Association removed the underground storage tanks and after further characterization of the site, remediated the soils beneath the tanks. As the final draft forms of the report by Pioneer Land Services Ltd. were lost in a fire, exact information regarding the remediation process has been lost. As previously mentioned, draft forms of the reports, correspondence, informal interviews and former lab certificates piece together the history of the remediation process that was undertaken in 2001. An unknown total amount of soil was removed with an excavator from beneath the diesel storage tank that bordered the west edge of the property line. The excavated area was backfilled. Additional soil was removed from in front of the store where a gasoline pump was located. Information regarding the site indicates that contaminated soil exists beneath the Cecil Lake Store building, however, the soils were only remediated up to the front limits of the store/building. Miss Piazza was told that a poly liner had been placed between the excavated area and the store front and the excavation area was backfilled.

SHARP Environmental was asked by Mr. Neudorf and Mrs. Hess to undertake a limited environmental investigation. On October 26, 2007, Michelle Piazza, B.A. Geog., A. Ag., undertook the process of collecting soil samples from the Cecil Lake Store property. Miss Piazza previously discussed with Mr. Neudorf and Mrs. Hess the former locations of infrastructure onsite and it was their decision regarding the location where the soils were to be sampled. Mr. Wayne Bell of the Cecil Lake Co-operative Association arrived onsite to discuss with Miss Piazza the activities that occurred during the first remedial investigation. After discussions with Mr. Bell and Mr. Neudorf, the location of the soil samples that were to be collected from within the former vicinity of the storage tanks and/or contaminated soil, were confirmed.

## **SITE ACTIVITIES**

On October 26, 2007, a total of seven (7) boreholes were drilled to a maximum depth of five (5) metres below ground surface. BH1, BH2, BH5, BH6 and BH7 were drilled within what was indicated by Mr. Neudorf as being the former location of an underground diesel storage tank. BH3 and BH4 were drilled in front of the Cecil Lake Store in the informed vicinity of the former gasoline island.

### **Soil Sampling**

All precautions were taken to minimize downhole smearing effects and to collect a least disturbed sample. Soil samples were collected with a track-mounted coring unit. An unused plastic core was used for each sample recovery. A clean latex glove was used to collect each sample to minimize the risk of cross-contamination. Soil samples for quantitative analysis were collected in clean, laboratory-supplied glass jars. Soil samples were recovered from each borehole for visual observation and for laboratory analyses.

## **REMEDIAL STANDARDS**

### **Soil Standards**

Soil standards are taken from the BC Contaminated Site Regulations (BC CSR) and are either generic or matrix based. The generic soil standards specified in Schedule 4 and 5 of the BC CSR are based on the future land use at the site. The matrix based standards specified in Schedule 5 of the CSR are based on future land use and the most conservative standard for a variety of factors. Those factors applicable to the site are:

- a) human health protection from the intake of contaminated soil;
- b) human health protection for groundwater used for drinking water;
- c) environmental protection for toxicity to soil invertebrates and plants;
- d) environmental protection for major microbial functional impairment;
- e) environmental protection for livestock ingesting soil or fodder;
- f) environmental protection for groundwater flow to surface water used by aquatic life (freshwater); and
- g) environmental protection for groundwater used for livestock watering.

Under the BC CSR, samples obtained from sites within the ALR are compared to BC CSR Agricultural Land Use (AL) standards from 0.0 to 3.0 metres. All samples taken from depths greater than three metres are compared to BC CSR Commercial Land Use (CL) Standards.

## **POTENTIAL CONTAMINANTS OF CONCERN**

The potential contaminants of concern (PCOC) that were determined to be associated with this site were benzene, toluene, ethylbenzene and total xylenes (BTEX), volatile petroleum hydrocarbons with the exception of BTEX (VPH), light extractable petroleum hydrocarbons with the exception of naphthalene and phenanthrene (LEPH), heavy extractable petroleum hydrocarbons with the exception of benz (a) anthracene, benzo (b) fluoranthene, benzo (k) fluoranthene, benzo (a) pyrene, dibenz (a,h) anthracene, ideno (1,2,3-c,d) pyrene and pyrene (HEPH) and polycyclic aromatic hydrocarbons (PAH's).

## **RESULTS OF THE INVESTIGATION**

### **Stratigraphy**

The soils that were encountered were generally brown, admixed and compacted silty clay with gravel and rock mixed throughout. The majority of the soils had a faint to strong hydrocarbon odour. A sand seam was evidenced in BH2 and BH5 at varying depths between 3.6-4.1 metres. Detailed descriptions of the soil profile at each location are presented in the appended borehole logs (Appendix B).

## **RESULTS OF LABORATORY ANALYSES**

Chemical analyses were conducted by AGAT Laboratories of Calgary, Alberta. Copies of the laboratory certificates are included in Appendix C.

### **Soil Analytical Results**

All samples were analyzed for the following hydrocarbon contaminants of concern: BTEX, VPH, PAH, LEPH and HEPH.

The results of analyses completed on soil samples recovered during the site investigation are summarized in Table 1. These results were compared with the generic and matrix based soil standards for AL and CL standards as specified in Schedule 4 and 5 of the BC CSR.

#### *Petroleum Hydrocarbons*

Nine samples were collected and analyzed for petroleum hydrocarbon concentrations from the seven boreholes drilled. Of the nine samples that were collected, three of the samples indicated that there were petroleum hydrocarbon levels above the CSR allowable limits within the boreholes. BH2 (4.5-5.0 m) exceeded the BC CSR CL standards for benzene and LEPH, BH3

(3.0-3.5 m) exceeded the BC CSR CL standards for benzene and BH5 (3.6-4.1 m) did not meet the BC CSR CL standards for benzene and LEPH.

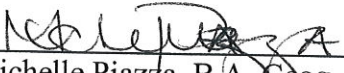
The exceeded limits of benzene and/or LEPH from borehole 2 and 5 coincide with a sand seam that was found in the borehole samples at varying depths from between 3.0-4.1 metres. BH3 (4.5-5.0 m) was collected from the location of the former gasoline island and did not coincide with any particular soil stratigraphy.


## CONCLUSION

In advancing seven boreholes at various locations on the Cecil Lake Store property, SHARP Environmental found, through chemical analyses, the presence of impacted soil. The impacted soil was identified in 3 of the 7 boreholes. The contaminants identified are benzene and Light Extractable Petroleum Hydrocarbons. The extent of the impacted soil has not been delineated.

We trust that the foregoing information is satisfactory for your present requirements. Should you have any questions, please contact the undersigned.

Yours truly,

  
\_\_\_\_\_  
Michelle Piazza, B.A. Geog., A.Ag.  
Project Consultant  
SHARP Environmental (2000) Ltd.

  
\_\_\_\_\_  
Darren Snider, A.Sc.T  
Project Manager  
SHARP Environmental (2000) Ltd.

Drawing 1: Site Sketch

Drawing 2: Sample Locations

Table 1: Analytical Results of Petroleum Hydrocarbons in the Soil

Appendix A: Survey Plan

Appendix B: Borehole Logs

Appendix C: Copies of the Laboratory Certificates

Appendix D: Copies of correspondence and draft reports

Appendix E: Copies of previous Laboratory Certificates

Project: Cecil Lake Co-Operative and Gas Station  
 Report to: Mr. Craig Neudorf and Mrs. Vicki Hess  
 AGAT Work Order: 07F246797

Table 1: Analytical results for Petroleum Hydrocarbons levels in Soil

Sample ID	Sample Depth Date Sampled Matrix	BH1 0.0-0.5 m 26-Oct-07	BH1 2.0-2.5 m 26-Oct-07	BH1 3.5-4.0 m 26-Oct-07	BH2 0.5-1.0 m 26-Oct-07	BH2 4.5-5.0 m 26-Oct-07	BC CSR Agricultural Use (AL) standards <sup>a,b,c</sup>	BC CSR Commercial Land Use (CL) standards <sup>a,b,c</sup>
	Unit	Soil	Soil	Soil	Soil	Soil		
Benzene	mg/kg	0.01	0.02	0.04	<0.01	0.09	0.04 <sup>d</sup>	0.04 <sup>d</sup>
Toluene	mg/kg	0.14	0.13	<0.05	<0.05	<0.05	1.5 <sup>c</sup>	2.5 <sup>d</sup>
Ethylbenzene	mg/kg	<0.02	<0.02	0.12	<0.02	0.29	1 <sup>c</sup>	7 <sup>d</sup>
Xylenes	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	0.1 <sup>c</sup>	20 <sup>d</sup>
Styrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	0.1	5
VPH	mg/kg	<10	<10	<10	<10	40	200	200
LEPH	mg/kg	150	70	70	40	2990	1,000	2,000
HEPH	mg/kg	650	330	70	300	300	1,000	2,000
Naphthalene	mg/kg	<0.05	<0.05	0.25	<0.05	0.42	0.1	50
Phenanthrene	mg/kg	<0.05	<0.05	<0.05	<0.05	0.54	0.1	50
Pyrene	mg/kg	<0.05	<0.05	0.06	<0.05	<0.05	0.1	100
Benzofluranthene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	0.1	10
Benzokjfluoranthene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	0.1	10
Benzoflpyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	0.1 <sup>c</sup>	10
Indeno[1,2,3-cd]pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	0.1	10
Dibenzofluranthracene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	0.1	10
	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	0.1	10

Notes:

- a - BC Contaminated Sites Regulation (CSR) B.C. Reg. 375/96 including amendments up to B.C. Reg. 76/2005
- b - generic numeric standard unless otherwise identified
- c - the soil specific-factors of human intake of contaminated soil and toxicity to soil invertebrates and plants apply to this site
- d - environmental protection of groundwater used for drinking water standard
- e - environmental protection for major microbial functional impairment
- f - environmental protection for groundwater flow to surface water used by aquatic life (freshwater)
- g - environmental protection for livestock ingesting soil and fodder
- h - environmental protection for groundwater used for livestock watering

**Bold and underline values indicate that the BC CSR AL and/or CL standards were exceeded.**

Project: Cecil Lake Co-Operative and Gas Station  
 Report to: Mr. Craig Neudorf and Mrs. Vicki Hess  
 AGAT Work Order: 07F246797

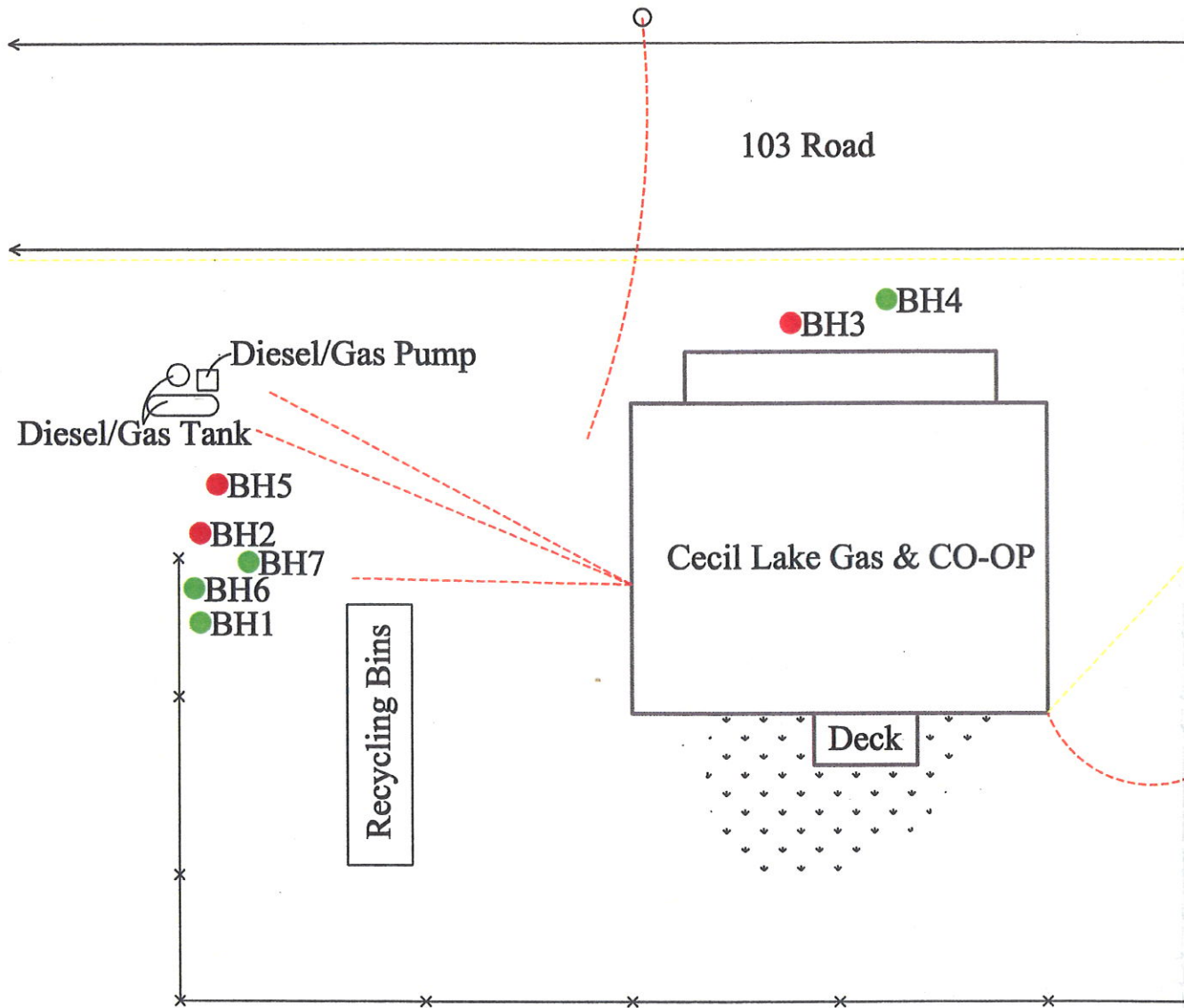
Table 1 continued: Analytical results for Petroleum Hydrocarbons levels in Soil

