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Phase II - Environmental Site Assessment

Former Appletex Mill
116-122 Old Mill Lane
Appleton, Ontario

Prepared For

Carlgate Development Inc.

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1.0 INTRODUCTION

At the request of Carlgate Developments, Paterson Group (Paterson) conducted a Phase II - Environmental Site Assessment (ESA) of the property known as the former Appletex Mill located at 116 - 122 Old Mill Lane in the Village of Appleton, Ontario.

The purpose of the Phase II ESA was to further evaluate the soil and groundwater conditions on the subject site subsequent to an initial soil remediation program conducted in May of 2007.

This report has been prepared specifically and solely for the above noted project which is described herein. It contains all of our findings and results of the environmental conditions at this site.

2.0 BACKGROUND

2.1 Site Information

The subject site is located on the west side of Old Mill Lane, north of Apple Street in the Village of Appleton, Ontario. The currently vacant property is situated along the shores of the Mississippi River, immediately adjacent to the Appleton Swamp, a provincially significant wetland.

The property was most recently occupied by a textile mill. However, the site has been vacant since the mill closed in 1989. The subject buildings, including the main mill structure, a pump house, a storage shed and the heating plant, were recently demolished following two fires, the most recent being in 2006. The concrete blocks from the former buildings remain on site.

The topography of the subject site slopes down towards the wetlands to the west. The majority of the site is located on a shallow limestone and dolomite bedrock deposit. A small escarpment runs in a north-south direction on the western portion of the site. The escarpment separates the low lying swampy area to the west, from the higher area to the east where the former plant was located. Site drainage consists of infiltration and runoff to three (3) lagoons located on the western portion of the site. The lagoons have not been in operation for many years and have become a natural habitat for the surrounding wetland creatures.

2.2 Historical Information

The subject site has an extensive history extending back to the 1970's. Prior to the subsurface investigation, Paterson reviewed a number of investigations, environmental assessments, reports and correspondence records that were compiled by the Ministry of the Environment (MOE) regarding the former Appletex site. The documents were reviewed in the MOE Ottawa office.

The site was owned and operated by the Collie Woolen Mill from the 1930's until 1989. In the mid-1980's three (3) lagoons were constructed on the western portion of the property. The lagoons were used to handle the waste from the dying process. Numerous complaints were made in the late 1980's by the surrounding residences regarding the discharge from the lagoons and the placement of waste on the subject site. The MOE subsequently investigated these complaints.

From 1989 to 1994, numerous MOE investigations and orders, many of which resulted in legal action, were made against the subject property. The site was under new management during this time and became vacant in 1992. The main concerns were with respect to the overflowing of liquid discharge from the lagoons to the surrounding wetland, the improper storage of chemicals on the property, the presence of PCB capacitors and light ballasts, unknown buried waste and physical site security.

2.3 Other Engineering Reports

In 1992 a Phase I Environmental Audit was conducted on the subject site by Dames & Moore, Canada (DMC). Following a historical review and subsequent site visit it was concluded that "*substantial environmental liabilities are associated with the Appletex Site*". Environmental concerns identified included the discharge of chemicals into the lagoons, the illegal dumping of debris and waste materials, abandoned bunker and fuel oil aboveground storage tanks (ASTs), improper storage of chemicals and the presence of PCB containing equipment. A subsurface investigation was subsequently recommended along with the removal of chemicals, ASTs and buried waste from the subject site.

During the investigation DMC collected water and sediment samples from the lagoons. The water samples were analysed for BOD, COD, total nitrogen, phosphate, total organic carbon and other parameters. Mercury was detected above the applicable provincial water quality objectives (PWQO) in Lagoon 3. The remaining water and sediment parameters, with the exception of pH, were in compliance with applicable standards.

In 1993, the MOE conducted a water analysis on the subject site. Water samples from the lagoons were collected and analysed for twenty-seven (27) inorganic parameters. Lead, aluminum and strontium were found in concentrations exceeding the PWQO and/or the ODWO in all three (3) lagoons. Hardness, DOC, copper, zinc and iron were found in excess of the applicable objectives in one or two of the lagoons. The MOE also issued an order in 1993 to secure the abandoned premises, remove stored wastes and to conduct studies to decommission the lagoons.

In 1994, Water and Earth Sciences Associates (WESA) was commissioned to conduct an environmental investigation on the subject property. The investigation consisted of the placement of fourteen (14) test pits, and three (3) boreholes with monitoring wells. A waste classification survey was also conducted.

The test pits were primarily placed in the area of dumped waste and debris, a test pit was placed near the bunker oil AST, two on the east side of the main building and two more south of the main building, south of the access road. Boreholes with monitoring wells were placed north and south of the main building and in the area of dumped waste.

A total of eight (8) soil samples from the test pits were submitted for analytical testing for a combination of metals, total petroleum hydrocarbons (TPH) and benzene, toluene, ethylbenzene and xylenes (BTEX). Two (2) samples obtained from the area of the lagoons were also tested for fluoride and sulphate. Chromium VI was found in excess of the standards applicable at that time in one soil sample (TP3) recovered from the waste disposal area. The remaining parameter concentrations were below the MOEE 1989 Clean-Up guidelines for a low sensitivity site.

The MOE standards have been changed since the issuance of the WESA report. When compared to the current MOE Table 2 standards for a residential property, metal exceedences were identified in two (2) of the previously tested soil samples. Concentrations of lead were detected above the Table 2 standards in TP3 and TP6, both located in the waste disposal area. The testing method for petroleum hydrocarbons has also been changed since the 1994 report. A direct comparison can not be made between the previously detected TPH concentrations and the current standards.

Three (3) groundwater samples obtained from the monitoring wells installed by WESA were submitted for general chemistry parameters including (but not limited to) chloride, fluoride, nitrate, sulphate, iron, mercury, conductivity and phenols. The results were compared to the applicable Ontario Drinking Water Objectives (ODWO). Three (3) parameter concentrations were identified in the groundwater samples, in excess of the ODWO.

The report concluded that "*several issues related to potential environmental concern*" were present on the subject site including:

- ❑ Residual chemicals and waste in and around the buildings
- ❑ Wastewater and sludge from the lagoons
- ❑ Miscellaneous solid waste disposed on the property and
- ❑ Groundwater.

It was recommended that the residual wastes around the buildings be removed and that further investigation of the water and sediment in the lagoons be conducted in order to determine the most practical and acceptable lagoon decommissioning process. Various decommissioning options including "do nothing", "stabilize and isolate on site" and "physical removal" were detailed.

Based on the analytical test results it was concluded that the solid waste buried on site did not present a significant environmental concern. It was recommended that the waste be isolated and capped and the area only be developed as open area. The groundwater exceedences were not considered to be a significant concern and no further work was recommended.

Following the WESA investigation, the majority of the chemicals stored on site, with the exception of polychlorinated biphenyls (PCBs) and ASTs, were removed from the property. In November of 1994 a fire broke out in the former mill and due to the presence of PCBs, adjacent residences were evacuated. Following the fire, all PCB-containing equipment was removed from the site to and placed at a secure, registered storage facility.

In March 2007, the MOE was alerted to an oil spill that had occurred on the subject site and continued into the Mississippi River. The spill was from a former bunker oil AST located near the Mill. Provincial orders to contain and remediate the impacted soil and groundwater were issued by the MOE.

Paterson was commissioned to supervise the remediation program which was conducted in April and May of 2007. A total of 1,740 tonnes of material was disposed of at a registered landfill facility as contaminated waste. Approximately 1000 tonnes of "clean" material was stockpiled on site and 13,650 L of liquid waste was removed and disposed of by a licenced contractor.

Analytical testing identified that petroleum impacted soil, in excess of all the MOE standards, remained on the western edge of the excavation, adjacent to the Mississippi River and along the shoreline, where high spring water levels made it impossible to remove the impacted soil at that time. Testing also identified metals in excess of the MOE Table 3 commercial standards in the "clean" stock piled material. Further excavation was recommended.

A summary letter (PE11147-LET.01), dated August 10, 2007 was issued by Paterson.

A letter from the MOE, dated November 8, 2007, stated that the aforementioned oil spill has been remediated as per the Provincial Officers Orders and that the MOE file was considered to be closed. It was noted, however, that residual contamination may remain on site.

In November 2007, two (2) of the lagoons located on the western portion of the site were breached, releasing the water and sediment into the adjacent provincially significant wetland. Another Provincial Officers Order was issued for the reinstatement of the lagoon walls. The lagoon walls were later reinstated.

In June of 2008, the MOE collected sediment samples from the area immediately west of the lagoons in order to determine if the released sediment had an impact on the adjacent sensitive area. The results of the analytical testing were subsequently made available to Paterson, for review.

The analytical test results indicate that concentrations of copper and manganese above the Lowest Effective Level (LEL) are present in the sediment within Pond No. 1 (Lagoon 3) and that concentrations of chromium, copper, iron, manganese, nickel and zinc at levels above the LEL, are present within Pond No. 2 (Lagoon 2).

Sediment samples collected from the settling pond discharge aprons were also analysed. Levels of chromium, copper, manganese and zinc equalled or exceeded LELs at the Pond No. 1 discharge apron. Levels of chromium, copper, iron and nickel equalled or exceeded LELs at the Pond No. 2 discharge apron, and on one occasion, manganese exceeded an SEL (Severe Effect Level).

The settling Pond discharge aprons are situated outside of the settling ponds, within the downgradient wetland, and contain sediment contaminated with metal concentrations in excess of the LELs. The sediment sampling data show that contaminated sediment from settling Pond No. 1 and settling Pond No. 2 has likely discharged to the respective discharge aprons within the adjacent wetland. The discharge of the contaminated sediment is considered to have been caused by the breaches of the settling ponds.

The *Guidelines for the Management and Protection of Aquatic Sediment Quality in Ontario (MOEE, August 1993)* state "When sediment quality in an area consistently exceeds the Lowest Effect Level (LEL) Guideline, that area shall be considered as an area of potential concern. In areas where contaminants in sediment are at or above LEL, steps should be taken to control all point and non-point contaminant sources to the area." The Guidelines state that if the contaminant concentrations exceed SELs, measures in addition to source control may be required to remediate the sediment.

3.0 METHOD OF INVESTIGATION

3.1 Subsurface Investigation

Field Program

The subsurface investigation was conducted in two (2) parts. Twenty-one (21) test pits and three (3) boreholes with monitoring wells were placed on the subject site in August of 2008. The test pits were placed to assess the soil conditions in and around the former building, near the buried waste area and to address fill consisting of material stockpiled during the 2007 remediation program. The boreholes were placed near the former bunker oil aboveground storage tank (AST), in the area previously used for chemical storage and adjacent to the lagoons.

Paterson returned to site on October 17, 2008. At this time, two (2) additional boreholes constructed with monitoring wells, were placed on the subject site. The boreholes were completed with a track mounted drill rig. All test hole locations are depicted on the Test Hole Location Plan in Appendix 2. Both field programs were conducted under full time supervision of Paterson personnel.

The test pits were completed to depths ranging from surface to 3.1 m below the existing grade. The boreholes were completed to depths of 7.6 to 12.2 m below the existing grade. A total of forty-seven (47) soil samples were recovered from the test holes. Bedrock was encountered in all the test holes at depths ranging from surface to 3.1 m. Upon recovery all samples were immediately sealed in appropriate containers to facilitate the preliminary screening procedure.

The depths at which the soil samples were obtained from the test holes are shown as **"G", "AU**" and **"SS"** on the Soil Profile and Test Data Sheets in Appendix 1.

Sediment samples from each lagoon were obtained during the field program. To address concerns regarding the use of pulverized painted concrete as backfill material, samples of paint from the concrete block rubble were also obtained in order to determine if the paint was lead based.

All samples recovered as part of this investigation will be stored in the laboratory for a period of one (1) month after issuance of this report. All samples will then be discarded unless this firm is otherwise directed.

Monitoring Well Installation

Groundwater monitoring wells were constructed in all five (5) boreholes to further assess groundwater quality beneath the subject property. Typical monitoring well construction details are described below:

- ❑ 30 mm diameter PVC riser pipe from top of screen to just below ground surface.
- ❑ Slotted 30 mm diameter PVC screen from riser to approximately 12.0 m below grade.
- ❑ No.3 silica sand backfill within annular space around screen.
- ❑ 300 mm thick bentonite hole plug directly above PVC slotted screen and at ground surface.
- ❑ Clean backfill from ground surface to the top of bentonite plug.
- ❑ Metal flush mount cap at ground surface.

Refer to the Soil Profile and Test Data sheets in Appendix 1 for specific well construction details.

Soil Sampling Protocol

Soil sampling protocols were followed using the MOE document entitled *"Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario*", dated May 1996.

The soil samples recovered from the test holes were sampled by hand, using protective gloves (changed after each sample). The samples were placed into sealed containers.

Soil Sample Headspace Analysis

A Gastech calibrated to hexane was used to measure the combustible vapour concentrations in the headspace of all soil samples recovered from the test pits. The technical protocol was obtained from Appendix C of the MOE document titled "*Interim Guidelines for the Remediation of Petroleum Contamination at Operating Retail and Private Fuel Outlets in Ontario*", dated March 1992.

Soil samples recovered at the time of sampling were placed immediately into airtight plastic bags with nominal headspace. All lumps of soil inside the bags were broken by hand, and the soil was allowed to come to room temperature prior to conducting the vapour survey. Allowing the samples to stabilize to room temperature ensures consistency of readings between samples.

To measure the soil vapours, the analyser probe is inserted into the nominal headspace above the soil sample. The sample is agitated/manipulated gently as the measurement is taken. The peak reading registered within the first 15 seconds is recorded as the vapour measurement.

The vapour readings were found to range from 20 to 80 ppm in all of the test pits. The results of the survey are not indicative of significant volatile substances within the soil samples. It should be noted that the vapour readings can not be used to assess the potential of heavier petroleum compounds. The results of the vapour survey are presented on the Soil Profile & Test Data sheets in Appendix 1.

Groundwater Sampling Protocol

Groundwater sampling protocols were followed using the MOE document entitled "Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario", dated May 1996.

The groundwater samples from the wells were taken using a dedicated water footvalve and polytubing. Each well was purged prior to sampling. A minimum of three (3) times the well volume (if adequate water was available) was removed.

Samples were stored in bottles prepared by Paracel Laboratories (Paracel). Samples were stored in coolers to reduce anatyle volatization during transportation.

3.2 Analytical Testing

Twelve (12) soil samples and six (6) groundwater samples were submitted for analysis of a combination of metals, volatile organic compounds (VOC's), petroleum hydrocarbons (PHCs), benzene, toluene, ethlebenzene and xylenes (BTEX) and polynuclear aromatic hydrocarbons (PAHs).

Two (2) of the groundwater samples submitted for analysis were obtained from monitoring wells installed by others. The results of the analytical testing are presented in Subsection 4.4. A copy of the laboratory reports are included in Appendix 1.

Paracel of Ottawa, performed laboratory analysis of the soil and water samples submitted for analytical testing. Paracel is a member of the Standards Council of Canada/Canadian Association for Environmental Analytical Laboratories (SCC/CAEAL) and is accredited and certified by SCC/CAEAL for specific tests registered with the Association.

3.3 Surveying

All test pits and monitoring wells were surveyed by GS Smith Surveying Ltd. The existing surface elevations were referenced to a geodetic Survey of Canada Monument.

4.0 OBSERVATIONS AND RESULTS

4.1 Subsurface Profile

Fill material consisting of silty sand with clay was encountered in all but two (2) test holes. Occasional pieces of concrete, metal and slag was observed in the fill material. It is suspected that the fill material, previously excavated during the remediation and stockpiled on site, was distributed in the southeast portion of the site in the area of TP11 through TP 17. Fill in the area of the former waste disposal site (TP20) was found to contain deleterious material including, plastic, rubber, fabric and metal.

Bedrock was encountered in all the test holes at depths ranging from surface to 3.1 m below the existing ground elevation. Native soil material consists of silty sand overlying a silty clay deposit.

Specific details of the soil profile at each test hole location can be seen on the Soil Profile and Test Data Sheets in Appendix 1.

4.2 Groundwater

The stabilised groundwater levels were obtained from the five (5) monitoring wells installed by Paterson and the two (2) monitoring wells installed by WESA in 1994. Based on the data obtained by WESA, the groundwater flow direction is determined to be towards the west. It should be noted that groundwater levels will fluctuate seasonally.

Table 1
Groundwater levels

Monitoring Well	Date	Groundwater level (m)	Groundwater Elevation (m)
MW1-08	Sept. 2/08	9.86	117.59
	Oct. 28/08	10.67	116.78
MW2-08	Sept. 2/08	7.3	120.78
MW3-08	Sept. 2/08	2.70	119.09
MW4-08	Oct. 28/08	9.87	--
MW5-08	Oct. 28/08	9.90	--
MW1*	Sept. 2/08	10.24	118.29
MW2*	Sept. 2/08	3.33	118.77

Notes: * Monitoring well installed by others in 1994

4.3 Analytical Test Results

Remediation Criteria

The remediation criteria for the subject property were obtained from Table 1 and Table 2 of the document entitled "*Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act.*", prepared by the Ontario Ministry of Environment (MOE) in March 2004.

A 30 m buffer area along the Mississippi River shoreline and the limit of the adjacent wetland is qualified as sensitive based on its proximity to the Mississippi River. Table 1 standards are applicable within this 30 m buffer zone.

The remainder of the site was compared to the Table 2 standards based on a residential property with coarse grained soil in a potable groundwater setting.

Analytical Results for Soil

A total of twelve (12) soil samples were submitted for analytical testing for a combination of metals, PHCs, BTEX, PAHs and VOCs. The results of the analytical testing are presented in Tables 2 to 5 along with the selected MOE standards. A copy of the laboratory test results are included in Appendix 1 of this report.

