



**Soil Remediation and  
Verification Sampling Program  
18 Main Street  
St. Eustache, Manitoba**

Business Development Bank of Canada  
Suite 200, 1655 Kenaston Boulevard  
Winnipeg, Manitoba  
R3P 2M4

Attention: Mr. Michael Selci

October 18, 2012

Pinchin File: 75695.002

Copyright © 2012 by Pinchin Environmental Ltd.

## EXECUTIVE SUMMARY

Pinchin Environmental Ltd. (“Pinchin”) was retained through an Authorization to Proceed signed by Mr. Michael Selci of Business Development Bank of Canada. (“Client”) to conduct a soil remediation and verification sampling program at the property located at 18 Main Street, St. Eustache, Manitoba (hereafter referred to as the “Site”).

The Site is developed with one single-storey residential dwelling (“Site Building A”), one single-storey office building (“Site Building B”), two single-storey storage sheds (“Site Buildings C and G”), one single-storey garage (“Site Building D”), one single-storey aggregate storage building (“Site Building E”) and one single-storey concrete batch plant building (“Site Building F”) formerly occupied by R. Bergeron Ready-Mix Concrete Ltd., recently purchased by Tritec Concrete.

On May 16, 2012 Pinchin completed a Phase I ESA that identified hydrocarbon staining in the vicinity of the aboveground storage tanks (“ASTs”) located on the south-central portion of the Site and hydrocarbon staining and oily water within a pit constructed with a pail within Site Building D. The result of the Phase I ESA was the recommendation that a Limited Soil Sampling Program be conducted.

The Limited Soil Sampling Program Report was completed by Pinchin on June 19, 2012. Six shallow boreholes were advanced to a maximum depth of 1.4 metres below ground surface (“mbgs”). Three boreholes located adjacent the AST pad had soil samples that were above the applicable Canadian Council of Ministers of the Environment (“CCME”) guidelines for petroleum hydrocarbons (“PHC”) in the F1 to F4 fraction ranges (“F1-F4”).

At the Client’s request, Pinchin was asked to collect soil verification samples during soil remediation. The scope of work included the removal of PHC impacted soil on the north, east and west sides located adjacent the concrete pad.

A Remedial Action Plan (“RAP”) was submitted to Manitoba Conservation dated August 14, 2012 outlining the proposed work as described above. Manitoba Conservation issued a letter approving the RAP dated August 21, 2012.

A summary of activities and results of the soil remediation and verification soil sampling program conducted at the Site is noted below.

1. On September 11, 2012, Pinchin field personnel were on-Site to supervise the soil excavation by Tritec Concrete.

2. Pinchin field personnel completed a field screening and segregation program using visual, olfactory and organic vapour measurements recorded using a photo-ionization detector (“PID”). Soil verification samples were collected from the final excavation limits.
3. A U-shaped remediation area with a base 3 meters wide, measuring approximately 6 m long (north-south) by 9 m long (east-west) to a maximum depth of 0.95 mbgs was excavated around the former AST concrete pad. The excavation was adjacent the concrete pad on the north, west and east sides. No noticeable visual or olfactory observations of PHC impacts were noted by Pinchin in the soil samples assessed at the assumed final limits of the excavation.
4. Data collected during the excavation program indicated that the subsurface material at the Site generally consisted of various amounts of coarse gravel and clay fill. Native subsurface material underlying the fill material was observed to generally consist of black organic clay soil from 0.76 mbgs to the maximum excavation depth of 0.95 mbgs.
5. Based on Site specific information, the soil quality was compared to guidelines set forth in the Canadian Council of Ministers of the Environment (“CCME”) “*Environmental Quality Guidelines*” accessed on-line September 2012 and the CCME “*Canada-Wide Standards for Petroleum Hydrocarbons (PHC) in Soil*” dated 2008. The applicable criteria for this area of the Site includes the most stringent criteria for residential land use, fine-grained and coarse grained surface soils, excluding protection of potable groundwater and aquatic life guidelines.
6. Soil samples from the final excavation limits were submitted for laboratory analysis for benzene, toluene, ethylbenzene and xylene (“BTEX”) and PHCs F1-F4.
7. The results of the laboratory analysis indicated that the verification soil samples submitted for chemical analysis reported concentrations of all targeted parameters which satisfied the CCME guidelines for residential land use, fine-grained and coarse grained surface soils excluding protection of potable water and aquatic life.
8. A total of 78 tonnes of impacted soil was transported off-Site to the Mid-Canada Soil Treatment Facility in Ile de Chenes, Manitoba (“Mid-Canada”) for disposal which is operated by Mid-Canada Environmental Services Ltd. The excavation was backfilled with gravel fill.

Based on the findings of this soil remediation and verification sampling program, it is Pinchin’s opinion that no additional remediation work is required for the Site in relation to the findings of the Phase I ESA and Limited Soil Sampling Program.

*This Executive Summary is subject to the same standard limitations as contained in the report and must be read in conjunction with the entire report.*

## TABLE OF CONTENTS

1.0	INTRODUCTION .....	1
1.1	Site Description.....	1
2.0	BACKGROUND .....	1
2.1	Scope of Work .....	2
3.0	METHODOLOGY .....	3
3.1	Excavation Activities .....	3
3.2	Field Screening Samples.....	3
3.3	Verification Soil Sampling .....	4
3.4	QA/QC Protocols .....	4
3.5	Applicable Regulatory Standards .....	5
4.0	RESULTS .....	6
4.1	Site Geology.....	6
4.2	Analytical Results .....	7
4.3	Soil Disposal .....	7
5.0	DISCUSSION .....	7
6.0	DISCLAIMER .....	7
7.0	CLOSURE .....	9

## APPENDICES

Appendix I	Figures
Appendix II	Summary Table
Appendix III	Remedial Action Plan
Appendix IV	Laboratory Certificates of Analyses

### **Figures**

Figure 1	Key Map
Figure 2	Generalized Excavation Location Plan
Figure 3	Soil Sample Location Plan

### **Tables**

Table 1	Summary of Soil Analytical Results for Petroleum Hydrocarbon and BTEX
---------	---

## **1.0 INTRODUCTION**

Pinchin Environmental Ltd. (“Pinchin”) was retained through an Authorization to Proceed signed by Mr. Michael Selci of Business Development Bank of Canada. (“Client”) to conduct a Soil Remediation and Verification Sampling Program at the property located at 18 Main Street, St. Eustache, Manitoba (hereafter referred to as the (“Site”).

### **1.1 Site Description**

The Site is developed with one residential building and several commercial buildings and is occupied by Tritec Concrete. The Site is situated in an area consisting primarily of commercial land uses. As indicated on Figure 1, presented in Appendix I, the Site is located north of Main Street, approximately 700 metres west of Public Road #248 in St. Eustache, Manitoba.

## **2.0 BACKGROUND**

On May 16, 2012, Pinchin completed a Phase I ESA that identified petroleum hydrocarbon staining in the vicinity of the aboveground storage tanks (“ASTs”) located on the south-central portion of the Site and petroleum hydrocarbon (“PHC”) staining and oily water within a pit constructed of a pail within Site Building D. Based on the findings of the Phase I ESA, Pinchin recommended that a Limited Soil Sampling Program be conducted.

A report titled “*Limited Soil Sampling Program, 18 Main Street, St. Eustache, Manitoba*” was prepared by Pinchin dated June 19, 2012 (the “*Limited Soil Sampling Program Report*”). As outlined in the *Limited Soil Sampling Program Report*, the details of which were reported under separate cover, six boreholes were advanced to a maximum depth of 1.4 metres below ground surface (“mbgs”).

Based on observations made during the Limited Soil Sampling Program, the soil stratigraphy at the Site generally consisted of a layer of surficial fill material comprised of granular limestone to a depth of approximately 0.3 mbgs. Native subsurface materials underlying the fill material was observed to generally consist of black organic clay soil to a depth of approximately 0.6 mbgs, underlain by moderately silty clay to a maximum sampled depth of 1.4 mbgs

Based on the results of soil samples previously collected and submitted for laboratory analyses by Pinchin and presented in the *Limited Soil Sampling Program Report*, soil samples collected from three boreholes adjacent the aboveground storage tank (“AST”) pad had reported concentrations at concentrations above the Canadian Council of Ministers of the Environment (“CCME”) guidelines for PHCs in the F1 to F4 fraction ranges (“F1-F4”) presented in the CCME document entitled “*Canada-Wide Standard for Petroleum Hydrocarbons (PHC) in Soil*” 2008, hereafter referred to as the “*applicable CCME Guidelines*”, as follows:

- Soil sample BH2 S1 exceeded the applicable guidelines for PHC (F2) (470 milligrams per kilogram (“mg/kg”)) versus the applicable CCME Guideline of 150 mg/kg) and PHCs (F3) (360 mg/kg) versus the applicable CCME Guideline of 300 mg/kg);
- Soil sample BH3 S1 exceeded the applicable guidelines for PHC (F2) (290 mg/kg versus the applicable CCME Guideline of 150 mg/kg); and
- Soil sample BH6 S1 exceeded the applicable guidelines for PHC (F2) (170 mg/kg versus the applicable CCME Guideline of 150 mg/kg) and PHC (F3) (320 mg/kg versus the applicable CCME Guideline of 300 mg/kg).

Based on the findings presented in the *Limited Soil Sampling Program Report*, reported concentrations of PHC (F2 and/or F3) were noted in soils samples submitted for laboratory analysis from boreholes BH2, BH3, and BH6, which exceeded the applicable CCME Guidelines. These boreholes were located on the north, west and east sides of the AST pad, respectively.

## **2.1 Scope of Work**

At the Client’s request, Pinchin was retained to collect soil verification samples during the excavation around the concrete pad that occupies the fuel tanks. The scope of work proposed by Pinchin, outlined in the proposal dated August 14, 2012, submitted to, and authorized by the Client, included the development and submission of a remedial action plan (“RAP”) to Manitoba Conservation. The impacted soil to be remediated is located adjacent the concrete refueling pad from surface to a depth of approximately 0.95 mbsg.

The RAP was submitted to Manitoba Conservation dated August 14, 2012. Manitoba Conservation issued a letter approving the RAP dated August 21, 2012.

In addition to excavation and off-Site disposal of PHC-impacted soils, the scope of work included verification soil sample collection, field observations/monitoring, laboratory analyses, a review of analytical data and report preparation.

### **3.0 METHODOLOGY**

#### **3.1 Excavation Activities**

On September 11, 2012, Pinchin field personnel were on-Site to monitor the soil excavation, which was undertaken by Tritec Concrete.

Pinchin field personnel undertook a field screening and segregation program using visual, olfactory and organic vapour measurements recorded using a photo-ionization detector (“PID”). Once headspace vapour readings decreased to levels considered that, based on Pinchin’s experience, would potentially indicate that known impacts had been adequately removed and no significant odours or staining were noted by Pinchin at the limits of the excavation, verification soil samples were collected for potential laboratory analyses.

The location of the excavation at the Site is depicted in Figure 2, in Appendix I. The excavation was completed along the north, west and east walls of the AST pad.

#### **3.2 Field Screening Samples**

Field screening was employed to assess the extent of the potential soil impacts in the vicinity of the previously noted soil impacts. Soil samples for field screening were placed in sealed plastic bags for approximately 15 minutes then screened for headspace organic vapour concentrations using the PID, which was calibrated to a known isobutylene standard.

At a minimum, the soil samples used for headspace organic vapour screening were collected at the following intervals:

- Divide each sidewall into a 2.5 m<sup>2</sup> grid pattern and the floor of the excavation into a 2.5 m<sup>2</sup> grid pattern;
- Based on headspace organic vapour screening results, collect one “worst case” soil sample from each grid unit for headspace vapour readings using the PID; and
- Additional headspace organic vapour screening samples were collected based on field observations, location, depth, soil type, texture, colour and odour.

The limits of the excavation were extended both vertically and laterally until the results of the field organic vapour screening program indicated that, based on Pinchin’s experience, analytical results of soil samples submitted for would satisfy the applicable criteria.

Headspace organic vapour readings of soil samples collected from the excavation are depicted in Figure 3 presented in Appendix I.

### 3.3 Verification Soil Sampling

Pinchin field personnel monitored the excavation and subsequently collected verification soil samples from the limits of the excavation, in order to confirm, based on the results of laboratory analyses, that the residual soils at the limits of the excavation, met the applicable criteria. The frequency of verification soil samples submitted for laboratory analyses were conducted in accordance with the following table:

Floor Area (m <sup>2</sup> )	Floor Samples	Sidewall Samples
<25	1	4
>25 – 50	2	4
<100	3	4
>100 – 250	3	5
>250 – 500	4	6
>500 – 750	4	7
>750 – 1,000	5	8

Additional samples were collected based on Pinchin's observations of the soil, impact patterns and organic vapour readings.

The total floor area of the excavation was approximately 45 m<sup>2</sup>. A total of 21 soil samples were collected. Approximate locations of these samples are depicted in Figure 3 presented in Appendix I. A total of nine "worst case" soil samples recovered from the final limits of the excavation (three from the base and one from each of the walls of the excavation), based on organic vapour headspace readings, as well as visual and/or olfactory observations, were submitted for laboratory chemical analysis.

Soil samples were delivered to Maxxam Analytics Inc. ("Maxxam") in Winnipeg, Manitoba for laboratory analysis. Maxxam is an independent laboratory accredited by the Canadian Association for Laboratory Accreditation. Formal chain of custody records of the sample submissions were maintained between Pinchin and Maxxam.

### 3.4 QA/QC Protocols

Quality assurance/quality control ("QA/QC") protocols were followed during excavation activities and verification soil sampling for the purpose of obtaining representative samples.

Field protocols that were employed included the following:

- Soil samples were extracted from the interior of the sampling device (where possible), rather than from areas in contact with the sampler walls to minimize the potential for cross-contamination;
- Placement of collected soil samples into laboratory-supplied glass sample jars;
- Dedicated and disposable Nitrile™ gloves were used for all sample handling;
- Maintaining proper temperature and sample integrity en route to the laboratory with acceptance from Maxxam; and
- Sample collection and handling procedures were performed in general accordance with the *CSA Standard Z769-00 (R2008)* and Manitoba Conservation's Guideline.

### **3.5 Applicable Regulatory Standards**

Manitoba Conservation has adopted the CCME Guidelines as the regulatory criteria applicable to soil and groundwater conditions in Manitoba.

Analytical results of the soil samples are compared to guidelines set forth in the CCME "*Environmental Quality Guidelines*" accessed on-line September 2012 and the CCME "*Canada-Wide Standards for Petroleum Hydrocarbons in Soil*" dated 2008 (hereafter referred to as the "*CCME Environmental Quality Guidelines*").

The *CCME Environmental Quality Guidelines* have been developed using a risk-based approach. The application of the appropriate criteria, as determined in the *Limited Soil Sampling Program Report*, is dependent upon several Site-specific conditions including:

- The existing/proposed land use;
- The existing/potential groundwater use;
- Soil depth; and
- Soil texture.

The *CCME Environmental Quality Guidelines* are further subdivided into the following types of protection:

- Human health guidelines/check values; and
- Environmental health guidelines/check values.

Within each of these categories, several pathways are listed that describe how the contaminant of concern would come in contact with the receptor. If a pathway is not applicable to the Site or a specific area of the Site, then the corresponding guideline/check value is not applicable. If future use of the Site is modified, pathways that were not applicable can become applicable and need to be reassessed.

Site specific details for the evaluation of applicable pathways are as noted below.

- The Site has a residential dwelling located on-Site; therefore, residential land use guidelines are applicable to the Site;
- The soils on-Site comprise of coarse-grained granular fill and fine-grained clay soils based on visual observations made during the *Limited Soil Sampling Program*; therefore, guidelines for coarse-grained and fine-grained soils are applicable to the Site;
- Groundwater is non-potable and is not used for livestock watering; therefore, it is Pinchin's opinion that these pathways can be eliminated for the Site;
- Mill Creek is located adjacent the north portion of the Site; however, the area of impact is approximately 85m south of Mill Creek. As such, it is Pinchin's opinion that the aquatic life pathway can be eliminated as it is further than 10 m from Mill Creek; and
- Soil samples collected during this soil remediation and verification sampling program were "surface" (i.e., 1.5 mbgs); therefore, for the purpose of this report, surface soil criteria is cited.

Based on the above, the appropriate CCME Guidelines for the Site are:

- Residential land use, fine-grained and coarse grained surface soil, excluding protection of potable groundwater and aquatic life.

As such, all analytical results have been compared to these applicable CCME Guidelines.

If the future use of the Site changes, the applicable pathways should be re-evaluated.

## **4.0 RESULTS**

### **4.1 Site Geology**

Based on the soil samples recovered during the Limited Soil Sampling Program and excavation, the soil stratigraphy generally consists of fill material comprised of granular limestone up to 2 cm in diameter from surface to a depth of approximately 0.3 mbgs. Native subsurface material underlying the fill material was observed to generally consist of black organic clay soil to 0.6 mbgs, underlain by moderately silty clay to a maximum depth of the excavation, at 0.95 mbgs.

A “U-shaped” remediation area, with a base of approximately 3 m wide, measuring approximately 6 m long (north-south) by 9 m long (east-west) to a maximum excavation depth of 0.95 m was excavated around the AST concrete pad. No visual or olfactory observations of PHC impacts were noted by Pinchin in the soil samples assessed at the assumed final limits of the excavation.

#### **4.2 Analytical Results**

The results of the laboratory analyses undertaken on the verification soil samples submitted for chemical analysis of benzene, toluene, ethylbenzene and xylene (“BTEX”) and PHCs (F1 to F4), along with their applicable CCME Guidelines are summarized in Table 1 in Appendix II. The laboratory certificates of analyses are presented in Appendix IV.

The results of the laboratory analyses indicate that the reported concentrations satisfied the applicable CCME Guidelines.

#### **4.3 Soil Disposal**

A total of 78 tonnes of impacted soil was transported off-Site to MidCanada Environmental Services Ltd. (“MidCanada”) for disposal. The excavation was backfilled with gravel from Tritec Concrete’s own on-Site stockpile.

### **5.0 DISCUSSION**

All reported concentrations in the soil samples submitted for analysis of BTEX and PHCs (F1-F4) satisfied the applicable CCME Guidelines.

Based on the findings of this soil remediation and verification sampling program, it is Pinchin’s opinion that no additional remediation work is required for the Site in relation to the findings of the Phase I ESA and the Limited Soil Sampling Program.

### **6.0 DISCLAIMER**

This soil remediation and verification sampling program was performed in order to mitigate the recognized environmental conditions at 18 Main Street, St. Eustache, Manitoba (“Site”). The term ‘recognized environmental condition’ means the presence or likely presence of any hazardous substance on a property under conditions that indicate an existing release, past release, or a material threat of a release of a hazardous substance into structures on the property or into the ground, groundwater, or surface water of the property.

Conclusions derived are specific to the immediate area of study and cannot be extrapolated extensively away from sample locations. Samples have been analyzed for a limited number of contaminants that are expected to be present at the Site, and the absence of information relating to a specific contaminant does not indicate that it is not present.

No soil remediation and verification sampling program can wholly eliminate uncertainty regarding the potential for recognized environmental conditions on the property. Performance of this soil remediation and verification sampling program to the standards established by Pinchin is intended to remediate and/or encapsulate areas outlined in the scope of work, but does not eliminate uncertainty regarding the potential for recognized environmental conditions on the property, and recognizes reasonable limits on time and cost.

This soil remediation and verification sampling program was performed in general compliance with currently acceptable practices for environmental site investigations, and specific Client requests, as applicable to this Site. This report was prepared for the exclusive use of Business Development Bank of Canada, subject to the conditions and limitations contained within the duly authorized workplan. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of the third parties. If additional parties require reliance on this report, written authorization from Pinchin will be required. Pinchin disclaims responsibility of consequential financial effects on transactions or property values, or requirements for follow-up actions and costs. No other warranties are implied or expressed.

Pinchin will not be responsible for any consequential or indirect damages. Pinchin will only be held liable for damages resulting from negligence of Pinchin. Pinchin will not be liable for any losses or damage if Client has failed, within a period of two (2) years following the date upon which the claim is discovered within the meaning of the *Manitoba Limitation of Actions Act RSM 1987*, to commence legal proceedings against Pinchin to recover such losses or damage.

Pinchin makes no other representations whatsoever, including those concerning the legal significance of its findings, or as to other legal matters touched on in this report, including, but not limited to, ownership of any property, or the application of any law to the facts set forth herein. With respect to regulatory compliance issues, regulatory statutes are subject to interpretation and these interpretations may change over time.

## 7.0 CLOSURE

We trust this meets your requirements at this time. If you have any questions about the report, please contact the undersigned.

Yours truly,

**PINCHIN ENVIRONMENTAL LTD.**



per: Sean Mulvey, B.Sc.

*Project Technologist*  
Environmental Due Diligence &  
Remediation  
[smulvey@pinchin.com](mailto:smulvey@pinchin.com)



per: Grant Eftoda, B.Sc. (Eng.)