Sample ID	Unit	BH3 0.5-1.0 m 26-Oct-07 Soil	BH3 3.0-3.5 m 26-Oct-07 Soil	BH4 1.0-1.5 m 26-Oct-07 Soil	BH4 2.0-2.5 m 26-Oct-07 Soil	BH5 3.6-4.1 m 26-Oct-07 Soil	BC CSR Agricultural Land Use (AL) standards <sup>a,b,c</sup>	BC CSR Commercial Land Use (CL) standards <sup>a,b,c</sup>
Benzene	mg/kg	0.01	0.18	<0.01	<0.01	0.18	0.04 <sup>d</sup>	0.04 <sup>d</sup>
Toluene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	0.04 <sup>d</sup>	0.04 <sup>d</sup>
Ethylbenzene	mg/kg	<0.02	0.37	<0.02	<0.02	1.23	1.5 <sup>e</sup>	2.5 <sup>d</sup>
Xylenes	mg/kg	<0.05	0.39	<0.05	<0.05	0.34	1 <sup>e</sup>	7 <sup>d</sup>
Styrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	0.1 <sup>e</sup>	20 <sup>d</sup>
VPH	mg/kg	<10	<10	<10	<10	<0.05	0.1	5
LEPH	mg/kg	<10	<10	<10	<10	120	200	200
HEPH	mg/kg	50	30	50	30	3470	1,000	2,000
Naphthalene	mg/kg	<0.05	<0.05	<0.05	<0.05	370	1,000	2,000
Phenanthrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	0.1	50
Pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	0.1	50
Benzo[a]anthracene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	0.1	100
Benzo[b]fluoranthene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	0.1	10
Benzo[k]fluoranthene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	0.1	10
Benzo[a]pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	0.1	10
Indeno[1,2,3-cd]pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	0.1 <sup>e</sup>	10
Dibenz[a,h]anthracene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	0.1	10
	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	0.1	10

Notes:

- a - BC Contaminated Sites Regulation (CSR) B.C. Reg. 375/96 including amendments up to B.C. Reg. 76/2005
- b - generic numeric standard unless otherwise identified
- c - the soil specific-factors of human intake of contaminated soil and toxicity to soil invertebrates and plants apply to this site
- d - environmental protection of groundwater used for drinking water standard
- e - environmental protection for major microbial functional impairment
- f - environmental protection for groundwater flow to surface water used by aquatic life (freshwater)
- g - environmental protection for livestock ingesting soil and fodder
- h - environmental protection for groundwater used for livestock watering

**Bold and underline values indicate that the BC CSR AL and/or CL standards were exceeded.**

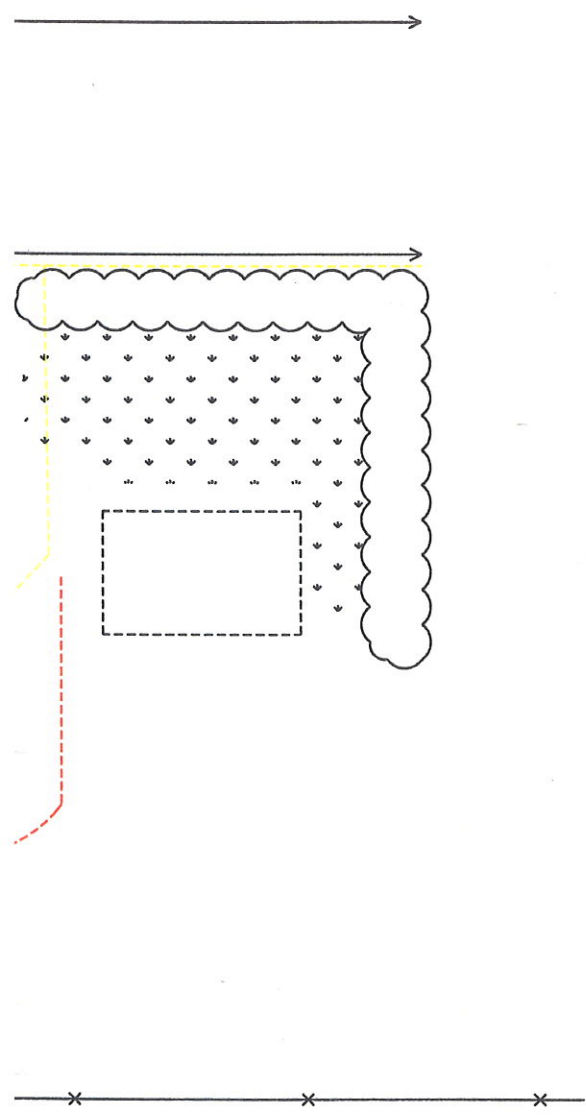


Note: This drawing was compiled by SHARP Environmental (2000) Ltd. on October 18, 2007.  
Borehole locations have not been professionally surveyed.

Contaminants of Concern		
Borehole	Depth	Contaminants
BH2	4.5-5.0 m	Benzene, LEPH
BH3	3.0-3.5 m	Benzene
BH5	3.6-4.1 m	Benzene, LEPH

**LEGEND**

- : Site boundary
- ~ : Poplar tree line
- - - : Buried cable
- - - : Buried pipe
- x-x-x : Fence line
- [•••] : Grass
- [ ] : House
- : Power pole
- BH : Borehole
- : Soil samples recovered from these testhole locations contained contaminants which exceeded the BC Contaminated Sites Regulations (CSR) Agricultural Land (AL) Use Standards and/or the BC Contaminated Sites Regulations (CSR) Commercial Land Use Standards.
- : Soil samples recovered from these testhole locations met all applicable BC Contaminated Sites Regulations (CSR) Agricultural Land (AL) Use Standards and/or BC Contaminated Sites Regulations (CSR) Commercial Land Use Standards.



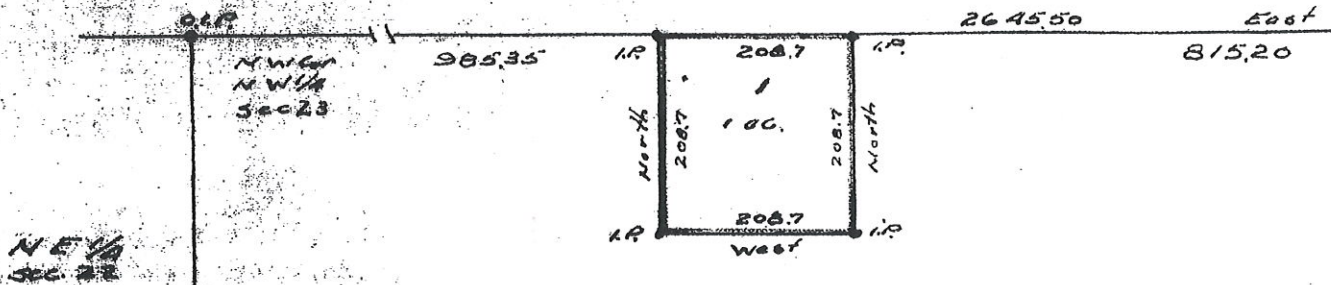
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Project:		Limited Environmental Investigation Cecil Lake Co-Operative & Gas Station	
Title:		Site Sketch	
Scale:	Not to Scale	Drawing No.:	1 of 1
Date:	October 18, 2007	Drawn By:	LE
		Checked By:	MF

**Appendix A**  
**Survey Plan**

Subdivision Plan of Part of  
 Section 23 Township 84 Range  
 except plans B4650 & B  
 Peace River District

Scale 1 inch = 206 feet

Bearings Astronomic derived from



Part of NW 1/4 Sec 23

I, B.C. Lemoll of the Town of Fort St John, British Columbia  
 Surveyor make oath and say that I was present at and did personally  
 superintend the survey represented by this plan and that the  
 bearings and plan are correct. The said survey was completed on  
 11<sup>th</sup> day of May 1960

*B.C. Lemoll*

Sworn before me this 31<sup>st</sup> day of September, 1960

*W. Thompson*

A Notary Public in and for the Province of British Columbia

Approved under the Land Registry Act this 17<sup>th</sup> day of

*[Signature]*  
 Approving Officer, Dept of Highways Victoria BC

*Inspected*

*[Signature]*

*13<sup>th</sup> Dec 1960*

*Inspected*  
*[Signature]*

*10 May 1961*

REAPPROVED:

*[Signature]*  
 APPROVING OFFICER, DEPT. OF HW

MAY 29<sup>th</sup>, 1961

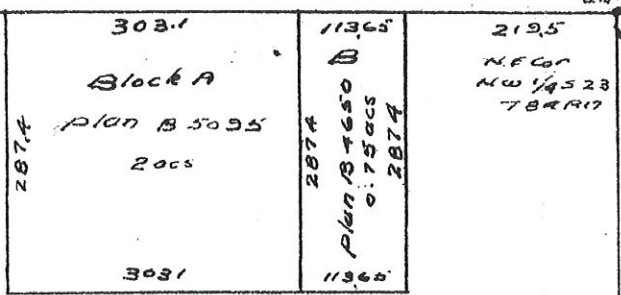
# PLAN 11545

NW 1/4  
7 W/6 M  
5095

Deposited in the Land  
Registry Office Karmloop  
this 14<sup>th</sup> day of June 1964

Iron post found thus o.i.p. Types  
Iron post set thus a IP Types  
North Boundary N.W. 1/4 Section 23

Road



NE 1/4  
Sec. 23

nd  
onally  
survey  
the

Owner Peter L. Smith

Witness - - - - -

FEB. 1, 1964

Owner Rev. Jewley  
The Director, The Veterans' Land Act.

WITNESS: J. Wilkins

5.7.