Table 2
Analytical Test Results - Soil - Metals

Parameter	MDL (µg/g)	Soil Samples - (µg/g)				*MOE Table 1 (µg/g)*	*MOE Table 2 Residential (µg/g)*
		TP3 G1	TP8 G1	TP9 G1	TP11 G1		
Antimony	1	nd	nd	nd	nd	*1.0*	*13*
Arsenic	1	2	nd	1	4	*17*	*20*
Barium	10	124	31	112	94	*210*	*750*
Beryllium	0.5	0.5	nd	0.5	nd	*1.2*	*1.2*
Boron (avail.)	0.5	0.8	nd	nd	nd	*nv*	*1.5*
Cadmium	0.5	nd	nd	nd	**1.5**	*1.0*	*12*
Chromium	5	**20**	**11**	**19**	**30**	*7.1*	*750*
Chromium VI	0.4	nd	nd	nd	nd	*2.5*	*8.0*
Cobalt	5	7	nd	6	7	*21*	*40*
Copper	5	12	6	13	42	*85*	*225*
Iron	200	16,700	11,500	16,200	29,100	*nv*	*nv*
Lead	1	**142**	5	11	**308**	*120*	*200*
Mercury	0.1	nd	nd	nd	nd	*0.23*	*10*
Molybdenum	1	nd	nd	nd	1	*2.5*	*40*
Nickel	5	11	6	12	**48**	*43*	*150*
Selenium	1	nd	nd	nd	nd	*1.9*	*10*
Silver	0.3	nd	nd	nd	nd	*0.42*	*20*
Thallium	1	nd	nd	nd	nd	*2.5*	*4.1*
Vanadium	10	29	22	30	**121**	*91*	*200*
Zinc	20	57	nd	26	**532**	*160*	*600*

Notes:
- MDL - Method Detection Limit; nd - Not Detected (< MDL)
- nv - No current MOE standard;
- Bold and underlined values exceed MOE Table 1 standard.
- values with outlined boxes exceed MOE Table 2 residential standards

Table 2 Continued
Analytical Test Results - Soil - Metals

Parameter	MDL (µg/g)	Soil Samples - (µg/g)				*MOE Table 1 (µg/g)*	*MOE Table 2 Residential (µg/g)*
		TP13 G1	TP16 G1	TP18 G1	TP20 G1		
Antimony	1	nd	nd	nd	**4**	*1.0*	*13*
Arsenic	1	8	8	6	5	*17*	*20*
Barium	10	**322**	**241**	**549**	**468**	*210*	*750*
Beryllium	0.5	0.8	0.5	0.5	0.5	*1.2*	*1.2*
Boron (avail.)	0.5	0.7	1.1	0.8	1.2	*nv*	*1.5*
Cadmium	0.5	0.5	nd	nd	**1.7**	*1.0*	*12*
Chromium	5	**25**	**27**	**23**	**186**	*7.1*	*750*
Chromium VI	0.4	nd	nd	nd	nd	*2.5*	*8.0*
Cobalt	5	10	8	5	7	*21*	*40*
Copper	5	38	54	14	**125**	*85*	*225*
Iron	200	26 600	21 700	16 100	27 400	*nv*	*nv*
Lead	1	43	84	28	**294**	*120*	*200*
Mercury	0.1	nd	**0.5**	**0.9**	**0.4**	*0.23*	*10*
Molybdenum	1	nd	1	1	nd	*2.5*	*40*
Nickel	5	28	**51**	13	25	*43*	*150*
Selenium	1	nd	nd	nd	nd	*1.9*	*10*
Silver	0.3	nd	nd	nd	nd	*0.42*	*20*
Thallium	1	nd	nd	nd	nd	*2.5*	*4.1*
Vanadium	10	**101**	**240**	45	28	*91*	*200*
Zinc	20	102	**185**	33	**413**	*160*	*600*

Notes:
- ❑ MDL - Method Detection Limit; nd - Not Detected (< MDL)
- ❑ nv - No current MOE standard;
- ❑ Bold and underlined values exceed MOE Table 1 standard.
- ❑ values with outlined boxes exceed MOE Table 2 residential standards

Various metal parameters were detected in all eight soil samples in excess of the MOE Table 1 standards. Lead was detected in excess of the MOE Table 2 standards in TP11 G1 and TP20 G1. Vanadium was found in excess of the Table 2 standard in TP16 G1.

Table 3
Analytical Test Results - Soil - Volatile Organic Compounds (VOCs)

Parameter	MDL (µg/g)	Soil Samples (µg/g)		MOE Table 1 Standards (µg/g)	MOE Table 2 Residential (µg/g)
		TP6 G3	TP7 G4		
Benzene	0.002	nd	nd	*0.002*	*0.24*
Bromodichloromethane	0.002	nd	nd	*nv*	*0.12*
Bromoform	0.002	nd	nd	*0.002*	*0.11*
Bromomethane	0.003	nd	nd	*0.003*	*0.061*
Carbon Tetrachloride	0.002	nd	nd	*0.002*	*0.10*
Chlorobenzene	0.002	nd	nd	*0.002*	*2.4*
Chloroethane	0.005	nd	nd	*nv*	*nv*
Chloroform	0.003	nd	nd	*0.006*	*0.13*
Chloromethane	0.020	nd	nd	*nv*	*nv*
Dibromochloromethane	0.002	nd	nd	*0.003*	*0.09*
1,2-Dibromoethane	0.002	nd	nd	*nv*	*nv*
m-Dichlorobenzene	0.002	nd	nd	*0.002*	*30*
o-Dichlorobenzene	0.002	nd	nd	*0.002*	*0.88*
p-Dichlorobenzene	0.002	nd	nd	*0.002*	*0.32*
1,1-Dichloroethane	0.002	nd	nd	*0.002*	*3.0*
1,2-Dichloroethane	0.002	nd	nd	*0.002*	*0.022*
1,1-Dichlroethylene	0.002	nd	nd	*0.002*	*0.0024*
c-1,2-Dichloroethylene	0.002	nd	nd	*nv*	*2.3*
t-1,2-Dichloroethylene	0.003	nd	nd	*0.003*	*4.1*
1,2-Dichloropropane	0.002	nd	nd	*0.002*	*0.019*
c-1,3-Dichloropropene	0.002	nd	nd	*0.003*	*0.0066*
t-1.3-Dichloropropene	0.002	nd	nd	*0.003*	*0.0066*
Ethylbenzene	0.002	nd	nd	*0.002*	*0.28*
Methylene Chloride	0.010	nd	nd	*0.003*	*1.1*
Styrene	0.002	nd	nd	*0.002*	*1.2*
1,1,1,2-Tetrachloroethane	0.003	nd	nd	*nv*	*0.019*
1,1,2,2-Tetrachloroethane	0.003	nd	nd	*0.004*	*0.01*
Tetrachloroethylene	0.002	nd	nd	*0.002*	*0.45*
Toluene	0.002	nd	nd	*0.002*	*2.1*
1,1,1-Trichloroethane	0.002	nd	nd	*0.009*	*26*
1,1,2-Trichloroethane	.002	nd	nd	*0.002*	*0.28*
Trichloroethylene	0.003	nd	nd	*0.004*	*1.1*

Table 3 (continued)
Analytical Test Results - Soil - Volatile Organic Compounds (VOCs)

Parameter	MDL (µg/g)	Soil Samples (µg/g)		MOE Table 1 Standards (µg/g)	MOE Table 2 Residential (µg/g)
		TP6 G3	TP7 G4		
Trichlorofluoromethane	0.005	nd	nd	*nv*	*nv*
1,3,5-Trimethylbenzene	0.003	nd	nd	*nv*	*nv*
Vinyl Chloride	0.002	nd	nd	*0.003*	*0.003*
Xylenes	0.004	nd	nd	*0.002*	*25*

Notes:
- ❑ MDL - Method Detection Limit
- ❑ nd - Not Detected (< MDL)
- ❑ nv - the MOE provides no values for these parameters
- ❑ Bolded and underlined values exceed the MOE Table 1 standards

No VOC parameters were detected above the laboratory method detection limit, in Samples TP6-G3 and TP7-G4.

Table 4
Analytical Test Results - Soil - Polynuclear Aromatic Hydrocarbons (PAHs)

Parameter	MDL	Soil Samples (µg/g)		MOE Table 1 Standards (µg/g)	MOE Table 2 Residential (µg/g)
		TP8 G1	TP11 G1		
Acenaphthene	0.02	nd	nd	*0.07*	*15*
Acenaphthylene	0.02	nd	0.03	*0.08*	*100*
Anthracene	0.02	nd	0.03	*0.16*	*28*
Benzo(a)anthracene	0.02	nd	0.13	*0.74*	*6.6*
Benzo(a)pyrene	0.02	nd	0.15	*0.49*	*1.2*
Benzo(b)fluoranthene	0.02	nd	0.22	*0.47*	*12*
Benzo(g,h,i)perylene	0.02	nd	0.11	*0.68*	*40*
Benzo(k)fluoranthene	0.02	nd	0.10	*0.48*	*12*
Biphenyl	0.02	nd	0.06	*nv*	*0.89*
Chrysene	0.02	nd	0.18	*0.69*	*12*
Dibenz(a,h)anthracene	0.02	nd	0.03	*0.16*	*1.2*
Fluoranthene	0.02	nd	0.20	*1.1*	*40*
Fluorene	0.02	nd	0.02	*0.12*	*340*
Indeno(1,2,3-cd)pyrene	0.02	nd	0.10	*0.38*	*12*
1-Methylnaphthalene	0.02	nd	**0.56**	*0.26*	*1.2*
2-Methylnaphthalene	0.02	nd	**0.68**	*0.29*	1.2
Naphthalene	0.02	nd	**0.40**	*0.09*	*4.6*
Phenanthrene	0.02	nd	0.37	*0.69*	*40*
Pyrene	0.02	nd	0.16	*1.0*	*250*

Notes:
- MDL - Method Detection Limit
- nd - Not Detected (< MDL)
- nv - the MOE provides no values for these parameters
- Bolded and underlined values exceed the MOE Table 1 standards

Concentrations of 1- and 2-methylnaphthalene and naphthalene were detected in excess of the MOE Table 1 standards but below the Table 2 standards in Sample TP11-G1. No parameters were identified above the method detection limits, in soil Sample TP8-G1.

Table 5
Analytical Test Results - Soil - BTEX and PHC

Parameter	MDL	Soil Samples (µg/g)						MOE Table 1 (µg/g)	MOE Table 2 (µg/g)
		TP2 G2	TP3 G1	TP6 G3	TP7 G2	TP13 G1	TP20 G1		
Benzene	0.002	nd	nt	nd	nt	nt	nd	*0.002*	*0.24*
Ethylbenzene	0.002	nd	nt	nd	nt	nt	nd	*0.002*	*0.28*
Toluene	0.002	nd	nt	nd	nt	nt	nd	*0.002*	*2.1*
Xylenes	0.002	nd	nt	nd	nt	nt	nd	*0.002*	*25*
F1 PHC (C6-C10)	10	nd	nd	nd	nd	nd	nd	*nv*	*30*
F2 PHC (C10-C16)	10	nd	nd	nd	nd	16	nd	*nv*	*150*
F3 PHC (C16-C34)	10	19	45	nd	nd	**265**	**639**	*nv*	*400*
F4 PHC (34-C50)	10	10	23	nd	nd	**221**	**158**	*nv*	*2,800*

Notes:
- ❑ MDL - Method Detection Limit
- ❑ nd - Not Detected (< MDL)
- ❑ nv - the MOE provides no values for these parameters
- ❑ Bolded and underlined values exceed the MOE Table 1 standards
- ❑ Outlined boxes exceed the MOE Table 2 standards

Petroleum hydrocarbons in the F_3 and F_4 ranges were detected in four (4) of the six (6) tested samples. No value is provided by the MOE Table 1 standards for PHCs. In this situation, it is common industry practice to use the method detection limit as a guideline. The concentrations of F_3 and F_4 range PHCs in TP13-G1 and TP20-G1 were more than ten (10) times the method detection limit and are considered to be unacceptable for a sensitive Table 1 site. The concentration of fraction F_3 detected in TP20-G1 is also in excess of the MOE Table 2 standards. None of the BTEX parameters were detected in excess of the laboratory method detection limits.

Analytical Test Results for Groundwater

Samples were obtained from each of the monitoring wells located on site. Monitoring well MW1-08 was sampled twice. Where significant oil product was observed on a groundwater sample, the sample was not submitted for analytical testing. A total of six (6) out of eight (8) collected groundwater samples were submitted for analytical testing for a combination of metals, VOCs, PAH, BTEX and PHCs. Each sample submitted for metal analysis was field filtered. The results of the analytical testing are presented in Tables 6 to 9 along with the selected MOE standards. A copy of the laboratory test results are included in Appendix 1 of this report.

Table 6
Analytical Test Results - Groundwater - Metals

Parameter	MDL (µg/L)	Groundwater Samples - (µg/L)		*MOE Table 1 Standards (µg/L)*	*MOE Table 2 Potable Standards (µg/L)*
		MW2	M03-08		
Antimony	1	nd	nd	*6*	*6.0*
Arsenic	10	nd	nd	*25*	*25*
Barium	10	380	233	*nv*	*1,000*
Beryllium	1	nd	nd	*4*	*4.0*
Boron (avail.)	50	125	88	*200*	*5,000*
Cadmium	1	nd	nd	*0.5*	*5.0*
Chromium	50	nd	nd	*8.9*	*50*
Chromium VI	10	nd	nd	*10*	*50*
Cobalt	5	nd	nd	*0.9*	*100*
Copper	5	nd	**5**	*2.5*	*23*
Iron	200	265	481	*nv*	*nv*
Lead	1	nd	**3**	*1.0*	*10*
Mercury	0.1	nd	nd	*0.02*	*0.12*
Molybdenum	5	nd	28	*40*	*7,300*
Nickel	5	10	11	*25*	*100*
Selenium	5	nd	nd	*5*	*10*
Silver	1	nd	nd	*0.25*	*1.2*
Sodium	200	47,200	163,000	*nv*	*nv*
Thallium	1	nd	nd	*0.5*	*2.0*
Vanadium	10	nd	**10**	*6*	*200*
Zinc	20	nd	nd	*20*	*1,100*

Notes:
- MDL - Method Detection Limit; nd - Not Detected (< MDL)
- nv - No current MOE standard;
- Bold and underlined values exceed MOE Table 1 standard.

Copper, lead and vanadium concentrations were detected in MW3-08, in excess of the MOE Table 1 standards. The detected concentrations were in compliance with the Table 2 standards. It should be noted that the method detection limit for mercury is higher than the Table 1 standard, therefore, it is not known if any mercury is present in the groundwater samples in excess of the Table 1 standard.

Table 7
Analytical Test Results - Groundwater - Volatile Organic Compounds (VOCs)

Parameter	MDL (µg/L)	Groundwater Sample (µg/L)				MOE Table 1 Standards (µg/L)	MOE Table 2 Potable Standards (µg/L)
		MW2-08	MW3-08	MW1	MW2		
Benzene	0.5	nd	nd	nd	nd	*5*	*5.0*
Bromodichloromethane	0.4	nd	nd	nd	nd	*5*	*5.0*
Bromoform	0.5	nd	nd	nd	nd	*5*	*5.0*
Bromomethane	0.7	nd	nd	nd	nd	*0.9*	*3.7*
Carbon Tetrachloride	0.5	nd	nd	nd	nd	*0.5*	*5.0*
Chlorobenzene	0.4	nd	nd	nd	nd	*15*	*30*
Chloroethane	1.0	nd	nd	nd	nd	*nv*	*nv*
Chloroform	0.5	nd	nd	nd	nd	*0.5*	*5.0*
Chloromethane	3.0	nd	nd	nd	nd	*nv*	*nv*
Dibromochloromethane	0.5	nd	nd	nd	nd	*0.5*	*5.0*
1,2-Dibromoethane	1.0	nd	nd	nd	nd	*nv*	*nv*
m-Dichlorobenzene	0.4	nd	nd	nd	nd	*2.5*	*630*
o-Dichlorobenzene	0.4	nd	nd	nd	nd	*2.5*	*3.0*
p-Dichlorobenzene	0.4	nd	nd	nd	nd	*1*	*1.0*
1,1-Dichloroethane	0.5	nd	nd	nd	nd	*70*	*70*
1,2-Dichloroethane	0.5	nd	nd	nd	nd	*5*	*5.0*
1,1-Dichlroethylene	0.5	nd	nd	nd	nd	*0.66*	*0.66*
c-1,2-Dichloroethylene	0.4	nd	nd	nd	nd	*70*	*70*
t-1,2-Dichloroethylene	1.0	nd	nd	nd	nd	*100*	*100*
1,2-Dichloropropane	0.5	nd	nd	nd	nd	*0.7*	*5.0*
c-1,3-Dichloropropene	0.4	nd	nd	nd	nd	*0.7*	*1.4*
t-1.3-Dichloropropene	0.5	nd	nd	nd	nd	*1.4*	*1.4*
Ethylbenzene	0.5	nd	0.9	nd	nd	*2.4*	*2.4*
Methylene Chloride	4.0	nd	nd	nd	nd	*50*	*50*
Styrene	0.4	nd	nd	nd	nd	*4*	*100*
1,1,1,2-Tetrachloroethane	0.5	nd	nd	nd	nd	*5*	*5.0*
1,1,2,2-Tetrachloroethane	0.6	nd	nd	nd	nd	*1*	*1.0*
Tetrachloroethylene	0.5	nd	nd	nd	nd	*5*	*5.0*
Toluene	0.5	nd	**1.7**	nd	nd	*0.8*	*24*
1,1,1-Trichloroethane	0.4	nd	nd	nd	nd	*10*	*200*
1,1,2-Trichloroethane	0.6	nd	nd	nd	nd	*5*	*5.0*

Table 7 (Continued)
Analytical Test Results - Groundwater - Volatile Organic Compounds (VOCs)

Parameter	MDL (µg/L)	Groundwater Sample (µg/L)				MOE Table 1 Standards (µg/L)	MOE Table 2 Potable Standards (µg/L)
		MW2-08	MW3-08	MW1	MW2		
Trichloroethylene	0.4	nd	nd	nd	nd	*20*	*50*
Trichlorofluoromethane	1.0	nd	nd	nd	nd	*nv*	*nv*
1,3,5-Trimethylbenzene	0.5	nd	nd	nd	nd	*nv*	*nv*
Vinyl Chloride	0.4	nd	nd	nd	nd	*0.5*	*0.5*
Xylenes	1.0	nd	1.1	nd	nd	*72*	*300*

Notes:
- ❑ MDL - Method Detection Limit
- ❑ nd - Not Detected (< MDL)
- ❑ nv - the MOE provides no values for these parameters
- ❑ bolded and underlined values exceed the MOE Table 1 standards

The concentration of toluene detected in Sample MW3-08 exceeds the MOE Table 1 standard although it is in compliance with the MOE Table 2 standard. The remaining parameters were detected at concentrations below both the Table 1 and Table 2 standards.