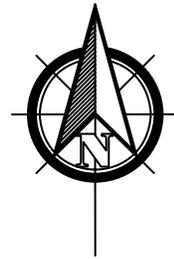
*Operations Manager*  
Environmental Due Diligence &  
Remediation  
[geftoda@pinchin.com](mailto:geftoda@pinchin.com)



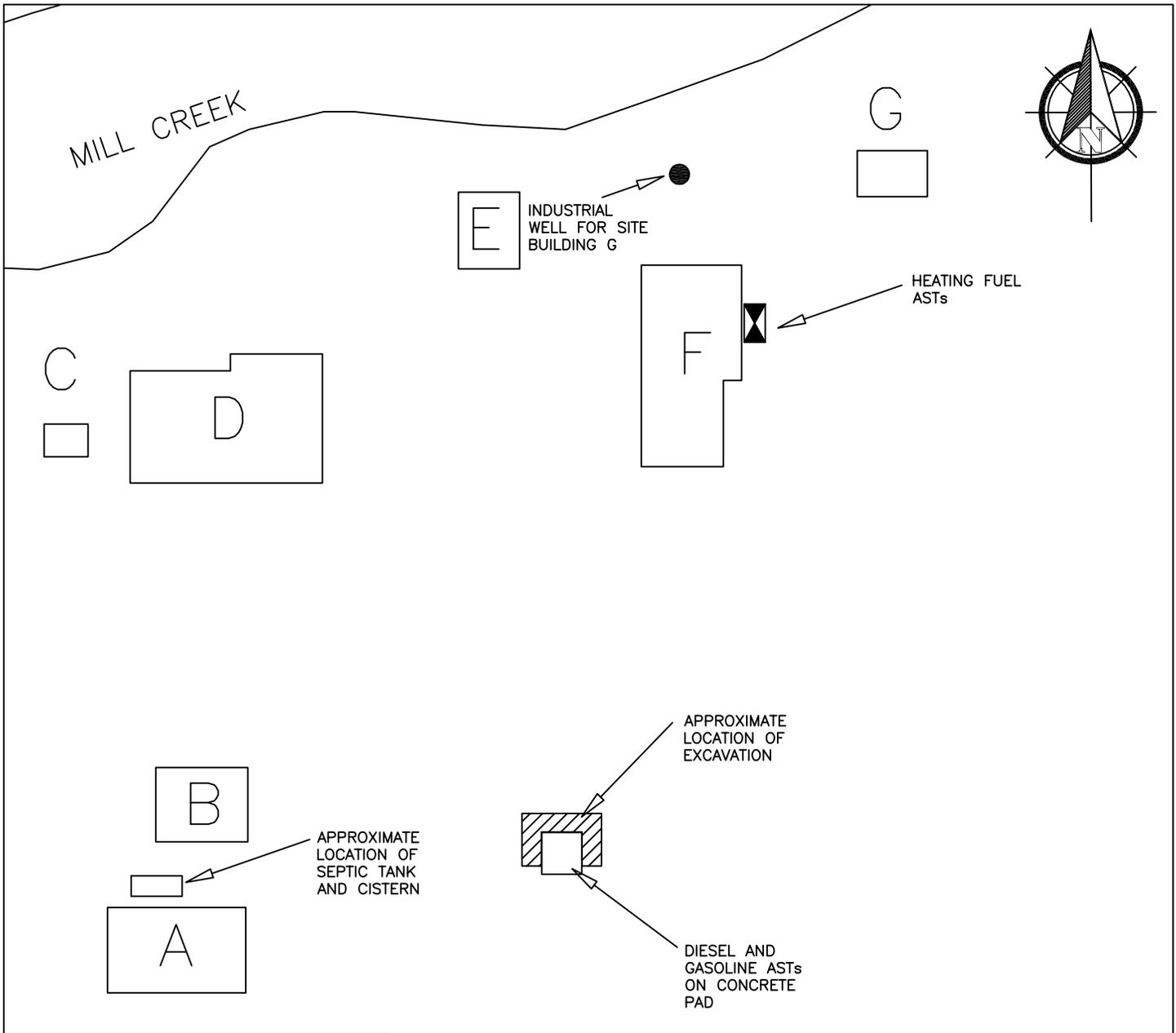
per: Steven B. Roberts, P.Geo. (ON)

*Senior Technical Manager*  
Environmental Due Diligence and  
Remediation  
[sroberts@pinchin.com](mailto:sroberts@pinchin.com)

**APPENDIX I**  
**FIGURES**



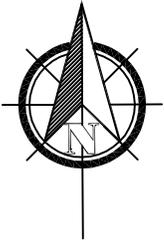
PROJECT NAME			FIGURE NO.
SOIL REMEDIATION AND VERIFICATION			
CLIENT NAME			
BUSINESS DEVELOPMENT BANK OF CANADA			
PROJECT LOCATION			1
18 MAIN STREET, ST. EUSTACHE, MANITOBA			
DRAWING NAME		KEY MAP	
SCALE	PROJECT NO.		
NTS	75695.002	OCTOBER 2012	



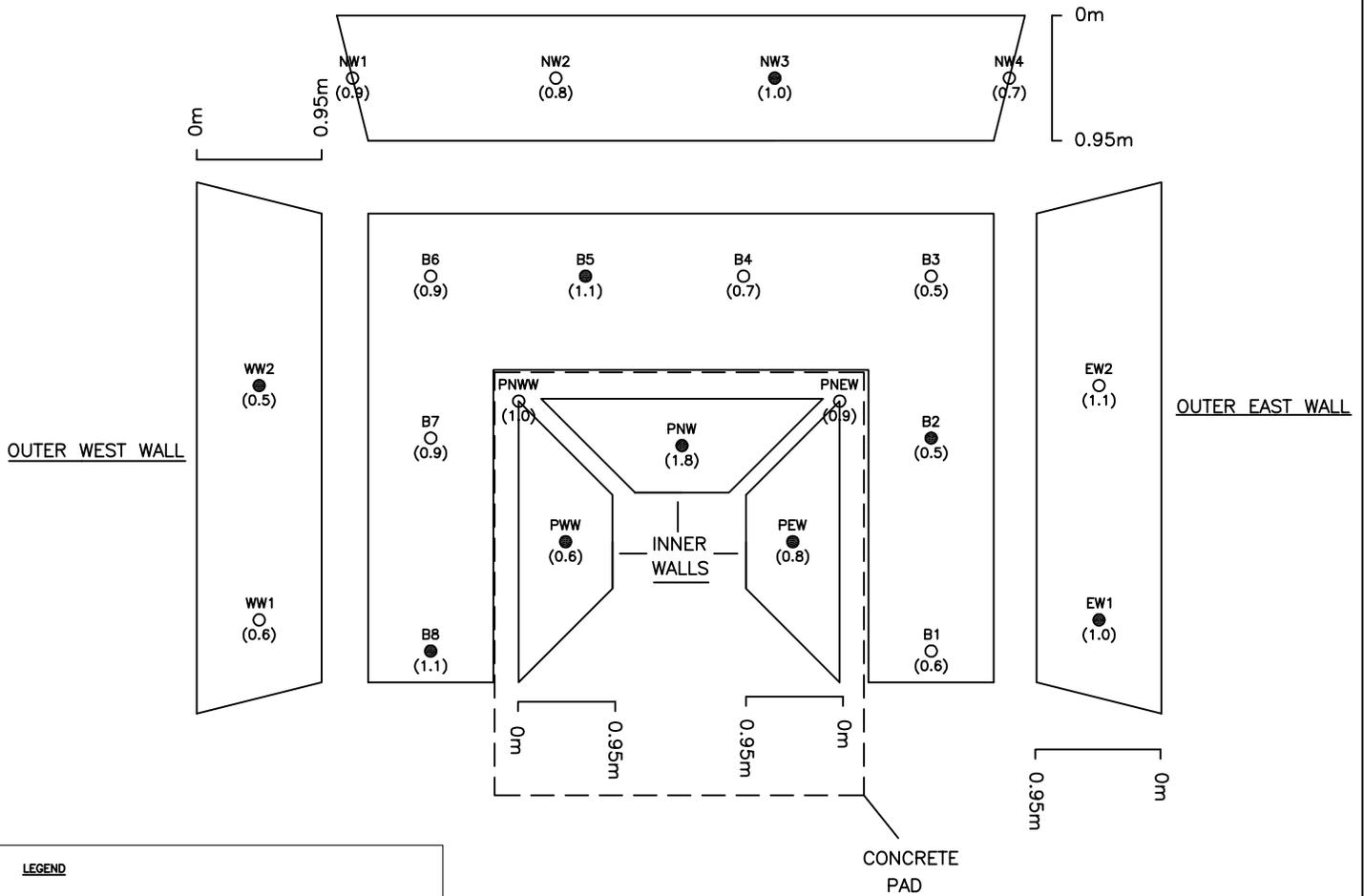
<b>LEGEND</b>	
	SITE BUILDINGS
	APPROXIMATE LOCATION OF EXCAVATION
ASTs	ABOVEGROUND STORAGE TANKS



<p>54 TERRACON PLACE, WINNIPEG, MANITOBA R2J 4G7 PHONE: 204-452-0983 FAX: 204-453-0788</p>	PROJECT NAME		FIGURE NO.
	SOIL REMEDIATION AND VERIFICATION SAMPLING PROGRAM		
	CLIENT NAME		
	BUSINESS DEVELOPMENT BANK OF CANADA		
	PROJECT LOCATION		
18 MAIN STREET, ST. EUSTACHE, MANITOBA		2	
DRAWING NAME			
GENERALIZED EXCAVATION LOCATION PLAN			
SCALE	PROJECT NO.	DATE	
NTS	75695.002	OCTOBER 2012	



OUTER NORTH WALL



LEGEND

XX1 ○ SOIL SAMPLE LOCATION NOT SUBMITTED FOR LABORATORY ANALYSIS (HEADSPACE VAPOUR READING IN PARTS PER MILLION)

XX1 ● SOIL SAMPLE LOCATION SUBMITTED FOR LABORATORY ANALYSIS (HEADSPACE VAPOUR READING IN PARTS PER MILLION)



PROJECT NAME SOIL REMEDIATION AND VERIFICATION SAMPLING PROGRAM		
CLIENT NAME BUSINESS DEVELOPMENT BANK OF CANADA		
PROJECT LOCATION 18 MAIN STREET, ST. EUSTACHE, MANITOBA		
DRAWING NAME SOIL SAMPLE LOCATION PLAN		FIGURE NO. 3
SCALE NTS	PROJECT NO. 75695.002	DATE OCTOBER 2012

**APPENDIX II**  
**SUMMARY TABLE**

**Table 1**  
**Summary of Soil Analytical Results for Petroleum Hydrocarbon and BTEX in Soil**  
**Soil Remediation and Verification Sampling Program**  
**18 Main Street**  
**St. Eustache, Manitoba**

Parameter	Sample Identification										CCME Guidelines <sup>a,b</sup>	
	B2	B5	B8	PEW	PNW	PWW	NW3	EW1	WW2			
	0.95 mbgs	0.95 mbgs	0.95 mbgs	0.76 mbgs								
BTEX	Benzene	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.21 <sup>a</sup>
	Toluene	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	110 <sup>a</sup>
	Ethyl benzene	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	120 <sup>a</sup>
	Xylenes	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	65 <sup>a</sup>
PHCs	F1 (C6-C10)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	210 <sup>b</sup>
	F2 (C10-C16)	<20	<20	<20	69	<20	<20	<20	<20	<20	<20	150 <sup>b</sup>
	F3 (C16-C34)	<20	<20	29	430	<20	86	<20	<20	<20	<20	1,300 <sup>b</sup>
	F4 (C34-C50)	<20	<20	<20	33	<20	<20	<20	<20	<20	<20	5,600 <sup>b</sup>

**Note:**

- All concentrations in milligrams per kilogram (mg/kg) or equivalent, unless otherwise noted
- BTEX = Benzene, Toluene, Ethylbenzene, Xylenes
- PHCs = Petroleum Hydrocarbons
- F1 = Carbon Fraction
- < = indicates that the concentration is less than the laboratory's minimum detection limit
- B2 = indicates the sample was collected from base of excavation
- PEW = indicates the sample was collected from concrete pad east wall
- NW3 = indicates the sample was collected from the north outer wall of excavation
- mbgs = meters below ground surface
- CCME = Canadian Council of the Ministers of the Environment
- <sup>a</sup> Referenced from the CCME Canadian Environmental Quality Guidelines, Accessed On-Line in September, 2012
- Value listed represents the most stringent criteria for residential land use, to either fined grained or coarse grained surface soils, excluding protection of groundwater and aquatic life
- <sup>b</sup> Referenced from the CCME Canada-Wide Standards for Petroleum Hydrocarbons in Soil, 2008
- Value listed represents the most stringent criteria for residential land use, to either fined grained or coarse grained surface soils, excluding protection of groundwater and aquatic life
- Concentrations in **BOLD** print indicates concentration exceeds referenced guideline

**APPENDIX III**  
**REMEDIAL ACTION PLAN**



August 14, 2012

Manitoba Conservation  
160-123 Main Street  
Winnipeg, Manitoba  
R3C 1A5

**Attention: Warren Rospad**

**Re: Remedial Action Plan  
18 Main Street, St. Eustache, Manitoba  
Pinchin File No.: 75695.002**

Pinchin Environmental Ltd. ("Pinchin") is pleased to submit this Remedial Action Plan ("RAP") for the above noted Site for approval by Manitoba Conservation. The RAP is based on information obtained during a Limited Soil Sampling Program conducted by Pinchin.

#### **BACKGROUND**

The Site is developed with one single-storey residential dwelling, one single-storey office building, two single-storey storage sheds, one single-storey garage, one single-storey aggregate storage building and one single-storey concrete batch plant building occupied by R. Bergeron Ready-Mix Concrete Ltd.

A summary of the Limited Soil Sampling Program that was completed by Pinchin dated June 19, 2012 is noted below.

- The purpose of the Limited Soil Sampling Program was to address potential issues of environmental concern in the area of the hydrocarbon staining in the vicinity of the aboveground storage tanks ("ASTs") located on the south-central portion of the Site and hydrocarbon staining and oily water within a pit constructed with a pail within Site Building D.
- Pinchin completed the Limited Soil Sampling Program at the Site on May 29, 2012. The boreholes were advanced to a maximum depth of 1.4 metres below ground surface ("mbgs") using a hand auger.

- Based on the soil samples recovered during the borehole drilling program, the soil stratigraphy at the sample locations generally consists of fill material comprised of granular limestone up to 2 cm in diameter to a depth of 0.03 to 0.3 mbgs. Native subsurface material underlying the fill material was observed to generally consist of black organic clay soil to 0.6 mbgs followed by medium plastic clay to a maximum depth of 1.4 mbgs. A perched water table was observed in BH1 at surface.
- Based on Site specific information, the soil and groundwater quality was assessed based on the Canadian Council of Ministers of the Environment (“CCME”) Guidelines for residential land use, coarse and fine grained surface soil, non-potable groundwater conditions, and the protection of aquatic life in the borehole closest to Mill Creek.
- Six “worse case” soil samples based on the results of field screening were submitted for laboratory analysis of a combination of benzene, toluene, ethylbenzene, and xylenes (“BTEX”), petroleum hydrocarbons (“PHCs”) in the F1 to F4 fraction ranges (“F1-F4”), volatile organic compounds (“VOCs”), and polycyclic aromatic hydrocarbons (“PAHs”).
- All reported concentrations in the soil samples submitted for analysis of BTEX, PHCs (F1-F4), VOCs and PAHs satisfied their respective CCME guidelines, with the following exceptions:
  - Soil sample BH2 S1 exceeded the CCME guidelines for PHCs (F2 and F3);
  - Soil sample BH3 S1 exceeded the CCME guidelines for PHCs (F2); and
  - Soil sample BH6 S2 exceeded the CCME guidelines for PHCs (F2 and F3).

The findings of the Limited Soil Sampling Program identified PHC-impacted soil at boreholes BH2, BH3 and BH6. As such, Pinchin recommended that a remedial excavation be completed in the vicinity of these boreholes.

Pinchin has since been retained to conduct soil excavation and verification soil sampling of the impacted soils noted above. The Pinchin Limited Soil Sampling Program has been appended to the RAP.

## **PROPOSED REMEDIATION**

The extent of soil impacts have not been delineated. Pinchin proposes excavating known impacts and using field screening to determine excavation limits. Impacted soils will be transported to MidCanada’s Soil Treatment Facility in Ile-des-Chenes, Manitoba for disposal.

Pinchin will conduct field screening of soil samples collected during the excavation for combustible vapour concentrations using a Photoionization Detector (“PID”). Based on visual observations and field screening, Pinchin will collect and submit confirmatory soil samples for BTEX and PHCs analysis upon completion of the excavation. The excavation will be backfilled with clean gravel. The work will be conducted according to Manitoba Conservation guidelines.

The laboratory analytical results for the confirmatory soil samples will be compared to the most current CCME “Environmental Quality Guidelines” and the most current CCME “Canada-Wide Standards for Petroleum Hydrocarbons in Soil”. The criteria used for data comparison will be for residential land use (residence on-Site) excluding potable groundwater (municipal supply).

## REPORTING

Pinchin will create a final remediation report outlining the work completed at the Site. The report will be inclusive of confirmatory soil sampling results. A copy of the final report will be provided to Manitoba Conservation.

## CLOSURE

Thank you for your assistance in this matter. We await your approval of this RAP.

Yours truly,

**Pinchin Environmental Ltd.**

Prepared by:

Reviewed by:

  
per: Joanne Lanoie, M.Sc., B.Sc.  
*Environmental Scientist*  
Environmental Due Diligence &  
Remediation  
[jlanoie@pinchin.com](mailto:jlanoie@pinchin.com)

  
per: Grant Eftoda, B.Sc. (Eng)  
*Operations Manager*  
Environmental Due Diligence &  
Remediation  
[geftoda@pinchin.com](mailto:geftoda@pinchin.com)

75695.002 – 18 Main, St Eustache - RAP – August 14, 2012

Attach.



## **Limited Soil Sampling Program**

**18 Main Street**

**St. Eustache, Manitoba**

Business Development Bank of Canada  
1655 Kenaston Boulevard, Suite 200  
Winnipeg, Manitoba  
R3P 2M4

Attention: Mr. Francis Methot

June 19, 2012

Pinchin File: 75695.001

© 2012 Pinchin Environmental Ltd.

## EXECUTIVE SUMMARY

Pinchin Environmental Ltd. (“Pinchin”) was retained through an Authorization to Proceed signed by Mr. Francis Methot of Business Development Bank of Canada (“Client”) to conduct a Limited Soil Sampling Program of the property located at 18 Main Street, St. Eustache, Manitoba (hereafter referred to as the “Site”).

The Site is developed with one single-storey residential dwelling (“Site Building A”), one single-storey office building (“Site Building B”), two single-storey storage sheds (“Site Buildings C and G”), one single-storey garage (“Site Building D”), one single-storey aggregate storage building (“Site Building E”) and one single-storey concrete batch plant building (“Site Building F”) occupied by R. Bergeron Ready-Mix Concrete Ltd.

The purpose of this Limited Soil Sampling Program was to address potential issues of environmental concern in the area of the hydrocarbon staining in the vicinity of the aboveground storage tanks (“ASTs”) located on the south-central portion of the Site and hydrocarbon staining and oily water within a pit constructed with a pail within Site Building D.

The Limited Soil Sampling Program was completed at the Site by Pinchin on May 29, 2012, and consisted of the advancement of six shallow boreholes.

Select “worst case” soil samples collected during the borehole drilling program were submitted for laboratory analysis of benzene, toluene, ethylbenzene, and xylenes (“BTEX”), petroleum hydrocarbons (“PHCs”) in the F1 to F4 fraction ranges (“F1-F4”), volatile organic compounds (“VOCs”), and polycyclic aromatic hydrocarbons (“PAHs”).

Soil samples submitted for analysis from boreholes BH2, BH3 and BH6 had concentrations of one or more PHC (F2-F3) parameters exceeding their applicable Canadian Council of Ministers of the Environment (“CCME”) guidelines.

The findings of this Limited Soil Sampling Program identified PHC-impacted soil at boreholes BH2, BH3 and BH6. As such, it is Pinchin’s recommendation that a remedial excavation be completed in the vicinity of these boreholes.

*This Executive Summary is subject to the same standard limitations as contained in the report and must be read in conjunction with the entire report.*

## TABLE OF CONTENTS

1.0	INTRODUCTION .....	1
1.1	Scope of Work.....	1
2.0	METHODOLOGY .....	2
2.1	Borehole Investigation .....	2
2.2	Sampling and Laboratory Analysis .....	2
2.2.1	Soil .....	2
2.2.2	Analytical Laboratory.....	2
2.3	QA/QC Protocols .....	3
2.4	Site Condition Standards .....	3
3.0	RESULTS .....	5
3.1	Site Geology and Hydrogeology .....	5
3.2	Soil Vapour Concentrations .....	5
3.3	Field Observations.....	5
3.4	Analytical .....	5
3.4.1	Soil .....	5
4.0	FINDINGS AND CONCLUSIONS .....	6
5.0	DISCLAIMER .....	7
6.0	CLOSURE .....	8

## APPENDICES

Appendix I – Figures

Appendix II – Summary Tables

Appendix III – Laboratory Certificate of Analysis

## FIGURES

Figure 1 – Key Map

Figure 2 – Borehole Location Plan

## TABLE

Table 1 – Petroleum Hydrocarbon and BTEX Analysis for Soil

Table 2 – Volatile Organic Compound Analysis for Soil

Table 3 – Polycyclic Aromatic Hydrocarbons Analysis for Soil

## 1.0 INTRODUCTION

Pinchin Environmental Ltd. (“Pinchin”) was retained through an Authorization to Proceed signed by Mr. Francis Methot of Business Development Bank of Canada (“Client”) to conduct a Limited Soil Sampling Program of the property located at 18 Main Street, St. Eustache, Manitoba (hereafter referred to as the “Site”).

The Site is developed with one single-storey residential dwelling (“Site Building A”), one single-storey office building (“Site Building B”), two single-storey storage sheds (“Site Buildings C and G”), one single-storey garage (“Site Building D”), one single-storey aggregate storage building (“Site Building E”) and one single-storey concrete batch plant building (“Site Building F”) occupied by R. Bergeron Ready-Mix Concrete Ltd.

The purpose of this Limited Soil Sampling Program was to address potential issues of environmental concern in the area of the hydrocarbon staining in the vicinity of the aboveground storage tanks (“ASTs”) located on the south-central portion of the Site and hydrocarbon staining and oily water within a pit constructed with a pail within Site Building D.

This Limited Soil Sampling Program was completed in general accordance with the Canadian Standards Association (“CSA”) document entitled “*Phase II Environmental Site Assessment, CSA Standard Z769-00 (R2008)*”, dated 2000 and reaffirmed in 2008.

### 1.1 Scope of Work

The scope of work completed by Pinchin, as outlined in the Pinchin workplan entitled “*Limited Soil Sampling Workplan, 18 Main Street, St. Eustache, Manitoba*” submitted to the Client dated May 24, 2012, included the following:

- Manually collect six shallow soil samples from the subsurface at strategic locations adjacent the former ASTs;
- Submission of select “worst case” soil samples for laboratory analysis of benzene, toluene, ethylbenzene, and xylenes (“BTEX”), petroleum hydrocarbons (“PHCs”) in the F1 to F4 fraction ranges (“F1-F4”), volatile organic compounds (“VOCs”), and polycyclic aromatic hydrocarbons (“PAHs”);
- Comparison of the soil laboratory analytical results to the applicable regulatory criteria; and
- Preparation of a factual report (this report) detailing the findings of the Limited Soil Sampling Program and recommendations.