**Appendix B**  
Borehole Logs

SHARP Environmental (2000) Ltd.  
Fort St John  
British Columbia

Log of BH1

(Page 1 of 1)

Cecil Lake Co-operative and Gas Station

Date Started : October 18, 2007  
Date Completed : October 18, 2007  
Hole Diameter : 3.5 cm  
Drilling Method : Geo Probe  
Sampling Method : Grab samples

Company Rep. : Michelle Piazza  
Northing Coord. : 6242589  
Easting Coord. : 0649823  
Survey By : na  
Logged By : Michelle Piazza

Depth in Meters	GRAPHIC	Sample Type	Blow Count	Sample	Volatile Organic Vapour ppm	Staining	REMARKS
		SOIL DESCRIPTION					
0		Split Spoon	No		0 25 50 75 100	None	No groundwater monitoring well was installed.  Volatile Organic Vapours were not analysed at this site.
0.2		CLAY, dark brown, firm, trace of sand, gravel throughout the core, slight hydrocarbon smell, organic deposits throughout (appears to be grasses) throughout, damp, rock < 1%					
0.4		Black stain with no smell (appears to be decomposing grasses)					
0.6		Wood pieces (similar to mulch) from 0.88 to 0.91 metres					
0.8							
1.0							
1.2							
1.4							
1.6							
1.8		Wood pieces (similar to mulch) from 1.71 to 1.74 metres					
2.0							
2.2							
2.4							
2.6							
2.8							
3.0							
3.2							
3.4		SILTY CLAY, dark brown, very hard, rock and gravel <1%, no smell,					
3.6							
3.8							
4.0							
4.2							
4.4		Slight hydrocarbon smell					
4.6							
4.8							
5.0		CLAY, hard, rock					
5.2		CLAY, natural, gravel and rock < 1%, no smell					
5.4		End of hole was at 5.10 metres. Borehole was abandoned and filled with drill cuttings to the top.					
5.6		Note: Stratification lines are approximate. In-situ transition between soil types may be gradual.					
5.8							
6.0							

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Fort St John  
British Columbia







# Log of BH2

(Page 1 of 1)

Cecil Lake Co-operative and Gas Station

Date Started : October 18, 2007  
Date Completed : October 18, 2007  
Hole Diameter : 3.5 cm  
Drilling Method : Geo Probe  
Sampling Method : Grab samples

Company Rep. : Michelle Piazza  
Northing Coord. : 6242591  
Easting Coord. : 0649829  
Survey By : na  
Logged By : Michelle Piazza

Depth in Meters	GRAPHIC	Sample Type	Blow Count	Sample	Volatile Organic Vapour ppm	Staining	REMARKS
		SOIL DESCRIPTION					
0		<ul style="list-style-type: none"> <li> Split Spoon</li> <li> Least Disturbed Grab Sample</li> <li> Disturbed Grab Sample</li> <li> Shelby Tube</li> </ul>			0 25 50 75 100		
0.2		SILTY CLAY, dark brown, rock throughout (but at less than 1%), hydrocarbon smell evident, pieces of organics throughout the core(s), damp					
0.4							
0.6							
0.8			No			None	No groundwater monitoring well was installed.
1.0		Wood chips (small)					Volatile Organic Vapours were not analysed at this site.
1.2							
1.4							
1.6							
1.8							
2.0							
2.2							
2.4							
2.6							
2.8		Rock layer from 2.82 to 3.02 metres					
3.0							
3.2		CLAY, trace of sand, very hard, brown					
3.4							
3.6							
3.8							
4.0							
4.2							
4.4		Sand seam from 4.42 to 4.7 metres - hydrocarbon sheen (diesel) visible, very moist, black staining					
4.6							
4.8		CLAY, black staining, strong hydrocarbon smell	No			Black	
5.0		sand layer from 4.82-4.84 metres - strong hydrocarbon smell, very moist					
5.2		CLAY, very hard, sand pockets throughout the remainder of the core, orange mottling, slight hydrocarbon smell					
5.4		No hydrocarbon smell at 5.0 metres					
5.6		End of hole was at 5.20 metres. Borehole was abandoned and filled with drill cuttings to the top.					
5.8		Note: Stratification lines are approximate. In-situ transition between soil types may be gradual.					
6.0							

SHARP Environmental (2000) Ltd.  
Fort St John  
British Columbia



# Log of BH3

(Page 1 of 1)

Cecil Lake Co-operative and Gas Station

Date Started : October 18, 2007  
Date Completed : October 18, 2007  
Hole Diameter : 3.5 cm  
Drilling Method : Geo Probe  
Sampling Method : Grab samples

Company Rep. : Michelle Piazza  
Northing Coord. : 6242601  
Easting Coord. : 0649849  
Survey By : na  
Logged By : Michelle Piazza

Depth in Meters	GRAPHIC	Sample Type	Blow Count	Sample	Volatile Organic Vapour ppm	Staining	REMARKS
		SOIL DESCRIPTION					
0		GRAVEL and ROCK					
0.2		SILTY CLAY, dark brown, rock throughout the core(s), very hard, damp, black staining, slight hydrocarbon smell throughout the core(s)					
0.4							
0.6							
0.8			No			None	No groundwater monitoring well was installed.
1.0							
1.2							
1.4							
1.6							
1.8							
2.0							
2.2							
2.4							
2.6							
2.8							
3.0							
3.2			No			Black	
3.4							
3.6							
3.8		SAND, yellow in colour, no smell					
4.0							
4.2		SILTY CLAY, brown-grey, hard, sand, moist, no smell					
4.4							
4.6							
4.8		End of hole was at 4.80 metres as an unnatural object was encountered (possibly cement as per Mr. Wayne Bell).					
5.0							
5.2		Borehole was abandoned and filled with drill cuttings to the top.					
5.4							
5.6		Note: Stratification lines are approximate. In-situ transition between soil types may be gradual.					
5.8							
6.0							







SHARP Environmental (2000) Ltd.  
Fort St John  
British Columbia





# Log of BH7

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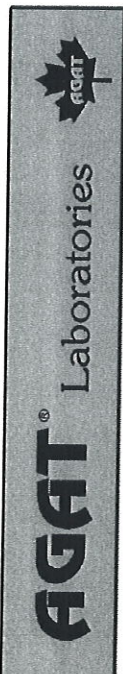
Cecil Lake Co-operative and Gas Station

Date Started : October 18, 2007  
Date Completed : October 18, 2007  
Hole Diameter : 3.5 cm  
Drilling Method : Geo Probe  
Sampling Method : Grab samples

Company Rep. : Michelle Piazza  
Northing Coord. : 6242587  
Easting Coord. : 0649825  
Survey By : na  
Logged By : Michelle Piazza

Depth in Meters	GRAPHIC	Sample Type	Blow Count	Sample	Volatile Organic Vapour ppm	Staining	REMARKS
		SOIL DESCRIPTION					
0		<ul style="list-style-type: none"> <li> Split Spoon</li> <li> Least Disturbed Grab Sample</li> <li> Disturbed Grab Sample</li> <li> Shelby Tube</li> </ul>			0 25 50 75 100		
0.2		SILTY CLAY - CLAY, dark brown, firm, moist, slight hydrocarbon smell throughout core(s)					Mr. Neudrof instructed Miss Piazza not collect or analyze any samples from this borehole as no sand seam was encountered.
0.4							No groundwater monitoring well was installed.
0.6							Volatile Organic Vapours were not analysed at this site.
0.8							
1.0							
1.2							
1.4							
1.6							
1.8							
2.0							
2.2							
2.4							
2.6							
2.8							
3.0							
3.2							
3.4							
3.6							
3.8							
4.0							
4.2							
4.4							
4.6							
4.8							
5.0							
5.2		Natural ground had a slight hydrocarbon smell					
5.4		End of hole was at 5.2 metres. Borehole was abandoned and filled with drill cuttings to the top.					
5.6		Note: Stratification lines are approximate. In-situ transition between soil types may be gradual.					
5.8							
6.0							

**Appendix C**  
Copies of the Laboratory Certificates



**Certificate of Analysis**  
**AGAT WORK ORDER: 07F246797**  
**PROJECT NO: Cecil Lake Co-op**

2910 12TH STREET NE  
 CALGARY, ALBERTA  
 CANADA T2E 7P7

PH: (403)735-2005  
 FAX: (403)735-2771  
 http://www.agatlabs.com

CLIENT NAME: CECIL LAKE CO-OP

ATTENTION TO: Vicki Hess

	DATE RECEIVED: Oct 26, 2007		DATE REPORTED: Oct 31, 2007		SAMPLE TYPE: Soil		
	Unit	G/S	M.D.L	BH1 0-0.5 832890	BH2 0.5-1.0 832893	BH3 0.5-1.0 832895	BH4 1.0-1.5 832897
Benzene	mg/kg		0.01	<0.01	0.09	0.01	<0.01
Toluene	mg/kg		0.05	<0.05	<0.05	<0.05	<0.05
Ethylbenzene	mg/kg		0.02	<0.02	0.29	<0.02	<0.02
Xylenes	mg/kg		0.05	<0.05	<0.05	<0.05	<0.05
Styrene	mg/kg		0.05	<0.05	<0.05	<0.05	<0.05
VH (S C6-10)	mg/kg		10	<10	40	<10	<10
VPH	mg/kg		10	<10	40	<10	<10
EPH (SC10-19)	mg/kg		10	70	2990	<10	<10
EPH (S C19-C32)	mg/kg		10	330	300	<10	<10
LEPH	mg/kg		10	70	2990	50	50
HEPH	mg/kg		10	70	2990	<10	<10
Naphthalene	mg/kg		0.05	<0.05	0.42	<0.05	<0.05
Phenanthrene	mg/kg		0.05	<0.05	0.54	<0.05	<0.05
Pyrene	mg/kg		0.05	<0.05	<0.05	<0.05	<0.05
Benzo[a]anthracene	mg/kg		0.05	<0.05	<0.05	<0.05	<0.05
Benzo[b]fluoranthene	mg/kg		0.05	<0.05	<0.05	<0.05	<0.05
Benzo[k]fluoranthene	mg/kg		0.05	<0.05	<0.05	<0.05	<0.05
Benzo[e]pyrene	mg/kg		0.05	<0.05	<0.05	<0.05	<0.05
Indeno[1,2,3-cd]pyrene	mg/kg		0.05	<0.05	<0.05	<0.05	<0.05
Dibenzo[a,h]anthracene	mg/kg		0.05	<0.05	<0.05	<0.05	<0.05

*Al Mahood*

**Certified By:**



# Certificate of Analysis

AGAT WORK ORDER: 07F246797  
PROJECT NO: Cecil Lake Co-op

2910 12TH STREET NE  
CALGARY, ALBERTA  
CANADA T2E 7P7

PH: (403)735-2005  
FAX: (403)735-2771  
http://www.agatlabs.com

CLIENT NAME: CECIL LAKE CO-OP

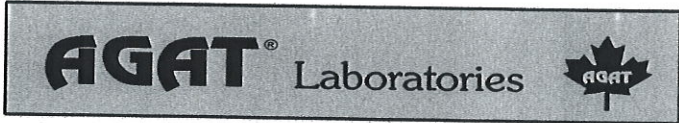
ATTENTION TO: Vicki Hess

M.E.L.P. Extended Site Remediation Analysis - Soil		DATE RECEIVED: Oct 26, 2007	DATE REPORTED: Oct 31, 2007	SAMPLE TYPE: Soil
Unit	G / S	M.D.L	BH4 2.0-2.5	BH5 3.6-4.1
Benzene	mg/kg	0.01	832898	832899
Toluene	mg/kg	0.05	<0.01	0.18
Ethylbenzene	mg/kg	0.02	<0.05	<0.05
Xylenes	mg/kg	0.05	<0.02	1.23
Styrene	mg/kg	0.05	<0.05	0.34
VH (S C6-10)	mg/kg	10	<0.05	<0.05
VPH	mg/kg	10	<10	120
EPH (SC10-19)	mg/kg	10	<10	120
EPH (S C19-C32)	mg/kg	10	30	3470
LEPH	mg/kg	10	40	370
HEPH	mg/kg	10	30	3470
Naphthalene	mg/kg	0.05	40	370
Phenanthrene	mg/kg	0.05	<0.05	1.18
Pyrene	mg/kg	0.05	<0.05	1.79
Benzo[a]anthracene	mg/kg	0.05	<0.05	0.06
Benzo[b]fluoranthene	mg/kg	0.05	<0.05	<0.05
Benzo[k]fluoranthene	mg/kg	0.05	<0.05	<0.05
Benzo[a]pyrene	mg/kg	0.05	<0.05	<0.05
Indeno[1,2,3-cd]pyrene	mg/kg	0.05	<0.05	<0.05
Dibenzo[a,h]anthracene	mg/kg	0.05	<0.05	<0.05

Comments: M.D.L - Method Detection Limit; G / S - Guideline / Standard

832890-832899 Results are based on dry weight of sample.  
VPH results have been corrected for BTEXS contributions.  
LEPH has been corrected for naphthalene and phenanthrene contributions.  
HEPH has been corrected for PAH contributions.  
VPH: Volatile Petroleum Hydrocarbons (n-C6 - n-C10).  
LEPH: Light Extractable Petroleum Hydrocarbons (n-C10 - n-C19); all extractable compounds in the n-C10 to n-C19 range quantified based on n-decane response.  
HEPH: Heavy Extractable Petroleum Hydrocarbons (n-C19 - n-C32); all extractable compounds in the n-C19 to n-C32 range quantified based on n-eicosane response.