Table 8
Analytical Test Results - Groundwater - Polynuclear Aromatic Hydrocarbons (PAHs)

Parameter	Groundwater Samples (µg/L)		MOE Table 1 Standards (µg/L)	MOE Table 2 Non potable Standards (µg/L)
	MDL (µg/L)	MW1-08*		
Acenaphthene	0.5	**1350**	*1*	*20*
Acenaphthylene	0.05	**300**	*1*	*310*
Anthracene	0.01	**185**	*0.5*	*12*
Benzo(a)anthracene	0.01	<5.00	*0.1*	*0.2*
Benzo(a)pyrene	0.01	<5.00	*0.005*	*0.01*
Benzo(b)fluoranthene	0.05	<25.0	*0.05*	*0.2*
Benzo(g,h,i)perylene	0.05	<25.0	*0.1*	*0.2*
Benzo(k)fluoranthene	0.05	<25.0	*0.05*	*0.2*
Biphenyl	0.05	**2430**	*1*	*350*
Chrysene	0.05	<25.0	*0.05*	*0.5*
Dibenz(a,h)anthracene	0.05	<25.0	*0.1*	*0.2*
Fluoranthene	0.01	<5.00	*1*	*130*
Fluorene	0.05	**2150**	*1*	*280*
Indeno(1,2,3-cd)pyrene	0.05	<25.0	*0.1*	*0.02*
1-Methylnaphthalene	0.05	**16700**	*2.5*	*10*
2-Methylnaphthalene	0.05	**30200**		*10*
Naphthalene	0.05	**7420**	*7*	*21*
Phenanthrene	0.05	**4020**	*1*	*63*
Pyrene	0.01	**252**	*0.05*	*40*

Notes:
- ❑ MDL - Method Detection Limit
- ❑ nd - Not Detected (< MDL)
- ❑ nv - the MOE provides no values for these parameters
- ❑ bolded and underlined values exceed the MOE Table 1 standards
- ❑ shaded values exceed the MOE Table 3 standards
- ❑ * Due to the presence of free product on the sample, dilution was required at the laboratory, elevating the method detection limits.

Free oil product was present on the groundwater sample submitted for PAH testing (MW1-08). Due to the presence of free product, the method detection limits were raised significantly, making the MDLs higher than the applicable standards. Where parameters were detected, they were all found in concentrations exceeding all MOE standards.

Table 9
Analytical Test Results - Groundwater - PHCs and BTEX

Parameter	MDL (µg/L)	Groundwater Sample (µg/L)					MOE Table 1 Standards (µg/L)	MOE Table 2 Standards (µg/L)
		MW1-08 Sept.2	MW2-08 Sept.2	MW1 Sept.2	MW2 Sept.2	MW5 G1 Oct.28		
Benzene	0.5	nd	nd	nd	nd	nt	***5***	*5.0*
Ethylbenzene	0.5	0.6	nd	nd	nd	nt	*2.4*	*2.4*
Toluene	0.5	**1**	nd	nd	nd	nt	*0.8*	*24*
Xylenes	1.0	11.5	nd	nd	nd	nt	*72*	*300*
F_1 PHC	200	200	nd	nd	nd	nd	*nv*	*1,000*
F_2 PHC	100	**4,350,000**	nd	nd	nd	**75,600**	*nv*	
F_3 PHC	100	**3,460,000**	nd	nd	nd	**56,100**	*nv*	*1,000*
F_4 PHC	100	**< 20,000**	nd	nd	nd	**520**	*nv*	

Notes:
- MDL - Method Detection Limit
- nd - Not Detected (< MDL)
- nv - the MOE provides no values for these parameters
- bolded and underlined values exceed the MOE Table 1 standards

As previously noted free oil product was present on sample MW1-08 obtained in September. This is reflected in the very high concentrations of F_2 and F_3 range PHCs detected in the sample. Elevated concentrations of F2 and F3 PHCs, in excess of all MOE standards were also detected in sample MW5 G1, obtained in October. Toluene was detected in MW1 above the MOE Table 1 standard, however the concentration was in compliance with the Table 2 standard. None of the PHC or BTEX parameters were detected in the remaining three (3) groundwater samples submitted for analysis.

Analytical Test Results for Sediment

A total of three (3) sediment samples were obtained from the three Lagoons present on the western portion of the subject site. The samples were submitted for analytical testing of metals, VOCs and/or PHCs. The results are contained in Tables 10 to 12 along with the selected MOE standards.

Table 10
Analytical Test Results - Metals - Sediment

Parameter	MDL (µg/g)	Sediment Samples - (µg/g)			MOE Table 1 and 2 Sediment Standards (µg/g)	MOE Table 2 Soil Standards (µg/g)
		Lagoon 1	Lagoon 2	Lagoon 3		
Antimony	1	2	1	5	*nv*	*13*
Arsenic	1	1	nd	2	*6*	*20*
Barium	10	239	122	241	*nv*	*750*
Beryllium	0.5	0.8	nd	0.8	*nv*	*1.2*
Boron (avail.)	0.5	0.5	nd	2.0	*nv*	*1.5*
Cadmium	0.5	0.6	nd	**0.8**	*0.6*	*12*
Chromium	5	**46**	22	**54**	*26*	*750*
Chromium VI	0.4	nd	nd	nd	*nv*	*8.0*
Cobalt	5	11	7	12	*50*	*40*
Copper	5	**32**	**18**	**38**	*16*	*225*
Iron	200	46,300	28,200	40,300	*nv*	*nv*
Lead	1	12	6	22	*31*	*200*
Mercury	0.1	nd	nd	nd	*0.2*	*10*
Molybdenum	1	nd	nd	nd	*nv*	*40*
Nickel	5	**22**	14	**20**	*16*	*150*
Selenium	1	nd	nd	nd	*nv*	*10*
Silver	0.3	nd	nd	nd	*0.5*	*20*
Thallium	1	nd	nd	nd	*nv*	*4.1*
Vanadium	10	59	35	49	*nv*	*200*
Zinc	20	**181**	**41**	**2,040**	*12*	*600*

Notes:
- MDL - Method Detection Limit; nd - Not Detected (< MDL)
- nv - No current MOE standard;
- Bold and underlined values exceed MOE standard.

Copper and zinc were detected at concentrations above the sediment standards in samples recovered from each of the lagoons. Nickel and chromium were found at concentrations in excess of the sediment standards in Lagoons 1 and 3. Cadmium was also detected in Lagoon 3 at a concentration above the sediment standard.

Based on our understanding of the proposed development to be conducted on the subject site, the sediment is to be removed from the lagoons and placed at a select location on the property, making the MOE Table 2 soil standards applicable to this material. None of the tested parameters were detected in excess of the MOE Table 2 soil standards.

Table 11
Analytical Test Results - Sediment - PHCs and BTEX

Parameter	MDL (µg/g)	Sediment Samples (µg/g)			MOE Table 2 Standards - Sediment (µg/g)	MOE Table 2 Standards - Soil (µg/g)
		Lagoon 1	Lagoon 2	Lagoon 3		
Benzene	0.002	nd	nt	nd	*nv*	*0.24*
Ethylbenzene	0.002	nd	nt	nd	*nv*	*0.28*
Toluene	0.002	nd	nt	nd	*nv*	***2.1***
Xylenes	0.004	nd	nt	nd	*nv*	*25*
F_1 PHC (C_6-C_{10})	10	nt	nd	nt	*nv*	*30*
F_2 PHC (C_{10}-C_{16})	10	nt	nd	nt	nv	*150*
F_3 PHC (C_{16}-C_{34})	10	nt	94	nt	*nv*	*400*
F_4 PHC (C_{34}-C_{50})	10	nt	nd	nt	*nv*	*2800*

Notes:
- MDL - Method Detection Limit
- nd - Not Detected (< MDL)
- nv - the MOE provides no values for these parameters
- bolded and underlined values exceed the MOE Table 1 standards

No BTEX parameters were detected above the method detection limits, in any of the sediment samples submitted for testing. A concentration of PHC fraction F_3 was detected in the sample collected from Lagoon 2. The MOE does not currently provide values for PHC parameters in sediment, however the detected concentration is well below the MOE Table 2 soil standard.

Table 12
Analytical Test Results - Groundwater - Volatile Organic Compounds (VOCs)

Parameter	MDL (µg/g)	Sediment Samples (µg/g)		MOE Table 2 Standards - Sediment (µg/g)	MOE Table 2 Standards - Soil (µg/g)
		Lagoon 1	Lagoon 3		
Benzene	0.002	nd	nd	*nv*	*0.24*
Bromodichloromethane	0.002	nd	nd	*nv*	*0.12*
Bromoform	0.002	nd	nd	*nv*	*0.11*
Bromomethane	0.003	nd	nd	*nv*	*0.061*
Carbon Tetrachloride	0.002	nd	nd	*nv*	*0.10*
Chlorobenzene	0.002	nd	nd	*nv*	*2.4*
Chloroethane	0.005	nd	nd	*nv*	*nv*
Chloroform	0.003	nd	nd	*nv*	*0.13*
Chloromethane	0.02	nd	nd	*nv*	*nv*
Dibromochloromethane	0.002	nd	nd	*nv*	*0.09*
1,2-Dibromoethane	0.002	nd	nd	*nv*	*nv*
m-Dichlorobenzene	0.002	nd	nd	*nv*	*30*
o-Dichlorobenzene	0.002	nd	nd	*nv*	*0.88*
p-Dichlorobenzene	0.002	nd	nd	*nv*	*0.32*
1,1-Dichloroethane	0.002	nd	nd	*nv*	*3.0*
1,2-Dichloroethane	0.002	nd	nd	*nv*	*0.022*
1,1-Dichlroethylene	0.002	nd	nd	*nv*	*0.0024*
c-1,2-Dichloroethylene	0.002	nd	nd	*nv*	*2.3*
t-1,2-Dichloroethylene	0.003	nd	nd	*nv*	*4.1*
1,2-Dichloropropane	0.002	nd	nd	*nv*	*0.019*
c-1,3-Dichloropropene	0.002	nd	nd	*nv*	*0.0066*
t-1.3-Dichloropropene	0.002	nd	nd	*nv*	*0.0066*
Ethylbenzene	0.002	nd	nd	*nv*	*0.28*
Methylene Chloride	0.01	nd	nd	*nv*	*1.1*
Styrene	0.002	nd	nd	*nv*	*1.2*
1,1,1,2-Tetrachloroethane	0.003	nd	nd	*nv*	*0.019*
1,1,2,2-Tetrachloroethane	0.003	nd	nd	*nv*	*0.01*
Tetrachloroethylene	0.002	nd	nd	*nv*	*0.45*
Toluene	0.002	nd	nd	*nv*	*2.1*
1,1,1-Trichloroethane	0.002	nd	nd	*nv*	*26*
1,1,2-Trichloroethane	0.002	nd	nd	*nv*	*0.28*

Table 12 (Continued)
Analytical Test Results - Groundwater - Volatile Organic Compounds (VOCs)

Parameter	MDL (µg/L)	Sediment Samples (µg/g)		MOE Table 2 Standards - Sediment (µg/g)	MOE Table 2 Standards - Soil (µg/g)
		Lagoon 1	Lagoon 3		
Trichloroethylene	0.003	nd	nd	*nv*	*1.1*
Trichlorofluoromethane	0.005	nd	nd	*nv*	*nv*
1,3,5-Trimethylbenzene	0.003	nd	nd	*nv*	*nv*
Vinyl Chloride	0.002	nd	nd	*nv*	*0.003*
Xylenes	0.002	nd	nd	*nv*	*25*

Notes:
- MDL - Method Detection Limit
- nd - Not Detected (< MDL)
- nv - the MOE provides no values for these parameters
- bolded and underlined values exceed the MOE Table 1 standards

VOC parameters were not identified above the method detection limits, in either sample submitted for analytical testing.

Analytical Test Results for Lead

It is being proposed that the concrete rubble from the former buildings is to be used as fill material during the future development of the site. Two samples of paint from the concrete rubble were obtained and submitted for lead testing to determine if the paint is considered to be lead based. The samples represented the two primary colours of paint observed on the concrete (white and blue). Lead is prescribed as a designated substance under Ontario Regulation 843 of the Occupational Health and Safety Act. Any paint with a lead concentration in excess of 5,000 µg/g is considered to be lead based. Any concrete covered in lead based paint would be considered unsuitable for use as a fill material.

The analytical test results, included in Appendix 1, indicate that both paint samples had a lead concentration below 50 µg/g. The paint on the concrete rubble is not a lead based product.

5.0 ASSESSMENT AND RECOMMENDATIONS

5.1 Assessment

A Phase II ESA was conducted on the property known as the Former Appletex Mill addressed 116-122 Old Mill Lane in the Village of Appleton, Ontario. The purpose of the Phase II ESA was to further investigate the soil and groundwater conditions on the subject site in comparison to the current MOE standards.

Soil

A total of twelve (12) soil samples, obtained from test pits and boreholes placed on site were submitted for analytical testing of PHCs, BTEX, VOCs, PAHs and/or metals. Metal parameters, in excess of the Table 2 standards were detected in TP11, TP16 and TP20. PHCs were also detected in excess of the Table 2 standards in TP20.

During the former soil remediation program, conducted in April and May of 2007, “clean” material was stockpiled onsite with the intent to conduct further testing prior to determining its usability on the subject site. During the current Phase II-ESA, TP 11 and TP 16 were placed in the stockpiled material and as noted above, analytical testing identified contaminant concentrations in excess of the applicable MOE Table 2 standards. The stockpiled soil was subsequently removed from the subject site and disposed of at a registered waste disposal facility.

During the previous assessment, conducted by WESA, it was estimated that approximately 7,200 m^3 of buried waste was present in the vicinity of TP20. It is our understanding that none of this buried waste was removed and therefore remains on the subject site. Based on the results of current and previous analytical testing, the waste material is contaminated in excess of the MOE Table 2 standards and requires disposal at a registered waste disposal facility.

Analytical testing conducted during the 2007 remediation program identified PHC contaminated soil, in excess of all MOE standards, along the western wall of the remediation excavation, adjacent to the Mississippi River. The extent of the contamination has not been delineated. It is estimated that approximately 300 m^3 of contaminated soil may remain in this area.

Groundwater

A total of six (6) groundwater samples, obtained during two (2) sampling events, were submitted for analytical testing of a combination of metals, PHCs and VOCs. Two (2) of the samples were obtained from monitoring wells installed by others in 1994. The remaining four (4) samples were obtained from monitoring wells installed by Paterson as part of the current investigation.

Petroleum free product was observed in MW1-08 and MW5-08 located in the area of the former remediation. Analytical testing identified elevated levels of petroleum hydrocarbons, in excess of all MOE standards, in MW1-08 and MW4-08. The remaining detected parameters were in compliance with the Table 2 standards for a potable groundwater condition**.**

Sediment

Three (3) sediment samples , one (1) from each lagoon, were submitted for analytical testing of metal, BTEX and PHC parameters. Copper and zinc were detected in concentrations above the MOE Table 2 sediment standards in each of the lagoons. Nickel and chromium were found in excess of the sediment standards in Lagoons 1 and 3. A cadmium concentration in excess of the applicable standard was also detected in Lagoon 3.

Based on our understanding of the proposed redevelopment of the subject property, the lagoons will be filled in upon removing the impacted sediment. The impacted sediment will be managed elsewhere on site where the less stringent Table 2 standards for soil is applicable. None of the tested parameters were detected in excess of the MOE Table 2 soil standards.

No BTEX parameters were detected in the tested sediment standards. F_3 range PHCs were detected in the sample collected from Lagoon 2. The MOE does not currently have standards for PHC parameters in sediment. However the detected concentration is in compliance with the MOE Table 2 standards for soil. No VOC parameters were detected above the laboratory method detection limits, in the sediment samples collected from Lagoons 1 and 3.

5.2 Recommendations

Soil

Soil contaminated with various metal and PHC parameters in excess of the MOE Table 2 standards is located immediately west of the former remediation excavation and in the vicinity of TP20, as shown on Drawing: PE1114-4. Remediation of this soil is required prior to the redevelopment of the subject property and prior to applying for a Record of Site Condition (RSC). The contaminated soil west of the former excavation will require remediation to Table 1 standards due to the proximity (less than 30 m) to the Mississippi River, while the remaining impacted soil outside the sensitive zone will have the remediation criteria compared to Table 2 standards.

Prior to remediation activities, an MOE Regulation 347/558 leachate analysis of a representative sample of impacted soil will be required to dispose of the material at an approved waste disposal facility. It is recommended that a representative from our environmental division be present during the soil remediation program to direct the excavation contractor and to conduct confirmatory sampling.

Groundwater

Petroleum free product was identified in the three (3) monitoring wells installed at the top of the slope, within the previous remediation excavation. Remediation of the groundwater is necessary prior to the redevelopment of the subject land.