## **2.0 METHODOLOGY**

The investigation methodology was conducted in general accordance with Manitoba Conservation's "*Guideline for Environmental Site Investigations in Manitoba*" dated 1998 (Revised 2002).

### **2.1 Borehole Investigation**

Pinchin completed the borehole drilling program at the Site on May 29, 2012. The boreholes were advanced to a maximum depth of 1.4 metres below ground surface ("mbgs") using a hand auger.

Soil samples were collected at continuous intervals. Discrete soil samples were collected from the auger and containerized in laboratory-supplied glass sampling jars. Subsurface soil conditions were logged on-Site by Pinchin personnel at the time of drilling. Soil samples were examined for visual and olfactory evidence of impacts and a portion of each sample was analyzed in the field for petroleum-derived vapour concentrations in soil headspace using a photoionization detector ("PID").

The locations of the boreholes are shown on Figure 2 within Appendix I and a description of the subsurface stratigraphy encountered during the drilling program is documented in Section 3.1.

### **2.2 Sampling and Laboratory Analysis**

#### *2.2.1 Soil*

One most apparent "worst case" soil sample, based on vapour concentrations as well as visual and/or olfactory considerations, recovered from each borehole was submitted for laboratory analysis of a combination of BTEX, PHCs (F1-F4), VOCs and/or PAHs.

The borehole locations are shown on Figure 2 within Appendix I.

#### *2.2.2 Analytical Laboratory*

All collected soil samples were delivered to Maxxam Analytics Inc. ("Maxxam") in Winnipeg, Manitoba. Maxxam is an independent laboratory accredited by the Canadian Association for Laboratory Accreditation ("CALA"). Formal chain of custody records of the sample submissions were maintained between Pinchin and the staff at Maxxam.

### 2.3 QA/QC Protocols

Various quality assurance/quality control (“QA/QC”) protocols were followed during the Limited Soil Sampling Program to ensure that representative samples were obtained and that representative analytical data were reported by the laboratory.

Field QA/QC protocols that were employed by Pinchin included the following:

- Soil samples were extracted from the interior of the sampling device (where possible), rather than from areas in contact with the sampler walls to minimize the potential for cross-contamination;
- Soil samples were placed in laboratory-supplied glass sample jars;
- All soil samples were placed in coolers on ice immediately upon collection, with appropriate sample temperatures maintained prior submission to the laboratory;
- Dedicated and disposable Nitrile™ gloves were used for all sample handling;
- All non-dedicated monitoring and sampling equipment (i.e. hand auger) was cleaned before initial use and between uses to minimize the potential for cross-contamination; and
- Sample collection and handling procedures were performed in general accordance with the CSA Standard Z769-00 (R2008) and Manitoba Conservation’s Guidelines.

Maxxam’s internal laboratory QA/QC consisted of the analysis of laboratory duplicate, method blank, matrix spike and spiked blank samples, an evaluation of relative percent difference calculations for laboratory duplicate samples, and an evaluation of surrogate recoveries for the method blank, matrix spike and spiked blank samples.

### 2.4 Site Condition Standards

Manitoba Conservation has adopted the Canadian Council of Ministers of the Environment (“CCME”) Guidelines as the regulatory criteria applicable to soil and groundwater conditions in Manitoba.

Analytical results of the soil samples are compared to guidelines set forth in the CCME “*Environmental Quality Guidelines*” Update 7.0 dated September 2007 and the CCME “*Canada-Wide Standards for Petroleum Hydrocarbons in Soil*” dated 2008.

The Environmental Quality Guidelines have been developed using a risk-based approach. The application of the appropriate criteria is dependent upon several Site-specific conditions including:

- The existing/proposed land use;
- The existing/potential groundwater use;
- Soil depth; and
- Soil texture.

Guidelines are further subdivided into the following types of protection:

- Human health guidelines/check values; and
- Environmental health guidelines/check values.

Within each of these categories, several pathways are listed that describe how the chemical in question would come in contact with the receptor. If a pathway is not applicable to the Site or a specific area of the Site, then the corresponding guideline/check value is not applicable. If future use of the Site is modified, pathways that were not applicable can become applicable and need to be reassessed.

Site specific details for the evaluation of applicable pathways are as noted below.

- The Site has a residential dwelling located on-Site; therefore residential land use guidelines are applicable to the Site.
- The soils on-Site comprise of coarse-grained granular fill and fine-grained clay soils; therefore guidelines for coarse-grained and fine-grained soils are applicable to the Site.
- Groundwater is non-potable and is not used for livestock watering; therefore these pathways can be eliminated for the Site.
- Mill Creek is located adjacent the north portion of the Site; therefore the aquatic life pathway is applicable to the borehole closest to Mill Creek.
- Soil samples collected during this Limited Soil Sampling Program were shallow (maximum 1.4 mbgs"); therefore for the purpose of this report surface soil criteria is cited.

Based on the above, the appropriate Site Condition Standards for the Site are:

- Residential land use, coarse and fine grained surface soil, non-potable groundwater conditions, protection of aquatic life in the borehole closest to Mill Creek.

As such, all analytical results have been compared to these applicable CCME guidelines.

## **3.0 RESULTS**

### **3.1 Site Geology and Hydrogeology**

Based on the soil samples recovered during the borehole drilling program, the soil stratigraphy at the drilling locations generally consists of fill material comprised of granular limestone up to 2 cm in diameter to a depth of 0.03 to 0.3 mbgs.

Native subsurface material underlying the fill material was observed to generally consist of black organic clay soil to 0.6 mbgs followed by medium plastic clay to a maximum depth of 1.4 mbgs.

A perched water table was observed in BH1 at surface.

### **3.2 Soil Vapour Concentrations**

Vapour concentrations measured in the soil samples collected during the Limited Soil Sampling Program ranged from 0.7 parts per million by volume (“ppm<sub>v</sub>”) to a maximum of 48.7 ppm<sub>v</sub> in soil sample BH2 S1 collected at a depth of 0.3 mbgs in BH2.

### **3.3 Field Observations**

No odours or staining were observed in the soil samples collected during the borehole drilling program with the exception of the soil collected from BH2 from 0.4 to 1.3 mbgs which exhibited a swamp like odour, and soil samples BH2 S1, BH3 S1 and BH 6 S1 collected at a depth of 0.25 to 0.4 mbgs which exhibited a PHC-like odour.

### **3.4 Analytical**

#### *3.4.1 Soil*

As indicated in Table 1 within Appendix II, all reported concentrations of BTEX, PHCs (F1-F4), VOCs and PAHs in the soil samples submitted for analysis met the applicable guidelines, with the following exceptions:

- Soil sample BH2 S1 exceeded the applicable guidelines for PHCs (F2) (470 milligrams per kilogram (“mg/kg”) vs. the applicable CCME guideline of 150 mg/kg) and PHCs (F3) (360 mg/kg vs. the applicable CCME guideline of 300 mg/kg);
- Soil sample BH3 S1 exceeded the applicable guidelines for PHCs (F2) (290 mg/kg vs. the applicable CCME guideline of 150 mg/kg); and

- Soil sample BH6 S1 exceeded the applicable guidelines for PHCs (F2) (170 mg/kg vs. the applicable CCME guideline of 150 mg/kg) and PHCs (F3) (320 mg/kg vs. the applicable CCME guideline of 300 mg/kg).

The laboratory Certificate of Analysis for the soil samples is provided in Appendix III.

#### **4.0 FINDINGS AND CONCLUSIONS**

Based on the work completed, a summary of the activities and findings of this Limited Soil Sampling Program are noted below.

- Pinchin completed the Limited Soil Sampling Program at the Site on May 29, 2012. The boreholes were advanced to a maximum depth of 1.4 mbgs using a hand auger.
- Based on the soil samples recovered during the borehole drilling program, the soil stratigraphy at the sample locations generally consists of fill material comprised of granular limestone up to 2 cm in diameter to a depth of 0.03 to 0.3 mbgs. Native subsurface material underlying the fill material was observed to generally consist of black organic clay soil to 0.6 mbgs followed by medium plastic clay to a maximum depth of 1.4 mbgs. A perched water table was observed in BH1 at surface.
- Based on Site specific information, the soil and groundwater quality was assessed based on the CCME Guidelines for residential land use, coarse and fine grained surface soil, non-potable groundwater conditions, and the protection of aquatic life in the borehole closest to Mill Creek.
- Six “worst case” soil samples based on the results of field screening were submitted for laboratory analysis of a combination of BTEX, PHCs (F1-F4), VOCs and PAHs.
- All reported concentrations in the soil samples submitted for analysis of BTEX, PHCs (F1-F4), VOCs and PAHs satisfied their respective CCME guidelines, with the following exceptions:
  - Soil sample BH2 S1 exceeded the CCME guidelines for PHCs (F2 and F3);
  - Soil sample BH3 S1 exceeded the CCME guidelines for PHCs (F2); and
  - Soil sample BH6 S2 exceeded the CCME guidelines for PHCs (F2 and F3).

The findings of this Limited Soil Sampling Program identified PHC-impacted soil at boreholes BH2, BH3 and BH6. As such, it is Pinchin’s recommendation that a remedial excavation be completed in the vicinity of these boreholes.

## **5.0 DISCLAIMER**

This Limited Soil Sampling Program was performed for Business Development Bank of Canada (“Client”) in order to investigate potential environmental impacts at 18 Main Street, St. Eustache, Manitoba, Manitoba (“Site”). The term ‘recognized environmental condition’ means the presence or likely presence of any hazardous substance on a property under conditions that indicate an existing release, past release, or a material threat of a release of a hazardous substance into structures on the property or into the ground, groundwater, or surface water of the property. This Limited Soil Sampling Program does not quantify the extent of the extent of the current and/or recognized environmental condition or the cost of any remediation.

Conclusions derived are specific to the immediate area of study and cannot be extrapolated extensively away from sample locations. Samples have been analyzed for a limited number of contaminants that are expected to be present at the Site, and the absence of information relating to a specific contaminant does not indicate that it is not present.

No environmental site assessment can wholly eliminate uncertainty regarding the potential for recognized environmental conditions on a property. Performance of this Limited Soil Sampling Program to the standards established by Pinchin is intended to reduce, but not eliminate, uncertainty regarding the potential for recognized environmental conditions on the Site, and recognizes reasonable limits on time and cost.

This Limited Soil Sampling Program was performed in general compliance with currently acceptable practices for environmental site investigations, and specific Client requests, as applicable to this Site.

This report was prepared for the exclusive use of Business Development Bank of Canada, subject to the conditions and limitations contained within the duly authorized work plan. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of the third parties. If additional parties require reliance on this report, written authorization from Pinchin will be required. Pinchin disclaims responsibility of consequential financial effects on transactions or property values, or requirements for follow-up actions and costs. No other warranties are implied or expressed. Furthermore, this report should not be construed as legal advice.

Pinchin will not be responsible for any consequential or indirect damages. Pinchin will only be held liable for damages resulting from the negligence of Pinchin. Pinchin will not be liable for any losses or damage if the Client has failed, within a period of two years following the date upon which the claim is discovered within the meaning of the Manitoba Limitation of Actions Act RSM 1987, to commence legal proceedings against Pinchin to recover such losses or damage.

Pinchin makes no other representations whatsoever, including those concerning the legal significance of its findings, or as to other legal matters touched on in this report, including, but not limited to, ownership of any property, or the application of any law to the facts set forth herein. With respect to regulatory compliance issues, regulatory statutes are subject to interpretation and these interpretations may change over time.

## 6.0 CLOSURE

We trust that the foregoing information is satisfactory for your present requirements.

Should you have any questions about the report or require additional information, please contact the undersigned.

Yours truly,

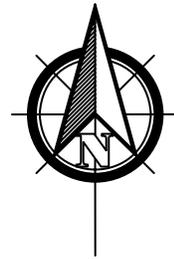
**PINCHIN ENVIRONMENTAL LTD.**

  
per: Joanne Lanoie, M.Sc., B.Sc.  
*Environmental Scientist*  
Environmental Due Diligence &  
Remediation  
[jlanoie@pinchin.com](mailto:jlanoie@pinchin.com)

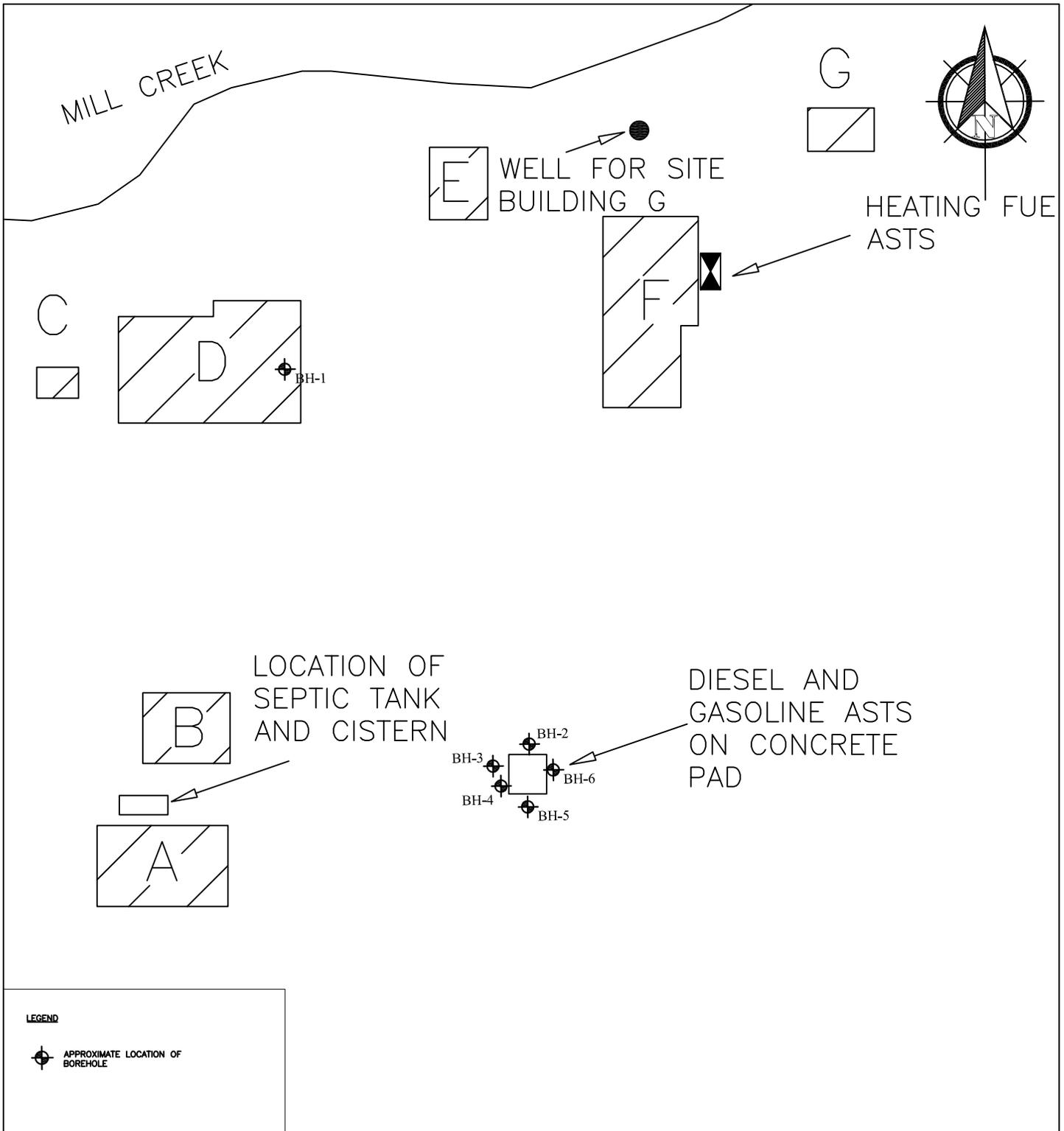
  
per: Grant Eftoda, B.Sc. (Eng)  
*Operations Manager*  
Environmental Due Diligence &  
Remediation  
[geftoda@pinchin.com](mailto:geftoda@pinchin.com)

**APPENDIX I**

**FIGURES**



PROJECT NAME			FIGURE NO.  <b>1</b>
<b>PHASE I ENVIRONMENTAL SITE ASSESSMENT</b>			
CLIENT NAME			
<b>BUSINESS DEVELOPMENT BANK OF CANADA</b>			
PROJECT LOCATION			
<b>18 MAIN STREET, ST. EUSTACHE, MANITOBA</b>			
DRAWING NAME		<b>KEY MAP</b>	
SCALE	PROJECT NO.		
<b>NTS</b>	<b>75695.001</b>	DATE	
		<b>JUNE 2012</b>	



 <p>54 TERRACON PLACE, WINNIPEG, MANITOBA R2J 4G7 PHONE: 204-452-0983 FAX: 204-453-0788</p>	PROJECT NAME			LIMITED SOIL SAMPLING PROGRAM
	CLIENT NAME			BUSINESS DEVELOPMENT BANK OF CANADA
	PROJECT LOCATION			18 MAIN STREET, ST. EUSTACHE, MANITOBA
	DRAWING NAME		BOREHOLE LOCATION PLAN	
	SCALE	PROJECT NO.	DATE	FIGURE NO. 2
NTS	75695.001	JUNE 2012		

**APPENDIX II**  
**SUMMARY TABLES**

**Table 1**  
**Petroleum Hydrocarbon and BTEX Analysis for Soil**  
**Limited Soil Sampling Program**  
**18 Main Street**  
**St. Eustache, Manitoba**

Parameter	Sample Number						CCME Guidelines		
	BH1 S1	BH2 S1	BH3 S1	BH4 S1	BH5 S1	BH6 S1	Surface Soils		
	0.5 mbgs	0.3 mbgs	0.4 mbgs	0.4 mbgs	0.4 mbgs	0.25 mbgs			
	Fine	Coarse	Fine	Fine	Fine	Coarse	Coarse	Fine	
BTEX	Benzene	<0.0050	<0.0050	<0.0050	0.011	<0.0050	<0.0050	0.095 <sup>a,c</sup>	2.1 <sup>a,c</sup>
	Toluene	<0.020	<0.020	<0.020	0.1	<0.020	<0.020	0.1 <sup>a,d</sup> , 75 <sup>a</sup>	110 <sup>a</sup>
	Ethyl benzene	<0.010	<0.010	<0.010	0.077	<0.010	<0.010	50 <sup>a,d</sup> , 55 <sup>a</sup>	120 <sup>a</sup>
	Xylenes	<0.040	<0.040	<0.040	0.55	<0.040	<0.040	14 <sup>a</sup>	230 <sup>a</sup>
PHCs	F1 (C6-C10)	<10	<10	<10	<10	<10	<10	30 <sup>b</sup>	210 <sup>b</sup>
	F2 (C10-C16)	<20	<b>470</b>	<b>290</b>	<20	<20	<b>170</b>	150 <sup>b</sup>	150 <sup>b</sup>
	F3 (C16-C34)	<20	<b>360</b>	150	60	28	<b>320</b>	300 <sup>b</sup>	1,300 <sup>b</sup>
	F4 (C34-C50)	23	<20	<20	35	<20	63	2,800 <sup>b</sup>	5,600 <sup>b</sup>
	F4G-SG	<500	N/A	N/A	<500	<500	<500	2,800 <sup>b</sup>	5,600 <sup>b</sup>

**Note:**

- All concentrations in parts per million or equivalent unless otherwise noted
- BTEX = Benzene, Toluene, Ethylbenzene, Xylene
- PHCs = Petroleum Hydrocarbons
- <, indicates that the concentration is less than the laboratory's minimum detection limit
- BH1 S1, 0.5 mbgs, Fine; indicates the sample was collected from borehole 1, sample location 1, 0.5 metres below ground surface and the soil was fine-grained
- CCME = Canadian Council of the Ministers of the Environment
- <sup>a</sup> Referenced from the CCME Canadian Environmental Quality Guidelines, Update 7.0, 2007  
Value listed represents the most stringent criteria for residential land use, surface soils, excluding protection of potable groundwater unless otherwise noted
- <sup>b</sup> Referenced from the CCME Canada-Wide Standards for Petroleum Hydrocarbons in Soil, 2008  
Value listed represents the most stringent criteria for residential land use, surface soils, excluding protection of potable groundwater
- <sup>c</sup> The human health guideline/check value of 10<sup>-5</sup> incremental risk has been referenced
- <sup>d</sup> The environmental health guideline for groundwater check (aquatic Life). Value only applicable for BH1 (the closest borehole to Mill Creek)
- Concentrations in **BOLD** print indicates concentration exceeds referenced guideline

**Table 2**  
**Volatile Organic Compound Analysis for Soil**  
**Limited Soil Sampling Program**  
**18 Main Street**  
**St. Eustache, Manitoba**

Parameter	Sample Number		CCME Guideline <sup>a</sup>
	BH1 S1		
	0.5 mbgs		
Chloromethane	<0.10		NG
Vinyl chloride	<0.060		5
Bromomethane	<0.30		NG
Chloroethane	<0.10		NG
Trichlorofluoromethane	<0.20		NG
1,1-dichloroethene	<0.025		5
Dichloromethane	<0.10		NG
trans-1,2-dichloroethene	<0.025		5
1,1-dichloroethane	<0.025		5
cis-1,2-dichloroethene	<0.025		5
Chloroform	<0.050		5
1,1,1-trichloroethane	<0.025		5
1,2-dichloroethane	<0.025		5
Carbon tetrachloride	<0.025		5
Methyl-tert-butylether (MTBE)	<0.10		NG
1,2-dichloropropane	<0.025		5
Trichloroethene	<0.0090		0.01
Bromodichloromethane	<0.050		NG
cis-1,3-dichloropropene	<0.050		5
trans-1,3-dichloropropene	<0.050		5
1,1,2-trichloroethane	<0.025		5
Chlorodibromomethane	<0.050		NG
Tetrachloroethene	<0.025		0.2
Chlorobenzene	<0.025		2
1,1,1,2-tetrachloroethane	<0.025		NG
m & p-Xylene	<0.040		NG
Bromoform	<0.050		NG
Styrene	<0.030		5
o-Xylene	<0.040		NG
1,1,2,2-tetrachloroethane	<0.025		5
1,2-dichlorobenzene	<0.025		1
1,3-dichlorobenzene	<0.025		1
1,4-dichlorobenzene	<0.025		1