Certified By: *Allyson*



## Quality Assurance

CLIENT NAME: CECIL LAKE CO-OP  
 PROJECT NO: Cecil Lake Co-op

AGAT WORK ORDER: 07F246797  
 ATTENTION TO: Vicki Hess

### Trace Organics Analysis

RPT Date: Oct 31, 2007			DUPLICATE			REFERENCE MATERIAL			METHOD BLANK			MATRIX SPIKE			
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

**M.E.L.P. Extended Site Remediation Analysis - Soil**

Benzene (mg/kg)	1893				0.0%	< 0.01	94%	70%	130%	102%	70%	130%	83%	60%	140%
Toluene (mg/kg)	1893				0.0%	< 0.05	91%	70%	130%	103%	70%	130%	85%	60%	140%
Ethylbenzene (mg/kg)	1893				0.0%	< 0.02	92%	70%	130%	105%	70%	130%	87%	60%	140%
Xylenes (mg/kg)	1893				0.0%	< 0.05	94%	70%	130%	107%	70%	130%	89%	60%	140%
Styrene (mg/kg)	1893				0.0%	< 0.05	92%	70%	130%	97%	70%	130%	70%	60%	140%
VH (S C6-10) (mg/kg)	1893				0.0%	< 10	100%	70%	130%	101%	70%	130%	92%	60%	140%
VPH (mg/kg)	1893					< 10		0%	0%		0%	0%		0%	0%
EPH (SC10-19) (mg/kg)	23				0.0%	< 10	104%	70%	130%	88%	70%	130%	117%	60%	140%
EPH (S C19-C32) (mg/kg)	23				43.0%	< 10	104%	70%	130%	91%	70%	130%	119%	60%	140%
Naphthalene (mg/kg)	83				0.0%	< 0.05	87%	70%	130%	108%	70%	130%	97%	60%	140%
Phenanthrene (mg/kg)	83				0.0%	< 0.05	95%	70%	130%	114%	70%	130%	104%	60%	140%
Pyrene (mg/kg)	83				0.0%	< 0.05	97%	70%	130%	109%	70%	130%	102%	60%	140%
Benzo[a]anthracene (mg/kg)	83				0.0%	< 0.05	101%	70%	130%	93%	70%	130%	108%	60%	140%
Benzo[b]fluoranthene (mg/kg)	83				0.0%	< 0.05	78%	70%	130%	94%	70%	130%	95%	60%	140%
Benzo[k]fluoranthene (mg/kg)	83				0.0%	< 0.05	92%	70%	130%	103%	70%	130%	109%	60%	140%
Benzo[a]pyrene (mg/kg)	83				0.0%	< 0.05	87%	70%	130%	94%	70%	130%	99%	60%	140%
Indeno[1,2,3-cd]pyrene (mg/kg)	83				0.0%	< 0.05	83%	70%	130%	101%	70%	130%	100%	60%	140%
Dibenzo[ah]anthracene (mg/kg)	83				0.0%	< 0.05	83%	70%	130%	103%	70%	130%	96%	60%	140%

Certified By: \_\_\_\_\_

**AGAT QUALITY ASSURANCE REPORT**

AGAT Laboratories (Calgary, Mississauga) is accredited by the Standards Council of Canada (SCC) and/or the Canadian Association for Environmental Analytical Laboratories (CAEAL), for specific environmental tests listed in the scope of accreditation. Accreditations are location and parameter specific and a complete listing of parameters is available from www.scc.ca and/or www.caeal.ca. The tests in this report may not necessarily be included in the scope of this accreditation.

AGAT Laboratories Calgary is accredited by the American Industrial Hygiene Association (AIHA) for specific tests.

2910 12TH STREET NE  
CALGARY, ALBERTA  
CANADA T2E 7P7

**AGAT**® Laboratories



PH: (403)735-2005  
FAX: (403)735-2771  
<http://www.agatlabs.com>

## Method Summary

CLIENT NAME: CECIL LAKE CO-OP

AGAT WORK ORDER: 07F246797

PROJECT NO: Cecil Lake Co-op

ATTENTION TO: Vicki Hess

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
<b>Trace Organics Analysis</b>			
Benzene	TO 0340	EPA SW-846 5035/8260	GC/MS
Toluene	TO 0340	EPA SW-846 5035/8260	GC/MS
Ethylbenzene	TO 0340	EPA SW-846 5035/8260	GC/MS
Xylenes	TO 0340	EPA SW-846 5035/8260	GC/MS
Styrene	TO 0340	EPA SW-846 5035/8260	GC/MS
VH (S C6-10)	TO 0530	EPA SW-846 3810/8260 & B.C. Env.	GC/MS
VPH	TO 0530	EPA SW-846 3810/8260 & B.C. Env.	GC/MS
EPH (SC10-19)	TO 0510	B.C. ENVIRONMENT	GC/FID
EPH (S C19-C32)	TO 0510	B.C. ENVIRONMENT	GC/FID
LEPH	TO 0510	B.C. ENVIRONMENT	GC/FID
HEPH	TO 0510	B.C. ENVIRONMENT	GC/FID
Naphthalene	TO 0500	EPA SW-846 3545/8270	GC/MS
Phenanthrene	TO 0500	EPA SW-846 3545/8270	GC/MS
Pyrene	TO 0500	EPA SW-846 3545/8270	GC/MS
Benzo[a]anthracene	TO 0500	EPA SW-846 3545/8270	GC/MS
Benzo[b]fluoranthene	TO 0500	EPA SW-846 3545/8270	GC/MS
Benzo[k]fluoranthene	TO 0500	EPA SW-846 3545/8270	GC/MS
Benzo[a]pyrene	TO 0500	EPA SW-846 3545/8270	GC/MS
Indeno[1,2,3-cd]pyrene	TO 0500	EPA SW-846 3545/8270	GC/MS
Dibenzo[ah]anthracene	TO 0500	EPA SW-846 3545/8270	GC/MS

**Appendix D**  
Copies of Correspondance  
and Draft Reports



# Land Title System

## Search Results

For: [ PA72601 ] [ MICKEY, JOELLE ]

May 10, 2001

As Of: 01/05/10 11:12:28

11:12:30 AM

Main Menu

Check for Prints

Print Only Current Title Info.

Print Current & Cancelled Title Info.

Search Again

Help ?

Folio: |

### Search by Title Displaying Current Information

#### Title Displayed

PRINCE GEORGE LAND TITLE OFFICE  
DECLARED VALUE

TITLE NO: S473  
FROM TITLE NO: 71477M

APPLICATION FOR REGISTRATION RECEIVED ON: 08 JANUARY, 1982  
ENTERED: 12 JANUARY, 1982

REGISTERED OWNER IN FEE SIMPLE:  
CECIL LAKE CO-OPERATIVE ASSOCIATION  
C/O MAYNARD REPLEY  
CECIL LAKE B.C.  
VOC 1G0

TAXATION AUTHORITY:  
PEACE RIVER ASSESSMENT DISTRICT

DESCRIPTION OF LAND:  
PARCEL IDENTIFIER: 012-522-031  
LOT 1 SECTION 23 TOWNSHIP 84 RANGE 17 WEST OF THE 6TH MERIDIAN PEACE RIVER  
DISTRICT PLAN 11545

#### LEGAL NOTATIONS:

ZONING REGULATION AND PLAN UNDER THE AERONAUTICS ACT (CANADA) FILED  
19/07/1982 UNDER NO. S19248 (PLAN 28487).

#### CHARGES, LIENS AND INTERESTS:

NATURE OF CHARGE  
CHARGE NUMBER      DATE      TIME

#### MORTGAGE

PF1069      1992-01-13      14:52

REGISTERED OWNER OF CHARGE:  
NORTH PEACE SAVINGS AND CREDIT UNION  
PF1069

"CAUTION - CHARGES MAY NOT APPEAR IN ORDER OF PRIORITY. SEE SECTION 28, L.T.A."

**PIONEER**  
LAND SERVICES LTD.



May 16, 2001

Pioneer File #: R-1160-01

Mrs. A. Knezevic-Stevalovic  
Waste Management Branch  
Pollution Prevention  
Ministry of Environment, Lands and Parks  
325 - 1011 Fourth Ave.  
Prince George, BC  
V2L 3H9

Dear Mrs. Knezevic-Stevalovic

**RE: Notification of an Independent Remediation on the Cecil Lake Co-op Gas Station  
Underground Fuel Storage Tanks**

This letter is to provide formal notification that Pioneer Land Services Ltd. has been retained by the Cecil Lake Co-operative Association to supervise an Independent Remediation of their property. The subject property is presently a fuel dispensing station with both gasoline and diesel storage and sales. Also, up until 15 years ago, the site was a small depot for bulk sales of oil, kerosene and varsol. Presently, there are four (4) underground fuel storage tanks that will be excavated and removed from the site. As well as the tanks, spillage from the bulk storage area will be remediated. Please refer to the attached Site Profile form (Schedule 1) for further details of the site.

Due to the upcoming sale of this property and concern for cost savings, the Co-op Board has decided to proceed with tank excavation and manage any contamination accordingly, rather than commence with an intensive and costly Phase 2 Investigation. Tank excavation and site remediation is to commence on May 25, 2001.

#### Tentative Remediation Plan

The objective of the site remediation will be to remove the underground storage tanks, assess the level of contamination (if any) and remediate the site accordingly based on the assessment and analytical results. Materials from the three areas of concern will be managed separately, and variability within these three areas will subsequently be segregated further, where possible, to ensure that waste volumes are minimized. A bermed containment area will be constructed to temporarily store suspect material until such a time as remediation plans can be implemented. Depending on the level of contamination, this may include returning the fill to the excavations, offsite landfarming, shipment to a regional landfill or shipment to a certified remediation facility. Depending on the treatment required, all necessary documentation and authorization will be sought out from the Ministry of Environment, including Soil Relocation Agreements. In addition to material treatment and / or disposal, confirmatory samples from the excavations will be collected to ensure compliance with appropriate Commercial soil criteria guidelines.

Calgary Office  
1729 - 12th Street S.W.  
Calgary, Alberta  
T2T 3N1  
Bus. (403) 229-2989  
Fax. (403) 244-1202

Edmonton Office  
#270, 8170 - 50th Street  
Edmonton, Alberta  
T6B 1E5  
Bus. (780) 482-1185  
Fax. (780) 468-4325

Grande Prairie Office  
#201, 10537 - 88th Avenue  
Grande Prairie, Alberta  
T8V 4L1  
Bus. (780) 630-7707  
Fax. (780) 532-7711

Lloydminster Office  
#201A, 8209-24th Street  
Lloydminster, Alberta  
T8V 1V8  
Bus. (780) 871-0805  
Fax. (780) 871-0808

Regina Office  
210, 1230 Blackfoot Drive  
Regina, Sask.  
S4S 7G4  
Bus. (306) 584-3044  
Fax. (306) 584-3044

Fort St. John Office  
Mile 51, Alaska Hwy.,  
Box 6089  
Fort St. John, B.C.  
V1J 4H6  
Bus. (250) 785-0666  
Fax. (250) 785-0666

We trust that this meets the requirements of the Independent Remediation notification, as per Section 57 of the Contaminated Sites Regulation. As stated, we will be proceeding with this clean-up in the very near future and will inform you of completion of remediation. If you have any questions or concerns regarding this work, please contact me.

Sincerely,

PIONEER LAND SERVICES LTD.