Two (2) remedial options have been considered:

- Option A - Pump and treat system via a series of recovery wells

  The advantage of this option is that it will be more economical in addressing this issue. The main disadvantage is that it takes a long time (2 to 5 years) and it may not be able to completely remove all free product.

- Option B - Open excavation with a treatment system

  The advantage of Option B is that in a very short period of time (4 to 6 weeks), the free product and impacted groundwater can be recovered and treated before backfilling. A trench excavated into the bedrock extending to 1 m below the current level of the Mississippi River is required. The main advantage of the trench excavation is that it will expose the bedrock face and allow any free product to flow into the trench. Free product recovery will be facilitated by this approach and the success rate will be greater. The disadvantage with Option B is the higher cost of blasting and excavating the bedrock to construct the trench.

  The bedrock would be blasted to a depth below the level of the Mississippi River to draw the surrounding groundwater into the trench and collect the free petroleum product on the surface of the water. The petroleum product and impacted groundwater would be pumped over a period of time and disposed off-site by a licenced pumping contractor or treated on site prior to surface discharging, under the supervision of personnel from our environmental division. Confirmatory sampling of the groundwater would be conducted periodically to determine whether the hydrocarbon concentrations have been effectively lowered.

  Blast-rock excavated from the trench will be assessed to determine whether or not it has been impacted with hydrocarbons. “Clean” rock will be stockpiled for future use onsite. Rock that has been impacted with hydrocarbons will be spread and aerated on site.

  Once confirmatory sampling has indicated that the groundwater has been remediated, the trench will be backfilled.

- Option C - In-Situ Bioremediation

  Another potential remedial option is to use an in-situ bioremediation approach which would involve the injection of a solution into injection wells. The solution would aid in the biodegradation of the petroleum product. Subsequent monitoring of the groundwater would be required to determine the condition of the groundwater. This is not the preferred remedial option as pockets of oil may remain within the bedrock fissures and there is always the potential of causing the contamination to spread and spill into the Mississippi River.

Sediment

As mentioned previously, analytical testing of the sediment in Lagoons 1 and 2, conducted by the MOE in June of 2008, indicated metal concentrations in excess of the Lowest Effect Level Guideline as per the MOE document entitled *Guidelines for the Management and Protection of Aquatic Sediment Quality in Ontario*, dated August of 1993. One (1) parameter detected in the sample collected from the Lagoon 2 discharge apron also exceeded the Severe Effect Level Guideline. No volatile organic compound (VOC) parameters or polychlorinated biphenyl (PCB) parameters were detected in any of the samples submitted for analysis. These results were subsequently compared to the MOE Table 2 standards for both sediment and soil. Several parameters are in excess of the sediment standards. However, all concentrations are in compliance with the soil standards.

Based on these test results as well as those identified during the current sampling program, it is recommended that the impacted sediment be removed from the lagoons and placed elsewhere on the subject property where the Table 2 standards for soil will be applicable. Confirmatory sampling of the sediment remaining within the lagoons should be conducted prior to backfilling with clean material, which will consists of a mixture of blast rock and soil excavated from elsewhere on site.

6.0 STATEMENT OF LIMITATIONS

This Phase II - Environmental Site Assessment report has been prepared in general accordance with the agreed scope-of-work and the requirements of CSA Z769-00. The conclusions presented herein are based on information gathered from a limited sampling and testing program. The test results represent conditions at specific test locations at the time of the field program.

The client should be aware that any information pertaining to soils and all test hole logs are furnished as a matter of general information only and test hole descriptions or logs are not to be interpreted as descriptive of conditions at locations other than those described by the test holes themselves.

Should any conditions be encountered at the subject site and/or historical information that differ from our findings, we request that we be notified immediately in order to allow for a reassessment.

This report was prepared for the sole use of Carlgate Developments. Permission and notification from the above noted party and Paterson Group will be required to release this report to any other party.

Paterson Group Inc.

Karyn Munch, P.Eng.

Carlos P. Da Silva, P. Eng

Report Distribution:

- ❑ Carlgate Developments (3 copies)
- ❑ Paterson Group Inc. (1 copy)

APPENDIX 1

SOIL PROFILE AND TEST DATA SHEETS

SYMBOLS AND TERMS

ANALYTICAL TEST RESULTS

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28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7

SOIL PROFILE AND TEST DATA

Phase II-Environmental Site Assessment
Former Appletex Mill
Appleton, Ontario

DATUM Ground surface elevations provided by G. A. Smith Surveying Ltd.

FILE NO. PE1114

REMARKS

HOLE NO. MW 1-08

BORINGS BY CME 55 Power Auger **DATE** 26 Aug 08

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone / ○ Lower Explosive Limit %	Monitoring Well Construction
GROUND SURFACE						0	127.46		
FILL: Silty sand with gravel		AU	1						
0.86		RC	1	91	0	1	126.46		
		RC	2	90	60	2	125.46		
		RC	3	88	82	3	124.46		
		RC	4	100	44	4	123.46		
BEDROCK: Limestone		RC	5	90	73	5	122.46		
		RC	6	95	92	6	121.46		
		RC	7	100	78	7	120.46		
		RC	8	97	80	8	119.46		
		RC	9	100	100	9	118.46		
12.19						10	117.46		
End of Monitoring Well (GWL @ 9.86m-Sept. 2/08)						11	116.46		
						12	115.46		

Pen. Resist. Blows/0.3m: ○ Lower Explosive Limit % — 20 40 60 80

100 200 300 400 500

Gastech 1314 Rdg. (ppm)

▲ Full Gas Resp. △ Methane Elim.

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SOIL PROFILE AND TEST DATA

Phase II-Environmental Site Assessment
Former Appletex Mill
Appleton, Ontario

DATUM Ground surface elevations provided by G. A. Smith Surveying Ltd.

FILE NO. PE1114

REMARKS

HOLE NO. MW 2-08

BORINGS BY CME 55 Power Auger **DATE** 26 Aug 08

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	128.08
FILL: Silty sand with gravel and concrete pieces						1	127.08
1.90						2	126.08
		RC	1	85	73	3	125.08
		RC	2	93	60	4	124.08
		RC	3	100	100	5	123.08
		RC	4	97	87	6	122.08
BEDROCK: LImestone						7	121.08
		RC	5	92	82	8	120.08
		RC	6	100	93	9	119.08
		RC	7	93	88	10	118.08
		RC	8	100	100	11	117.08
12.19						12	116.08
End of Monitoring Well							
(GWL @ 7.30m-Sept. 2/08)							

Pen. Resist. Blows/0.3m
● 50 mm Dia. Cone

○ Lower Explosive Limit %

20 40 60 80

100 200 300 400 500

Gastech 1314 Rdg. (ppm)

▲ Full Gas Resp. △ Methane Elim.

Monitoring Well Construction

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SOIL PROFILE AND TEST DATA

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Appleton, Ontario

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FILE NO. PE1114

REMARKS

HOLE NO. MW 3-08

BORINGS BY CME 55 Power Auger **DATE** 26 Aug 08

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	121.79
TOPSOIL 0.05		SS	1	33	2		
FILL: Brown silty sand with clay and gravel		SS	2	17	12	1	120.79
		SS	3	4	4		
2.21		AU	5			2	119.79
		SS	4	17	2		
FILL: Grey to black silty clay with gravel		SS	6	17	3	3	118.79
3.73							
GLACIAL TILL		SS	7	29	74	4	117.79
4.62		SS	8	55	33		
		RC	1	96	83	5	116.79
BEDROCK: Limestone						6	115.79
		RC	2	95	90		
						7	114.79
7.62		RC	3	90	70		
End of Monitoring Well							
(GWL @ 2.70m-Sept. 2/08)							

Pen. Resist. Blows/0.3m
● 50 mm Dia. Cone

○ Lower Explosive Limit %

20 40 60 80

Monitoring Well Construction

100 200 300 400 500

Gastech 1314 Rdg. (ppm)

▲ Full Gas Resp. △ Methane Elim.

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SOIL PROFILE AND TEST DATA

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Former Appletex Mill
Appleton, Ontario

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FILE NO. PE1114

REMARKS

HOLE NO. TP 1

BORINGS BY Backhoe **DATE** 26 Aug 08

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone / ○ Lower Explosive Limit %	Monitoring Well Construction
GROUND SURFACE						0	124.90		
25mm Topsoil over brown **SILTY SAND** with some clay and gravel		G	1						
0.48									
End of Test Pit TP terminated on bedrock surface @ 0.48m depth									

20 40 60 80

100 200 300 400 500

Gastech 1314 Rdg. (ppm)

▲ Full Gas Resp. △ Methane Elim.

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SOIL PROFILE AND TEST DATA

Phase II-Environmental Site Assessment
Former Appletex Mill
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DATUM Ground surface elevations provided by G. A. Smith Surveying Ltd.

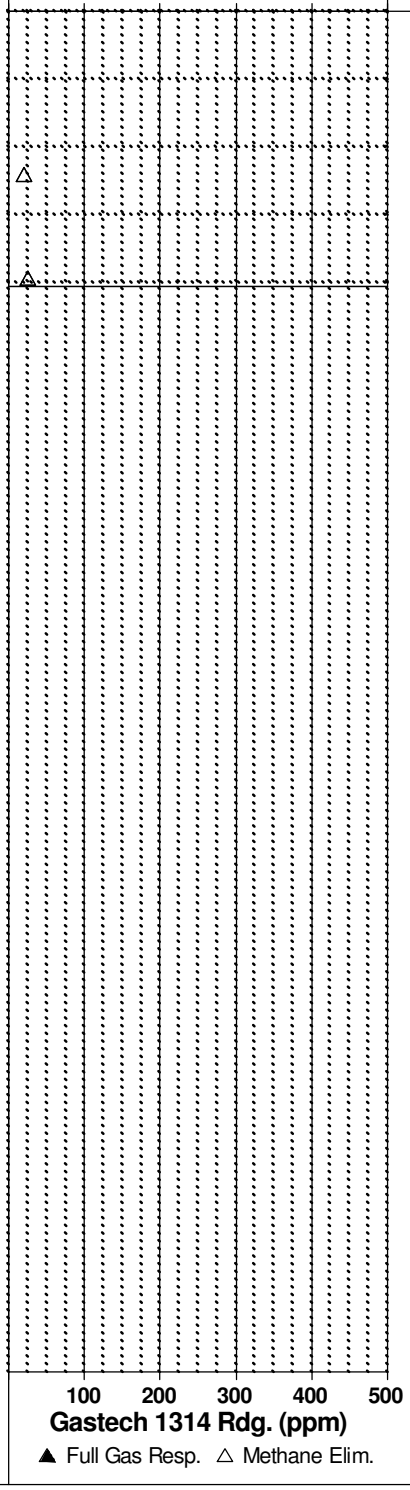
FILE NO. PE1114

REMARKS

HOLE NO. TP 2

BORINGS BY Backhoe **DATE** 26 Aug 08

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone / ○ Lower Explosive Limit %	Monitoring Well Construction
GROUND SURFACE						0	127.28		
TOPSOIL 0.10									
FILL: Brown silty sand with cinder blocks 0.53		G	1						
Brown **SILTY SAND** 0.81		G	2						
End of Test Pit									
TP terminated on bedrock surface @ 0.81m depth									



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SOIL PROFILE AND TEST DATA

Phase II-Environmental Site Assessment
Former Appletex Mill
Appleton, Ontario

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FILE NO. PE1114

REMARKS

HOLE NO. TP 3

BORINGS BY Backhoe **DATE** 26 Aug 08

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone / ○ Lower Explosive Limit %	Monitoring Well Construction
GROUND SURFACE						0	127.94		
FILL: Dark brown silty clay with gravel and brick pieces		G	1			1	126.94		▽
1.62									
Grey-brown **SILTY CLAY** with sand		G	2			2	125.94		
2.34									
End of Test Pit TP terminated on bedrock surface @ 2.34m depth (GWL @ 1.6m depth)									

Lower Explosive Limit % scale: 20 40 60 80

Gastech 1314 Rdg. (ppm) scale: 100 200 300 400 500

▲ Full Gas Resp. △ Methane Elim.

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SOIL PROFILE AND TEST DATA

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FILE NO. PE1114

REMARKS

HOLE NO. TP 4

BORINGS BY Backhoe **DATE** 26 Aug 08

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone / ○ Lower Explosive Limit %	Monitoring Well Construction
GROUND SURFACE						0	128.92		
FILL: Brown sand and gravel with rubble		G	1						
0.97						1	127.92		
GLACIAL TILL: Brown silty sand with clay, gravel and cobbles		G	2						
2.67						2	126.92		
End of Test Pit TP terminated on bedrock surface @ 2.67m depth									

Pen. Resist. Blows/0.3m: ● 50 mm Dia. Cone; ○ Lower Explosive Limit %

20 40 60 80

100 200 300 400 500

Gastech 1314 Rdg. (ppm)

▲ Full Gas Resp. △ Methane Elim.

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SOIL PROFILE AND TEST DATA

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FILE NO. PE1114

REMARKS

HOLE NO. TP 5

BORINGS BY Backhoe **DATE** 26 Aug 05

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone / ○ Lower Explosive Limit %	Monitoring Well Construction
GROUND SURFACE						0	128.72		
FILL: Brown silty sand with gravel and clay		G	1			1	127.72		
1.30									
GLACIAL TILL: Brown silty clay with sand and gravel		G	2						
1.83									
End of Test Pit TP terminated on bedrock surface @ 1.83m depth									

○ Lower Explosive Limit %

20 40 60 80

100 200 300 400 500

Gastech 1314 Rdg. (ppm)

▲ Full Gas Resp. △ Methane Elim.

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SOIL PROFILE AND TEST DATA

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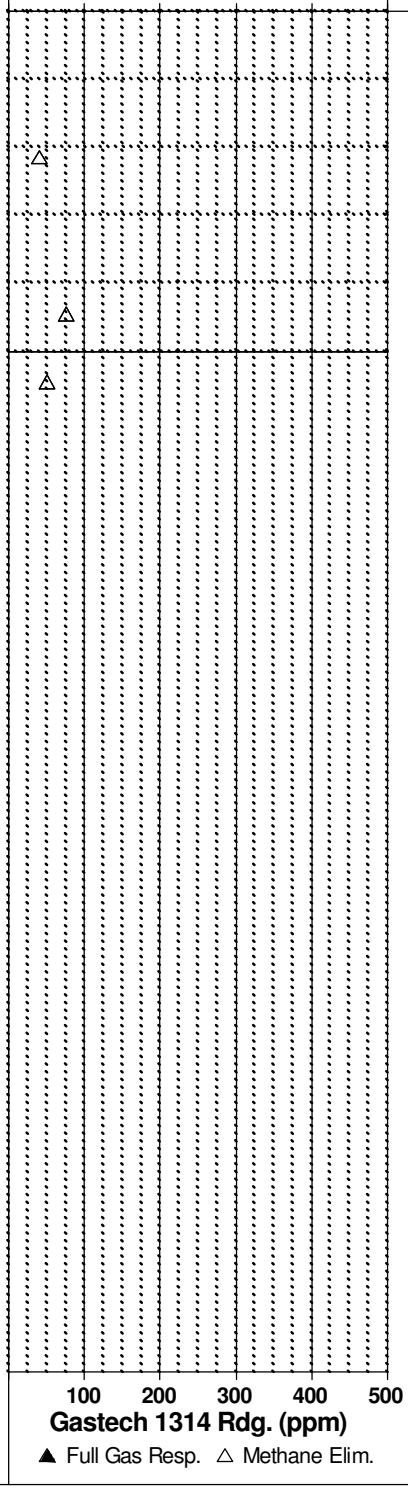
FILE NO. PE1114

REMARKS

HOLE NO. TP 6

BORINGS BY Backhoe **DATE** 26 Aug 08

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone / ○ Lower Explosive Limit %	Monitoring Well Construction
GROUND SURFACE						0	127.70		
FILL: Dark brown silty sand with topsoil		G	1						
0.53									
Brown **SILTY SAND**, some clay		G	2						
0.99						1	126.70		
GLACIAL TILL: Grey-brown silty clay with sand, gravel and cobbles		G	3						
1.20									
End of Test Pit									
TP terminated on bedrock surface @ 1.20m depth									



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SOIL PROFILE AND TEST DATA

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Former Appletex Mill
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FILE NO. PE1114

REMARKS

HOLE NO. TP 7

BORINGS BY Backhoe **DATE** 26 Aug 08

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone / ○ Lower Explosive Limit %	Monitoring Well Construction
GROUND SURFACE						0	128.63		
FILL: Brown silty sand with gravel		G	1						
0.48									
FILL: Dark brown silty sand with clay and concrete pieces		G	2						
0.84									
FILL: Brown silty sand with gravel		G	3			1	127.63		
1.22									
		G	4						
GLACIAL TILL: Light brown silty sand with clay, gravel and cobbles						2	126.63		
2.34									
End of Test Pit									
TP terminated on bedrock surface @ 2.34m depth									

Pen. Resist. Blows/0.3m: 20 40 60 80

100 200 300 400 500

Gastech 1314 Rdg. (ppm)

▲ Full Gas Resp. △ Methane Elim.

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SOIL PROFILE AND TEST DATA

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FILE NO. PE1114

REMARKS

HOLE NO. TP 8

BORINGS BY Backhoe **DATE** 26 Aug 08

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone / ○ Lower Explosive Limit %	Monitoring Well Construction
GROUND SURFACE						0	128.92		
FILL: Brown silty sand with clay, cobbles, steel and topsoil		G	1			1	127.92		
		G	2						
1.78									
End of Test Pit TP terminated on bedrock surface @ 1.78m depth									

○ Lower Explosive Limit %

20 40 60 80

100 200 300 400 500

Gastech 1314 Rdg. (ppm)

▲ Full Gas Resp. △ Methane Elim.