**Note:**

- All concentrations in parts per million or equivalent unless otherwise noted
- VOCs = Volatile Organic Compounds
- NG; indicates that there is no guideline for corresponding parameter
- <, indicates that the concentration is less than the laboratory's minimum detection limit
- BH1 S1, 0.5 mbgs; indicates the sample was collected from borehole 1, sample location 1, 0.5 metres below ground surface
- CCME = Canadian Council of the Ministers of the Environment
- <sup>a</sup> Referenced from the CCME Canadian Environmental Quality Guidelines, Update 7.0, 2007
- N/A = Not analyzed for
- Concentrations in **BOLD** print indicates concentration exceeds referenced guideline

**Table 3**  
**Polycyclic Aromatic Hydrocarbons Analysis for Soil**  
**Limited Soil Sampling Program**  
**18 Main Street**  
**St. Eustache, Manitoba**

Parameter	Sample Number	CCME Guideline <sup>a</sup>
	BH1 S1	
	0.5 mbgs	
Benzo(a)Pyrene Equivalency	<0.10	5.3
Naphthalene	<0.010	0.013
2-Methylnaphthalene	<0.020	NG
Acenaphthylene	<0.0050	320
Acenaphthene	<0.0050	0.28
Fluorene	<0.020	0.25
Phenanthrene	<0.020	0.046
Anthracene	<0.0040	2.5
Fluoranthene	<0.020	15.4
Pyrene	<0.020	7.7
Benzo(a)anthracene	<0.020	1
Chrysene	<0.020	6.2
Benzo(b&j)fluoranthene	<0.020	1
Benzo(k)fluoranthene	<0.020	1
Benzo(a)pyrene	<0.020	0.6
Indeno(1,2,3-cd)pyrene	<0.050	1
Dibenz(a,h)anthracene	<0.050	1
Benzo(g,h,i)perylene	<0.050	NG
Low Molecular Weight PAH's	<0.020	NG
High Molecular Weight PAH's	<0.050	NG
Total PAH	<0.050	NG

**Note:**

- All concentrations in parts per million or equivalent unless otherwise noted
- PAHs = Polycyclic Aromatic Hydrocarbons
- NG; indicates that there is no guideline for corresponding parameter
- <, indicates that the concentration is less than the laboratory's minimum detection limit
- BH1 S1, 0.5 mbgs; indicates the sample was collected from borehole 1, sample location 1, 0.5 metres below ground surface
- CCME = Canadian Council of the Ministers of the Environment
- <sup>a</sup> Referenced from the CCME Canadian Environmental Soil Quality Guidelines for the Protection of Environmental and Human Health Polycyclic Aromatic Hydrocarbons, dated 2010  
Value listed represents the criteria for residential properties
- Concentrations in **BOLD** print indicates concentration exceeds referenced guideline

**APPENDIX III**

**LABORATORY CERTIFICATES OF ANALYSIS**

Your Project #: 75695.001  
 Your C.O.C. #: N003609

**Attention: Joanne Lanoie**

Pinchin Environmental  
 Winnipeg  
 54 Terracon Pl.  
 Winnipeg, MB  
 CANADA R2J 4G7

**Report Date: 2012/06/08**

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B245040**

**Received: 2012/05/31, 13:54**

Sample Matrix: Soil  
 # Samples Received: 6

Analyses	Quantity	Date		Laboratory Method	Analytical Method
		Extracted	Analyzed		
BTEX/F1 by HS GC/MS (MeOH extract)	5	2012/06/01	2012/06/01	WINSOP-00054 WINSOP-00055	EPA8260C/CCME PHCCWS
Volatile F1-BTEX (1)	1	N/A	2012/06/05	BBY WI-00033	BC MOE Lab Method
CCME Hydrocarbons (F2-F4 in soil)	6	2012/06/01	2012/06/01	WINSOP-00056	CCME PHC-CWS
CCME Hydrocarbons (F4G in soil)	4	2012/06/01	2012/06/06		CCME PHC-CWS
Moisture	6	N/A	2012/06/04	WIN SOP-00060	Carter Method 51.2
PAH in Soil by GC/MS (SIM) - CCME (1)	1	2012/06/01	2012/06/06	BBY8SOP-00022	EPA 8270D
Benzo[a]pyrene Equivalency (1)	1	N/A	2012/06/07	BBY WI-00033	CCME Guidelines
Total LMW, HMW, Total PAH Calc (1)	1	N/A	2012/06/07	BBY WI-00033	BC MOE Lab Method
CCME F1 C6-C10 in Soil by GC/FID (1)	1	2012/06/04	2012/06/04	BBY8SOP-00012	EPA SW8260C
PSA Coarse/Fine (75 micron)	1	N/A	2012/05/31		
Grain Size (Coarse/Fine)	1	N/A	2012/06/05		
VOCs in Soil by HS GC/MS (1)	1	2012/06/01	2012/06/04	BBY8-SOP-0009	EPA 8260C

\* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) This test was performed by Maxxam Vancouver

**Encryption Key**

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

JANELLE KOCHAN, B.Sc., Project Manager,  
 Email: JKochan@maxxam.ca  
 Phone# (204) 772-7276 Ext:2209

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Total cover pages: 1

Maxxam Job #: B245040  
 Report Date: 2012/06/08

Pinchin Environmental  
 Client Project #: 75695.001

Sampler Initials: JL

**RESULTS OF CHEMICAL ANALYSES OF SOIL**

Maxxam ID		DN9866	DN9867	DN9868	DN9869		
Sampling Date		2012/05/30 13:00	2012/05/30 13:00	2012/05/30 13:00	2012/05/30 13:00		
COC Number		N003609	N003609	N003609	N003609		
	<b>UNITS</b>	<b>BH1 S1</b>	<b>BH2 S1</b>	<b>BH3 S1</b>	<b>BH4 S1</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Calculated Parameters</b>							
F1 (C6-C10) - BTEX	mg/kg	<10				10	5883553
<b>Physical Properties</b>							
Moisture	%	24	11	17	19	0.3	5885171

RDL = Reportable Detection Limit

Maxxam ID		DN9870	DN9871		
Sampling Date		2012/05/30 13:00	2012/05/30 17:00		
COC Number		N003609	N003609		
	<b>UNITS</b>	<b>BH5 S1</b>	<b>BH6 S1</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Physical Properties</b>					
Moisture	%	17	7.6	0.3	5885171

RDL = Reportable Detection Limit

Maxxam Job #: B245040  
 Report Date: 2012/06/08

 Pinchin Environmental  
 Client Project #: 75695.001

Sampler Initials: JL

**PETROLEUM HYDROCARBONS (CCME)**

Maxxam ID		DN9866	DN9867	DN9868	DN9869		
Sampling Date		2012/05/30 13:00	2012/05/30 13:00	2012/05/30 13:00	2012/05/30 13:00		
COC Number		N003609	N003609	N003609	N003609		
	<b>UNITS</b>	<b>BH1 S1</b>	<b>BH2 S1</b>	<b>BH3 S1</b>	<b>BH4 S1</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Ext. Pet. Hydrocarbon</b>							
F2 (C10-C16 Hydrocarbons)	mg/kg	<20	470	290	<20	20	5885170
F3 (C16-C34 Hydrocarbons)	mg/kg	<20	360	150	60	20	5885170
F4 (C34-C50 Hydrocarbons)	mg/kg	23	<20	<20	35	20	5885170
Reached Baseline at C50	mg/kg	No	Yes	Yes	No		5885170
F4G-SG (Heavy Hydrocarbons-Grav.)	mg/kg	<500			<500	500	5897777
<b>Surrogate Recovery (%)</b>							
O-TERPHENYL (sur.)	%	86	82	76	92		5885170

RDL = Reportable Detection Limit

Maxxam ID		DN9870	DN9871		
Sampling Date		2012/05/30 13:00	2012/05/30 17:00		
COC Number		N003609	N003609		
	<b>UNITS</b>	<b>BH5 S1</b>	<b>BH6 S1</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Ext. Pet. Hydrocarbon</b>					
F2 (C10-C16 Hydrocarbons)	mg/kg	<20	170	20	5885170
F3 (C16-C34 Hydrocarbons)	mg/kg	28	320	20	5885170
F4 (C34-C50 Hydrocarbons)	mg/kg	<20	63	20	5885170
Reached Baseline at C50	mg/kg	No	No		5885170
F4G-SG (Heavy Hydrocarbons-Grav.)	mg/kg	<500	<500	500	5897777
<b>Surrogate Recovery (%)</b>					
O-TERPHENYL (sur.)	%	95	106		5885170

RDL = Reportable Detection Limit

Maxxam Job #: B245040  
 Report Date: 2012/06/08

 Pinchin Environmental  
 Client Project #: 75695.001

Sampler Initials: JL

**SEMIVOLATILE ORGANICS BY GC-MS (SOIL)**

Maxxam ID		DN9866		
Sampling Date		2012/05/30 13:00		
COC Number		N003609		
	<b>UNITS</b>	<b>BH1 S1</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Calculated Parameters</b>				
Index of Additive Cancer Risk(IARC)	N/A	0.31	0.10	5883554
Benzo[a]pyrene equivalency	N/A	<0.10	0.10	5883554
<b>Polycyclic Aromatics</b>				
Naphthalene	mg/kg	<0.010	0.010	5898699
2-Methylnaphthalene	mg/kg	<0.020	0.020	5898699
Acenaphthylene	mg/kg	<0.0050	0.0050	5898699
Acenaphthene	mg/kg	<0.0050	0.0050	5898699
Fluorene	mg/kg	<0.020	0.020	5898699
Phenanthrene	mg/kg	<0.020	0.020	5898699
Anthracene	mg/kg	<0.0040	0.0040	5898699
Fluoranthene	mg/kg	<0.020	0.020	5898699
Pyrene	mg/kg	<0.020	0.020	5898699
Benzo(a)anthracene	mg/kg	<0.020	0.020	5898699
Chrysene	mg/kg	<0.020	0.020	5898699
Benzo(b&j)fluoranthene	mg/kg	<0.020	0.020	5898699
Benzo(k)fluoranthene	mg/kg	<0.020	0.020	5898699
Benzo(a)pyrene	mg/kg	<0.020	0.020	5898699
Indeno(1,2,3-cd)pyrene	mg/kg	<0.050	0.050	5898699
Dibenz(a,h)anthracene	mg/kg	<0.050	0.050	5898699
Benzo(g,h,i)perylene	mg/kg	<0.050	0.050	5898699
Low Molecular Weight PAH`s	mg/kg	<0.020	0.020	5883162
High Molecular Weight PAH`s	mg/kg	<0.050	0.050	5883162
Total PAH	mg/kg	<0.050	0.050	5883162
<b>Surrogate Recovery (%)</b>				
D10-ANTHRACENE (sur.)	%	66		5898699
D8-ACENAPHTHYLENE (sur.)	%	67		5898699
D8-NAPHTHALENE (sur.)	%	79		5898699
TERPHENYL-D14 (sur.)	%	78		5898699
RDL = Reportable Detection Limit				

Maxxam Job #: B245040  
 Report Date: 2012/06/08

Pinchin Environmental  
 Client Project #: 75695.001

Sampler Initials: JL

**CUSTOM PARTICLE SIZE DISTRIBUTION (SOIL)**

Maxxam ID		DN9867		
Sampling Date		2012/05/30 13:00		
COC Number		N003609		
	<b>UNITS</b>	<b>BH2 S1</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Particle Size</b>				
Sieve-%Coarse (>0.075mm)	%	79.96	0.01	5895006
Grain Size	N/A	COARSE		5883551
Sieve-%Fine (<0.075mm)	%	20.04	0.01	5895006

RDL = Reportable Detection Limit

Maxxam Job #: B245040  
 Report Date: 2012/06/08

 Pinchin Environmental  
 Client Project #: 75695.001

Sampler Initials: JL

**VOLATILE ORGANICS BY GC-MS (SOIL)**

Maxxam ID		DN9867	DN9868	DN9869	DN9870		
Sampling Date		2012/05/30 13:00	2012/05/30 13:00	2012/05/30 13:00	2012/05/30 13:00		
COC Number		N003609	N003609	N003609	N003609		
	<b>UNITS</b>	<b>BH2 S1</b>	<b>BH3 S1</b>	<b>BH4 S1</b>	<b>BH5 S1</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Volatiles</b>							
Benzene	mg/kg	<0.0050	<0.0050	0.011	<0.0050	0.0050	5885169
Toluene	mg/kg	<0.020	<0.020	0.10	<0.020	0.020	5885169
Ethylbenzene	mg/kg	<0.010	<0.010	0.077	<0.010	0.010	5885169
Xylenes (Total)	mg/kg	<0.040	<0.040	0.55	<0.040	0.040	5885169
m & p-Xylene	mg/kg	<0.040	<0.040	0.37	<0.040	0.040	5885169
o-Xylene	mg/kg	<0.020	<0.020	0.18	<0.020	0.020	5885169
Methyl-tert-butylether (MTBE)	mg/kg	<0.10	<0.10	<0.10	<0.10	0.10	5885169
F1 (C6-C10) - BTEX	mg/kg	<10	<10	<10	<10	10	5885169
(C6-C10)	mg/kg	<10	<10	<10	<10	10	5885169
<b>Surrogate Recovery (%)</b>							
4-BROMOFLUOROBENZENE (sur.)	%	101	100	102	100		5885169
D10-ETHYLBENZENE (sur.)	%	97	97	101	95		5885169
D4-1,2-DICHLOROETHANE (sur.)	%	101	99	99	102		5885169
D8-TOLUENE (sur.)	%	94	93	94	92		5885169

RDL = Reportable Detection Limit

Maxxam Job #: B245040  
 Report Date: 2012/06/08

Pinchin Environmental  
 Client Project #: 75695.001

Sampler Initials: JL

**VOLATILE ORGANICS BY GC-MS (SOIL)**

Maxxam ID		DN9871		
Sampling Date		2012/05/30 17:00		
COC Number		N003609		
	<b>UNITS</b>	<b>BH6 S1</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Volatiles</b>				
Benzene	mg/kg	<0.0050	0.0050	5885169
Toluene	mg/kg	<0.020	0.020	5885169
Ethylbenzene	mg/kg	<0.010	0.010	5885169
Xylenes (Total)	mg/kg	<0.040	0.040	5885169
m & p-Xylene	mg/kg	<0.040	0.040	5885169
o-Xylene	mg/kg	<0.020	0.020	5885169
Methyl-tert-butylether (MTBE)	mg/kg	<0.10	0.10	5885169
F1 (C6-C10) - BTEX	mg/kg	<10	10	5885169
(C6-C10)	mg/kg	<10	10	5885169
<b>Surrogate Recovery (%)</b>				
4-BROMOFLUOROBENZENE (sur.)	%	102		5885169
D10-ETHYLBENZENE (sur.)	%	90		5885169
D4-1,2-DICHLOROETHANE (sur.)	%	138		5885169
D8-TOLUENE (sur.)	%	80		5885169
RDL = Reportable Detection Limit				

Maxxam Job #: B245040  
 Report Date: 2012/06/08

 Pinchin Environmental  
 Client Project #: 75695.001

Sampler Initials: JL

**VOLATILE ORGANICS BY GC-MS (SOIL)**

Maxxam ID		DN9866		
Sampling Date		2012/05/30 13:00		
COC Number		N003609		
	<b>UNITS</b>	<b>BH1 S1</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Volatile Hydrocarbons</b>				
(C6-C10)	mg/kg	<10	10	5889733
<b>Volatiles</b>				
Chloromethane	mg/kg	<0.10	0.10	5889699
Vinyl chloride	mg/kg	<0.060	0.060	5889699
Bromomethane	mg/kg	<0.30	0.30	5889699
Chloroethane	mg/kg	<0.10	0.10	5889699
Trichlorofluoromethane	mg/kg	<0.20	0.20	5889699
1,1-dichloroethene	mg/kg	<0.025	0.025	5889699
Dichloromethane	mg/kg	<0.10	0.10	5889699
trans-1,2-dichloroethene	mg/kg	<0.025	0.025	5889699
1,1-dichloroethane	mg/kg	<0.025	0.025	5889699
cis-1,2-dichloroethene	mg/kg	<0.025	0.025	5889699
Chloroform	mg/kg	<0.050	0.050	5889699
1,1,1-trichloroethane	mg/kg	<0.025	0.025	5889699
1,2-dichloroethane	mg/kg	<0.025	0.025	5889699
Carbon tetrachloride	mg/kg	<0.025	0.025	5889699
Benzene	mg/kg	<0.0050	0.0050	5889699
Methyl-tert-butylether (MTBE)	mg/kg	<0.10	0.10	5889699
1,2-dichloropropane	mg/kg	<0.025	0.025	5889699
Trichloroethene	mg/kg	<0.0090	0.0090	5889699
Bromodichloromethane	mg/kg	<0.050	0.050	5889699
cis-1,3-dichloropropene	mg/kg	<0.050	0.050	5889699
trans-1,3-dichloropropene	mg/kg	<0.050	0.050	5889699
1,1,2-trichloroethane	mg/kg	<0.025	0.025	5889699
Toluene	mg/kg	<0.020	0.020	5889699
Chlorodibromomethane	mg/kg	<0.050	0.050	5889699
Tetrachloroethene	mg/kg	<0.025	0.025	5889699
Chlorobenzene	mg/kg	<0.025	0.025	5889699
1,1,1,2-tetrachloroethane	mg/kg	<0.025	0.025	5889699
Ethylbenzene	mg/kg	<0.010	0.010	5889699
m & p-Xylene	mg/kg	<0.040	0.040	5889699
Bromoform	mg/kg	<0.050	0.050	5889699

RDL = Reportable Detection Limit

Maxxam Job #: B245040  
 Report Date: 2012/06/08

Pinchin Environmental  
 Client Project #: 75695.001

Sampler Initials: JL

**VOLATILE ORGANICS BY GC-MS (SOIL)**

Maxxam ID		DN9866		
Sampling Date		2012/05/30 13:00		
COC Number		N003609		
	<b>UNITS</b>	<b>BH1 S1</b>	<b>RDL</b>	<b>QC Batch</b>

Styrene	mg/kg	<0.030	0.030	5889699
o-Xylene	mg/kg	<0.040	0.040	5889699
Xylenes (Total)	mg/kg	<0.040	0.040	5889699
1,1,2,2-tetrachloroethane	mg/kg	<0.025	0.025	5889699
1,2-dichlorobenzene	mg/kg	<0.025	0.025	5889699
1,3-dichlorobenzene	mg/kg	<0.025	0.025	5889699
1,4-dichlorobenzene	mg/kg	<0.025	0.025	5889699
<b>Surrogate Recovery (%)</b>				
1,4-Difluorobenzene (sur.)	%	97		5889699
4-BROMOFLUOROBENZENE (sur.)	%	116		5889699
D10-ETHYLBENZENE (sur.)	%	120		5889699
D4-1,2-DICHLOROETHANE (sur.)	%	88		5889699
RDL = Reportable Detection Limit				

Maxxam Job #: B245040  
Report Date: 2012/06/08

Pinchin Environmental  
Client Project #: 75695.001

Sampler Initials: JL

**General Comments**

**Results relate only to the items tested.**

Pinchin Environmental  
 Attention: Joanne Lanoie  
 Client Project #: 75695.001  
 P.O. #:  
 Site Location:

Quality Assurance Report  
 Maxxam Job Number: NB245040

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
5885169 HW4	Matrix Spike	4-BROMOFLUOROBENZENE (sur.)	2012/06/01		101	%	60 - 140
		D10-ETHYLBENZENE (sur.)	2012/06/01		101	%	30 - 130
		D4-1,2-DICHLOROETHANE (sur.)	2012/06/01		100	%	60 - 140
		D8-TOLUENE (sur.)	2012/06/01		92	%	60 - 140
		Benzene	2012/06/01		91	%	60 - 140
		Toluene	2012/06/01		85	%	60 - 140
		Ethylbenzene	2012/06/01		91	%	60 - 140
		m & p-Xylene	2012/06/01		90	%	60 - 140
		o-Xylene	2012/06/01		91	%	60 - 140
		Methyl-tert-butylether (MTBE) (C6-C10)	2012/06/01		95	%	60 - 140
	Spiked Blank	4-BROMOFLUOROBENZENE (sur.)	2012/06/01		122	%	60 - 140
		D10-ETHYLBENZENE (sur.)	2012/06/01		102	%	60 - 140
		D4-1,2-DICHLOROETHANE (sur.)	2012/06/01		99	%	30 - 130
		D8-TOLUENE (sur.)	2012/06/01		91	%	60 - 140
		Benzene	2012/06/01		95	%	60 - 140
		Toluene	2012/06/01		85	%	60 - 140
		Ethylbenzene	2012/06/01		83	%	60 - 140
		m & p-Xylene	2012/06/01		91	%	60 - 140
		o-Xylene	2012/06/01		88	%	60 - 140
		Methyl-tert-butylether (MTBE) (C6-C10)	2012/06/01		88	%	60 - 140
	Method Blank	4-BROMOFLUOROBENZENE (sur.)	2012/06/01		85	%	60 - 140
		D10-ETHYLBENZENE (sur.)	2012/06/01		113	%	60 - 140
		D4-1,2-DICHLOROETHANE (sur.)	2012/06/01		101	%	60 - 140
		D8-TOLUENE (sur.)	2012/06/01		100	%	30 - 130
		Benzene	2012/06/01		90	%	60 - 140
		Toluene	2012/06/01		97	%	60 - 140
		Ethylbenzene	2012/06/01		<0.0050		mg/kg
		Xylenes (Total)	2012/06/01		<0.020		mg/kg
		m & p-Xylene	2012/06/01		<0.010		mg/kg
		o-Xylene	2012/06/01		<0.040		mg/kg
	RPD	Methyl-tert-butylether (MTBE) (C6-C10) - BTEX	2012/06/01		<0.040		mg/kg
		F1 (C6-C10) - BTEX	2012/06/01		<0.020		mg/kg
		(C6-C10)	2012/06/01		<0.10		mg/kg
Benzene		2012/06/01		<10		mg/kg	
Toluene		2012/06/01		NC		%	
Ethylbenzene		2012/06/01		NC		%	
Xylenes (Total)		2012/06/01		NC		%	
m & p-Xylene		2012/06/01		NC		%	
o-Xylene		2012/06/01		NC		%	
F1 (C6-C10) - BTEX		2012/06/01		NC		%	
5885170 CD3	Matrix Spike	O-TERPHENYL (sur.)	2012/06/01		NC	%	50
		F2 (C10-C16 Hydrocarbons)	2012/06/01		86	%	50 - 130
		F3 (C16-C34 Hydrocarbons)	2012/06/01		98	%	50 - 130
		F4 (C34-C50 Hydrocarbons)	2012/06/01		104	%	50 - 130
	Spiked Blank	O-TERPHENYL (sur.)	2012/06/01		100	%	50 - 130
		F2 (C10-C16 Hydrocarbons)	2012/06/01		90	%	50 - 130
		F3 (C16-C34 Hydrocarbons)	2012/06/01		98	%	80 - 120
		F4 (C34-C50 Hydrocarbons)	2012/06/01		105	%	80 - 120
	Method Blank	O-TERPHENYL (sur.)	2012/06/01		100	%	80 - 120
		F2 (C10-C16 Hydrocarbons)	2012/06/01		83	%	50 - 130
		F3 (C16-C34 Hydrocarbons)	2012/06/01		<20		mg/kg
		F4 (C34-C50 Hydrocarbons)	2012/06/01		<20		mg/kg
		F4 (C34-C50 Hydrocarbons)	2012/06/01		<20		mg/kg