KEN LATREILLE  
Environmental Planner

cc: Terry Sawchuk, MOE Fort St. John  
Wayne Bell, Cecil Lake Co-operative Association

F:\Cecil Lk Co-op\IndRemediation1160-01.doc

The following electronic version is for informational purposes only.  
The printed version remains the official version.

QUEEN'S PRINTER  
PROVINCE OF BRITISH COLUMBIA

Links to Related Information

Contents

**SCHEDULE 1**

**SITE PROFILE**

**I. CONTACT IDENTIFICATION**

**A. Name of Site Owner:**

Last Bell First Wayne Middle Initial(s) \_\_\_\_\_  
 (and / or, if applicable) Chairman of Board of Directors  
 Company Cecil Lake Co-operative Association  
 Owner's Civic Address General Delivery  
 City Cecil Lake Province/State B.C.  
 Country Canada Postal Code/ZIP V0C 1G0

**B. Person Completing Site Profile *Leave blank if same as above:***

Last \_\_\_\_\_ First \_\_\_\_\_ Middle Initial(s) \_\_\_\_\_  
 (and / or, if applicable)  
 Company \_\_\_\_\_

**C. Person to Contact Regarding the Site Profile:**

Last Latreille First Ken Middle Initial(s) O.  
 (and / or, if applicable)  
 Company Pioneer Land Services Ltd.  
 Mailing Address Box 6069, Mile 51 Alaska Hwy.  
 City Fort St. John, B.C.  
 Province/State \_\_\_\_\_

Country Canada Postal  
 Code/ZIP V1J 4H6  
 Telephone (250...) 785 - 0669 Fax (250...) 785 - 0644

**II. SITE IDENTIFICATION**

**If Legally Titled, Registered Property**

Site Street Address N/A  
 City Cecil Lake, B.C. Postal Code V0C 1G0

PID numbers and associated legal descriptions. *Attach an additional sheet if necessary.*

PID	Legal Description
012-522-031	Lot 1, Sec. 23, Township 04, Range 17, West of the 6th Meridian, Peace River District, Plan # 11545

Total number of titled parcels represented by this site profile is: 1

**If Untitled Crown Land**

1) PIN numbers and associated Land Description. *Attach an additional sheet if necessary*

PID	Land Description
N/A	N/A

Total number of untitled, crown land parcels represented by this site profile is: .....

OR

2) Coordinates (using the North American Datum 1983 convention) for the centre of the site:

Latitude: Degrees 56 Minutes 18 Seconds 14

Longitude: Degrees 120 Minutes 33 Seconds 45

Please attach a map of appropriate scale showing the boundaries of the site.

(and, if available)

Crown land file numbers. Attach an additional sheet if necessary.

N/A

(All the Following Questions Must be Answered.)

III. COMMERCIAL AND INDUSTRIAL PURPOSES OR ACTIVITIES

Please indicate below, in the format of the example provided, which of the industrial and commercial purposes and activities from Schedule 2 have occurred or are occurring on this site.

EXAMPLE:

Schedule 2 Reference	Description
E1	appliance, equipment or engine repair, reconditioning, cleaning or salvage
F10	solvent manufacturing or wholesale bulk storage

Please print legibly. Attach an additional sheet if necessary

Schedule 2 Reference	Description
F5	Petroleum product dispensing facilities, including service stations and cardlocks
F8	Petroleum product wholesale or bulk storage or distribution

IV. AREAS OF POTENTIAL CONCERN			
	Is there currently or to the best of your knowledge has there previously been on the site any (please mark the appropriate column opposite the question):	YES	NO
A	Petroleum, solvent or other polluting substance spills to the environment greater than 100 litres?		X
B	Residue left after removal of piled materials such as chemicals, coal, ore, smelter slag, air quality control system baghouse dust?		X
C	Discarded barrels, drums or tanks?		X

V. FILL MATERIALS			
	Is there currently or to the best of your knowledge has there previously been on the site any deposit of (please mark the appropriate column opposite the question):	YES	NO
A	Fill dirt, soil, gravel, sand or like materials from a contaminated site or from a source used for any of the activities listed under Schedule 2?		X
B	Discarded or waste granular materials such as sand blasting grit, asphalt paving or roofing material, spent foundry casting sands, mine ore, waste rock or float?		X
C	Dredged sediments, or sediments and debris materials originating from locations adjacent to foreshore industrial activities, or municipal sanitary or stormwater discharges?		X

VI. WASTE DISPOSAL			
	Is there currently or to the best of your knowledge has there previously been on the site any landfilling, deposit or dumping in pits, ponds, lagoons or natural depressions of (please mark the appropriate column opposite the question):	YES	NO
A	Materials such as household garbage, mixed municipal refuse, or demolition debris?		X
B	Waste or byproducts such as tank bottoms, residues, sludge, or flocculation precipitates from industrial processes or wastewater treatment?		X
C	Waste products from smelting or mining activities, such as smelter slag, mine tailings, or cull materials from coal processing?		X
D	Waste products from natural gas and oil well drilling activities, such as drilling fluids and muds?		X
E	Waste products from photographic developing or finishing laboratories; asphalt tar roofing manufacturing; boilers, incinerators or other thermal facilities (e.g. ash); appliance, small equipment or engine repair or salvage; dry cleaning operations (e.g. solvents); or automobile and truck parts cleaning or repair?		X

VII. TANKS OR CONTAINERS USED OR STORED			
	Are there currently or to the best of your knowledge have there been previously on the site any (please mark the appropriate column opposite the question):	YES	NO
A	Underground fuel or chemical storage tanks?	X	
B	Above ground fuel or chemical storage tanks? (45 gal drums/5 gal)	X	

VIII. SPECIAL (HAZARDOUS) WASTES OR SUBSTANCES			
	Are there currently or to the best of your knowledge have there been previously on the site any (please mark the appropriate column opposite the question):	YES	NO
A	PCB-containing electrical transformers or capacitors either at grade, attached above ground to poles, located within buildings, or stored?		X
B	Waste asbestos or asbestos containing materials such as pipe wrapping, blown-in insulation or panelling buried?		X
C	Paints, solvents, mineral spirits or waste pest control products or pest control product containers stored in volumes greater than 205 litres? (Varsol)	X	

IX. LEGAL OR REGULATORY ACTIONS OR CONSTRAINTS			
	To the best of your knowledge are there currently any of the following pertaining to the site (please mark the appropriate column opposite the question):	YES	NO
A	Government orders or other notifications pertaining to environmental conditions or quality of soil, water, groundwater or other environmental media?		X
B	Liens to recover costs, restrictive covenants on land use, or other charges or encumbrances, stemming from contaminants or wastes remaining onsite or from other environmental conditions?		X
C	Government notifications relating to past or recurring environmental violations at the site or any facility located on the site?		X

#### X. ADDITIONAL COMMENTS AND EXPLANATIONS

(Note 1: Please list any past or present government orders, permits, approvals, certificates and notifications pertaining to the environmental condition, use or quality of soil, surface water, groundwater or biota at the site.)

Note 2: If completed by a consultant, receiver or trustee, please indicate the type and degree of access to information used to complete this site profile):

**XI. SIGNATURES**

The person completing the site profile states that the above information is true, based on the person's current knowledge as of the date completed.

*Ken Zetser*

01/05/16

Signature of person completing site profile Date completed: (YY-MM-DD)

In collaboration with Wayne Bell, Board Chairman, Cecil Lake  
Co-operative Association.

Top Contents

*Link to the Home Page for:*

- Ministry of Environment, Lands and Parks
- Government of British Columbia
- Legislative Assembly of British Columbia
- Queen's Printer

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### Additional Site Profile information Based on the Preliminary Site Reconnaissance

A site inspection was conducted on May 10, 2001. At this time the Cecil Lake Co-operative Association Board Director Wayne Bell was available to review the site history, areas of concern and desired remediation action.

Three areas of concern have been identified,

1. A gasoline dispensing island with 2 - 1000 gal tanks,  
The gasoline island was installed in 1979,  
The gasoline island is covered in asphalt,  
There was no visible spillage at the gasoline island;
  
2. A diesel dispensing island (formerly gas and diesel) with a 2000 gal and 1000 gal tank respectively,  
The diesel (formerly also gasoline) island has been in use since the early 1960's,  
The gasoline/diesel island is not covered in asphalt,  
There is visible spillage at the diesel island;
  
3. A bulk storage / sales area which has not been in use for over 15 years which historically sold oil, kerosene and varsol area  
The bulk storage area has not been in use for some time but historically there have been small volumes of product spillage onto the ground,  
There was no spillage visible at the bulk storage area;

Mr. Bell has indicated that logs from all tanks have not indicated leakage. Pressure testing of the tanks has not been done on any of the tanks.

The owner of an adjacent property had some concerns of hydrocarbon escape onto his property and commissioned a local environmental company to conduct an assessment. Although the results are not available, it has been determined that the results were below Agricultural guidelines.

The site borders a highway to the North, a wheat field to the West, South and East.

There is a Manager Residence (house) on the property located in the Southeast corner.

There are no water wells in the immediate or surrounding area, water is typically stored in cistern type containers in the area.

The natural land slopes gently (3-5 °) towards the South South-west.

Soil in the Cecil Lake area are typically consist;

- Clay or Clay Loam "A" horizon (~12 cm)
- Clay or silt clay B horizon or (~20 cm)
- Clay BC horizon (~30cm)
- Heavy Clay C horizons (+60 cm)



July 20/01

File: 26250-20/PG0114  
SITE ID: 7243

July 17, 2001

PIONEER LAND SERVICES LTD.  
MILE 51, ALASKA HIGHWAY  
BOX 6069  
FORT ST. JOHN, BC V1J 4H6

Gasoline  
material

Dear Ken Latreille

**Re: Contaminated Soil Relocation Agreement**

The Ministry of Water, Land and Air Protection hereby provides notice that your application for relocation of soils originating from the excavation of gasoline underground storage tank complies with the terms and conditions of the contaminated soil relocation agreement.

We have sent a notice of this agreement to the municipality from which the soil is to be removed and the municipality in which the receiving site is located.

Please note that before soil relocation is effective under section 28.1 of the **Waste Management Act** and section 44 of the *Contaminated Sites Regulation* you are responsible for:

- (i) ensuring that a copy of the notice of soil relocation agreement from BC Environment as required under section 28.1 (9) of the **Waste Management Act**, has been received by
- the municipality from which the soil is removed, and
  - the municipality in which the receiving site is situated,

**OR**

- (ii) waiting at least 96 hours from the time of receiving the approved contaminated soil relocation agreement before moving any contaminated soil.

A copy of the approved Soil Relocation Agreement is attached.

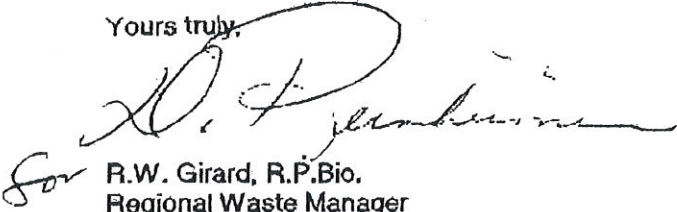
Please note that in addition to exceedence of special waste criteria for leachate ethylbenzene, one sample also exceeds special waste concentration of xylenes in soil. This exceedence has been reflected in correction made to the section B1 of the attached Soil Relocation Agreement.

This agreement does NOT authorize any exemption from the *Special Waste Regulation* (SWR) pertaining to any aspect of transport or management of contaminated material. Upon completion of treatment the subject soils shall be delisted in accordance with the delisting protocol, and material shall not be disposed of in the landfill unless an approval of the landfill owner and an authorization from a manager has been obtained.

Decisions by the manager are appealable under part seven of the **Waste Management Act**.

If you require clarification please contact Andjela Knezevic-Stevanovic at (250) 565-6452.