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SOIL PROFILE AND TEST DATA

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Former Appletex Mill
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FILE NO. PE1114

REMARKS

HOLE NO. TP 9

BORINGS BY Backhoe **DATE** 26 Aug 08

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone / ○ Lower Explosive Limit %	Monitoring Well Construction
GROUND SURFACE						0	128.84		
FILL: Sand and gravel with concrete and steel pieces		G	1			1	127.84		
1.47									
End of Test Pit TP terminated on bedrock surface @ 1.47m depth									

20 40 60 80

100 200 300 400 500

Gastech 1314 Rdg. (ppm)

▲ Full Gas Resp. △ Methane Elim.

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SOIL PROFILE AND TEST DATA

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FILE NO. PE1114

REMARKS

HOLE NO. TP10

BORINGS BY Backhoe **DATE** 26 Aug 08

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone / ○ Lower Explosive Limit %	Monitoring Well Construction
GROUND SURFACE						0	127.73		
TOPSOIL 0.23		G	1						
Brown **SILTY SAND**, trace clay 0.48		G	2						
GLACIAL TILL: Grey-brown silty clay with sand, gravel and cobbles 0.99		G	3						
End of Test Pit									
TP terminated on bedrock surface @ 0.99m depth									

○ Lower Explosive Limit %: 20 40 60 80

100 200 300 400 500

Gastech 1314 Rdg. (ppm)

▲ Full Gas Resp. △ Methane Elim.

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SOIL PROFILE AND TEST DATA

Phase II-Environmental Site Assessment
Former Appletex Mill
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FILE NO. PE1114

REMARKS

HOLE NO. TP11

BORINGS BY Backhoe **DATE** 26 Aug 08

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone / ○ Lower Explosive Limit %	Monitoring Well Construction
GROUND SURFACE						0	128.34		
FILL: Silty sand with gravel, concrete, metal and slag pieces		G	1						
0.60									
		G	2						
Brown **SILTY CLAY** with sand						1	127.34		
1.83									
End of Test Pit									

Lower Explosive Limit % scale: 20 40 60 80

Gastech 1314 Rdg. (ppm) scale: 100 200 300 400 500

▲ Full Gas Resp. △ Methane Elim.

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SOIL PROFILE AND TEST DATA

Phase II-Environmental Site Assessment
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FILE NO. PE1114

REMARKS

HOLE NO. TP12

BORINGS BY Backhoe **DATE** 26 Aug 08

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone / ○ Lower Explosive Limit %	Monitoring Well Construction
GROUND SURFACE						0	128.16		
FILL: Brown sand with gravel									
0.15									
TOPSOIL		G	2						
0.33									
Brown **SILTY CLAY** with sand		G	1						
0.53		G	3						
GLACIAL TILL: Light brown silty sand with clay, gravel and cobbles		G	4			1	127.16		
1.37									
End of Test Pit									
TP terminated on bedrock surface @ 1.37m depth									

Lower Explosive Limit % scale: 20 40 60 80

Gastech 1314 Rdg. (ppm): 100 200 300 400 500

▲ Full Gas Resp. △ Methane Elim.

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SOIL PROFILE AND TEST DATA

Phase II-Environmental Site Assessment
Former Appletex Mill
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DATUM Ground surface elevations provided by G. A. Smith Surveying Ltd.

FILE NO. PE1114

REMARKS

HOLE NO. TP13

BORINGS BY Backhoe **DATE** 26 Aug 08

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone / ○ Lower Explosive Limit %	Monitoring Well Construction
GROUND SURFACE						0	128.85		
FILL: Sand and gravel with topsoil		G	1						
1.12						1	127.85		
Brown **SILTY SAND**, some clay		G	2						
1.73									
GLACIAL TILL: Light brown silty sand with clay, gravel and cobbles		G	3			2	126.85		
3.05						3	125.85		
End of Test Pit TP terminated on bedrock surface @ 3.05m depth									

Pen. Resist. Blows/0.3m: ● 50 mm Dia. Cone; ○ Lower Explosive Limit %

20 40 60 80

100 200 300 400 500

Gastech 1314 Rdg. (ppm)

▲ Full Gas Resp. △ Methane Elim.

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SOIL PROFILE AND TEST DATA

Phase II-Environmental Site Assessment
Former Appletex Mill
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FILE NO. PE1114

REMARKS

HOLE NO. TP14

BORINGS BY Backhoe **DATE** 26 Aug 08

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone / ○ Lower Explosive Limit %	Monitoring Well Construction
GROUND SURFACE						0	128.82		
FILL: Brown silty sand with clay, concrete and steel		G	1						
						1	127.82		
1.30									
GLACIAL TILL: Light brown silty sand with clay, gravel and cobbles		G	2						
1.42									
End of Test Pit									
TP terminated on bedrock surface @ 1.42m depth									

Pen. Resist. Blows/0.3m: ● 50 mm Dia. Cone; ○ Lower Explosive Limit %

20 40 60 80

100 200 300 400 500

Gastech 1314 Rdg. (ppm)

▲ Full Gas Resp. △ Methane Elim.

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SOIL PROFILE AND TEST DATA

Phase II-Environmental Site Assessment
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FILE NO. PE1114

REMARKS

HOLE NO. TP15

BORINGS BY Backhoe **DATE** 26 Aug 08

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone / ○ Lower Explosive Limit %	Monitoring Well Construction
GROUND SURFACE						0	128.04		
FILL: Mixture of topsoil, sand, silty clay, gravel and wood		G	1						
0.51									
End of Test Pit TP terminated on bedrock surface @ 0.51m depth									

○ Lower Explosive Limit %

20 40 60 80

100 200 300 400 500

Gastech 1314 Rdg. (ppm)

▲ Full Gas Resp. △ Methane Elim.

patersongroup

Consulting Engineers

28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7

SOIL PROFILE AND TEST DATA

Phase II-Environmental Site Assessment
Former Appletex Mill
Appleton, Ontario

DATUM Ground surface elevations provided by G. A. Smith Surveying Ltd.

FILE NO. PE1114

REMARKS

HOLE NO. TP16

BORINGS BY Backhoe **DATE** 26 Aug 08

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone / ○ Lower Explosive Limit %	Monitoring Well Construction
GROUND SURFACE						0	127.95		
FILL: Sand and gravel with clay, wood and slag		G	1						
		G	2						
0.91									
End of Test Pit TP terminated on bedrock surface @ 0.91m depth									

○ Lower Explosive Limit %

20 40 60 80

100 200 300 400 500

Gastech 1314 Rdg. (ppm)

▲ Full Gas Resp. △ Methane Elim.

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Consulting Engineers

28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7

SOIL PROFILE AND TEST DATA

Phase II-Environmental Site Assessment
Former Appletex Mill
Appleton, Ontario

DATUM Ground surface elevations provided by G. A. Smith Surveying Ltd.

FILE NO. PE1114

REMARKS

HOLE NO. TP17

BORINGS BY Backhoe **DATE** 26 Aug 08

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone / ○ Lower Explosive Limit %	Monitoring Well Construction
GROUND SURFACE						0	127.85		
FILL: Sand, gravel, wood and slag		G	1						
0.66									
End of Test Pit TP terminated on bedrock surface @ 0.66m depth									

20 40 60 80

100 200 300 400 500

Gastech 1314 Rdg. (ppm)

▲ Full Gas Resp. △ Methane Elim.

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Consulting Engineers

28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7

SOIL PROFILE AND TEST DATA

Phase II-Environmental Site Assessment
Former Appletex Mill
Appleton, Ontario

DATUM Ground surface elevations provided by G. A. Smith Surveying Ltd.

FILE NO. PE1114

REMARKS

HOLE NO. TP18

BORINGS BY Backhoe **DATE** 26 Aug 08

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone / ○ Lower Explosive Limit %	Monitoring Well Construction
GROUND SURFACE						0	125.97		
FILL: Silty sand with clay, topsoil, wood and slag		G	1						
0.63									
End of Test Pit TP terminated on bedrock surface @ 0.63m depth									

○ Lower Explosive Limit %: 20 40 60 80

100 200 300 400 500

Gastech 1314 Rdg. (ppm)

▲ Full Gas Resp. △ Methane Elim.

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Consulting Engineers

28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7

SOIL PROFILE AND TEST DATA

Phase II-Environmental Site Assessment
Former Appletex Mill
Appleton, Ontario

DATUM Ground surface elevations provided by G. A. Smith Surveying Ltd.

FILE NO. PE1114

REMARKS

HOLE NO. TP19

BORINGS BY Backhoe **DATE** 26 Aug 08

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone / ○ Lower Explosive Limit %	Monitoring Well Construction
GROUND SURFACE									
TOPSOIL 0.03						0			
End of Test Pit									
TP terminated on bedrock surface @ 0.03m depth									

20 40 60 80

100 200 300 400 500

Gastech 1314 Rdg. (ppm)

▲ Full Gas Resp. △ Methane Elim.

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Consulting Engineers

28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7

SOIL PROFILE AND TEST DATA

Phase II-Environmental Site Assessment
Former Appletex Mill
Appleton, Ontario

DATUM Ground surface elevations provided by G. A. Smith Surveying Ltd.

FILE NO. PE1114

REMARKS

HOLE NO. TP20

BORINGS BY Backhoe **DATE** 26 Aug 08

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone / ○ Lower Explosive Limit %	Monitoring Well Construction
GROUND SURFACE						0			
FILL: Brown silty sand with clay, rubber, steel, plastic and fabric		G	1						
0.25									
End of Test Pit									
TP terminated on bedrock surface @ 0.25m depth									

○ Lower Explosive Limit %

20 40 60 80

△

100 200 300 400 500

Gastech 1314 Rdg. (ppm)

▲ Full Gas Resp. △ Methane Elim.

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Consulting Engineers

28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7

SOIL PROFILE AND TEST DATA

Phase II-Environmental Site Assessment
Former Appletex Mill
Appleton, Ontario

DATUM Ground surface elevations provided by G. A. Smith Surveying Ltd.

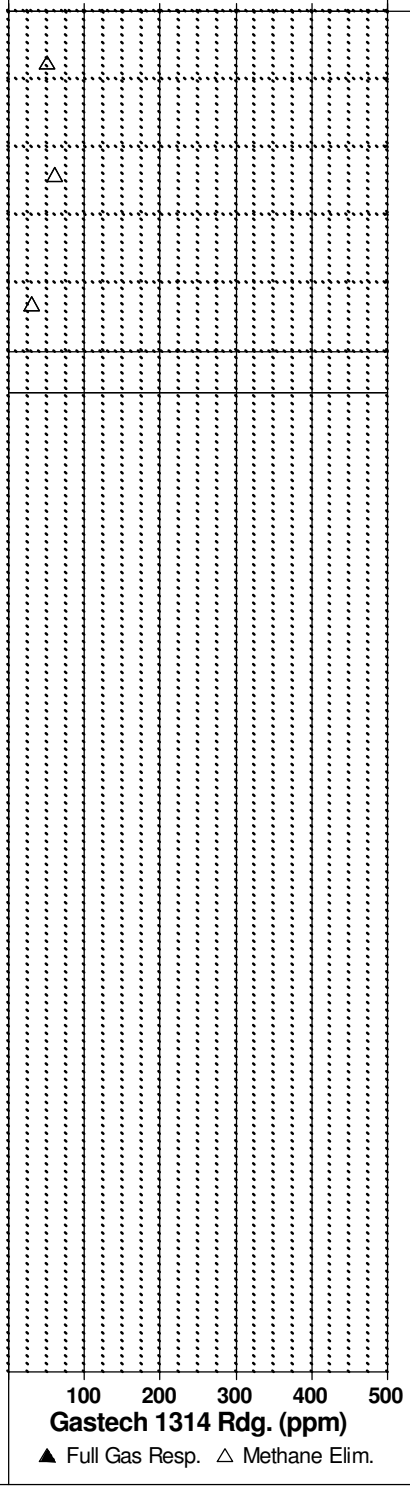
FILE NO. PE1114

REMARKS

HOLE NO. TP21

BORINGS BY Backhoe **DATE** 26 Aug 08

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone / ○ Lower Explosive Limit %	Monitoring Well Construction
GROUND SURFACE						0	128.19		
FILL: Brown silty sand with clay and gravel		G	1						
0.20									
TOPSOIL		G	2						
0.63									
GLACIAL TILL: Brown silty clay with sand, gravel and cobbles		G	3			1	127.19		
1.12									
End of Test Pit									
TP terminated on bedrock surface @ 1.12m depth									



SYMBOLS AND TERMS

SOIL DESCRIPTION

Behavioural properties, such as structure and strength, take precedence over particle gradation in describing soils. Terminology describing soil structure are as follows:

Desiccated	-	having visible signs of weathering by oxidation of clay minerals, shrinkage cracks, etc.
Fissured	-	having cracks, and hence a blocky structure.
Varved	-	composed of regular alternating layers of silt and clay.
Stratified	-	composed of alternating layers of different soil types, e.g. silt and sand or silt and clay.
Well-Graded	-	having wide range in grain sizes and substantial amounts of all intermediate particle sizes (see Grain Size Distribution).
Uniformly-Graded	-	predominantly of one grain size (see Grain Size Distribution).

The standard terminology to describe the strength of cohesionless soils is the relative density, usually inferred from the results of the Standard Penetration Test (SPT) 'N' value. The SPT N value is the number of blows of a 63.5 kg hammer, falling 760 mm, required to drive a 51 mm O.D. split spoon sampler 300 mm into the soil after an initial penetration of 150 mm.

Relative Density	'N' Value	Relative Density %
Very Loose	<4	<15
Loose	4-10	15-35
Compact	10-30	35-65
Dense	30-50	65-85
Very Dense	>50	>85

The standard terminology to describe the strength of cohesive soils is the consistency, which is based on the undisturbed undrained shear strength as measured by in situ or laboratory vane tests, penetrometer tests, unconfined compression tests, or occasionally by Standard Penetration Tests.

Consistency	Undrained Shear Strength (kPa)	'N' Value
Very Soft	<12	<2
Soft	12-25	2-4
Firm	25-50	4-8
Stiff	50-100	8-15
Very Stiff	100-200	15-30
Hard	>200	>30

SYMBOLS AND TERMS (continued)

SOIL DESCRIPTION (continued)

Cohesive soils can also classified according to their "sensitivity". The sensitivity is the ratio between the undisturbed undrained shear strength and the remoulded undrained shear strength of the soil.

Terminology used for describing soil strata based upon texture, or the proportion of individual particle sizes present is provided on the Textural Soil Classification Chart at the end of this information package.

ROCK DESCRIPTION

The structural description of the bedrock mass is based on the Rock Quality Designation (RQD).

The RQD classification is based on a modified core recovery percentage in which all pieces of sound core over 100 mm long are counted as recovery. The smaller pieces are considered to be a result of closely-spaced discontinuities (resulting from shearing, jointing, faulting, or weathering) in the rock mass and are not counted. RQD is ideally determined from NXL size core. However, it can be used on smaller core sizes, such as BX, if the bulk of the fractures caused by drilling stresses (called "mechanical breaks") are easily distinguishable from the normal in-situ fractures.

RQD %	ROCK QUALITY
90-100	Excellent, intact, very sound
75-90	Good, massive, moderately jointed or sound
50-75	Fair, blocky and seamy, fractured
25-50	Poor, shattered and very seamy or blocky, severely fractured
0-25	Very poor, crushed, very severely fractured

SAMPLE TYPES

SS	-	Split spoon sample (obtained in conjunction with the performing of the Standard Penetration Test (SPT))
TW	-	Thin wall tube or Shelby tube
PS	-	Piston sample
AU	-	Auger sample or bulk sample
WS	-	Wash sample
RC	-	Rock core sample (Core bit size AXT, BXL, etc.) Rock core samples are obtained with the use of standard diamond drilling bits

SYMBOLS AND TERMS (continued)

GRAIN SIZE DISTRIBUTION

MC%	-	Natural moisture content or water content of sample, %
LL	-	Liquid limit, % (water content above which soil behaves as a liquid)
PL	-	Plastic limit, % (water content above which soil behaves plastically)
PI	-	Plasticity index, % (difference between LL and PL)
Dxx	-	Grain size at which xx% of the soil, by weight, is of finer grain sizes These grain size descriptions are not used below 0.075 mm grain size
D10	-	Grain size at which 10% of the soil is finer (effective grain size)
D60	-	Grain size at which 60% of the soil is finer
Cc	-	Concavity coefficient = $(D30)^2$ / (D10 x D60)
Cu	-	Uniformity coefficient = D60 / D10

Cc and Cu are used to assess the grading of sands and gravels:
Well-graded gravels have: $1 < Cc < 3$ and $Cu > 4$
Well-graded sands have: $1 < Cc < 3$ and $Cu > 6$
Sand and gravels not meeting the above requirements are poorly-graded or uniformly-graded. Cc and Cu are not applicable for the description of soils with more than 10% silt and clay (more than 10% finer than 0.075 mm or the #200 sieve)