Pinchin Environmental  
 Attention: Joanne Lanoie  
 Client Project #: 75695.001  
 P.O. #:  
 Site Location:

## Quality Assurance Report (Continued)

Maxxam Job Number: NB245040

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
5885170	CD3 RPD	F2 (C10-C16 Hydrocarbons)	2012/06/01	NC		%	50
		F3 (C16-C34 Hydrocarbons)	2012/06/01	NC		%	50
		F4 (C34-C50 Hydrocarbons)	2012/06/01	NC		%	50
5885171	CD3 Method Blank	Moisture	2012/06/04	<0.3		%	
	RPD [DN9866-01]	Moisture	2012/06/04	3.3		%	20
5889699	MM5 Matrix Spike	1,4-Difluorobenzene (sur.)	2012/06/04		106	%	70 - 130
		4-BROMOFLUOROBENZENE (sur.)	2012/06/04		115	%	70 - 130
		D10-ETHYLBENZENE (sur.)	2012/06/04		114	%	50 - 130
		D4-1,2-DICHLOROETHANE (sur.)	2012/06/04		99	%	70 - 130
		Chloromethane	2012/06/04		107	%	40 - 150
		Vinyl chloride	2012/06/04		66	%	40 - 150
		Bromomethane	2012/06/04		92	%	40 - 150
		Chloroethane	2012/06/04		104	%	40 - 150
		Trichlorofluoromethane	2012/06/04		145	%	40 - 150
		1,1-dichloroethene	2012/06/04		96	%	60 - 140
		Dichloromethane	2012/06/04		107	%	60 - 140
		trans-1,2-dichloroethene	2012/06/04		101	%	60 - 140
		1,1-dichloroethane	2012/06/04		95	%	60 - 140
		cis-1,2-dichloroethene	2012/06/04		100	%	60 - 140
		Chloroform	2012/06/04		96	%	60 - 140
		1,1,1-trichloroethane	2012/06/04		105	%	60 - 140
		1,2-dichloroethane	2012/06/04		105	%	60 - 140
		Carbon tetrachloride	2012/06/04		100	%	60 - 140
		Benzene	2012/06/04		103	%	60 - 140
		1,2-dichloropropane	2012/06/04		91	%	60 - 140
		Trichloroethene	2012/06/04		100	%	60 - 140
		Bromodichloromethane	2012/06/04		104	%	60 - 140
		cis-1,3-dichloropropene	2012/06/04		78	%	60 - 140
		trans-1,3-dichloropropene	2012/06/04		78	%	60 - 140
		1,1,2-trichloroethane	2012/06/04		77	%	60 - 140
		Toluene	2012/06/04		112	%	60 - 140
		Chlorodibromomethane	2012/06/04		98	%	60 - 140
		Tetrachloroethene	2012/06/04		110	%	60 - 140
		Chlorobenzene	2012/06/04		97	%	60 - 140
		1,1,1,2-tetrachloroethane	2012/06/04		94	%	60 - 140
		Ethylbenzene	2012/06/04		108	%	60 - 140
		m & p-Xylene	2012/06/04		151 (1)	%	60 - 140
		Bromoform	2012/06/04		102	%	60 - 140
		Styrene	2012/06/04		133	%	60 - 140
		o-Xylene	2012/06/04		98	%	60 - 140
		1,1,2,2-tetrachloroethane	2012/06/04		105	%	60 - 140
		1,2-dichlorobenzene	2012/06/04		93	%	60 - 140
		1,3-dichlorobenzene	2012/06/04		97	%	60 - 140
		1,4-dichlorobenzene	2012/06/04		98	%	60 - 140
	Spiked Blank	1,4-Difluorobenzene (sur.)	2012/06/03		101	%	70 - 130
		4-BROMOFLUOROBENZENE (sur.)	2012/06/03		110	%	70 - 130
		D10-ETHYLBENZENE (sur.)	2012/06/03		101	%	50 - 130
		D4-1,2-DICHLOROETHANE (sur.)	2012/06/03		96	%	70 - 130
		Chloromethane	2012/06/03		104	%	40 - 150
		Vinyl chloride	2012/06/03		70	%	40 - 150
		Bromomethane	2012/06/03		97	%	40 - 150
		Chloroethane	2012/06/03		104	%	40 - 150
		Trichlorofluoromethane	2012/06/03		134	%	40 - 150
		1,1-dichloroethene	2012/06/03		86	%	60 - 140
		Dichloromethane	2012/06/03		99	%	60 - 140

Pinchin Environmental  
 Attention: Joanne Lanoie  
 Client Project #: 75695.001  
 P.O. #:  
 Site Location:

## Quality Assurance Report (Continued)

Maxxam Job Number: NB245040

QA/QC Batch	Date Analyzed	Parameter	Value	Recovery	UNITS	QC Limits
Num Init	QC Type	yyyy/mm/dd				
5889699	MM5	Spiked Blank				
		trans-1,2-dichloroethene		109	%	60 - 140
		1,1-dichloroethane		107	%	60 - 140
		cis-1,2-dichloroethene		101	%	60 - 140
		Chloroform		96	%	60 - 140
		1,1,1-trichloroethane		101	%	60 - 140
		1,2-dichloroethane		97	%	60 - 140
		Carbon tetrachloride		104	%	60 - 140
		Benzene		100	%	60 - 140
		1,2-dichloropropane		85	%	60 - 140
		Trichloroethene		100	%	60 - 140
		Bromodichloromethane		100	%	60 - 140
		cis-1,3-dichloropropene		88	%	60 - 140
		trans-1,3-dichloropropene		100	%	60 - 140
		1,1,2-trichloroethane		74	%	60 - 140
		Toluene		120	%	60 - 140
		Chlorodibromomethane		95	%	60 - 140
		Tetrachloroethene		114	%	60 - 140
		Chlorobenzene		92	%	60 - 140
		1,1,1,2-tetrachloroethane		89	%	60 - 140
		Ethylbenzene		103	%	60 - 140
		m & p-Xylene		143 (2)	%	60 - 140
		Bromoform		99	%	60 - 140
		Styrene		121	%	60 - 140
		o-Xylene		92	%	60 - 140
		1,1,2,2-tetrachloroethane		95	%	60 - 140
		1,2-dichlorobenzene		99	%	60 - 140
		1,3-dichlorobenzene		92	%	60 - 140
		1,4-dichlorobenzene		92	%	60 - 140
	Method Blank	1,4-Difluorobenzene (sur.)		103	%	70 - 130
		4-BROMOFLUOROBENZENE (sur.)		100	%	70 - 130
		D10-ETHYLBENZENE (sur.)		106	%	50 - 130
		D4-1,2-DICHLOROETHANE (sur.)		99	%	70 - 130
		Chloromethane	<0.10		mg/kg	
		Vinyl chloride	<0.060		mg/kg	
		Bromomethane	<0.30		mg/kg	
		Chloroethane	<0.10		mg/kg	
		Trichlorofluoromethane	<0.20		mg/kg	
		1,1-dichloroethene	<0.025		mg/kg	
		Dichloromethane	<0.10		mg/kg	
		trans-1,2-dichloroethene	<0.025		mg/kg	
		1,1-dichloroethane	<0.025		mg/kg	
		cis-1,2-dichloroethene	<0.025		mg/kg	
		Chloroform	<0.050		mg/kg	
		1,1,1-trichloroethane	<0.025		mg/kg	
		1,2-dichloroethane	<0.025		mg/kg	
		Carbon tetrachloride	<0.025		mg/kg	
		Benzene	<0.0050		mg/kg	
		Methyl-tert-butylether (MTBE)	<0.10		mg/kg	
		1,2-dichloropropane	<0.025		mg/kg	
		Trichloroethene	<0.0090		mg/kg	
		Bromodichloromethane	<0.050		mg/kg	
		cis-1,3-dichloropropene	<0.050		mg/kg	
		trans-1,3-dichloropropene	<0.050		mg/kg	
		1,1,2-trichloroethane	<0.025		mg/kg	
		Toluene	<0.020		mg/kg	

Pinchin Environmental  
 Attention: Joanne Lanoie  
 Client Project #: 75695.001  
 P.O. #:  
 Site Location:

## Quality Assurance Report (Continued)

Maxxam Job Number: NB245040

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
5889699	MM5	Method Blank	2012/06/03	<0.050		mg/kg	
		Chlorodibromomethane	2012/06/03	<0.025		mg/kg	
		Tetrachloroethene	2012/06/03	<0.025		mg/kg	
		Chlorobenzene	2012/06/03	<0.025		mg/kg	
		1,1,1,2-tetrachloroethane	2012/06/03	<0.025		mg/kg	
		Ethylbenzene	2012/06/03	<0.010		mg/kg	
		m & p-Xylene	2012/06/03	<0.040		mg/kg	
		Bromoform	2012/06/03	<0.050		mg/kg	
		Styrene	2012/06/03	<0.030		mg/kg	
		o-Xylene	2012/06/03	<0.040		mg/kg	
		Xylenes (Total)	2012/06/03	<0.040		mg/kg	
		1,1,2,2-tetrachloroethane	2012/06/03	<0.025		mg/kg	
		1,2-dichlorobenzene	2012/06/03	<0.025		mg/kg	
		1,3-dichlorobenzene	2012/06/03	<0.025		mg/kg	
		1,4-dichlorobenzene	2012/06/03	<0.025		mg/kg	
	RPD	Chloromethane	2012/06/04	NC		%	40
		Vinyl chloride	2012/06/04	NC		%	40
		Bromomethane	2012/06/04	NC		%	40
		Chloroethane	2012/06/04	NC		%	40
		Trichlorofluoromethane	2012/06/04	NC		%	40
		1,1-dichloroethene	2012/06/04	NC		%	40
		Dichloromethane	2012/06/04	NC		%	40
		trans-1,2-dichloroethene	2012/06/04	NC		%	40
		1,1-dichloroethane	2012/06/04	NC		%	40
		cis-1,2-dichloroethene	2012/06/04	NC		%	40
		Chloroform	2012/06/04	NC		%	40
		1,1,1-trichloroethane	2012/06/04	NC		%	40
		1,2-dichloroethane	2012/06/04	NC		%	40
		Carbon tetrachloride	2012/06/04	NC		%	40
		Benzene	2012/06/04	NC		%	40
		Methyl-tert-butylether (MTBE)	2012/06/04	NC		%	40
		1,2-dichloropropane	2012/06/04	NC		%	40
		Trichloroethene	2012/06/04	NC		%	40
		Bromodichloromethane	2012/06/04	NC		%	40
		cis-1,3-dichloropropene	2012/06/04	NC		%	40
		trans-1,3-dichloropropene	2012/06/04	NC		%	40
		1,1,2-trichloroethane	2012/06/04	NC		%	40
		Toluene	2012/06/04	NC		%	40
		Chlorodibromomethane	2012/06/04	NC		%	40
		Tetrachloroethene	2012/06/04	NC		%	40
		Chlorobenzene	2012/06/04	NC		%	40
		1,1,1,2-tetrachloroethane	2012/06/04	NC		%	40
		Ethylbenzene	2012/06/04	NC		%	40
		m & p-Xylene	2012/06/04	NC		%	40
		Bromoform	2012/06/04	NC		%	40
		Styrene	2012/06/04	NC		%	40
		o-Xylene	2012/06/04	NC		%	40
		Xylenes (Total)	2012/06/04	NC		%	40
		1,1,2,2-tetrachloroethane	2012/06/04	NC		%	40
		1,2-dichlorobenzene	2012/06/04	NC		%	40
		1,3-dichlorobenzene	2012/06/04	NC		%	40
		1,4-dichlorobenzene	2012/06/04	NC		%	40
5889733	MM5	QC Standard (C6-C10)	2012/06/03		85	%	60 - 140
		Method Blank (C6-C10)	2012/06/03	<10		mg/kg	
5897777	CD3	Spiked Blank	2012/06/06		93	%	70 - 130
		Method Blank	2012/06/06	<500		mg/kg	

Pinchin Environmental  
 Attention: Joanne Lanoie  
 Client Project #: 75695.001  
 P.O. #:  
 Site Location:

## Quality Assurance Report (Continued)

Maxxam Job Number: NB245040

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
5898699 JP1	Spiked Blank	D10-ANTHRACENE (sur.)	2012/06/07		102	%	60 - 130
		D8-ACENAPHTHYLENE (sur.)	2012/06/07		101	%	50 - 130
		D8-NAPHTHALENE (sur.)	2012/06/07		99	%	50 - 130
		TERPHENYL-D14 (sur.)	2012/06/07		110	%	60 - 130
		Naphthalene	2012/06/07		85	%	50 - 130
		2-Methylnaphthalene	2012/06/07		88	%	50 - 130
		Acenaphthylene	2012/06/07		87	%	50 - 130
		Acenaphthene	2012/06/07		90	%	50 - 130
		Fluorene	2012/06/07		89	%	50 - 130
		Phenanthrene	2012/06/07		84	%	60 - 130
		Anthracene	2012/06/07		89	%	60 - 130
		Fluoranthene	2012/06/07		97	%	60 - 130
		Pyrene	2012/06/07		98	%	60 - 130
		Benzo(a)anthracene	2012/06/07		70	%	60 - 130
		Chrysene	2012/06/07		85	%	60 - 130
		Benzo(b&j)fluoranthene	2012/06/07		86	%	60 - 130
		Benzo(k)fluoranthene	2012/06/07		84	%	60 - 130
		Benzo(a)pyrene	2012/06/07		89	%	60 - 130
		Indeno(1,2,3-cd)pyrene	2012/06/07		79	%	60 - 130
		Dibenz(a,h)anthracene	2012/06/07		86	%	60 - 130
		Benzo(g,h,i)perylene	2012/06/07		79	%	60 - 130
	Method Blank	D10-ANTHRACENE (sur.)	2012/06/06		77	%	60 - 130
		D8-ACENAPHTHYLENE (sur.)	2012/06/06		75	%	50 - 130
		D8-NAPHTHALENE (sur.)	2012/06/06		81	%	50 - 130
		TERPHENYL-D14 (sur.)	2012/06/06		82	%	60 - 130
		Naphthalene	2012/06/06	<0.010		mg/kg	
		2-Methylnaphthalene	2012/06/06	<0.020		mg/kg	
		Acenaphthylene	2012/06/06	<0.0050		mg/kg	
		Acenaphthene	2012/06/06	<0.0050		mg/kg	
		Fluorene	2012/06/06	<0.020		mg/kg	
		Phenanthrene	2012/06/06	<0.020		mg/kg	
		Anthracene	2012/06/06	<0.0040		mg/kg	
		Fluoranthene	2012/06/06	<0.020		mg/kg	
		Pyrene	2012/06/06	<0.020		mg/kg	
		Benzo(a)anthracene	2012/06/06	<0.020		mg/kg	
		Chrysene	2012/06/06	<0.020		mg/kg	
		Benzo(b&j)fluoranthene	2012/06/06	<0.020		mg/kg	
		Benzo(k)fluoranthene	2012/06/06	<0.020		mg/kg	
		Benzo(a)pyrene	2012/06/06	<0.020		mg/kg	
		Indeno(1,2,3-cd)pyrene	2012/06/06	<0.050		mg/kg	
		Dibenz(a,h)anthracene	2012/06/06	<0.050		mg/kg	
		Benzo(g,h,i)perylene	2012/06/06	<0.050		mg/kg	

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.  
 Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.  
 QC Standard: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.  
 Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.  
 Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.  
 Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.  
 NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.  
 ( 1 ) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.  
 ( 2 ) LCS outside acceptance criteria (10% of analytes failure allowed)

### Validation Signature Page

Maxxam Job #: B245040

---

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



ANDY LU, Data Validation Coordinator



ERIN SANTOS, Dip., Laboratory Coordinator, Laboratory Coordinator



HUA WO, Organics Supervisor

=====

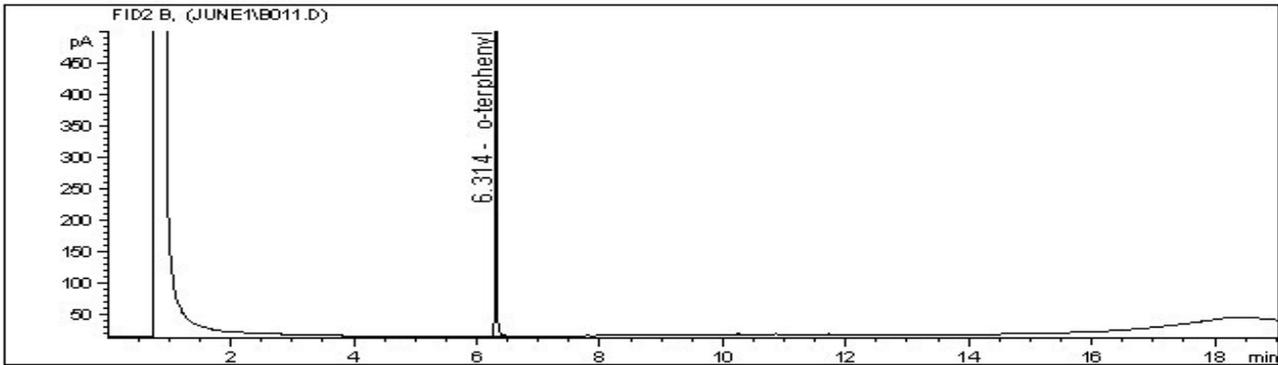
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Report Date: 2012/06/08  
 Maxxam Job #: B245040  
 Maxxam Sample: DN9866

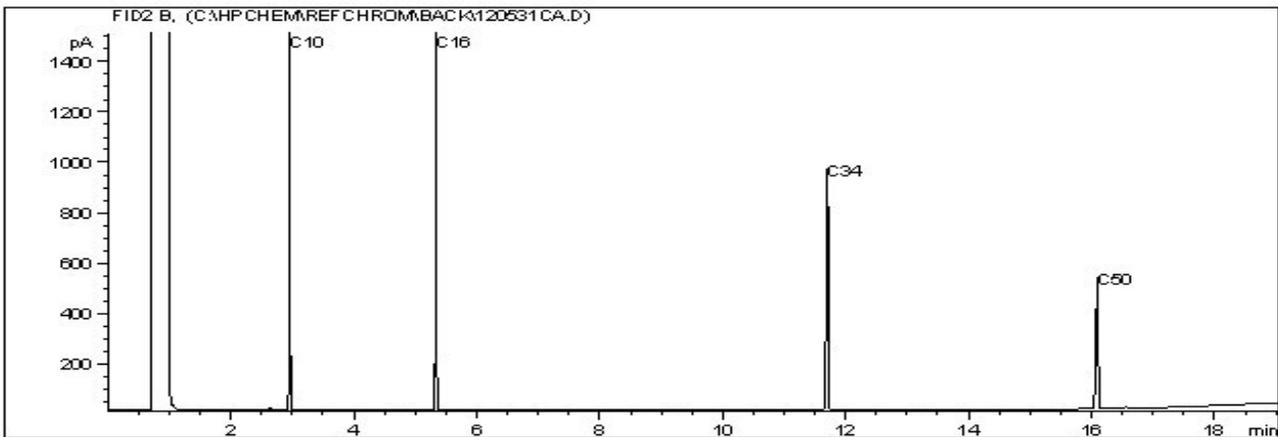
Pinchin Environmental  
 Client Project #: 75695.001

Client ID: BH1 S1

**CCME Hydrocarbons (F2-F4 in soil) Chromatogram**



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

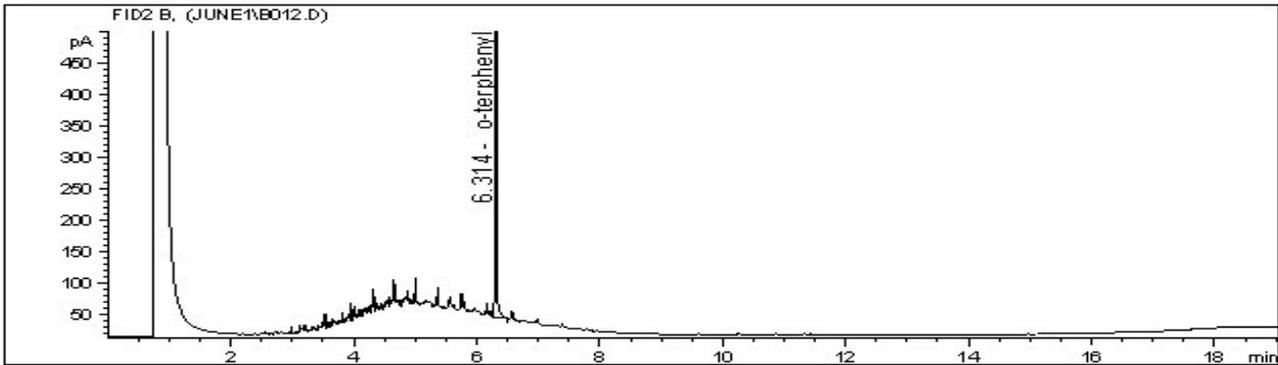
**Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.**