Yours truly,



R.W. Girard, R.P.Bio.  
Regional Waste Manager  
Omineca-Peace Region

/aks

enclosure

cc. Harold Hansen, Peace River Regional District, Box 810, Dawson Creek, BC V1G 4H8

Shannon Louise Thompson, Box 50, Cecil Lake BC V0C 1G0

Terry Sawchuk, BC Environment, Fort St. John

cc. Harold Hansen, Peace River Regional District, Box 810, Dawson Creek, BC V1G 4H8

Shannon Louise Thompson, Box 50, Cecil Lake BC V0C 1G0

Terry Sawchuk, BC Environment, Fort St. John

July 5, 2001

Pioneer File #: R-1160-01

Mrs. A. Knezevic-Stevalovic  
Waste Management Branch  
Pollution Prevention  
Ministry of Environment, Lands and Parks  
325 - 1011 Fourth Ave.  
Prince George, BC  
V2L 3H9

Dear Mrs. Knezevic-Stevalovic

**RE: Soil Relocation Agreement Application for Gasoline Contaminated Materials  
Originating at the Cecil Lake Co-op Association Service Station - Authorization for  
Special Waste Transport and Treatment**

As noted in the July 4, 2001 letter regarding disposal of diesel materials at the Cecil Lake landfill site, and further to my discussions with Larry Gardner of your office, please find attached an Application for a Contaminated Soil Relocation Agreement. Also find attached an application fee cheque for the sum of \$267.50. This application is for the authorization to transport and treat contaminated soils, classified as Special Waste, originating from the excavation of gasoline underground storage tanks at the Cecil Lake Co-op Service Station, at the Cecil Lake Landfill site. The Peace River Regional District has been contacted and have agreed to this based on the review and authorization by the Ministry of Environment.

Based on sampling of stockpiled materials, there is soil that exceeds Special Waste Criteria for Leachate Ethylbenzene. Results show the Leachate Ethylbenzene number to be 0.40 mg/L and 0.51 mg/L from Discreet 2 and 4 respectively, as compared to the guideline of 0.24 mg/L. All other parameters are below Special Waste Criteria. Additionally, stockpiled material meets the Standards for Management of Hydrocarbon Contaminated soil listed in 41.1 (1) of the Special Waste Regulation.

The following sampling protocol was used to classify the excavated materials. The present stockpile size is approximately 260 m<sup>3</sup> and therefore, a total of 5 samples were taken discreetly and run for the various hydrocarbon parameters, total lead, leachate parameters and Special Waste Oil and Grease. Sample #1 and #2 were from the part of the stockpile which was expected to be the most highly contaminated. It was determined early on that lead was not a concern with this material, and therefore was only run on selected samples. Based on sample results the pile is classified as Special Waste and will be handled as such. Therefore, treatment is necessary to bring the material into the suspect waste category for final disposal. As noted

July 5/01

2082

above, and based on discussions with the Peace River Regional District, we would like to relocate this material to the Cecil lake Landfill site and treat the materials based on the following procedure.

**Transport**

Materials will be manifested for transport from the originating site to the Landfill site

**Proposed Treatment**

Treatment works to be constructed to 55 m x 30 m (0.16 ha)

Double - 6 mm poly plastic lined cell covered with 0.15 m clean clay fill

Treatment cell to be bermed, compacted and ditched to collect run-off water

Material will be stored in <0.3 m lifts

Material will be worked with a hoe or small cultivator weekly

Material will be routinely assessed to determine treatment success and containment integrity

**Delisting Sampling**

Will consist of collection and run for Special Waste Leachate BTEX parameters

Based on a 10 m x 10 m grid for a total of 15 samples, which is 1 sample per 17 m<sup>3</sup> of material

**Final Disposal**

Once treated, delisted and authorized by the Ministry of Environment, the material would be used as an intermediate cover at the landfill

Based on the fact that the contamination is the lighter end of the hydrocarbon spectrum, it is expected that this material will be successfully treated with the procedure outlined above.

We trust that this meets the requirements of a Soil Relocation Agreement application and treatment protocol, please contact me if you require additional information. You can contact me at 250-785-0669 or 250-261-1494.

Sincerely,

**PIONEER LAND SERVICES LTD.**

**KEN LATREILLE**

Environmental Planner

cc: Wayne Bell, Cecil Lake Co-operative Association (Fax 787-5065)  
George Kunz, Peace River Regional District, Dawson Creek (Fax 784-3201)

**PIONEER**  
LAND SERVICES LTD.



July 16, 2001

Pioneer File # R-1160-01

Mrs. A. Knezevic-Stevalovic  
Waste Management Branch  
Pollution Prevention  
Ministry of Environment, Lands and Parks  
325 - 1011 Fourth Ave.  
Prince George, BC  
V2L 3H9

1062

Dear Mrs. Knezevic-Stevalovic

**RE: Additional Information for Soil Relocation Agreements for Diesel and Gasoline Contaminated Soils Originating at the Cecil Lake Co-op Association Service Station**

Further to our discussions on July 11, 2001, regarding the Soil Relocation Agreements for contaminated soils at the Cecil Lake Co-op, please find attached the following requested information. The original signed Soil Relocation Agreements (SRA) for both gasoline and diesel contaminated soils are attached. This includes Shannon L. Thomson as site owner, signatory authorization from Shannon L. Thomson, original signature for Peace River Regional District representative, site plan(attached to SRA), and lab certificates of applicable sample analysis.

The appropriate land use for this site is Commercial and the following soil standards apply to the site.

Parameter	Groundwater Used for Drinking Water	Generic Soil Standards	Agricultural Considerations (Toxicity to Soil Invertebrates and Plants)
Benzene	0.04	-	80
Ethylbenzene	7	-	0.1
Toluene	2.5	-	0.1
Xylene	20	-	0.1
Volatile Petroleum Hydrocarbons	-	200	200
Light Extractable Hydrocarbons	-	2000	1000
Heavy Extractable Hydrocarbons	-	5000	1000
Total Lead	100 (pH <6.0)	-	1000

\*The above noted standards are in ug/g.

\*\* Agricultural Considerations are for the portion of the excavation that approaches the neighboring property line.

Calgary Office  
1729 - 12th Street S.W.  
Calgary, Alberta  
T2T 3N1  
Bus (403) 229-3969  
Fax (403) 244-1202

Edmonton Office  
#270, 8170 - 50th Street  
Edmonton, Alberta  
T6B 1E6  
Bus (780) 462-4486  
Fax (780) 468-4325

Grande Prairie Office  
#201, 10537 - 98th Avenue  
Grande Prairie, Alberta  
T8V 4L1  
Bus (780) 532-7707  
Fax (780) 532-7711

Regina Office  
210, 1230 Blackfoot Drive  
Regina, Sask.  
S4S 7G4  
Bus (306) 584-3044  
Fax (306) 584-3066

Fort St. John Office  
Mile 51, Alaska Hwy.  
Box 6069  
Fort St. John, B.C.  
V1J 4H6  
Bus (250) 785-0668  
Fax (250) 785-0644

July 16/9

Also find attached a copy of the letter from Shannon Thompson indicating that the site will be used for a Service Station in the future.

We trust that this meets the requirements of a Soil Relocation Agreement application, please contact me if you require additional information on this application or project. You can contact me at 250-785-0669 or 250-261-1494.

Sincerely,

PIONEER LAND SERVICES LTD.



KEN LATREILLE  
Environmental Planner

cc: Wayne Bell, Cecil Lake Co-operative Association (Fax 787-5065)  
George Kunz, Peace River Regional District, Dawson Creek (Fax 784-3201)

\\W9\REC-CLIE\Cecil Lk Co-op\MOESoilRelocateAddInfo1160-01.doc

2082



SENT TO YOU BY FAX  
ON July 26/01

File: 26250-20/PG0114  
SITE ID: 7243

July 17, 2001

PIONEER LAND SERVICES LTD.  
MILE 51, ALASKA HIGHWAY  
BOX 6069  
FORT ST. JOHN, BC V1J 4H6

*Diesel  
materials*

Dear Ken Latreille

**Re: Contaminated Soil Relocation Agreement**

The Ministry of Water, Land and Air Protection hereby provides notice that your application for relocation of soils originating from the excavation of diesel underground storage tank complies with the terms and conditions of the contaminated soil relocation agreement.

We have sent a notice of this agreement to the municipality from which the soil is to be removed and the municipality in which the receiving site is located.

Please note that before soil relocation is effective under section 28.1 of the **Waste Management Act** and section 44 of the *Contaminated Sites Regulation* you are responsible for:

- (i) ensuring that a copy of the notice of soil relocation agreement from BC Environment as required under section 28.1 (9) of the **Waste Management Act**, has been received by
- the municipality from which the soil is removed, and
  - the municipality in which the receiving site is situated,

**OR**

- (ii) waiting at least 96 hours from the time of receiving the approved contaminated soil relocation agreement before moving any contaminated soil.

A copy of the approved Soil Relocation Agreement is attached.

Decisions by the manager are appealable under part seven of the **Waste Management Act**.

If you require clarification please contact Andjela Knezevic-Stevanovic at (250) 565-6452.

Yours truly,

for R.W. Girard, R.P.Bio.  
Regional Waste Manager  
Omineca-Peace Region

/aks

enclosure

Ministry of  
Water, Land and Air  
Protection

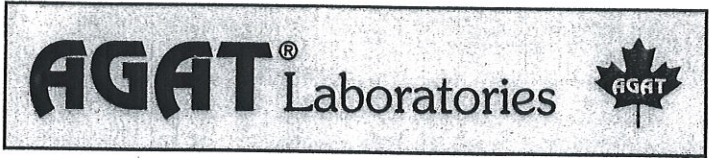
Pollution Prevention  
Environment and Lands  
Omineca-Peace  
Region

Mailing Address:  
325 - 1011 Fourth Avenue  
PRINCE GEORGE BC V2L 3H9

Telephone: (250) 565-6155  
Facsimile: (250) 565-6629

**Appendix E**  
Copies of previous Laboratory Certificates

3650 - 21st STREET N.E.  
CALGARY, ALBERTA  
CANADA T2E 6V6



TEL: (403) 299-2000  
FAX: (403) 299-2010  
www.agatlabs.com

**CLIENT:** CECIL LAKE CO-OP  
**ATTENTION:** WAYNE BELL

**AGAT WORK ORDER:** 01F087425

**SOIL ANALYSIS REVIEWED BY:** Laurenz Baars, Manager  
**TRACE ORGANICS REVIEWED BY:** Jennifer Scott, Coordinator

**DATE REPORTED:** October 25, 2001

**PAGES (INCLUDING COVER):** 22

Should you require any information regarding this analysis please contact your client services representative at (403) 299-2000, at 1-800-661-7174, or by email at env@agatlabs.com

**All Samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.**

**AGAT Laboratories**

Member of: Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA)  
Western Enviro-Agricultural Laboratory Association (WEALA)  
Western Canada Microtox Users Committee (WCMUC)  
Environmental Services Association of Alberta (ESAA)

AGAT Laboratories Calgary is accredited by the Standards Council of Canada (SCC), in co-operation with the Canadian Association for Environmental Analytical Laboratories (CAEAL), for specific tests listed in the scope of accreditation approved by the SCC

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CANADA T2E 6V6

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## Certificate of Analysis

**CLIENT NAME: CECIL LAKE CO-OP**

**AGAT WORK ORDER 01F087425**

**ATTENTION: WAYNE BELL**

### Soil Analysis -Special Waste Oil & Grease

<b>SAMPLE TYPE:</b>	Soil	<b>DATE SAMPLED:</b>	Oct 04, 2001
<b>SAMPLE ID:</b>	312819	<b>DATE RECEIVED:</b>	Oct 09, 2001
<b>SAMPLE DESCRIPTION:</b>	Cecil Lake Land Fill # 1	<b>DATE REPORTED:</b>	Oct 25, 2001

PARAMETER	RESULTS	UNITS	M.D.L.	DATE ANALYZED	INITIALS	DATE PREPARED
SWOG	<0.5	%	0.001	Oct 15, 2001	AL	Oct 15, 2001

**COMMENTS:**

M.D.L. - Method Detection Limit  
Total oil and grease is less than 0.5%, therefore Special Waste Oil and Grease reported as less than 0.5%.