CONSOLIDATION TEST

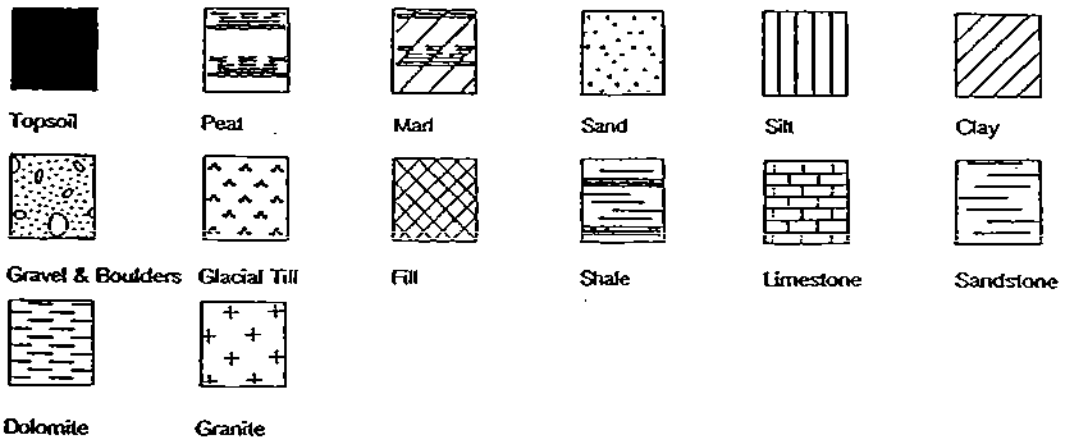
p'_o	-	Present effective overburden pressure at sample depth
p'_c	-	Preconsolidation pressure of (maximum past pressure on) sample
Ccr	-	Recompression index (in effect at pressures below p'_c)
Cc	-	Compression index (in effect at pressures above p'_c)
OC Ratio		Overconsolidation ratio = p'_c / p'_o
Void Ratio		Initial sample void ratio = volume of voids / volume of solids
Wo	-	Initial water content (at start of consolidation test)

PERMEABILITY TEST

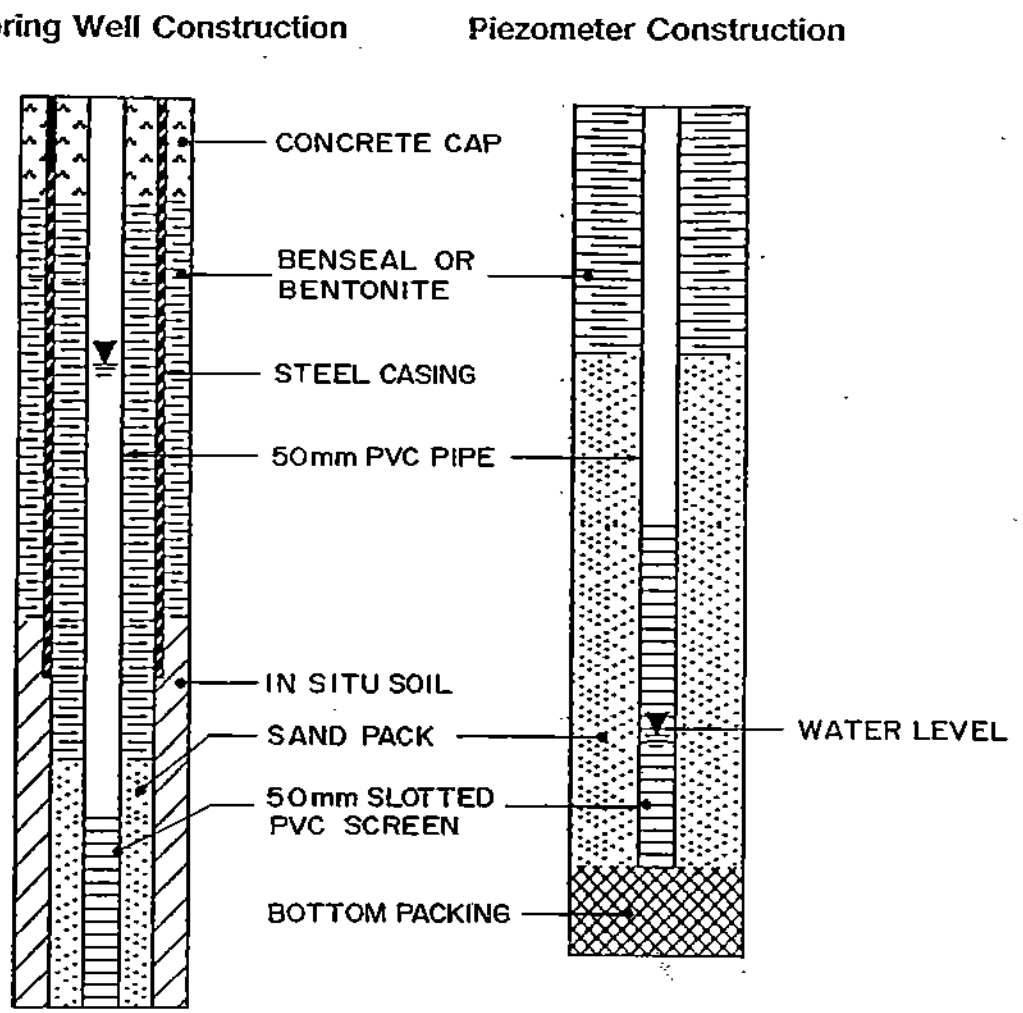
k	-	Coefficient of permeability or hydraulic conductivity is a measure of the ability of water to flow through the sample. The value of k is measured at a specified unit weight for (remoulded) cohesionless soil samples, because its value will vary with the unit weight or density of the sample during the test.

SYMBOLS AND TERMS (continued)

STRATA PLOT



MONITORING WELL AND PIEZOMETER CONSTRUCTION



PARACEL LABORATORIES LTD.

Order #: 0835090

Certificate of Analysis

Report Date: 03-Sep-2008
Order Date:27-Aug-2008

Client: **Paterson Group Consulting Engineers**

Client PO: 6544 Project Description: PE 1114

	Client ID:	TP2 G2	TP3 G1	TP6 G3	TP7 G2
	Sample Date:	26-Aug-08	26-Aug-08	26-Aug-08	26-Aug-08
	Sample ID:	0835090-01	0835090-02	0835090-03	0835090-04
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	87.2	87.7	89.9	82.2
Metals					
Antimony	1 ug/g dry	-	<1	-	-
Arsenic	1 ug/g dry	-	2	-	-
Barium	10 ug/g dry	-	124	-	-
Beryllium	0.5 ug/g dry	-	0.5	-	-
Boron, available	0.5 ug/g dry	-	0.8	-	-
Cadmium	0.5 ug/g dry	-	<0.5	-	-
Chromium	5 ug/g dry	-	20	-	-
Chromium (VI)	0.4 ug/g dry	-	<0.4	-	-
Cobalt	5 ug/g dry	-	7	-	-
Copper	5 ug/g dry	-	12	-	-
Iron	200 ug/g dry	-	16700	-	-
Lead	1 ug/g dry	-	142	-	-
Mercury	0.1 ug/g dry	-	<0.1	-	-
Molybdenum	1 ug/g dry	-	<1	-	-
Nickel	5 ug/g dry	-	11	-	-
Selenium	1 ug/g dry	-	<1	-	-
Silver	0.3 ug/g dry	-	<0.3	-	-
Thallium	1 ug/g dry	-	<1	-	-
Vanadium	10 ug/g dry	-	29	-	-
Zinc	20 ug/g dry	-	57	-	-
Volatiles					
Benzene	0.002 ug/g dry	-	-	<0.002	-
Bromodichloromethane	0.002 ug/g dry	-	-	<0.002	-
Bromoform	0.002 ug/g dry	-	-	<0.002	-
Bromomethane	0.003 ug/g dry	-	-	<0.003	-
Carbon Tetrachloride	0.002 ug/g dry	-	-	<0.002	-
Chlorobenzene	0.002 ug/g dry	-	-	<0.002	-
Chloroethane	0.005 ug/g dry	-	-	<0.005	-
Chloroform	0.003 ug/g dry	-	-	<0.003	-

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Client: **Paterson Group Consulting Engineers**

Client PO: 6544 Project Description: PE 1114

	Client ID:	TP2 G2	TP3 G1	TP6 G3	TP7 G2
	Sample Date:	26-Aug-08	26-Aug-08	26-Aug-08	26-Aug-08
	Sample ID:	0835090-01	0835090-02	0835090-03	0835090-04
	MDL/Units	Soil	Soil	Soil	Soil
Chloromethane	0.020 ug/g dry	-	-	<0.020	-
Dibromochloromethane	0.002 ug/g dry	-	-	<0.002	-
1,2-Dibromoethane	0.002 ug/g dry	-	-	<0.002	-
1,2-Dichlorobenzene	0.002 ug/g dry	-	-	<0.002	-
1,3-Dichlorobenzene	0.002 ug/g dry	-	-	<0.002	-
1,4-Dichlorobenzene	0.002 ug/g dry	-	-	<0.002	-
1,1-Dichloroethane	0.002 ug/g dry	-	-	<0.002	-
1,2-Dichloroethane	0.002 ug/g dry	-	-	<0.002	-
1,1-Dichloroethylene	0.002 ug/g dry	-	-	<0.002	-
cis-1,2-Dichloroethylene	0.002 ug/g dry	-	-	<0.002	-
trans-1,2-Dichloroethylene	0.003 ug/g dry	-	-	<0.003	-
1,2-Dichloropropane	0.002 ug/g dry	-	-	<0.002	-
cis-1,3-Dichloropropylene	0.002 ug/g dry	-	-	<0.002	-
trans-1,3-Dichloropropylene	0.002 ug/g dry	-	-	<0.002	-
Ethylbenzene	0.002 ug/g dry	-	-	<0.002	-
Methylene Chloride	0.010 ug/g dry	-	-	<0.010	-
Styrene	0.002 ug/g dry	-	-	<0.002	-
1,1,1,2-Tetrachloroethane	0.003 ug/g dry	-	-	<0.003	-
1,1,2,2-Tetrachloroethane	0.003 ug/g dry	-	-	<0.003	-
Tetrachloroethylene	0.002 ug/g dry	-	-	<0.002	-
Toluene	0.002 ug/g dry	-	-	<0.002	-
1,1,1-Trichloroethane	0.002 ug/g dry	-	-	<0.002	-
1,1,2-Trichloroethane	0.002 ug/g dry	-	-	<0.002	-
Trichloroethylene	0.003 ug/g dry	-	-	<0.003	-
Trichlorofluoromethane	0.005 ug/g dry	-	-	<0.005	-
1,3,5-Trimethylbenzene	0.003 ug/g dry	-	-	<0.003	-
Vinyl chloride	0.002 ug/g dry	-	-	<0.002	-
m,p-Xylenes	0.002 ug/g dry	-	-	<0.002	-
o-Xylene	0.002 ug/g dry	-	-	<0.002	-
4-Bromofluorobenzene	Surrogate	-	-	117%	-
Dibromofluoromethane	Surrogate	-	-	82.0%	-

Certificate of Analysis

Report Date: 03-Sep-2008
Order Date:27-Aug-2008

Client: **Paterson Group Consulting Engineers**

Client PO: 6544 Project Description: PE 1114

	Client ID:	TP2 G2	TP3 G1	TP6 G3	TP7 G2
	Sample Date:	26-Aug-08	26-Aug-08	26-Aug-08	26-Aug-08
	Sample ID:	0835090-01	0835090-02	0835090-03	0835090-04
	MDL/Units	Soil	Soil	Soil	Soil
Toluene-d8	Surrogate	-	-	101%	-
Benzene	0.002 ug/g dry	<0.002	-	-	-
Ethylbenzene	0.002 ug/g dry	<0.002	-	-	-
Toluene	0.002 ug/g dry	<0.002	-	-	-
m,p-Xylenes	0.002 ug/g dry	<0.002	-	-	-
o-Xylene	0.002 ug/g dry	<0.002	-	-	-
Toluene-d8	Surrogate	99.6%	-	-	-
Hydrocarbons					
F1 PHCs (C6-C10)	10 ug/g dry	<10	<10	<10	<10
F2 PHCs (C10-C16)	10 ug/g dry	<10	<10	<10	<10
F3 PHCs (C16-C34)	10 ug/g dry	19	45	<10	<10
F4 PHCs (C34-C50)	10 ug/g dry	10	23	<10	<10

PARACEL LABORATORIES LTD.

Order #: 0835090

Certificate of Analysis

Report Date: 03-Sep-2008
Order Date:27-Aug-2008

Client: **Paterson Group Consulting Engineers**

Client PO: 6544 Project Description: PE 1114

	Client ID:	TP7 G4	TP8 G1	TP9 G1	TP11 G1
	Sample Date:	26-Aug-08	26-Aug-08	26-Aug-08	26-Aug-08
	Sample ID:	0835090-05	0835090-06	0835090-07	0835090-08
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	91.5	91.6	85.6	87.1
Metals					
Antimony	1 ug/g dry	-	<1	<1	<1
Arsenic	1 ug/g dry	-	<1	1	4
Barium	10 ug/g dry	-	31	112	94
Beryllium	0.5 ug/g dry	-	<0.5	0.5	<0.5
Boron, available	0.5 ug/g dry	-	<0.5	<0.5	<0.5
Cadmium	0.5 ug/g dry	-	<0.5	<0.5	1.5
Chromium	5 ug/g dry	-	11	19	30
Chromium (VI)	0.4 ug/g dry	-	<0.4	<0.4	<0.4
Cobalt	5 ug/g dry	-	<5	6	7
Copper	5 ug/g dry	-	6	13	42
Iron	200 ug/g dry	-	11500	16200	29100
Lead	1 ug/g dry	-	5	11	308
Mercury	0.1 ug/g dry	-	<0.1	<0.1	<0.1
Molybdenum	1 ug/g dry	-	<1	<1	1
Nickel	5 ug/g dry	-	6	12	48
Selenium	1 ug/g dry	-	<1	<1	<1
Silver	0.3 ug/g dry	-	<0.3	<0.3	<0.3
Thallium	1 ug/g dry	-	<1	<1	<1
Vanadium	10 ug/g dry	-	22	30	121
Zinc	20 ug/g dry	-	<20	26	532
Volatiles					
Benzene	0.002 ug/g dry	<0.002	-	-	-
Bromodichloromethane	0.002 ug/g dry	<0.002	-	-	-
Bromoform	0.002 ug/g dry	<0.002	-	-	-
Bromomethane	0.003 ug/g dry	<0.003	-	-	-
Carbon Tetrachloride	0.002 ug/g dry	<0.002	-	-	-
Chlorobenzene	0.002 ug/g dry	<0.002	-	-	-
Chloroethane	0.005 ug/g dry	<0.005	-	-	-
Chloroform	0.003 ug/g dry	<0.003	-	-	-
Chloromethane	0.020 ug/g dry	<0.020	-	-	-

PARACEL LABORATORIES LTD.

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Client: **Paterson Group Consulting Engineers**

Client PO: 6544 Project Description: PE 1114

	Client ID:	TP7 G4	TP8 G1	TP9 G1	TP11 G1
	Sample Date:	26-Aug-08	26-Aug-08	26-Aug-08	26-Aug-08
	Sample ID:	0835090-05	0835090-06	0835090-07	0835090-08
	MDL/Units	Soil	Soil	Soil	Soil
Dibromochloromethane	0.002 ug/g dry	<0.002	-	-	-
1,2-Dibromoethane	0.002 ug/g dry	<0.002	-	-	-
1,2-Dichlorobenzene	0.002 ug/g dry	<0.002	-	-	-
1,3-Dichlorobenzene	0.002 ug/g dry	<0.002	-	-	-
1,4-Dichlorobenzene	0.002 ug/g dry	<0.002	-	-	-
1,1-Dichloroethane	0.002 ug/g dry	<0.002	-	-	-
1,2-Dichloroethane	0.002 ug/g dry	<0.002	-	-	-
1,1-Dichloroethylene	0.002 ug/g dry	<0.002	-	-	-
cis-1,2-Dichloroethylene	0.002 ug/g dry	<0.002	-	-	-
trans-1,2-Dichloroethylene	0.003 ug/g dry	<0.003	-	-	-
1,2-Dichloropropane	0.002 ug/g dry	<0.002	-	-	-
cis-1,3-Dichloropropylene	0.002 ug/g dry	<0.002	-	-	-
trans-1,3-Dichloropropylene	0.002 ug/g dry	<0.002	-	-	-
Ethylbenzene	0.002 ug/g dry	<0.002	-	-	-
Methylene Chloride	0.010 ug/g dry	<0.010	-	-	-
Styrene	0.002 ug/g dry	<0.002	-	-	-
1,1,1,2-Tetrachloroethane	0.003 ug/g dry	<0.003	-	-	-
1,1,2,2-Tetrachloroethane	0.003 ug/g dry	<0.003	-	-	-
Tetrachloroethylene	0.002 ug/g dry	<0.002	-	-	-
Toluene	0.002 ug/g dry	<0.002	-	-	-
1,1,1-Trichloroethane	0.002 ug/g dry	<0.002	-	-	-
1,1,2-Trichloroethane	0.002 ug/g dry	<0.002	-	-	-
Trichloroethylene	0.003 ug/g dry	<0.003	-	-	-
Trichlorofluoromethane	0.005 ug/g dry	<0.005	-	-	-
1,3,5-Trimethylbenzene	0.003 ug/g dry	<0.003	-	-	-
Vinyl chloride	0.002 ug/g dry	<0.002	-	-	-
m,p-Xylenes	0.002 ug/g dry	<0.002	-	-	-
o-Xylene	0.002 ug/g dry	<0.002	-	-	-
4-Bromofluorobenzene	Surrogate	119%	-	-	-
Dibromofluoromethane	Surrogate	83.7%	-	-	-
Toluene-d8	Surrogate	101%	-	-	-
Hydrocarbons					

PARACEL LABORATORIES LTD.