Report Date: 2012/06/08  
 Maxxam Job #: B245040  
 Maxxam Sample: DN9867

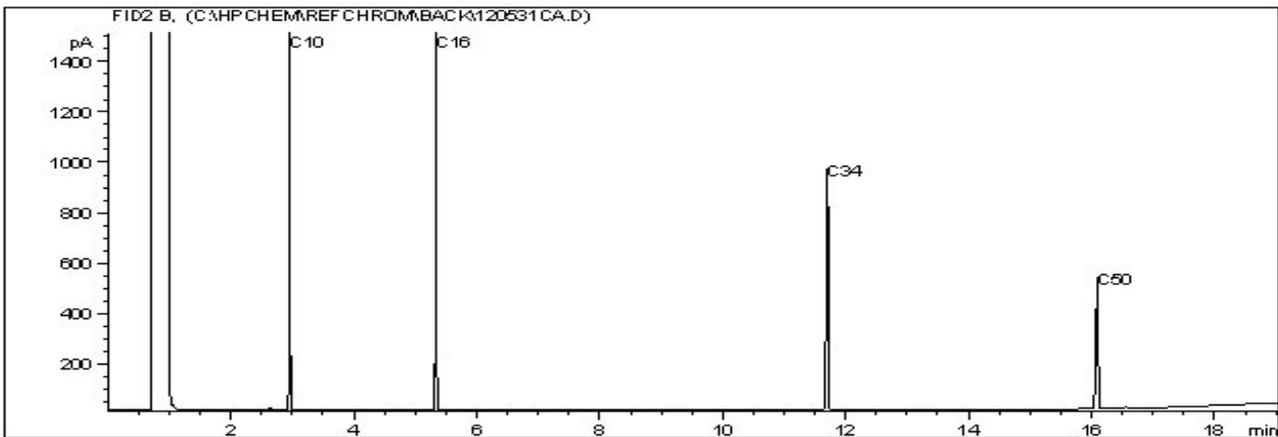
Pinchin Environmental  
 Client Project #: 75695.001

Client ID: BH2 S1

**CCME Hydrocarbons (F2-F4 in soil) Chromatogram**



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

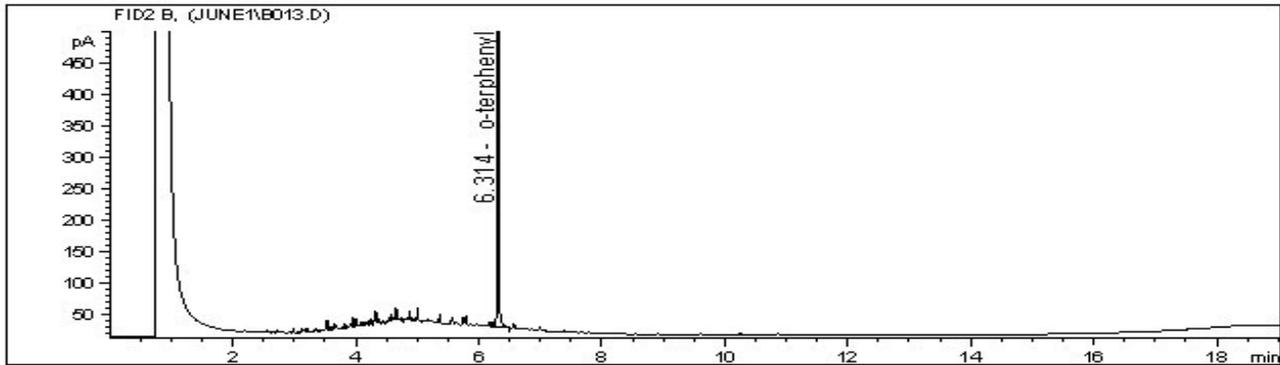
**Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.**

Report Date: 2012/06/08  
 Maxxam Job #: B245040  
 Maxxam Sample: DN9868

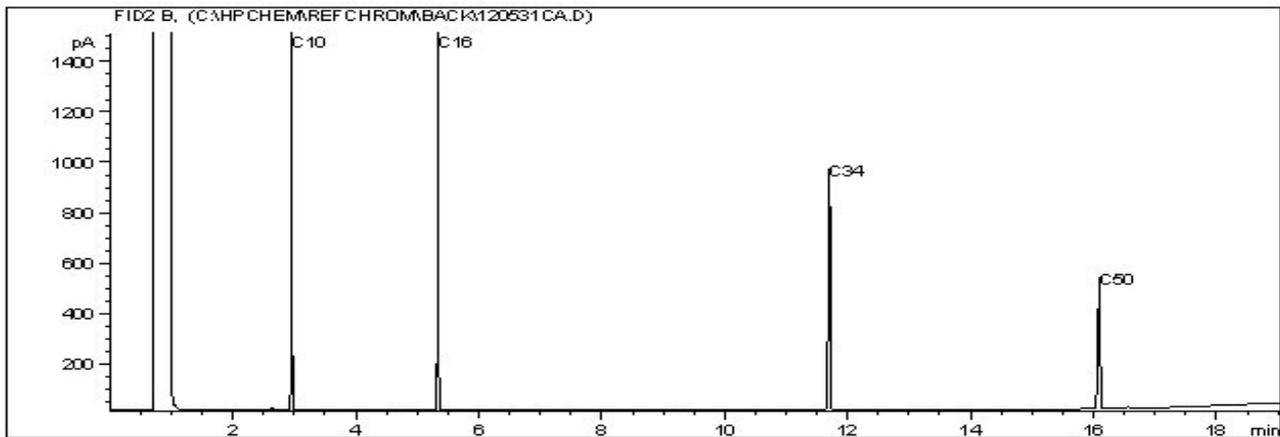
Pinchin Environmental  
 Client Project #: 75695.001

Client ID: BH3 S1

**CCME Hydrocarbons (F2-F4 in soil) Chromatogram**



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

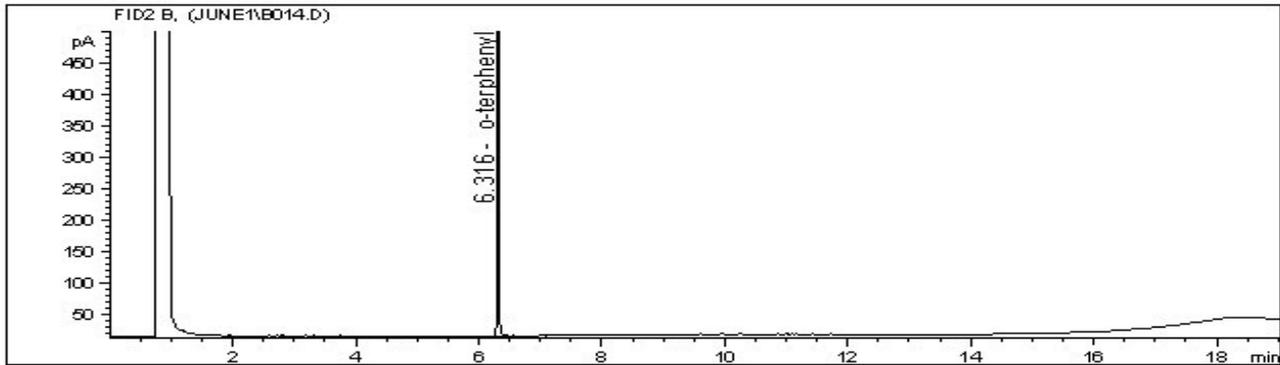
**Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.**

Report Date: 2012/06/08  
 Maxxam Job #: B245040  
 Maxxam Sample: DN9869

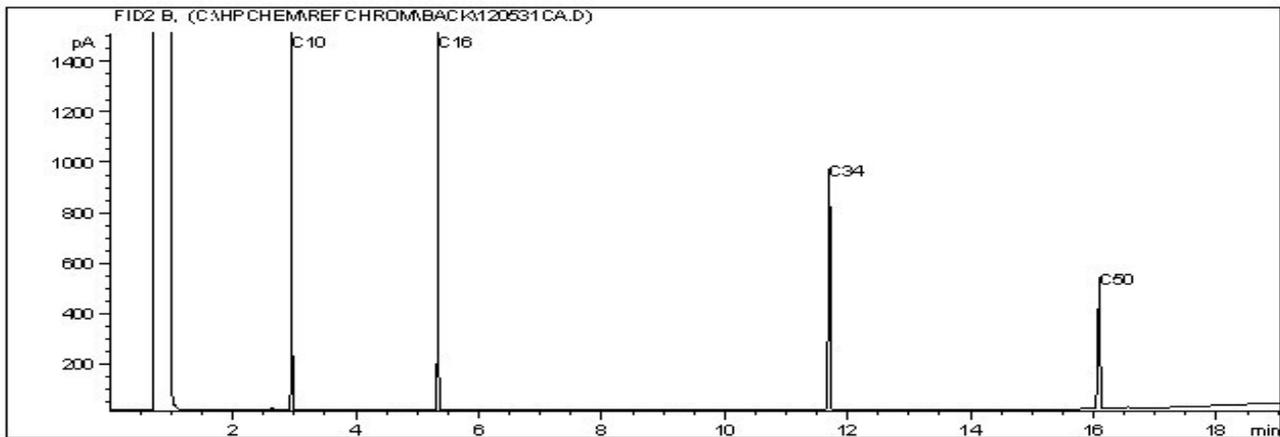
Pinchin Environmental  
 Client Project #: 75695.001

Client ID: BH4 S1

**CCME Hydrocarbons (F2-F4 in soil) Chromatogram**



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

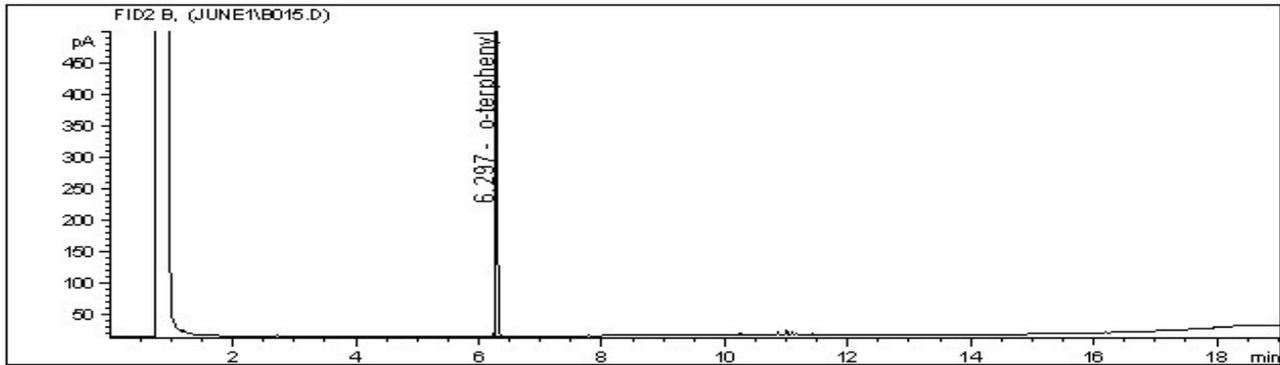
**Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.**

Report Date: 2012/06/08  
 Maxxam Job #: B245040  
 Maxxam Sample: DN9870

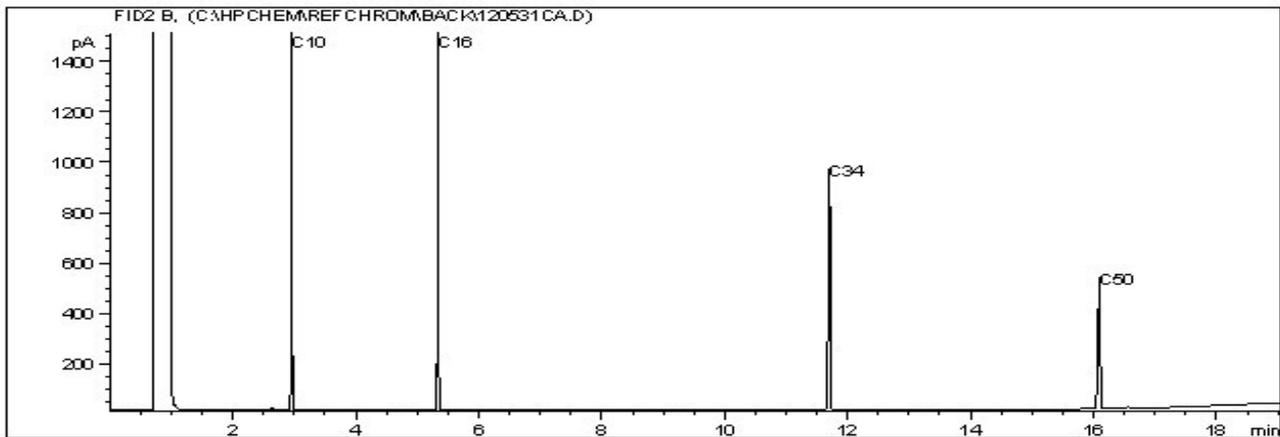
Pinchin Environmental  
 Client Project #: 75695.001

Client ID: BH5 S1

**CCME Hydrocarbons (F2-F4 in soil) Chromatogram**



Carbon Range Distribution - Reference Chromatogram



**TYPICAL PRODUCT CARBON NUMBER RANGES**

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

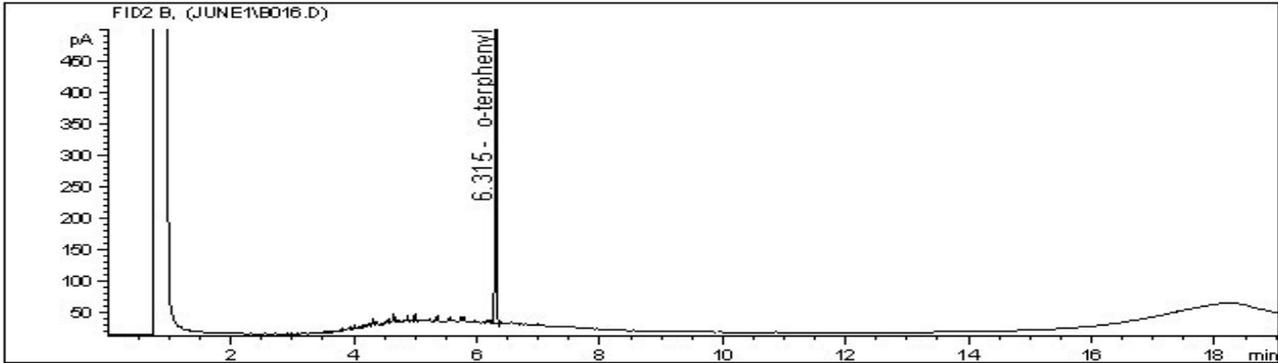
**Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.**

Report Date: 2012/06/08  
 Maxxam Job #: B245040  
 Maxxam Sample: DN9871

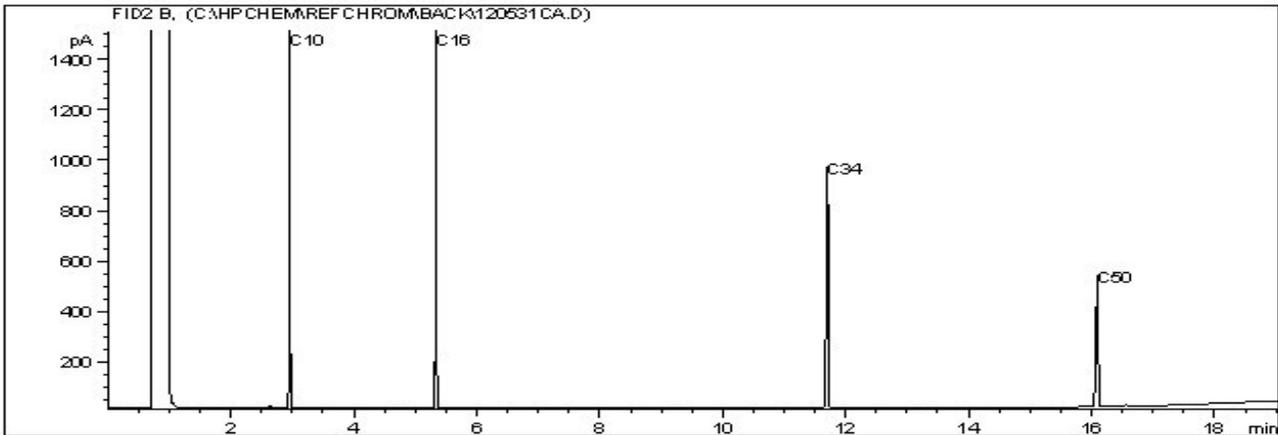
Pinchin Environmental  
 Client Project #: 75695.001

Client ID: BH6 S1

**CCME Hydrocarbons (F2-F4 in soil) Chromatogram**



Carbon Range Distribution - Reference Chromatogram



**TYPICAL PRODUCT CARBON NUMBER RANGES**

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

**Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.**



**Conservation and Water Stewardship**  
Environmental Compliance and Enforcement  
123 Main Street, Suite 160  
Winnipeg, Manitoba R3C 1A5  
T 204-945-7100 F 204-948-2338  
www.manitoba.ca

August 21, 2012

Pinchin Environmental  
54 Terracon Place  
Winnipeg, MB R2J 4G7

Dear Ms. Joanne Lanoie,

**Re: Remedial Action Plan, 18 Main Street, St. Eustache, Manitoba, Pinchin File No:  
75695.002**

---

This will acknowledge receipt of the Remedial Action Plan for the above noted property, dated August 14, 2012, prepared by Pinchin Environmental.

The Remedial Action Plan states:

- Impacted soil from the area surrounding the aboveground storage tanks will be removed from the site and transported to MidCanada Soil Recycling Facility in Ile des Chenes, Manitoba.
- The target remediation criteria will likely be those for a Residential Land Use, excluding potable groundwater pathway.
- Representative soil samples will be collected from the limits of the final excavation and sent for laboratory analysis.
- Clean imported fill material will be used to backfill the excavation.

It is the position of Manitoba Conservation that the remediation at 18 Main Street, St. Eustache, Manitoba be undertaken as described above. A Summary Report documenting the remediation should be submitted to this office for review at the completion of this work.

It should be noted that the position of Manitoba Conservation as stated in this letter is based on the information provided to this office by Pinchin Environmental and relates only to the matters within the scope of the investigation conducted by Pinchin Environmental.

Sincerely,

Warren Rospad, B.Sc.  
District Supervisor / Environment Officer  
Contaminated Sites / Petroleum Storage Programs

File:

**APPENDIX IV**  
**LABORATORY CERTIFICATES OF ANALYSES**

Your Project #: 75695.002  
 Your C.O.C. #: N004044

**Attention: SEAN MULVEY**

Pinchin Environmental  
 Winnipeg  
 54 Terracon Pl.  
 Winnipeg, MB  
 CANADA R2J 4G7

**Report Date: 2012/09/19**

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B281497**

**Received: 2012/09/12, 14:00**

Sample Matrix: Soil  
 # Samples Received: 9

Analyses	Quantity	Date		Laboratory Method	Analytical Method
		Extracted	Analyzed		
BTEX/F1 by HS GC/MS (MeOH extract)	9	2012/09/14	2012/09/18	WINSOP-00054 WINSOP-00055	EPA8260C/CCME PHCCWS
CCME Hydrocarbons (F2-F4 in soil)	9	2012/09/14	2012/09/18	WINSOP-00056	CCME PHC-CWS
Moisture	9	N/A	2012/09/17	WIN SOP-00060	Carter Method 51.2

\* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

**Encryption Key**

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Janelle Kochan, B.Sc., Project Manager,  
 Email: JKochan@maxxam.ca  
 Phone# (204) 772-7276 Ext:2209

=====

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Total cover pages: 1

Maxxam Job #: B281497  
 Report Date: 2012/09/19

Pinchin Environmental  
 Client Project #: 75695.002

### RESULTS OF CHEMICAL ANALYSES OF SOIL

Maxxam ID		EL0838	EL0839	EL0840	EL0841	EL0842		
Sampling Date		2012/09/11 09:45	2012/09/11 09:55	2012/09/11 10:05	2012/09/11 10:15	2012/09/11 10:25		
COC Number		N004044	N004044	N004044	N004044	N004044		
	<b>UNITS</b>	<b>B2</b>	<b>B5</b>	<b>B8</b>	<b>PEW</b>	<b>PNW</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Physical Properties</b>								
Moisture	%	25	25	27	5.2	5.7	0.3	6167454

RDL = Reportable Detection Limit

Maxxam ID		EL0843	EL0844	EL0845	EL0846		
Sampling Date		2012/09/11 10:35	2012/09/11 10:45	2012/09/11 10:55	2012/09/11 11:05		
COC Number		N004044	N004044	N004044	N004044		
	<b>UNITS</b>	<b>PWW</b>	<b>NW3</b>	<b>EW1</b>	<b>WW2</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Physical Properties</b>							
Moisture	%	25	25	27	27	0.3	6167454

RDL = Reportable Detection Limit

Maxxam Job #: B281497  
 Report Date: 2012/09/19

 Pinchin Environmental  
 Client Project #: 75695.002

**PETROLEUM HYDROCARBONS (CCME)**

Maxxam ID		EL0838	EL0839	EL0840	EL0841		
Sampling Date		2012/09/11 09:45	2012/09/11 09:55	2012/09/11 10:05	2012/09/11 10:15		
COC Number		N004044	N004044	N004044	N004044		
	<b>UNITS</b>	<b>B2</b>	<b>B5</b>	<b>B8</b>	<b>PEW</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Ext. Pet. Hydrocarbon</b>							
F2 (C10-C16 Hydrocarbons)	mg/kg	<20	<20	<20	69	20	6167453
F3 (C16-C34 Hydrocarbons)	mg/kg	<20	<20	29	430	20	6167453
F4 (C34-C50 Hydrocarbons)	mg/kg	<20	<20	<20	33	20	6167453
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes		6167453
<b>Surrogate Recovery (%)</b>							
O-TERPHENYL (sur.)	%	89	89	98	86		6167453
RDL = Reportable Detection Limit							