*Certified By:*

**AGAT CERTIFICATE OF ANALYSIS**

AGAT Laboratories Calgary is accredited by the Standards Council of Canada (SCC), in co-operation with the Canadian Association for Environmental Analytical Laboratories (CAEAL), for specific tests listed in the scope of accreditation approved by the SCC

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CANADA T2E 6V6

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## Certificate of Analysis

**CLIENT NAME:** CECIL LAKE CO-OP

**AGAT WORK ORDER** 01F087425

**ATTENTION:** WAYNE BELL

### Soil Analysis -Special Waste Oil & Grease

<b>SAMPLE TYPE:</b>	Soil	<b>DATE SAMPLED:</b>	Oct 04, 2001
<b>SAMPLE ID:</b>	312821	<b>DATE RECEIVED:</b>	Oct 09, 2001
<b>SAMPLE DESCRIPTION:</b>	Cecil Lake Land Fill # 2	<b>DATE REPORTED:</b>	Oct 25, 2001

PARAMETER	RESULTS	UNITS	M.D.L.	DATE ANALYZED	INITIALS	DATE PREPARED
SWOG	<0.5	%	0.001	Oct 15, 2001	AL	Oct 15, 2001

**COMMENTS:**

M.D.L. - Method Detection Limit

Total oil and grease is less than 0.5%, therefore Special Waste Oil and Grease reported as less than 0.5%.

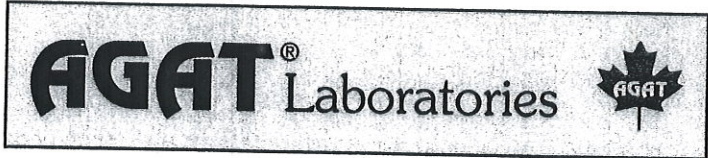
*Certified By:*

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CANADA T2E 6V6



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## Certificate of Analysis

**CLIENT NAME:** CECIL LAKE CO-OP  
**ATTENTION:** WAYNE BELL

**AGAT WORK ORDER** 01F087425

### Soil Analysis -Special Waste Oil & Grease

<b>SAMPLE TYPE:</b>	Soil	<b>DATE SAMPLED:</b>	Oct 04, 2001
<b>SAMPLE ID:</b>	312823	<b>DATE RECEIVED:</b>	Oct 09, 2001
<b>SAMPLE DESCRIPTION:</b>	Cecil Lake Land Fill # 3	<b>DATE REPORTED:</b>	Oct 25, 2001

PARAMETER	RESULTS	UNITS	M.D.L.	DATE ANALYZED	INITIALS	DATE PREPARED
SWOG	<0.5	%	0.001	Oct 15, 2001	AL	Oct 15, 2001

**COMMENTS:**

M.D.L. - Method Detection Limit  
Total oil and grease is less than 0.5%, therefore Special Waste Oil and Grease reported as less than 0.5%.

*Certified By:*

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## Certificate of Analysis

**CLIENT NAME:** CECIL LAKE CO-OP  
**ATTENTION:** WAYNE BELL

**AGAT WORK ORDER** 01F087425

### Soil Analysis -Special Waste Oil & Grease

<b>SAMPLE TYPE:</b>	Soil	<b>DATE SAMPLED:</b>	Oct 04, 2001
<b>SAMPLE ID:</b>	312830	<b>DATE RECEIVED:</b>	Oct 09, 2001
<b>SAMPLE DESCRIPTION:</b>	Cecil Lake Land Fill # 4	<b>DATE REPORTED:</b>	Oct 25, 2001

PARAMETER	RESULTS	UNITS	M.D.L.	DATE ANALYZED	INITIALS	DATE PREPARED
SWOG	<0.5	%	0.001	Oct 15, 2001	AL	Oct 15, 2001

**COMMENTS:**

M.D.L. - Method Detection Limit  
Total oil and grease is less than 0.5%, therefore Special Waste Oil and Grease reported as less than 0.5%.

*Certified By:*

**AGAT CERTIFICATE OF ANALYSIS**

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## Certificate of Analysis

**CLIENT NAME:** CECIL LAKE CO-OP  
**ATTENTION:** WAYNE BELL

**AGAT WORK ORDER** 01F087425

### Soil Analysis -Special Waste Oil & Grease

<b>SAMPLE TYPE:</b>	Soil	<b>DATE SAMPLED:</b>	Oct 04, 2001
<b>SAMPLE ID:</b>	312832	<b>DATE RECEIVED:</b>	Oct 09, 2001
<b>SAMPLE DESCRIPTION:</b>	Cecil Lake Land Fill # 5	<b>DATE REPORTED:</b>	Oct 25, 2001

PARAMETER	RESULTS	UNITS	M.D.L.	DATE ANALYZED	INITIALS	DATE PREPARED
SWOG	<0.5	%	0.001	Oct 15, 2001	AL	Oct 15, 2001

**COMMENTS:**

M.D.L. - Method Detection Limit  
Total oil and grease is less than 0.5%, therefore Special Waste Oil and Grease reported as less than 0.5%.

*Certified By:*

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## Certificate of Analysis

**CLIENT NAME:** CECIL LAKE CO-OP  
**ATTENTION:** WAYNE BELL

**AGAT WORK ORDER** 01F087425

### Soil Analysis -Special Waste Oil & Grease

<b>SAMPLE TYPE:</b>	Soil	<b>DATE SAMPLED:</b>	Oct 04, 2001
<b>SAMPLE ID:</b>	312835	<b>DATE RECEIVED:</b>	Oct 09, 2001
<b>SAMPLE DESCRIPTION:</b>	Cecil Lake Land Fill # 6	<b>DATE REPORTED:</b>	Oct 25, 2001

PARAMETER	RESULTS	UNITS	M.D.L.	DATE ANALYZED	INITIALS	DATE PREPARED
SWOG	<0.5	%	0.001	Oct 15, 2001	AL	Oct 15, 2001

**COMMENTS:**

M.D.L. - Method Detection Limit  
Total oil and grease is less than 0.5%, therefore Special Waste Oil and Grease reported as less than 0.5%.

*Certified By:*

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CANADA T2E 6V6

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## Certificate of Analysis

**CLIENT NAME:** CECIL LAKE CO-OP  
**ATTENTION:** WAYNE BELL

**AGAT WORK ORDER** 01F087425

### BTEX Analysis - TCLP Leachate

<b>SAMPLE TYPE:</b>	Soil	<b>DATE SAMPLED:</b>	Oct 04, 2001
<b>SAMPLE ID:</b>	312819	<b>DATE RECEIVED:</b>	Oct 09, 2001
<b>SAMPLE DESCRIPTION:</b>	Cecil Lake Land Fill # 1	<b>DATE REPORTED:</b>	Oct 25, 2001

PARAMETER	RESULTS	GUIDELINE	UNITS	M.D.L.	DATE ANALYZED	INITIALS	DATE PREPARED
Benzene	<0.01	0.5	mg/L	0.01	Oct 15, 2001	CM	Oct 13, 2001
Toluene	<0.01	0.5	mg/L	0.01	Oct 15, 2001	CM	Oct 13, 2001
Ethylbenzene	<0.01	0.5	mg/L	0.01	Oct 15, 2001	CM	Oct 13, 2001
Xylenes	<0.01	0.5	mg/L	0.01	Oct 15, 2001	CM	Oct 13, 2001

**COMMENTS:**

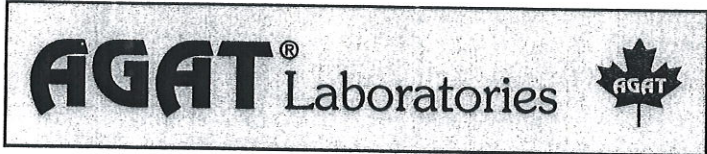
M.D.L. - Method Detection Limit  
Guideline refers to Class 2 Landfill  
Toluene-d8 surrogate recovery: 108%

*Certified By:*

**AGAT CERTIFICATE OF ANALYSIS**

AGAT Laboratories Calgary is accredited by the Standards Council of Canada (SCC), in co-operation with the Canadian Association for Environmental Analytical Laboratories (CAEAL), for specific tests listed in the scope accreditation approved by the SCC

AGAT Laboratories Calgary is accredited by the American Industrial Hygiene Association (AIHA) for specific tests.



## Certificate of Analysis

**CLIENT NAME: CECIL LAKE CO-OP**  
**ATTENTION: WAYNE BELL**

**AGAT WORK ORDER 01F087425**

### M.E.L.P. Site Remediation Analysis - Soil

<b>SAMPLE TYPE:</b>	Soil	<b>DATE SAMPLED:</b>	Oct 04, 2001
<b>SAMPLE ID:</b>	312819	<b>DATE RECEIVED:</b>	Oct 09, 2001
<b>SAMPLE DESCRIPTION:</b>	Cecil Lake Land Fill # 1	<b>DATE REPORTED:</b>	Oct 25, 2001

PARAMETER	RESULTS	UNITS	M.D.L.	DATE ANALYZED	INITIALS	DATE PREPARED
Benzene	<0.005	mg/kg	0.005	Oct 13, 2001	WG	Oct 13, 2001
Toluene	0.050	mg/kg	0.005	Oct 13, 2001	WG	Oct 13, 2001
Ethylbenzene	0.055	mg/kg	0.005	Oct 13, 2001	WG	Oct 13, 2001
Xylenes	0.220	mg/kg	0.005	Oct 13, 2001	WG	Oct 13, 2001
VPH	30.4	mg/kg	0.05	Oct 13, 2001	WG	Oct 13, 2001
LEPH	300	mg/kg	10	Oct 13, 2001	MCS	Oct 13, 2001
HEPH	420	mg/kg	10	Oct 13, 2001	MCS	Oct 13, 2001

**COMMENTS:**

M.D.L. - Method Detection Limit  
 Results are based on dry weight of sample.  
 Recovery of toluene-d8 surrogate added to sample prior to BTEX/VPH analysis: 95%  
 VPH results have been corrected for BTEX contributions.  
 LEPH & HEPH results are not corrected for potential PAH contributions.  
 VPH: Volatile Petroleum Hydrocarbons (n-C5 - n-C10); all volatile compounds in the n-C5 to n-C10 range quantified based on o-xylene response.  
 LEPH: Light Extractable Petroleum Hydrocarbons (n-C10 - n-C19); all extractable compounds in the n-C10 to n-C19 range quantified based on n-decane response.  
 HEPH: Heavy Extractable Petroleum Hydrocarbons (n-C19 - n-C32); all extractable compounds in the n-C19 to n-C32 range quantified based on n-icosane response.

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## Certificate of Analysis

**CLIENT NAME:** CECIL LAKE CO-OP  
**ATTENTION:** WAYNE BELL

**AGAT WORK ORDER** 01F087425

### BTEX Analysis - TCLP Leachate

<b>SAMPLE TYPE:</b>	Soil	<b>DATE SAMPLED:</b>	Oct 04, 2001
<b>SAMPLE ID:</b>	312821	<b>DATE RECEIVED:</b>	Oct 09, 2001
<b>SAMPLE DESCRIPTION:</b>	Cecil Lake Land Fill # 2	<b>DATE REPORTED:</b>	Oct 25, 2001

PARAMETER	RESULTS	GUIDELINE	UNITS	M.D.L.	DATE ANALYZED	INITIALS	DATE PREPARED
Benzene	<0.01	0.5	mg/L	0.01	Oct 15, 2001	CM	Oct 13, 2001
Toluene	0.01	0.5	mg/L	0.01	Oct 15, 2001	CM	Oct 13, 2001
Ethylbenzene	<0.01	0.5	mg/L	0.01	Oct 15, 2001	CM	Oct 13, 2001
Xylenes	0.02	0.5	mg/L	0.01	Oct 15, 2001	CM	Oct 13, 2001

**COMMENTS:**

M.D.L. - Method Detection Limit  
Guideline refers to Class 2 Landfill  
Toluene-d8 surrogate recovery: 107%

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## Certificate of Analysis

**CLIENT NAME: CECIL LAKE CO-OP**  
**ATTENTION: WAYNE BELL**

**AGAT WORK ORDER 01F087425**

### M.E.L.P. Site Remediation Analysis - Soil

<b>SAMPLE TYPE:</b>	Soil	<b>DATE SAMPLED:</b>	Oct 04, 2001
<b>SAMPLE ID:</b>	312821	<b>DATE RECEIVED:</b>	Oct 09, 2001
<b>SAMPLE DESCRIPTION:</b>	Cecil Lake Land Fill # 2	<b>DATE REPORTED:</b>	Oct 25, 2001

PARAMETER	RESULTS	UNITS	M.D.L.	DATE ANALYZED	INITIALS	DATE PREPARED
Benzene	0.005	mg/kg	0.005	Oct 13, 2001	WG	Oct 13, 2001
Toluene	0.135	mg/kg	0.005	Oct 13, 2001	WG	Oct 13, 2001
Ethylbenzene	0.089	mg/kg	0.005	Oct 13, 2001	WG	Oct 13, 2001
Xylenes	0.752	mg/kg	0.005	Oct 13, 2001	WG	Oct 13, 2001
VPH	49.7	mg/kg	0.05	Oct 13, 2001	WG	Oct 13, 2001
LEPH	310	mg/kg	10	Oct 13, 2001	MCS	Oct 13, 2001
HEPH	510	mg/kg	10	Oct 13, 2001	MCS	Oct 13, 2001

**COMMENTS:**

M.D.L. - Method Detection Limit  
 Results are based on dry weight of sample.  
 Recovery of toluene-d8 surrogate added to sample prior to BTEX/VPH analysis: 93%  
 VPH results have been corrected for BTEX contributions.  
 LEPH & HEPH results are not corrected for potential PAH contributions.  
 VPH: Volatile Petroleum Hydrocarbons (n-C5 - n-C10); all volatile compounds in the n-C5 to n-C10 range quantified based on o-xylene response.  
 LEPH: Light Extractable Petroleum Hydrocarbons (n-C10 - n-C19); all extractable compounds in the n-C10 to n-C19 range quantified based on n-decane response.  
 HEPH: Heavy Extractable Petroleum Hydrocarbons (n-C19 - n-C32); all extractable compounds in the n-C19 to n-C32 range quantified based on n-icosane response.