Order #: 0835090

Certificate of Analysis

Report Date: 03-Sep-2008
Order Date:27-Aug-2008

Client: **Paterson Group Consulting Engineers**

Client PO: 6544 Project Description: PE 1114

	Client ID:	TP7 G4	TP8 G1	TP9 G1	TP11 G1
	Sample Date:	26-Aug-08	26-Aug-08	26-Aug-08	26-Aug-08
	Sample ID:	0835090-05	0835090-06	0835090-07	0835090-08
	MDL/Units	Soil	Soil	Soil	Soil
F1 PHCs (C6-C10)	10 ug/g dry	-	-	-	-
F2 PHCs (C10-C16)	10 ug/g dry	-	-	-	-
F3 PHCs (C16-C34)	10 ug/g dry	-	-	-	-
F4 PHCs (C34-C50)	10 ug/g dry	-	-	-	-
Semi-Volatiles					
Acenaphthene	0.02 ug/g dry	-	<0.02	-	<0.02
Acenaphthylene	0.02 ug/g dry	-	<0.02	-	0.03
Anthracene	0.02 ug/g dry	-	<0.02	-	0.03
Benzo[a]anthracene	0.02 ug/g dry	-	<0.02	-	0.13
Benzo[a]pyrene	0.02 ug/g dry	-	<0.02	-	0.15
Benzo[b]fluoranthene	0.02 ug/g dry	-	<0.02	-	0.22
Benzo[g,h,i]perylene	0.02 ug/g dry	-	<0.02	-	0.11
Benzo[k]fluoranthene	0.02 ug/g dry	-	<0.02	-	0.10
Biphenyl	0.02 ug/g dry	-	<0.02	-	0.06
Chrysene	0.02 ug/g dry	-	<0.02	-	0.18
Dibenzo[a,h]anthracene	0.02 ug/g dry	-	<0.02	-	0.03
Fluoranthene	0.02 ug/g dry	-	<0.02	-	0.20
Fluorene	0.02 ug/g dry	-	<0.02	-	0.02
Indeno[1,2,3-cd]pyrene	0.02 ug/g dry	-	<0.02	-	0.10
1-Methylnaphthalene	0.02 ug/g dry	-	<0.02	-	0.56
2-Methylnaphthalene	0.02 ug/g dry	-	<0.02	-	0.68
Naphthalene	0.02 ug/g dry	-	<0.02	-	0.40
Phenanthrene	0.02 ug/g dry	-	<0.02	-	0.37
Pyrene	0.02 ug/g dry	-	<0.02	-	0.16
2-Fluorobiphenyl	Surrogate	-	96.9%	-	108%
Terphenyl-d14	Surrogate	-	129%	-	125%

PARACEL LABORATORIES LTD.

Order #: 0835090

Certificate of Analysis

Report Date: 03-Sep-2008

Order Date:27-Aug-2008

Client: **Paterson Group Consulting Engineers**

Client PO: 6544

Project Description: PE 1114

	Client ID:	TP13 G1	TP16 G1	TP18 G1	TP20 G1
	Sample Date:	26-Aug-08	26-Aug-08	26-Aug-08	26-Aug-08
	Sample ID:	0835090-09	0835090-10	0835090-11	0835090-12
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	82.1	91.5	78.8	82.7
Metals					
Antimony	1 ug/g dry	<1	<1	<1	4
Arsenic	1 ug/g dry	8	8	6	5
Barium	10 ug/g dry	322	241	549	468
Beryllium	0.5 ug/g dry	0.8	0.5	0.5	0.5
Boron, available	0.5 ug/g dry	0.7	1.1	0.8	1.2
Cadmium	0.5 ug/g dry	0.5	<0.5	<0.5	1.7
Chromium	5 ug/g dry	25	27	23	186
Chromium (VI)	0.4 ug/g dry	<0.4	<0.4	<0.4	<0.4
Cobalt	5 ug/g dry	10	8	5	7
Copper	5 ug/g dry	38	54	14	125
Iron	200 ug/g dry	26600	21700	16100	27400
Lead	1 ug/g dry	43	84	28	294
Mercury	0.1 ug/g dry	<0.1	0.5	0.9	0.4
Molybdenum	1 ug/g dry	<1	1	1	<1
Nickel	5 ug/g dry	28	51	13	25
Selenium	1 ug/g dry	<1	<1	<1	<1
Silver	0.3 ug/g dry	<0.3	<0.3	<0.3	<0.3
Thallium	1 ug/g dry	<1	<1	<1	<1
Vanadium	10 ug/g dry	101	240	45	28
Zinc	20 ug/g dry	102	185	33	413
Volatiles					
Benzene	0.002 ug/g dry	-	-	-	<0.002
Bromodichloromethane	0.002 ug/g dry	-	-	-	<0.002
Bromoform	0.002 ug/g dry	-	-	-	<0.002
Bromomethane	0.003 ug/g dry	-	-	-	<0.003
Carbon Tetrachloride	0.002 ug/g dry	-	-	-	<0.002
Chlorobenzene	0.002 ug/g dry	-	-	-	<0.002
Chloroethane	0.005 ug/g dry	-	-	-	<0.005
Chloroform	0.003 ug/g dry	-	-	-	<0.003
Chloromethane	0.020 ug/g dry	-	-	-	<0.020

Certificate of Analysis

Report Date: 03-Sep-2008
Order Date:27-Aug-2008

Client: **Paterson Group Consulting Engineers**

Client PO: 6544 Project Description: PE 1114

	Client ID:	TP13 G1	TP16 G1	TP18 G1	TP20 G1
	Sample Date:	26-Aug-08	26-Aug-08	26-Aug-08	26-Aug-08
	Sample ID:	0835090-09	0835090-10	0835090-11	0835090-12
	MDL/Units	Soil	Soil	Soil	Soil
Dibromochloromethane	0.002 ug/g dry	-	-	-	<0.002
1,2-Dibromoethane	0.002 ug/g dry	-	-	-	<0.002
1,2-Dichlorobenzene	0.002 ug/g dry	-	-	-	<0.002
1,3-Dichlorobenzene	0.002 ug/g dry	-	-	-	<0.002
1,4-Dichlorobenzene	0.002 ug/g dry	-	-	-	<0.002
1,1-Dichloroethane	0.002 ug/g dry	-	-	-	<0.002
1,2-Dichloroethane	0.002 ug/g dry	-	-	-	<0.002
1,1-Dichloroethylene	0.002 ug/g dry	-	-	-	<0.002
cis-1,2-Dichloroethylene	0.002 ug/g dry	-	-	-	<0.002
trans-1,2-Dichloroethylene	0.003 ug/g dry	-	-	-	<0.003
1,2-Dichloropropane	0.002 ug/g dry	-	-	-	<0.002
cis-1,3-Dichloropropylene	0.002 ug/g dry	-	-	-	<0.002
trans-1,3-Dichloropropylene	0.002 ug/g dry	-	-	-	<0.002
Ethylbenzene	0.002 ug/g dry	-	-	-	<0.002
Methylene Chloride	0.010 ug/g dry	-	-	-	<0.010
Styrene	0.002 ug/g dry	-	-	-	<0.002
1,1,1,2-Tetrachloroethane	0.003 ug/g dry	-	-	-	<0.003
1,1,2,2-Tetrachloroethane	0.003 ug/g dry	-	-	-	<0.003
Tetrachloroethylene	0.002 ug/g dry	-	-	-	<0.002
Toluene	0.002 ug/g dry	-	-	-	<0.002
1,1,1-Trichloroethane	0.002 ug/g dry	-	-	-	<0.002
1,1,2-Trichloroethane	0.002 ug/g dry	-	-	-	<0.002
Trichloroethylene	0.003 ug/g dry	-	-	-	<0.003
Trichlorofluoromethane	0.005 ug/g dry	-	-	-	<0.005
1,3,5-Trimethylbenzene	0.003 ug/g dry	-	-	-	<0.003
Vinyl chloride	0.002 ug/g dry	-	-	-	<0.002
m,p-Xylenes	0.002 ug/g dry	-	-	-	<0.002
o-Xylene	0.002 ug/g dry	-	-	-	<0.002
4-Bromofluorobenzene	Surrogate	-	-	-	122%
Dibromofluoromethane	Surrogate	-	-	-	86.6%
Toluene-d8	Surrogate	-	-	-	101%
Hydrocarbons					

PARACEL
LABORATORIES LTD.

Order #: 0835090

Certificate of Analysis

Report Date: 03-Sep-2008
Order Date:27-Aug-2008

Client: **Paterson Group Consulting Engineers**

Client PO: 6544 Project Description: PE 1114

	Client ID:	TP13 G1	TP16 G1	TP18 G1	TP20 G1
	Sample Date:	26-Aug-08	26-Aug-08	26-Aug-08	26-Aug-08
	Sample ID:	0835090-09	0835090-10	0835090-11	0835090-12
	MDL/Units	Soil	Soil	Soil	Soil
F1 PHCs (C6-C10)	10 ug/g dry	<10	-	-	<10
F2 PHCs (C10-C16)	10 ug/g dry	16	-	-	<10
F3 PHCs (C16-C34)	10 ug/g dry	265	-	-	639
F4 PHCs (C34-C50)	10 ug/g dry	221	-	-	158

PARACEL LABORATORIES LTD.

Order #: 0836113

Certificate of Analysis

Report Date: 10-Sep-2008
Order Date:5-Sep-2008

Client: **Paterson Group Consulting Engineers**

Client PO: 6917 Project Description: PE 1114

	Client ID:	MW1-08	MW2-08	MW3-08	MW1
	Sample Date:	05-Sep-08	05-Sep-08	05-Sep-08	05-Sep-08
	Sample ID:	0836113-01	0836113-02	0836113-03	0836113-04
	MDL/Units	Water	Water	Water	Water
Metals					
Antimony	1 ug/L	-	-	<1	-
Arsenic	10 ug/L	-	-	<10	-
Barium	10 ug/L	-	-	233	-
Beryllium	1 ug/L	-	-	<1	-
Boron	50 ug/L	-	-	88	-
Cadmium	1 ug/L	-	-	<1	-
Chromium	50 ug/L	-	-	<50	-
Chromium (VI)	10 ug/L	-	-	<10	-
Cobalt	5 ug/L	-	-	<5	-
Copper	5 ug/L	-	-	5	-
Iron	200 ug/L	-	-	481	-
Lead	1 ug/L	-	-	3	-
Mercury	0.1 ug/L	-	-	<0.1	-
Molybdenum	5 ug/L	-	-	28	-
Nickel	5 ug/L	-	-	11	-
Selenium	5 ug/L	-	-	<5	-
Silver	1 ug/L	-	-	<1	-
Sodium	200 ug/L	-	-	163000	-
Thallium	1 ug/L	-	-	<1	-
Vanadium	10 ug/L	-	-	10	-
Zinc	20 ug/L	-	-	<20	-
Volatiles					
Benzene	0.5 ug/L	-	<0.5	<0.5	<0.5
Bromodichloromethane	0.4 ug/L	-	<0.4	<0.4	<0.4
Bromoform	0.5 ug/L	-	<0.5	<0.5	<0.5
Bromomethane	0.7 ug/L	-	<0.7	<0.7	<0.7
Carbon Tetrachloride	0.5 ug/L	-	<0.5	<0.5	<0.5
Chlorobenzene	0.4 ug/L	-	<0.4	<0.4	<0.4
Chloroethane	1.0 ug/L	-	<1.0	<1.0	<1.0
Chloroform	0.5 ug/L	-	<0.5	<0.5	<0.5
Chloromethane	3.0 ug/L	-	<3.0	<3.0	<3.0

PARACEL LABORATORIES LTD.

Order #: 0836113

Certificate of Analysis

Report Date: 10-Sep-2008
Order Date:5-Sep-2008

Client: **Paterson Group Consulting Engineers**

Client PO: 6917 Project Description: PE 1114

	Client ID:	MW1-08	MW2-08	MW3-08	MW1
	Sample Date:	05-Sep-08	05-Sep-08	05-Sep-08	05-Sep-08
	Sample ID:	0836113-01	0836113-02	0836113-03	0836113-04
	MDL/Units	Water	Water	Water	Water
Dibromochloromethane	0.5 ug/L	-	<0.5	<0.5	<0.5
1,2-Dibromoethane	1.0 ug/L	-	<1.0	<1.0	<1.0
1,2-Dichlorobenzene	0.4 ug/L	-	<0.4	<0.4	<0.4
1,3-Dichlorobenzene	0.4 ug/L	-	<0.4	<0.4	<0.4
1,4-Dichlorobenzene	0.4 ug/L	-	<0.4	<0.4	<0.4
1,1-Dichloroethane	0.5 ug/L	-	<0.5	<0.5	<0.5
1,2-Dichloroethane	0.5 ug/L	-	<0.5	<0.5	<0.5
1,1-Dichloroethylene	0.5 ug/L	-	<0.5	<0.5	<0.5
cis-1,2-Dichloroethylene	0.4 ug/L	-	<0.4	<0.4	<0.4
trans-1,2-Dichloroethylene	1.0 ug/L	-	<1.0	<1.0	<1.0
1,2-Dichloropropane	0.5 ug/L	-	<0.5	<0.5	<0.5
cis-1,3-Dichloropropylene	0.4 ug/L	-	<0.4	<0.4	<0.4
trans-1,3-Dichloropropylene	0.5 ug/L	-	<0.5	<0.5	<0.5
Ethylbenzene	0.5 ug/L	-	<0.5	0.9	<0.5
Methylene Chloride	4.0 ug/L	-	<4.0	<4.0	<4.0
Styrene	0.4 ug/L	-	<0.4	<0.4	<0.4
1,1,1,2-Tetrachloroethane	0.5 ug/L	-	<0.5	<0.5	<0.5
1,1,2,2-Tetrachloroethane	0.6 ug/L	-	<0.6	<0.6	<0.6
Tetrachloroethylene	0.5 ug/L	-	<0.5	<0.5	<0.5
Toluene	0.5 ug/L	-	<0.5	1.7	<0.5
1,1,1-Trichloroethane	0.4 ug/L	-	<0.4	<0.4	<0.4
1,1,2-Trichloroethane	0.6 ug/L	-	<0.6	<0.6	<0.6
Trichloroethylene	0.4 ug/L	-	<0.4	<0.4	<0.4
Trichlorofluoromethane	1.0 ug/L	-	<1.0	<1.0	<1.0
1,3,5-Trimethylbenzene	0.5 ug/L	-	<0.5	<0.5	<0.5
Vinyl chloride	0.4 ug/L	-	<0.4	<0.4	<0.4
m,p-Xylenes	0.5 ug/L	-	<0.5	1.1	<0.5
o-Xylene	0.5 ug/L	-	<0.5	0.5	<0.5
4-Bromofluorobenzene	Surrogate	-	98.0%	94.6%	96.1%
Dibromofluoromethane	Surrogate	-	101%	107%	101%
Toluene-d8	Surrogate	-	106%	92.4%	104%

PARACEL LABORATORIES LTD.

Order #: 0836113

Certificate of Analysis

Report Date: 10-Sep-2008
Order Date:5-Sep-2008

Client: **Paterson Group Consulting Engineers**

Client PO: 6917 Project Description: PE 1114

	Client ID:	MW1-08	MW2-08	MW3-08	MW1
	Sample Date:	05-Sep-08	05-Sep-08	05-Sep-08	05-Sep-08
	Sample ID:	0836113-01	0836113-02	0836113-03	0836113-04
	MDL/Units	Water	Water	Water	Water
Benzene	0.5 ug/L	<0.5	-	-	-
Ethylbenzene	0.5 ug/L	0.6	-	-	-
Toluene	0.5 ug/L	1.0	-	-	-
m,p-Xylenes	0.5 ug/L	3.2	-	-	-
o-Xylene	0.5 ug/L	8.3	-	-	-
Toluene-d8	Surrogate	103%	-	-	-
Hydrocarbons					
F1 PHCs (C6-C10)	200 ug/L	200	<200	-	<200
F2 PHCs (C10-C16)	100 ug/L	4350000 [3]	<100	-	<100
F3 PHCs (C16-C34)	100 ug/L	3460000 [3]	<100	-	<100
F4 PHCs (C34-C50)	100 ug/L	<20000 [2] [3]	<100	-	<100
Semi-Volatiles					
Acenaphthene	0.05 ug/L	1350 [3] [4]	-	-	-
Acenaphthylene	0.05 ug/L	300 [3] [4]	-	-	-
Anthracene	0.01 ug/L	185 [3] [4]	-	-	-
Benzo[a]anthracene	0.01 ug/L	<5.00 [1] [3] [4]	-	-	-
Benzo[a]pyrene	0.01 ug/L	<5.00 [1] [3] [4]	-	-	-
Benzo[b]fluoranthene	0.05 ug/L	<25.0 [1] [3] [4]	-	-	-
Benzo[g,h,i]perylene	0.05 ug/L	<25.0 [1] [3] [4]	-	-	-
Benzo[k]fluoranthene	0.05 ug/L	<25.0 [1] [3] [4]	-	-	-
Biphenyl	0.05 ug/L	2430 [3] [4]	-	-	-
Chrysene	0.05 ug/L	<25.0 [1] [3] [4]	-	-	-
Dibenzo[a,h]anthracene	0.05 ug/L	<25.0 [1] [3] [4]	-	-	-
Fluoranthene	0.01 ug/L	<5.00 [1] [3] [4]	-	-	-
Fluorene	0.05 ug/L	2150 [3] [4]	-	-	-
Indeno[1,2,3-cd]pyrene	0.05 ug/L	<25.0 [1] [3] [4]	-	-	-
1-Methylnaphthalene	0.05 ug/L	16700 [3] [4]	-	-	-
2-Methylnaphthalene	0.05 ug/L	30200 [3] [4]	-	-	-
Naphthalene	0.05 ug/L	7420 [3] [4]	-	-	-
Phenanthrene	0.05 ug/L	4020 [3] [4]	-	-	-
Pyrene	0.01 ug/L	252 [3] [4]	-	-	-

PARACEL LABORATORIES LTD.