Maxxam ID		EL0842	EL0843	EL0844	EL0845		
Sampling Date		2012/09/11 10:25	2012/09/11 10:35	2012/09/11 10:45	2012/09/11 10:55		
COC Number		N004044	N004044	N004044	N004044		
	<b>UNITS</b>	<b>PNW</b>	<b>PWW</b>	<b>NW3</b>	<b>EW1</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Ext. Pet. Hydrocarbon</b>							
F2 (C10-C16 Hydrocarbons)	mg/kg	<20	<20	<20	<20	20	6167453
F3 (C16-C34 Hydrocarbons)	mg/kg	<20	86	<20	<20	20	6167453
F4 (C34-C50 Hydrocarbons)	mg/kg	<20	<20	<20	<20	20	6167453
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes		6167453
<b>Surrogate Recovery (%)</b>							
O-TERPHENYL (sur.)	%	95	101	101	87		6167453
RDL = Reportable Detection Limit							

Maxxam Job #: B281497  
 Report Date: 2012/09/19

Pinchin Environmental  
 Client Project #: 75695.002

**PETROLEUM HYDROCARBONS (CCME)**

Maxxam ID		EL0846		
Sampling Date		2012/09/11 11:05		
COC Number		N004044		
	<b>UNITS</b>	<b>WW2</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Ext. Pet. Hydrocarbon</b>				
F2 (C10-C16 Hydrocarbons)	mg/kg	<20	20	6167453
F3 (C16-C34 Hydrocarbons)	mg/kg	<20	20	6167453
F4 (C34-C50 Hydrocarbons)	mg/kg	<20	20	6167453
Reached Baseline at C50	mg/kg	Yes		6167453
<b>Surrogate Recovery (%)</b>				
O-TERPHENYL (sur.)	%	79		6167453
RDL = Reportable Detection Limit				

Maxxam Job #: B281497  
 Report Date: 2012/09/19

 Pinchin Environmental  
 Client Project #: 75695.002

**VOLATILE ORGANICS BY GC-MS (SOIL)**

Maxxam ID		EL0838	EL0839	EL0840	EL0841		
Sampling Date		2012/09/11 09:45	2012/09/11 09:55	2012/09/11 10:05	2012/09/11 10:15		
COC Number		N004044	N004044	N004044	N004044		
	<b>UNITS</b>	<b>B2</b>	<b>B5</b>	<b>B8</b>	<b>PEW</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Volatiles</b>							
Benzene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	6167447
Toluene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	6167447
Ethylbenzene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	6167447
Xylenes (Total)	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	6167447
m & p-Xylene	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	6167447
o-Xylene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	6167447
Methyl-tert-butylether (MTBE)	mg/kg	<0.10	<0.10	<0.10	<0.10	0.10	6167447
F1 (C6-C10) - BTEX	mg/kg	<10	<10	<10	<10	10	6167447
(C6-C10)	mg/kg	<10	<10	<10	<10	10	6167447
<b>Surrogate Recovery (%)</b>							
4-BROMOFLUOROBENZENE (sur.)	%	100	101	102	100		6167447
D10-ETHYLBENZENE (sur.)	%	122	123	119	117		6167447
D4-1,2-DICHLOROETHANE (sur.)	%	114	112	133	119		6167447
D8-TOLUENE (sur.)	%	94	95	91	93		6167447
RDL = Reportable Detection Limit							

Maxxam Job #: B281497  
 Report Date: 2012/09/19

 Pinchin Environmental  
 Client Project #: 75695.002

**VOLATILE ORGANICS BY GC-MS (SOIL)**

Maxxam ID		EL0842	EL0843	EL0844	EL0845		
Sampling Date		2012/09/11 10:25	2012/09/11 10:35	2012/09/11 10:45	2012/09/11 10:55		
COC Number		N004044	N004044	N004044	N004044		
	<b>UNITS</b>	<b>PNW</b>	<b>PWW</b>	<b>NW3</b>	<b>EW1</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Volatiles</b>							
Benzene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	6167447
Toluene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	6167447
Ethylbenzene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	6167447
Xylenes (Total)	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	6167447
m & p-Xylene	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	6167447
o-Xylene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	6167447
Methyl-tert-butylether (MTBE)	mg/kg	<0.10	<0.10	<0.10	<0.10	0.10	6167447
F1 (C6-C10) - BTEX	mg/kg	<10	<10	<10	<10	10	6167447
(C6-C10)	mg/kg	<10	<10	<10	<10	10	6167447
<b>Surrogate Recovery (%)</b>							
4-BROMOFLUOROBENZENE (sur.)	%	102	102	101	102		6167447
D10-ETHYLBENZENE (sur.)	%	115	102	102	99		6167447
D4-1,2-DICHLOROETHANE (sur.)	%	139	100	97	102		6167447
D8-TOLUENE (sur.)	%	89	99	99	98		6167447

RDL = Reportable Detection Limit

Maxxam Job #: B281497  
 Report Date: 2012/09/19

Pinchin Environmental  
 Client Project #: 75695.002

### VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		EL0846		
Sampling Date		2012/09/11 11:05		
COC Number		N004044		
	<b>UNITS</b>	<b>WW2</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Volatiles</b>				
Benzene	mg/kg	<0.0050	0.0050	6167447
Toluene	mg/kg	<0.020	0.020	6167447
Ethylbenzene	mg/kg	<0.010	0.010	6167447
Xylenes (Total)	mg/kg	<0.040	0.040	6167447
m & p-Xylene	mg/kg	<0.040	0.040	6167447
o-Xylene	mg/kg	<0.020	0.020	6167447
Methyl-tert-butylether (MTBE)	mg/kg	<0.10	0.10	6167447
F1 (C6-C10) - BTEX	mg/kg	<10	10	6167447
(C6-C10)	mg/kg	<10	10	6167447
<b>Surrogate Recovery (%)</b>				
4-BROMOFLUOROBENZENE (sur.)	%	100		6167447
D10-ETHYLBENZENE (sur.)	%	105		6167447
D4-1,2-DICHLOROETHANE (sur.)	%	99		6167447
D8-TOLUENE (sur.)	%	98		6167447
RDL = Reportable Detection Limit				

Maxxam Job #: B281497  
Report Date: 2012/09/19

Pinchin Environmental  
Client Project #: 75695.002

**General Comments**

**Results relate only to the items tested.**

Pinchin Environmental  
 Attention: SEAN MULVEY  
 Client Project #: 75695.002  
 P.O. #:  
 Site Location:

Quality Assurance Report  
 Maxxam Job Number: NB281497

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits	
6167447 HW4	Matrix Spike [EL0839-01]	4-BROMOFLUOROBENZENE (sur.)	2012/09/18		102	%	60 - 140	
		D10-ETHYLBENZENE (sur.)	2012/09/18		127	%	30 - 130	
		D4-1,2-DICHLOROETHANE (sur.)	2012/09/18		106	%	60 - 140	
		D8-TOLUENE (sur.)	2012/09/18		96	%	60 - 140	
		Benzene	2012/09/18		125	%	60 - 140	
		Toluene	2012/09/18		117	%	60 - 140	
		Ethylbenzene	2012/09/18		115	%	60 - 140	
		m & p-Xylene	2012/09/18		104	%	60 - 140	
		o-Xylene	2012/09/18		107	%	60 - 140	
		Methyl-tert-butylether (MTBE)	2012/09/18		115	%	60 - 140	
	Spiked Blank	(C6-C10)	2012/09/18		135	%	60 - 140	
		4-BROMOFLUOROBENZENE (sur.)	2012/09/18		102	%	60 - 140	
		D10-ETHYLBENZENE (sur.)	2012/09/18		112	%	30 - 130	
		D4-1,2-DICHLOROETHANE (sur.)	2012/09/18		122	%	60 - 140	
		D8-TOLUENE (sur.)	2012/09/18		93	%	60 - 140	
		Benzene	2012/09/18		122	%	60 - 140	
		Toluene	2012/09/18		107	%	60 - 140	
		Ethylbenzene	2012/09/18		103	%	60 - 140	
		m & p-Xylene	2012/09/18		94	%	60 - 140	
		o-Xylene	2012/09/18		99	%	60 - 140	
	Method Blank	Methyl-tert-butylether (MTBE)	2012/09/18		123	%	60 - 140	
		(C6-C10)	2012/09/18		95	%	60 - 140	
		4-BROMOFLUOROBENZENE (sur.)	2012/09/18		101	%	60 - 140	
		D10-ETHYLBENZENE (sur.)	2012/09/18		116	%	30 - 130	
		D4-1,2-DICHLOROETHANE (sur.)	2012/09/18		112	%	60 - 140	
		D8-TOLUENE (sur.)	2012/09/18		96	%	60 - 140	
		Benzene	2012/09/18	<0.0050		mg/kg		
		Toluene	2012/09/18	<0.020		mg/kg		
		Ethylbenzene	2012/09/18	<0.010		mg/kg		
		Xylenes (Total)	2012/09/18	<0.040		mg/kg		
	RPD [EL0838-01]	m & p-Xylene	2012/09/18	<0.040		mg/kg		
		o-Xylene	2012/09/18	<0.020		mg/kg		
		Methyl-tert-butylether (MTBE)	2012/09/18	<0.10		mg/kg		
		F1 (C6-C10) - BTEX	2012/09/18	<10		mg/kg		
		(C6-C10)	2012/09/18	<10		mg/kg		
		Benzene	2012/09/18	NC		%	50	
		Toluene	2012/09/18	NC		%	50	
		Ethylbenzene	2012/09/18	NC		%	50	
		Xylenes (Total)	2012/09/18	NC		%	50	
		m & p-Xylene	2012/09/18	NC		%	50	
6167453 HW4	Matrix Spike [EL0839-01]	o-Xylene	2012/09/18		NC	%	50	
		Methyl-tert-butylether (MTBE)	2012/09/18		NC	%	N/A	
		F1 (C6-C10) - BTEX	2012/09/18		NC	%	50	
		(C6-C10)	2012/09/18		NC	%	50	
	Spiked Blank	O-TERPHENYL (sur.)	2012/09/18			95	%	50 - 130
		F2 (C10-C16 Hydrocarbons)	2012/09/18			118	%	50 - 130
		F3 (C16-C34 Hydrocarbons)	2012/09/18			122	%	50 - 130
		F4 (C34-C50 Hydrocarbons)	2012/09/18			113	%	50 - 130
	Method Blank	O-TERPHENYL (sur.)	2012/09/18			82	%	50 - 130
		F2 (C10-C16 Hydrocarbons)	2012/09/18			99	%	80 - 120
F3 (C16-C34 Hydrocarbons)		2012/09/18			101	%	80 - 120	
F4 (C34-C50 Hydrocarbons)		2012/09/18			91	%	80 - 120	
	O-TERPHENYL (sur.)	2012/09/18			66	%	50 - 130	

Pinchin Environmental  
 Attention: SEAN MULVEY  
 Client Project #: 75695.002  
 P.O. #:  
 Site Location:

### Quality Assurance Report (Continued)

Maxxam Job Number: NB281497

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
6167453 HW4	Method Blank	F2 (C10-C16 Hydrocarbons)	2012/09/18	<20		mg/kg	
		F3 (C16-C34 Hydrocarbons)	2012/09/18	<20		mg/kg	
		F4 (C34-C50 Hydrocarbons)	2012/09/18	<20		mg/kg	
	RPD [EL0838-01]	F2 (C10-C16 Hydrocarbons)	2012/09/18	NC		%	50
		F3 (C16-C34 Hydrocarbons)	2012/09/18	NC		%	50
6167454 ML8	Method Blank	F4 (C34-C50 Hydrocarbons)	2012/09/18	NC		%	50
		Moisture	2012/09/17	<0.3		%	
	RPD [EL0840-01]	Moisture	2012/09/17	0.4		%	20

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

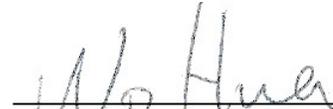
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.

## Validation Signature Page

Maxxam Job #: B281497

---

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



---

Hua Wo, Organics Supervisor

=====

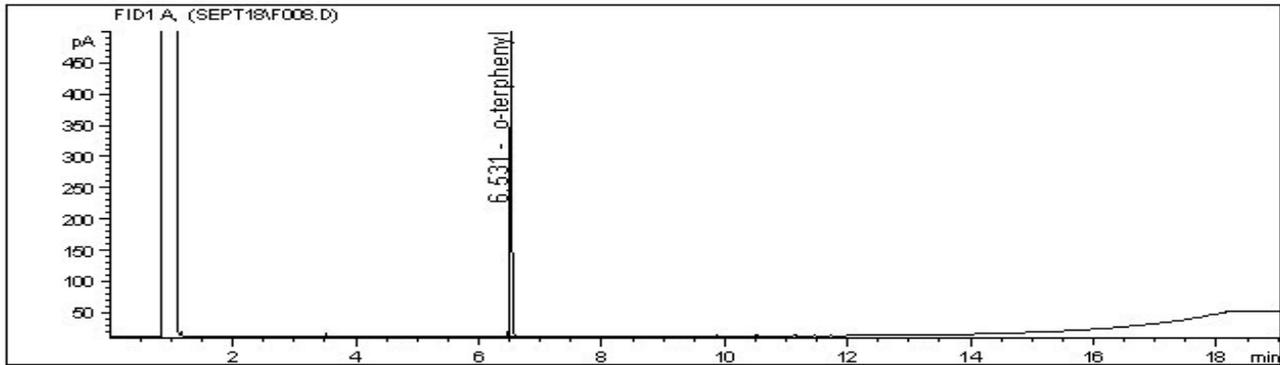
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Report Date: 2012/09/19  
 Maxxam Job #: B281497  
 Maxxam Sample: EL0838

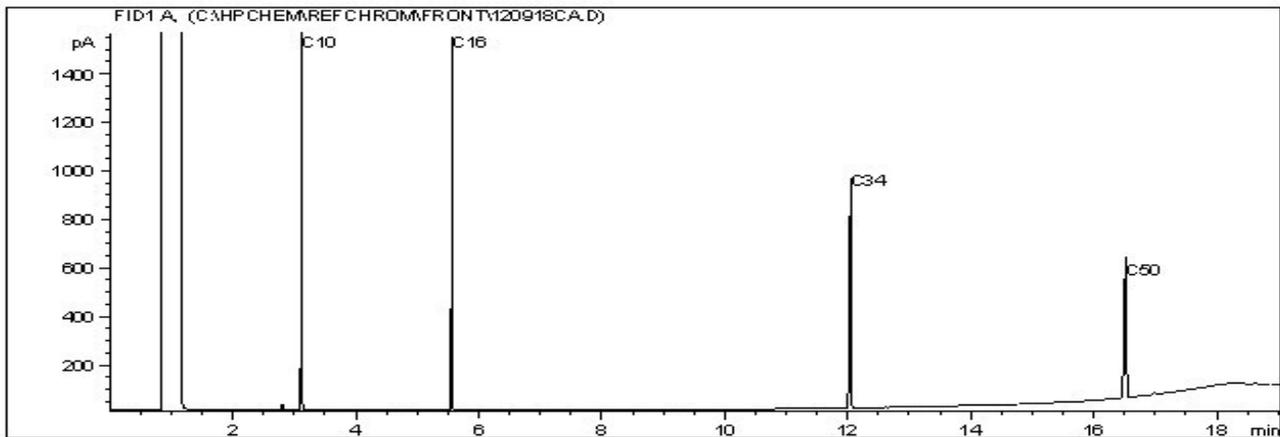
Pinchin Environmental  
 Client Project #: 75695.002

Client ID: B2

**CCME Hydrocarbons (F2-F4 in soil) Chromatogram**



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

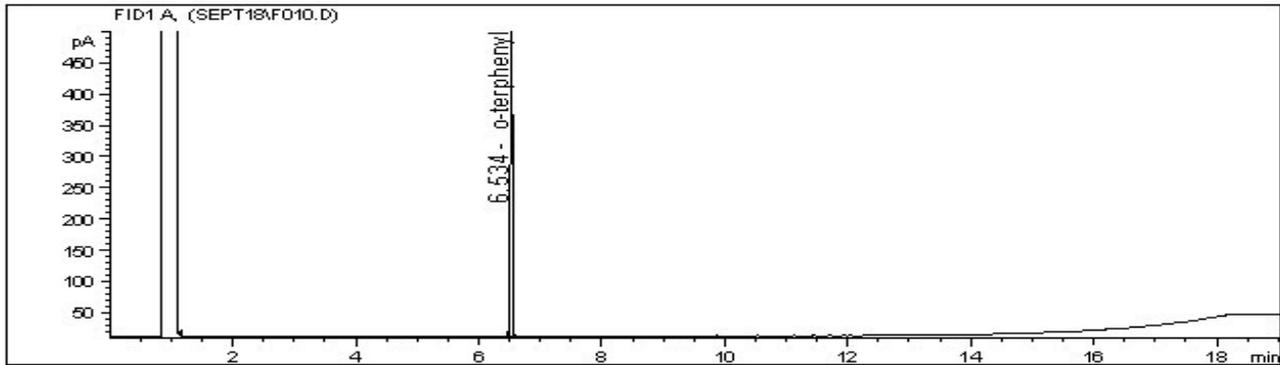
**Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.**

Report Date: 2012/09/19  
 Maxxam Job #: B281497  
 Maxxam Sample: EL0839

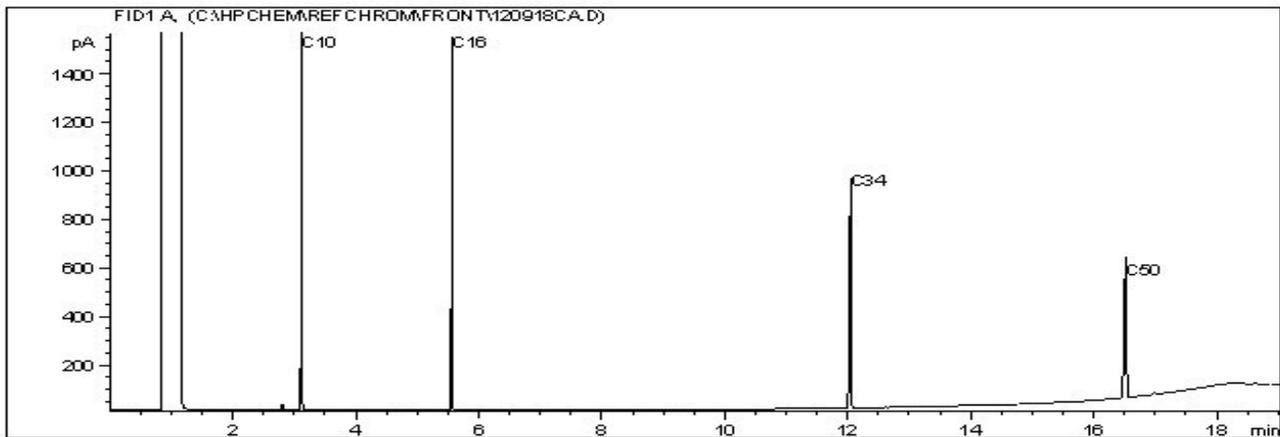
Pinchin Environmental  
 Client Project #: 75695.002

Client ID: B5

**CCME Hydrocarbons (F2-F4 in soil) Chromatogram**



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

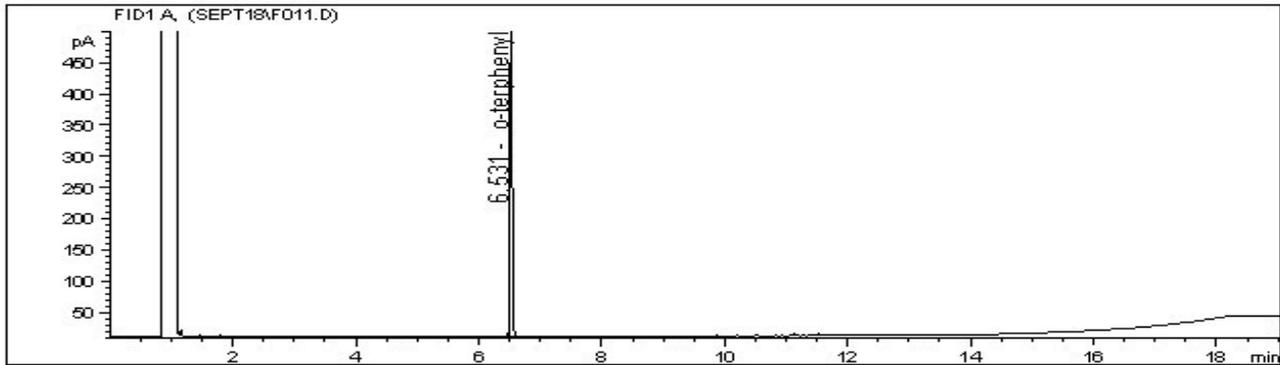
**Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.**

Report Date: 2012/09/19  
 Maxxam Job #: B281497  
 Maxxam Sample: EL0840

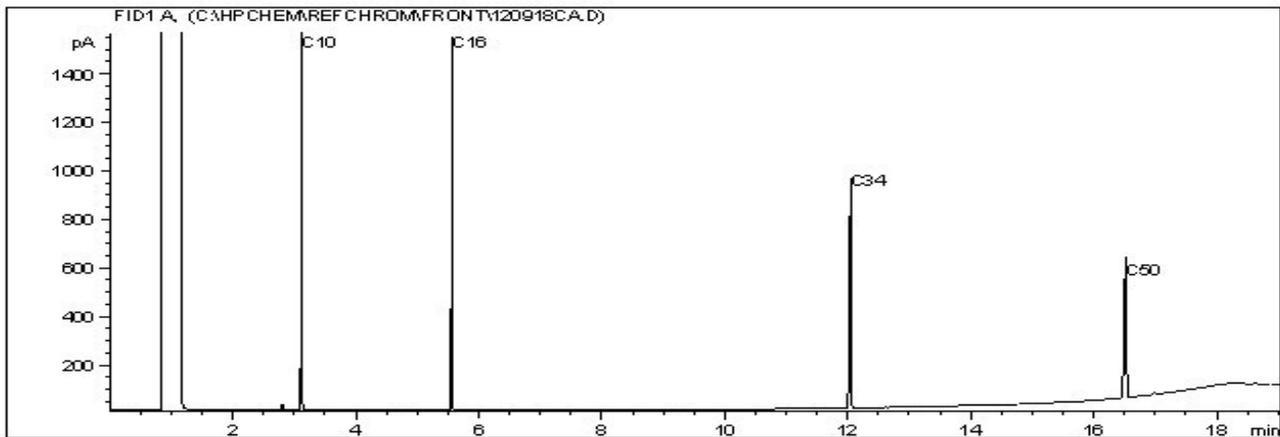
Pinchin Environmental  
 Client Project #: 75695.002