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**CLIENT NAME: CECIL LAKE CO-OP**

**AGAT WORK ORDER 01F087425**

**ATTENTION: WAYNE BELL**

### BTEX Analysis - TCLP Leachate

<b>SAMPLE TYPE:</b>	Soil	<b>DATE SAMPLED:</b>	Oct 04, 2001
<b>SAMPLE ID:</b>	312823	<b>DATE RECEIVED:</b>	Oct 09, 2001
<b>SAMPLE DESCRIPTION:</b>	Cecil Lake Land Fill # 3	<b>DATE REPORTED:</b>	Oct 25, 2001

PARAMETER	RESULTS	GUIDELINE	UNITS	M.D.L.	DATE ANALYZED	INITIALS	DATE PREPARED
Benzene	<0.01	0.5	mg/L	0.01	Oct 15, 2001	CM	Oct 13, 2001
Toluene	0.01	0.5	mg/L	0.01	Oct 15, 2001	CM	Oct 13, 2001
Ethylbenzene	<0.01	0.5	mg/L	0.01	Oct 15, 2001	CM	Oct 13, 2001
Xylenes	0.02	0.5	mg/L	0.01	Oct 15, 2001	CM	Oct 13, 2001

**COMMENTS:**

M.D.L. - Method Detection Limit  
Guideline refers to Class 2 Landfill  
Toluene-d8 surrogate recovery: 109%

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**ATTENTION:** WAYNE BELL

**AGAT WORK ORDER** 01F087425

### M.E.L.P. Site Remediation Analysis - Soil

<b>SAMPLE TYPE:</b>	Soil	<b>DATE SAMPLED:</b>	Oct 04, 2001
<b>SAMPLE ID:</b>	312823	<b>DATE RECEIVED:</b>	Oct 09, 2001
<b>SAMPLE DESCRIPTION:</b>	Cecil Lake Land Fill # 3	<b>DATE REPORTED:</b>	Oct 25, 2001

PARAMETER	RESULTS	UNITS	M.D.L.	DATE ANALYZED	INITIALS	DATE PREPARED
Benzene	<0.005	mg/kg	0.005	Oct 13, 2001	WG	Oct 13, 2001
Toluene	0.094	mg/kg	0.005	Oct 13, 2001	WG	Oct 13, 2001
Ethylbenzene	0.049	mg/kg	0.005	Oct 13, 2001	WG	Oct 13, 2001
Xylenes	0.487	mg/kg	0.005	Oct 13, 2001	WG	Oct 13, 2001
VPH	72.1	mg/kg	0.05	Oct 13, 2001	WG	Oct 13, 2001
LEPH	760	mg/kg	10	Oct 13, 2001	MCS	Oct 13, 2001
HEPH	360	mg/kg	10	Oct 13, 2001	MCS	Oct 13, 2001

**COMMENTS:**

M.D.L. - Method Detection Limit  
 Results are based on dry weight of sample.  
 Recovery of toluene-d8 surrogate added to sample prior to BTEX/VPH analysis: 100%  
 VPH results have been corrected for BTEX contributions.  
 LEPH & HEPH results are not corrected for potential PAH contributions.  
 VPH: Volatile Petroleum Hydrocarbons (n-C5 - n-C10); all volatile compounds in the n-C5 to n-C10 range quantified based on o-xylene response.  
 LEPH: Light Extractable Petroleum Hydrocarbons (n-C10 - n-C19); all extractable compounds in the n-C10 to n-C19 range quantified based on n-decane response.  
 HEPH: Heavy Extractable Petroleum Hydrocarbons (n-C19 - n-C32); all extractable compounds in the n-C19 to n-C32 range quantified based on n-tricosane response.

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**AGAT WORK ORDER 01F087425**

### BTEX Analysis - TCLP Leachate

<b>SAMPLE TYPE:</b>	Soil	<b>DATE SAMPLED:</b>	Oct 04, 2001
<b>SAMPLE ID:</b>	312830	<b>DATE RECEIVED:</b>	Oct 09, 2001
<b>SAMPLE DESCRIPTION:</b>	Cecil Lake Land Fill # 4	<b>DATE REPORTED:</b>	Oct 25, 2001

PARAMETER	RESULTS	GUIDELINE	UNITS	M.D.L.	DATE ANALYZED	INITIALS	DATE PREPARED
Benzene	<0.01	0.5	mg/L	0.01	Oct 15, 2001	CM	Oct 13, 2001
Toluene	<0.01	0.5	mg/L	0.01	Oct 15, 2001	CM	Oct 13, 2001
Ethylbenzene	<0.01	0.5	mg/L	0.01	Oct 15, 2001	CM	Oct 13, 2001
Xylenes	<0.01	0.5	mg/L	0.01	Oct 15, 2001	CM	Oct 13, 2001

**COMMENTS:**

M.D.L. - Method Detection Limit  
Guideline refers to Class 2 Landfill  
Toluene-d8 surrogate recovery: 106%

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### M.E.L.P. Site Remediation Analysis - Soil

<b>SAMPLE TYPE:</b>	Soil	<b>DATE SAMPLED:</b>	Oct 04, 2001
<b>SAMPLE ID:</b>	312830	<b>DATE RECEIVED:</b>	Oct 09, 2001
<b>SAMPLE DESCRIPTION:</b>	Cecil Lake Land Fill # 4	<b>DATE REPORTED:</b>	Oct 25, 2001

PARAMETER	RESULTS	UNITS	M.D.L.	DATE ANALYZED	INITIALS	DATE PREPARED
Benzene	<0.005	mg/kg	0.005	Oct 13, 2001	WG	Oct 13, 2001
Toluene	0.059	mg/kg	0.005	Oct 13, 2001	WG	Oct 13, 2001
Ethylbenzene	0.023	mg/kg	0.005	Oct 13, 2001	WG	Oct 13, 2001
Xylenes	0.121	mg/kg	0.005	Oct 13, 2001	WG	Oct 13, 2001
VPH	10.5	mg/kg	0.05	Oct 13, 2001	WG	Oct 13, 2001
LEPH	250	mg/kg	10	Oct 13, 2001	MCS	Oct 13, 2001
HEPH	250	mg/kg	10	Oct 13, 2001	MCS	Oct 13, 2001

**COMMENTS:**

M.D.L. - Method Detection Limit  
 Results are based on dry weight of sample.  
 Recovery of toluene-d8 surrogate added to sample prior to BTEX/VPH analysis: 93%  
 VPH results have been corrected for BTEX contributions.  
 LEPH & HEPH results are not corrected for potential PAH contributions.  
 VPH: Volatile Petroleum Hydrocarbons (n-C5 - n-C10); all volatile compounds in the n-C5 to n-C10 range quantified based on o-xylene response.  
 LEPH: Light Extractable Petroleum Hydrocarbons (n-C10 - n-C19); all extractable compounds in the n-C10 to n-C19 range quantified based on n-decane response.  
 HEPH: Heavy Extractable Petroleum Hydrocarbons (n-C19 - n-C32); all extractable compounds in the n-C19 to n-C32 range quantified based on n-tricosane response.

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### BTEX Analysis - TCLP Leachate

<b>SAMPLE TYPE:</b>	Soil	<b>DATE SAMPLED:</b>	Oct 04, 2001
<b>SAMPLE ID:</b>	312832	<b>DATE RECEIVED:</b>	Oct 09, 2001
<b>SAMPLE DESCRIPTION:</b>	Cecil Lake Land Fill # 5	<b>DATE REPORTED:</b>	Oct 25, 2001

PARAMETER	RESULTS	GUIDELINE	UNITS	M.D.L.	DATE ANALYZED	INITIALS	DATE PREPARED
Benzene	<0.01	0.5	mg/L	0.01	Oct 15, 2001	CM	Oct 13, 2001
Toluene	<0.01	0.5	mg/L	0.01	Oct 15, 2001	CM	Oct 13, 2001
Ethylbenzene	<0.01	0.5	mg/L	0.01	Oct 15, 2001	CM	Oct 13, 2001
Xylenes	0.02	0.5	mg/L	0.01	Oct 15, 2001	CM	Oct 13, 2001

**COMMENTS:**

M.D.L. - Method Detection Limit  
Guideline refers to Class 2 Landfill  
Toluene-d8 surrogate recovery: 101%

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### M.E.L.P. Site Remediation Analysis - Soil

<b>SAMPLE TYPE:</b>	Soil	<b>DATE SAMPLED:</b>	Oct 04, 2001
<b>SAMPLE ID:</b>	312832	<b>DATE RECEIVED:</b>	Oct 09, 2001
<b>SAMPLE DESCRIPTION:</b>	Cecil Lake Land Fill # 5	<b>DATE REPORTED:</b>	Oct 25, 2001

PARAMETER	RESULTS	UNITS	M.D.L.	DATE ANALYZED	INITIALS	DATE PREPARED
Benzene	<0.005	mg/kg	0.005	Oct 13, 2001	WG	Oct 13, 2001
Toluene	0.057	mg/kg	0.005	Oct 13, 2001	WG	Oct 13, 2001
Ethylbenzene	0.129	mg/kg	0.005	Oct 13, 2001	WG	Oct 13, 2001
Xylenes	0.979	mg/kg	0.005	Oct 13, 2001	WG	Oct 13, 2001
VPH	66.9	mg/kg	0.05	Oct 13, 2001	WG	Oct 13, 2001
LEPH	400	mg/kg	10	Oct 13, 2001	MCS	Oct 13, 2001
HEPH	760	mg/kg	10	Oct 13, 2001	MCS	Oct 13, 2001

**COMMENTS:**

M.D.L. - Method Detection Limit  
 Results are based on dry weight of sample.  
 Recovery of toluene-d8 surrogate added to sample prior to BTEX/VPH analysis: 90%  
 VPH results have been corrected for BTEX contributions.  
 LEPH & HEPH results are not corrected for potential PAH contributions.  
 VPH: Volatile Petroleum Hydrocarbons (n-C5 - n-C10); all volatile compounds in the n-C5 to n-C10 range quantified based on o-xylene response.  
 LEPH: Light Extractable Petroleum Hydrocarbons (n-C10 - n-C19); all extractable compounds in the n-C10 to n-C19 range quantified based on n-decane response.  
 HEPH: Heavy Extractable Petroleum Hydrocarbons (n-C19 - n-C32); all extractable compounds in the n-C19 to n-C32 range quantified based on n-tricosane response.

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