Order#: 0836113

Certificate of Analysis

Report Date: 10-Sep-2008
Order Date:5-Sep-2008

Client: **Paterson Group Consulting Engineers**

Client PO: 6917 Project Description: PE 1114

	Client ID:	MW2	-	-	-
	Sample Date:	05-Sep-08	-	-	-
	Sample ID:	0836113-05	-	-	-
	MDL/Units	Water	-	-	-
Metals					
Antimony	1 ug/L	<1	-	-	-
Arsenic	10 ug/L	<10	-	-	-
Barium	10 ug/L	380	-	-	-
Beryllium	1 ug/L	<1	-	-	-
Boron	50 ug/L	125	-	-	-
Cadmium	1 ug/L	<1	-	-	-
Chromium	50 ug/L	<50	-	-	-
Chromium (VI)	10 ug/L	<10	-	-	-
Cobalt	5 ug/L	<5	-	-	-
Copper	5 ug/L	<5	-	-	-
Iron	200 ug/L	265	-	-	-
Lead	1 ug/L	<1	-	-	-
Mercury	0.1 ug/L	<0.1	-	-	-
Molybdenum	5 ug/L	<5	-	-	-
Nickel	5 ug/L	10	-	-	-
Selenium	5 ug/L	<5	-	-	-
Silver	1 ug/L	<1	-	-	-
Sodium	200 ug/L	47200	-	-	-
Thallium	1 ug/L	<1	-	-	-
Vanadium	10 ug/L	<10	-	-	-
Zinc	20 ug/L	<20	-	-	-
Volatiles					
Benzene	0.5 ug/L	<0.5	-	-	-
Bromodichloromethane	0.4 ug/L	<0.4	-	-	-
Bromoform	0.5 ug/L	<0.5	-	-	-
Bromomethane	0.7 ug/L	<0.7	-	-	-
Carbon Tetrachloride	0.5 ug/L	<0.5	-	-	-
Chlorobenzene	0.4 ug/L	<0.4	-	-	-
Chloroethane	1.0 ug/L	<1.0	-	-	-
Chloroform	0.5 ug/L	<0.5	-	-	-
Chloromethane	3.0 ug/L	<3.0	-	-	-

PARACEL

Order #: 0836113

Certificate of Analysis

Report Date: 10-Sep-2008
Order Date:5-Sep-2008

Client: **Paterson Group Consulting Engineers**

Client PO: 6917 Project Description: PE 1114

	Client ID:	MW2	-	-	-
	Sample Date:	05-Sep-08	-	-	-
	Sample ID:	0836113-05	-	-	-
	MDL/Units	Water	-	-	-
Dibromochloromethane	0.5 ug/L	<0.5	-	-	-
1,2-Dibromoethane	1.0 ug/L	<1.0	-	-	-
1,2-Dichlorobenzene	0.4 ug/L	<0.4	-	-	-
1,3-Dichlorobenzene	0.4 ug/L	<0.4	-	-	-
1,4-Dichlorobenzene	0.4 ug/L	<0.4	-	-	-
1,1-Dichloroethane	0.5 ug/L	<0.5	-	-	-
1,2-Dichloroethane	0.5 ug/L	<0.5	-	-	-
1,1-Dichloroethylene	0.5 ug/L	<0.5	-	-	-
cis-1,2-Dichloroethylene	0.4 ug/L	<0.4	-	-	-
trans-1,2-Dichloroethylene	1.0 ug/L	<1.0	-	-	-
1,2-Dichloropropane	0.5 ug/L	<0.5	-	-	-
cis-1,3-Dichloropropylene	0.4 ug/L	<0.4	-	-	-
trans-1,3-Dichloropropylene	0.5 ug/L	<0.5	-	-	-
Ethylbenzene	0.5 ug/L	<0.5	-	-	-
Methylene Chloride	4.0 ug/L	<4.0	-	-	-
Styrene	0.4 ug/L	<0.4	-	-	-
1,1,1,2-Tetrachloroethane	0.5 ug/L	<0.5	-	-	-
1,1,2,2-Tetrachloroethane	0.6 ug/L	<0.6	-	-	-
Tetrachloroethylene	0.5 ug/L	<0.5	-	-	-
Toluene	0.5 ug/L	<0.5	-	-	-
1,1,1-Trichloroethane	0.4 ug/L	<0.4	-	-	-
1,1,2-Trichloroethane	0.6 ug/L	<0.6	-	-	-
Trichloroethylene	0.4 ug/L	<0.4	-	-	-
Trichlorofluoromethane	1.0 ug/L	<1.0	-	-	-
1,3,5-Trimethylbenzene	0.5 ug/L	<0.5	-	-	-
Vinyl chloride	0.4 ug/L	<0.4	-	-	-
m,p-Xylenes	0.5 ug/L	<0.5	-	-	-
o-Xylene	0.5 ug/L	<0.5	-	-	-
4-Bromofluorobenzene	Surrogate	96.2%	-	-	-
Dibromofluoromethane	Surrogate	102%	-	-	-
Toluene-d8	Surrogate	95.3%	-	-	-
Hydrocarbons					

Certificate of Analysis

Report Date: 10-Sep-2008
Order Date:5-Sep-2008

Client: **Paterson Group Consulting Engineers**

Client PO: 6917 Project Description: PE 1114

	Client ID:	MW2	-	-	-
	Sample Date:	05-Sep-08	-	-	-
	Sample ID:	0836113-05	-	-	-
	MDL/Units	Water	-	-	-
F1 PHCs (C6-C10)	200 ug/L	<200	-	-	-
F2 PHCs (C10-C16)	100 ug/L	<100	-	-	-
F3 PHCs (C16-C34)	100 ug/L	<100	-	-	-
F4 PHCs (C34-C50)	100 ug/L	<100	-	-	-

PARACEL LABORATORIES LTD.

Order #: 0835132

Certificate of Analysis

Report Date: 05-Sep-2008
Order Date:28-Aug-2008

Client: **Paterson Group Consulting Engineers**

Client PO: 6531 Project Description: PE1114

	Client ID:	Lagoon 1	Lagoon 2	Lagoon 3	MW3 SS6
	Sample Date:	28-Aug-08	28-Aug-08	28-Aug-08	28-Aug-08
	Sample ID:	0835132-01	0835132-02	0835132-03	0835132-04
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	59.7	75.8	28.4	80.8
General Inorganics					
Conductivity	5 uS/cm	1020	-	944	-
Cyanide, free	0.03 ug/g dry	<0.03	-	<0.03	-
pH	0.05 pH Units	7.29	-	7.16	-
SAR	0.01	0.68	-	1.25	-
Metals					
Antimony	1 ug/g dry	2	1	5	<1
Arsenic	1 ug/g dry	1	<1	2	1
Barium	10 ug/g dry	239	122	241	200
Beryllium	0.5 ug/g dry	0.8	<0.5	0.8	<0.5
Boron, available	0.5 ug/g dry	0.5	<0.5	2.0	<0.5
Cadmium	0.5 ug/g dry	0.6	<0.5	0.8	<0.5
Chromium	5 ug/g dry	46	22	54	24
Chromium (VI)	0.4 ug/g dry	<0.4	<0.4	<0.4	<0.4
Cobalt	5 ug/g dry	11	7	12	8
Copper	5 ug/g dry	32	18	38	17
Iron	200 ug/g dry	46300	28200	40300	34200
Lead	1 ug/g dry	12	6	22	9
Mercury	0.1 ug/g dry	<0.1	<0.1	<0.1	<0.1
Molybdenum	1 ug/g dry	<1	<1	<1	<1
Nickel	5 ug/g dry	22	14	20	16
Selenium	1 ug/g dry	<1	<1	<1	<1
Silver	0.3 ug/g dry	<0.3	<0.3	<0.3	<0.3
Thallium	1 ug/g dry	<1	<1	<1	<1
Vanadium	10 ug/g dry	59	35	49	39
Zinc	20 ug/g dry	181	41	2040	37
Volatiles					
Benzene	0.002 ug/g dry	<0.002	-	<0.002	-
Bromodichloromethane	0.002 ug/g dry	<0.002	-	<0.002	-
Bromoform	0.002 ug/g dry	<0.002	-	<0.002	-

PARACEL LABORATORIES LTD.

Order #: 0835132

Certificate of Analysis

Report Date: 05-Sep-2008

Order Date:28-Aug-2008

Client: **Paterson Group Consulting Engineers**

Client PO: 6531 Project Description: PE1114

	Client ID:	Lagoon 1	Lagoon 2	Lagoon 3	MW3 SS6
	Sample Date:	28-Aug-08	28-Aug-08	28-Aug-08	28-Aug-08
	Sample ID:	0835132-01	0835132-02	0835132-03	0835132-04
	MDL/Units	Soil	Soil	Soil	Soil
Bromomethane	0.003 ug/g dry	<0.003	-	<0.003	-
Carbon Tetrachloride	0.002 ug/g dry	<0.002	-	<0.002	-
Chlorobenzene	0.002 ug/g dry	<0.002	-	<0.002	-
Chloroethane	0.005 ug/g dry	<0.005	-	<0.005	-
Chloroform	0.003 ug/g dry	<0.003	-	<0.003	-
Chloromethane	0.020 ug/g dry	<0.020	-	<0.020	-
Dibromochloromethane	0.002 ug/g dry	<0.002	-	<0.002	-
1,2-Dibromoethane	0.002 ug/g dry	<0.002	-	<0.002	-
1,2-Dichlorobenzene	0.002 ug/g dry	<0.002	-	<0.002	-
1,3-Dichlorobenzene	0.002 ug/g dry	<0.002	-	<0.002	-
1,4-Dichlorobenzene	0.002 ug/g dry	<0.002	-	<0.002	-
1,1-Dichloroethane	0.002 ug/g dry	<0.002	-	<0.002	-
1,2-Dichloroethane	0.002 ug/g dry	<0.002	-	<0.002	-
1,1-Dichloroethylene	0.002 ug/g dry	<0.002	-	<0.002	-
cis-1,2-Dichloroethylene	0.002 ug/g dry	<0.002	-	<0.002	-
trans-1,2-Dichloroethylene	0.003 ug/g dry	<0.003	-	<0.003	-
1,2-Dichloropropane	0.002 ug/g dry	<0.002	-	<0.002	-
cis-1,3-Dichloropropylene	0.002 ug/g dry	<0.002	-	<0.002	-
trans-1,3-Dichloropropylene	0.002 ug/g dry	<0.002	-	<0.002	-
Ethylbenzene	0.002 ug/g dry	<0.002	-	<0.002	-
Methylene Chloride	0.010 ug/g dry	<0.010	-	<0.010	-
Styrene	0.002 ug/g dry	<0.002	-	<0.002	-
1,1,1,2-Tetrachloroethane	0.003 ug/g dry	<0.003	-	<0.003	-
1,1,2,2-Tetrachloroethane	0.003 ug/g dry	<0.003	-	<0.003	-
Tetrachloroethylene	0.002 ug/g dry	<0.002	-	<0.002	-
Toluene	0.002 ug/g dry	<0.002	-	<0.002	-
1,1,1-Trichloroethane	0.002 ug/g dry	<0.002	-	<0.002	-
1,1,2-Trichloroethane	0.002 ug/g dry	<0.002	-	<0.002	-
Trichloroethylene	0.003 ug/g dry	<0.003	-	<0.003	-
Trichlorofluoromethane	0.005 ug/g dry	<0.005	-	<0.005	-
1,3,5-Trimethylbenzene	0.003 ug/g dry	<0.003	-	<0.003	-
Vinyl chloride	0.002 ug/g dry	<0.002	-	<0.002	-

Certificate of Analysis

Report Date: 05-Sep-2008

Order Date:28-Aug-2008

Client: **Paterson Group Consulting Engineers**

Client PO: 6531 Project Description: PE1114

	Client ID:	Lagoon 1	Lagoon 2	Lagoon 3	MW3 SS6
	Sample Date:	28-Aug-08	28-Aug-08	28-Aug-08	28-Aug-08
	Sample ID:	0835132-01	0835132-02	0835132-03	0835132-04
	MDL/Units	Soil	Soil	Soil	Soil
m,p-Xylenes	0.002 ug/g dry	<0.002	-	<0.002	-
o-Xylene	0.002 ug/g dry	<0.002	-	<0.002	-
4-Bromofluorobenzene	Surrogate	88.7%	-	97.3%	-
Dibromofluoromethane	Surrogate	90.3%	-	92.4%	-
Toluene-d8	Surrogate	94.1%	-	92.5%	-
Hydrocarbons					
F1 PHCs (C6-C10)	10 ug/g dry	-	<10	-	<10
F2 PHCs (C10-C16)	10 ug/g dry	-	<10	-	<10
F3 PHCs (C16-C34)	10 ug/g dry	-	94	-	148
F4 PHCs (C34-C50)	10 ug/g dry	-	<10	-	<10

PARACEL

Order #: 0835133

Certificate of Analysis

Report Date: 29-Aug-2008

Order Date:28-Aug-2008

Client: **Paterson Group Consulting Engineers**

Client PO: 6531 Project Description: PE1114

Lead

Matrix: Paint

Sample Date: 28-Aug-08

Paracel ID	Client ID	Units	MDL	Result
0835133-01	S1	ug/g	50	<50
0835133-02	S2	ug/g	50	<50

APPENDIX 2

FIGURE 1 - KEY PLAN

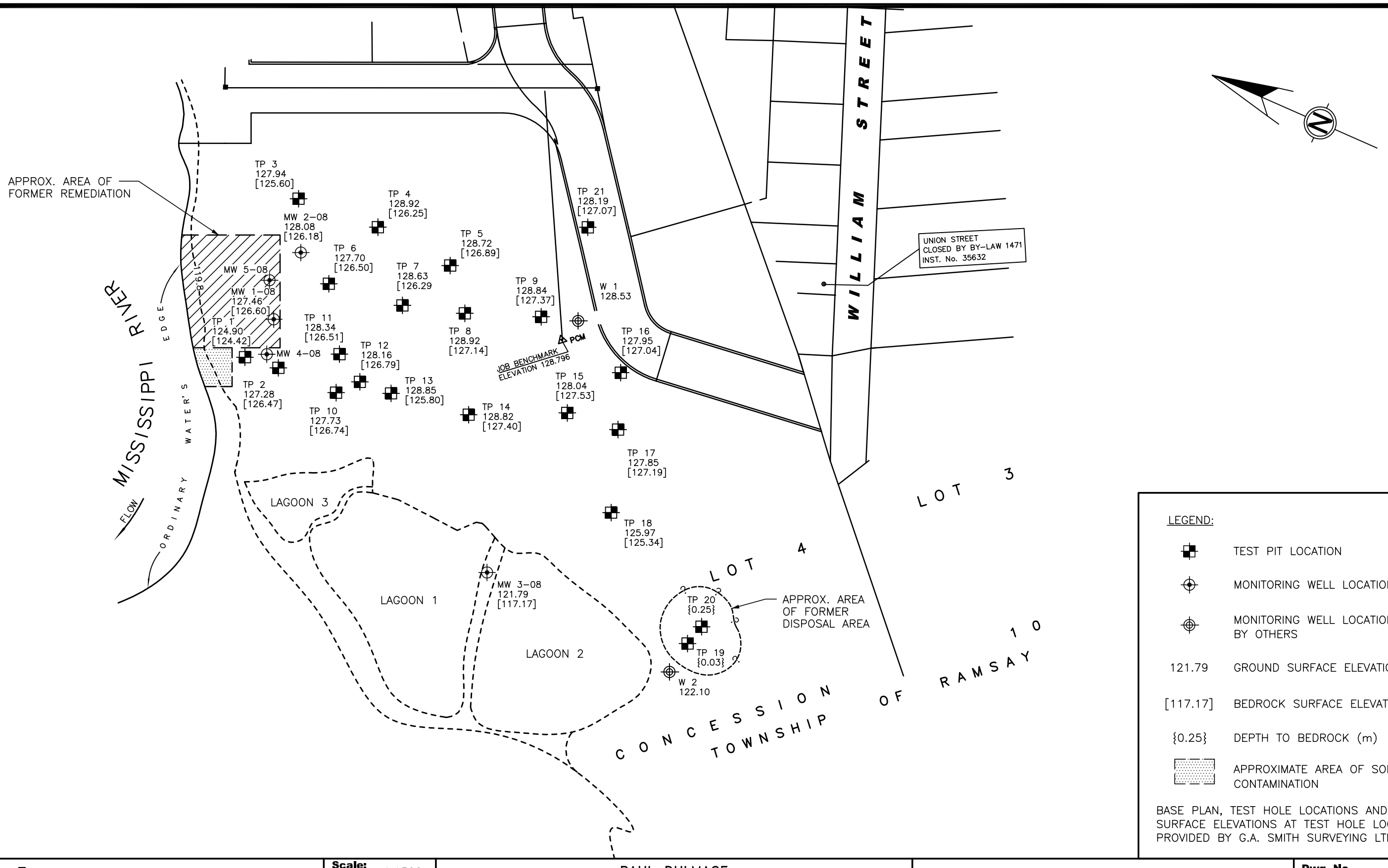
DRAWING PE1114-4 - TEST HOLE LOCATION PLAN

APPENDIX 2

FIGURE 1 - KEY PLAN

DRAWING PE1114-4 - TEST HOLE LOCATION PLAN

FIGURE 1
KEY PLAN



LEGEND:

- TEST PIT LOCATION
- MONITORING WELL LOCATION
- MONITORING WELL LOCATION, BY OTHERS
- 121.79 GROUND SURFACE ELEVATION (m)
- [117.17] BEDROCK SURFACE ELEVATION (m)
- {0.25} DEPTH TO BEDROCK (m)
- APPROXIMATE AREA OF SOIL CONTAMINATION

BASE PLAN, TEST HOLE LOCATIONS AND GROUND SURFACE ELEVATIONS AT TEST HOLE LOCATIONS PROVIDED BY G.A. SMITH SURVEYING LTD.

paterson group
consulting engineers
28 Concourse Gate, Unit 1, Ottawa, Ontario K2E 7T7

Scale:	1:1500
Des.:	DC
Dwn:	MPG
Chkd:	MSD

PAUL DULMAGE

PHASE II-ENVIRONMENTAL SITE ASSESSMENT
FORMER APPLETEX MILL
APPLETON, ONTARIO

TEST HOLE LOCATION PLAN

Dwg. No. PE1114-4
Report No.: PE1114-2
Date: 10/2008

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