Client ID: B8

**CCME Hydrocarbons (F2-F4 in soil) Chromatogram**



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

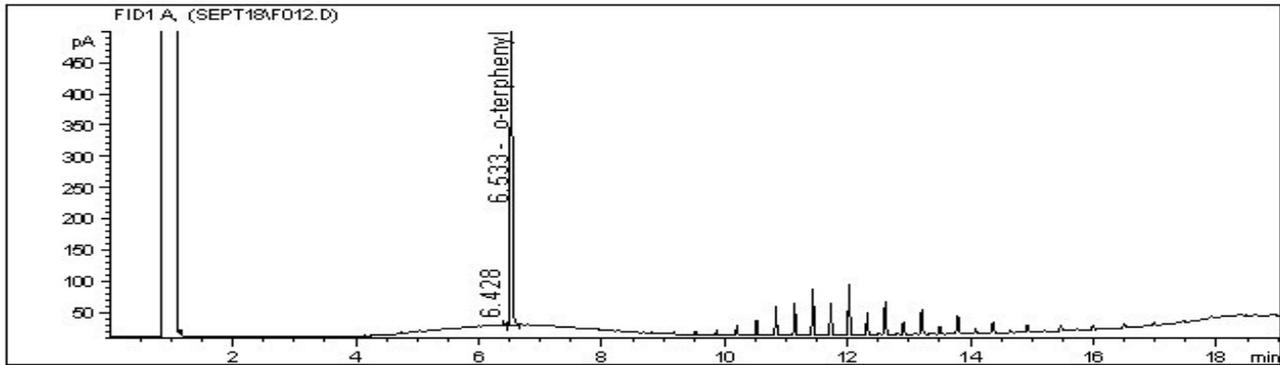
**Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.**

Report Date: 2012/09/19  
 Maxxam Job #: B281497  
 Maxxam Sample: EL0841

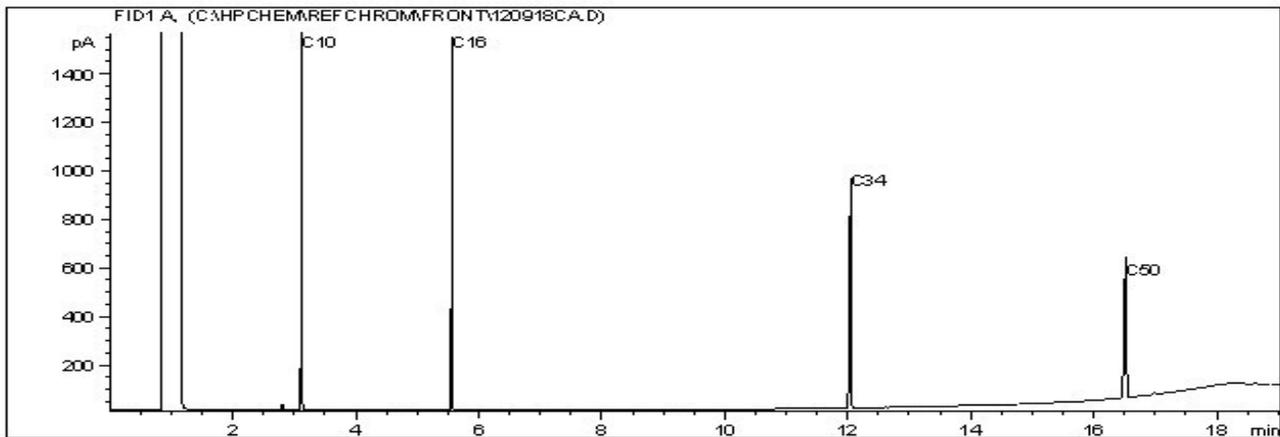
Pinchin Environmental  
 Client Project #: 75695.002

Client ID: PEW

**CCME Hydrocarbons (F2-F4 in soil) Chromatogram**



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

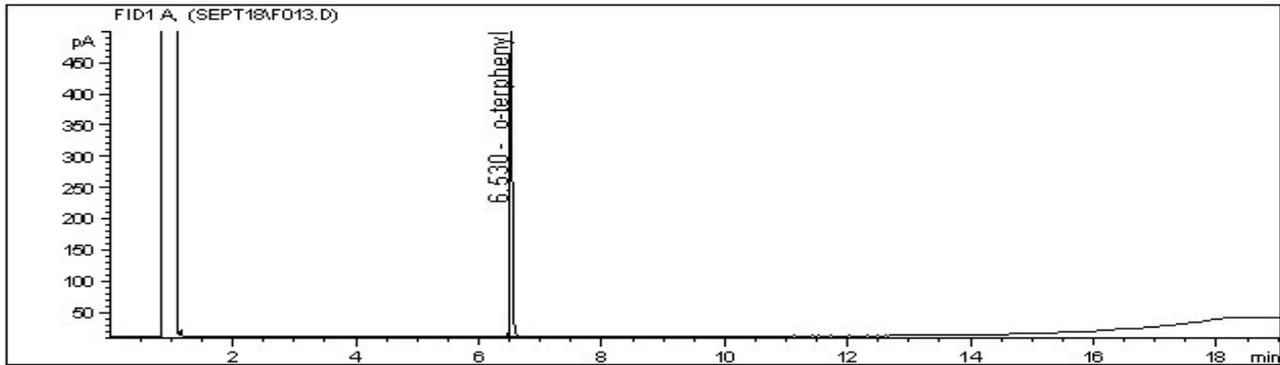
**Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.**

Report Date: 2012/09/19  
 Maxxam Job #: B281497  
 Maxxam Sample: EL0842

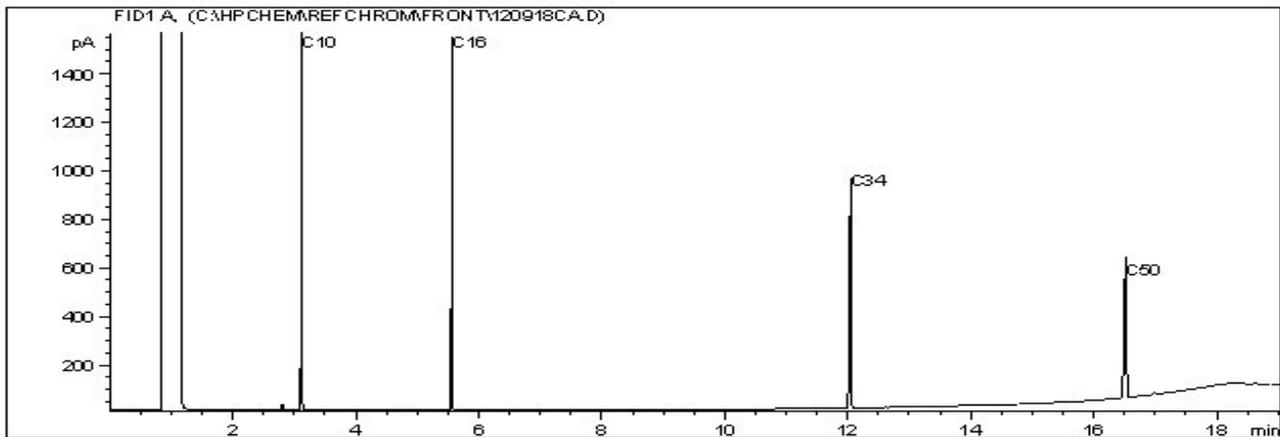
Pinchin Environmental  
 Client Project #: 75695.002

Client ID: PNW

**CCME Hydrocarbons (F2-F4 in soil) Chromatogram**



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

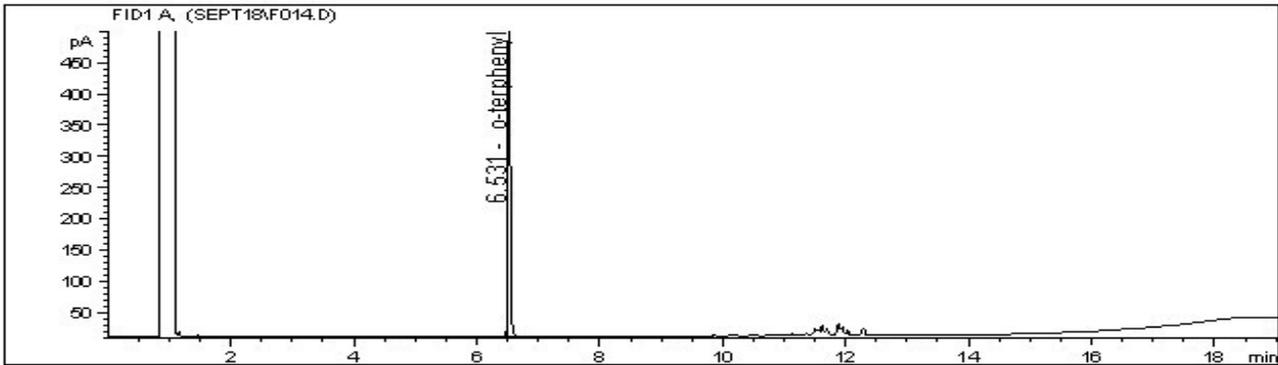
**Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.**

Report Date: 2012/09/19  
 Maxxam Job #: B281497  
 Maxxam Sample: EL0843

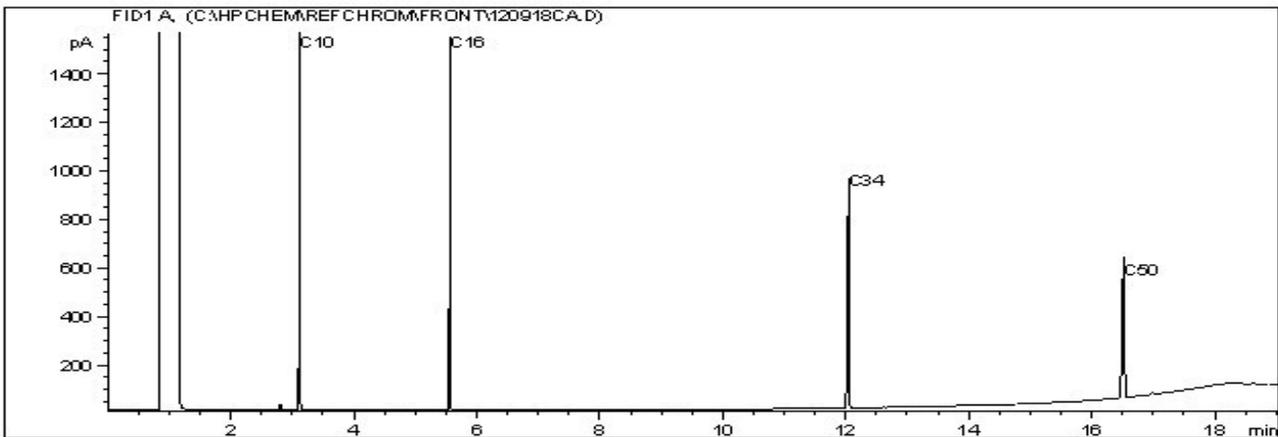
Pinchin Environmental  
 Client Project #: 75695.002

Client ID: PWW

**CCME Hydrocarbons (F2-F4 in soil) Chromatogram**



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

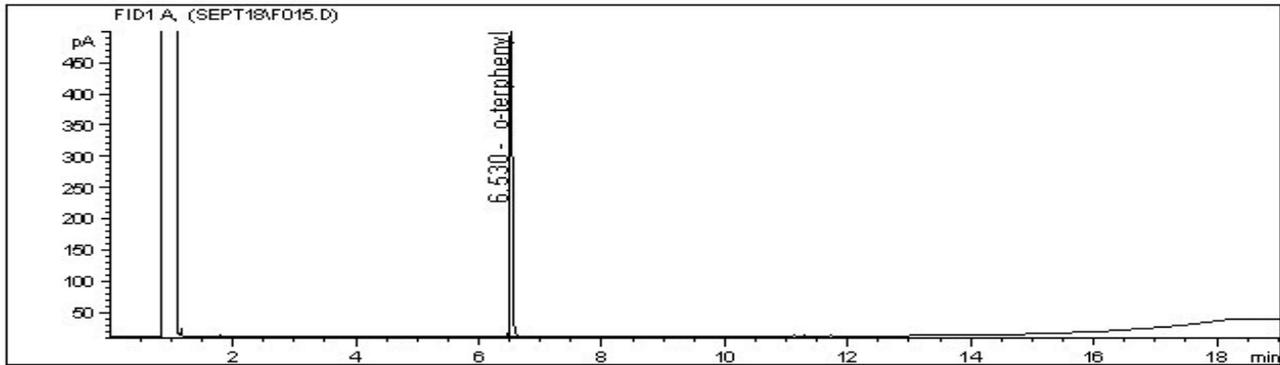
**Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.**

Report Date: 2012/09/19  
 Maxxam Job #: B281497  
 Maxxam Sample: EL0844

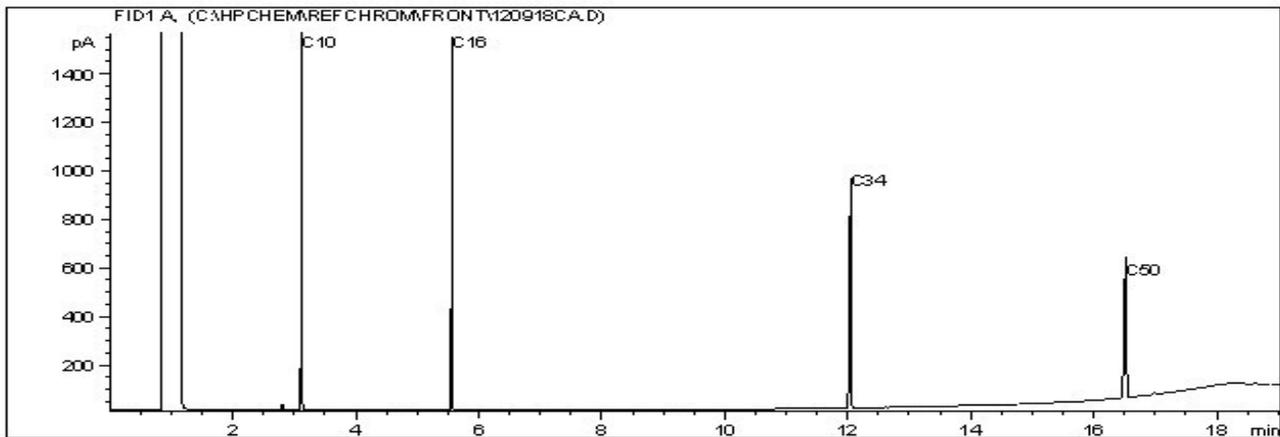
Pinchin Environmental  
 Client Project #: 75695.002

Client ID: NW3

**CCME Hydrocarbons (F2-F4 in soil) Chromatogram**



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

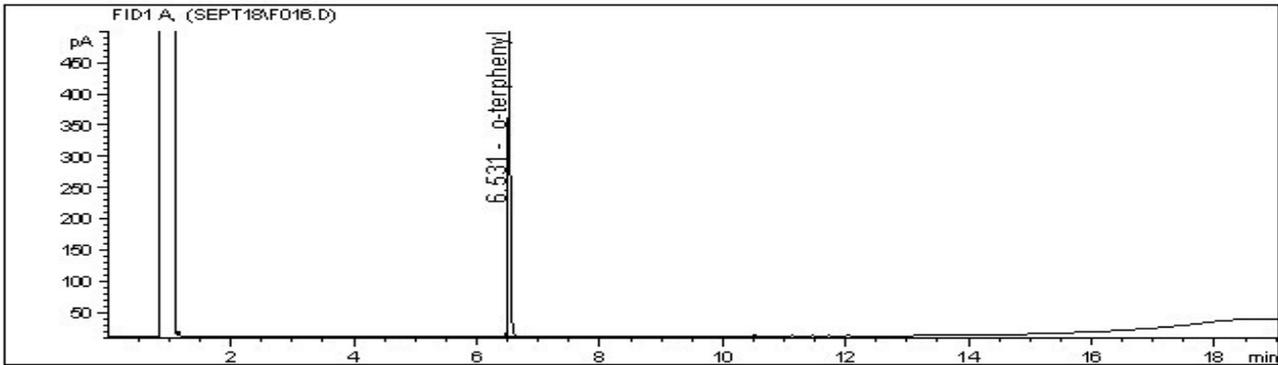
**Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.**

Report Date: 2012/09/19  
 Maxxam Job #: B281497  
 Maxxam Sample: EL0845

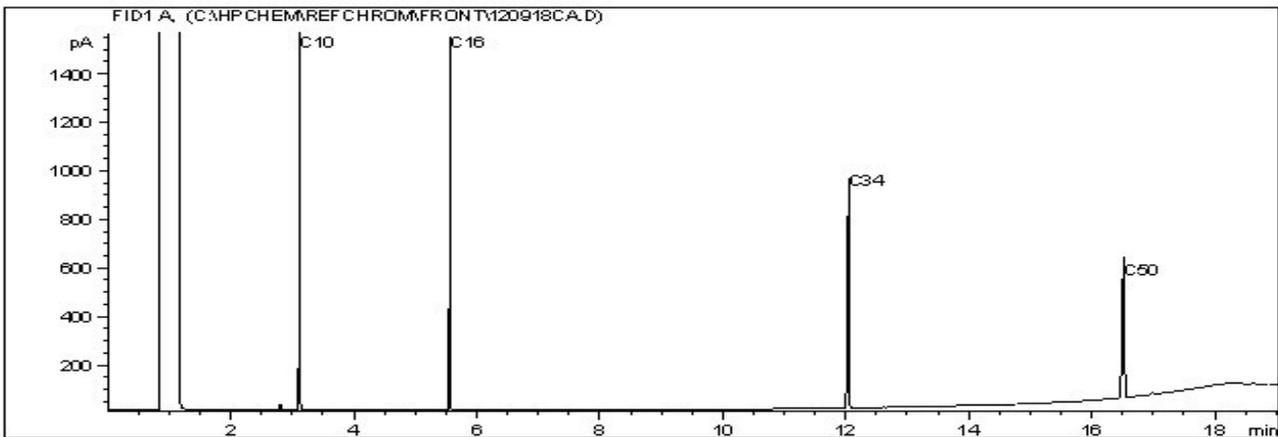
Pinchin Environmental  
 Client Project #: 75695.002

Client ID: EW1

**CCME Hydrocarbons (F2-F4 in soil) Chromatogram**



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

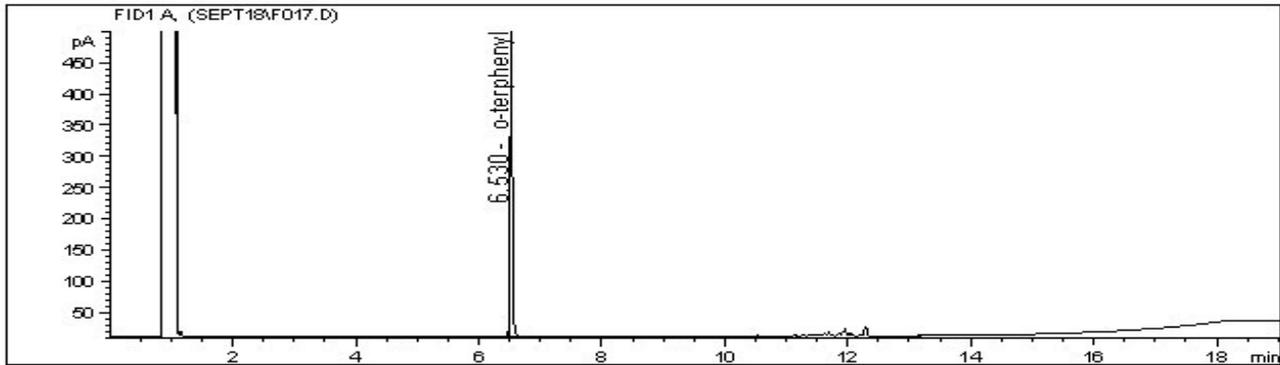
**Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.**

Report Date: 2012/09/19  
 Maxxam Job #: B281497  
 Maxxam Sample: EL0846

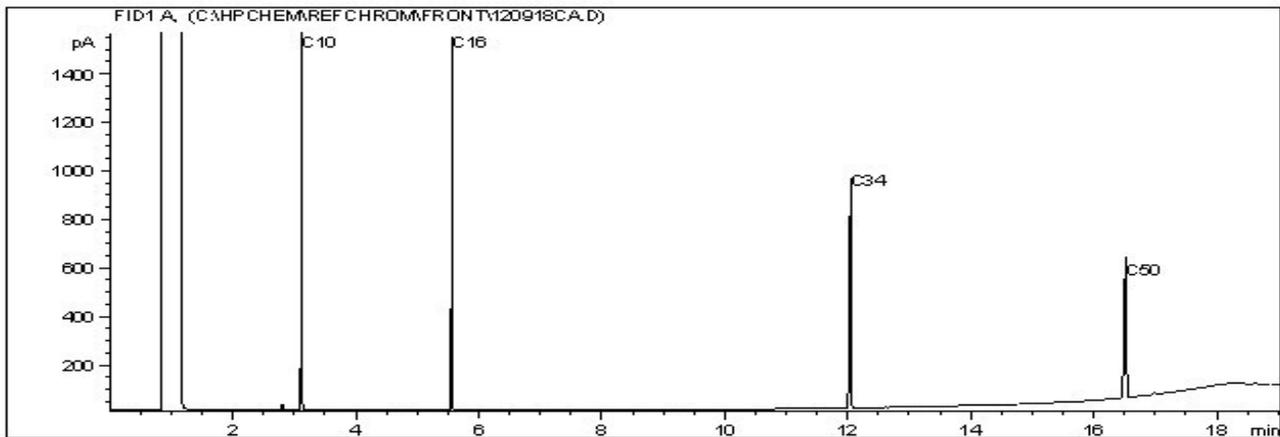
Pinchin Environmental  
 Client Project #: 75695.002

Client ID: WW2

**CCME Hydrocarbons (F2-F4 in soil) Chromatogram**



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

**Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.**