PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
HALTON DISTRICT SCHOOL BOARD SURPLUS LAND
ON STONEHAVEN DRIVE
STONEHAVEN DRIVE
BURLINGTON, ONTARIO

for

HALTON DISTRICT SCHOOL BOARD

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Peto MacCallum Ltd.
CONSULTING ENGINEERS

May 8, 2013

PML Ref.: 13HX002
Report: 2

Mr. Domenico Renzella
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Dear Mr. Renzella

Phase Two Environmental Site Assessment
Halton District School Board Surplus Land on Stonehaven Drive
Stonehaven Drive
Burlington, Ontario

This report presents the results of a Phase Two Environmental Site Assessment (ESA) completed for a parcel of land located on Stonehaven Drive in Burlington, Ontario. Authorization to proceed with this project was provided under Purchase Order No. 4500046552, dated January 16, 2013 with an Engineering Services Agreement to be signed and returned.

Included in this report are the findings of the Phase Two ESA and our conclusions and recommendations together with the appendices.

We trust the information presented in this report is sufficient for your present purposes. If you have any questions, please do not hesitate to contact our office.

Sincerely

Peto MacCallum Ltd.

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TABLE OF CONTENTS

1. EXECUTIVE SUMMARY 1
2. INTRODUCTION 6
2.1 Regulatory Requirements 6
2.2 Site Description 7
2.3 Property Ownership 8
2.4 Current and Proposed Future Uses 8
2.5 Applicable Site Condition Standard 8
3. BACKGROUND INFORMATION 9
3.1 Physical Setting 9
3.2 Past Investigations 9
3.2.1 Historical Investigations 9
3.2.1.1 Document 1: 2006 PML Phase I ESA 10
3.2.1.2 Document 2: 2006 PML Phase II ESA 11
3.2.1.2.1 Electrical Conductivity (EC) 11
3.2.1.2.2 Boron 12
3.2.1.2.3 Petroleum Hydrocarbons 12
3.2.1.2.4 Estimated Cleanup Costs 12
3.2.1.2.5 Comparison to the Current T3 RPI Standards 12
3.2.1.3 Document 3: 2006 PML Preliminary Findings, Phase I ESA Update 13
3.2.1.4 Document 4: 1999 Terraprobe Phase I ESA 13
3.2.1.5 Document 5: 2002 Soil-Mat Phase I ESA 13
3.2.1.6 Document 6: 2012 Terraprobe Environmental Investigation 13
3.2.2 Phase One ESA 14
4. SCOPE OF INVESTIGATION 15
4.1 Overview of Site Investigation 15
4.2 Media Investigated 15
4.3 Phase One Conceptual Site Model 15
4.4 Deviations from Sampling and Analysis Plan 16
4.5 Impediments 16
5. INVESTIGATION METHOD 16
5.1 General 16
5.2 Drilling 17
5.3 Soil: Sampling 18
5.3.1 Summarized Subsurface Conditions 18
5.3.1.1 Topsoil Fill 19

5.3.1.2 Fill 19
5.3.1.3 Clay Till 19
5.3.1.4 Silt Till 19
5.4 Field Screening Measurements 19
5.5 Ground Water: Monitoring Well Installation 20
5.6 Ground Water: Field Measurements of Water Quality Parameters 21
5.7 Ground Water: Sampling 21
5.8 Sediment Sampling 22
5.9 Analytical Testing 22
5.10 Residue Management Procedures 22
5.11 Elevation Surveying 23
5.12 Quality Assurance and Quality Control Measures 23
6. REVIEW AND EVALUATION 25
6.1 Geology 25
6.2 Ground Water: Elevations and Flow Direction 25
6.2.1 Ground Water: Hydraulic Gradients 26
6.3 Fine-Medium Soil Texture 26
6.4 Soil: Field Screening 26
6.5 Soil Quality 26
6.5.1 VOCs 27
6.5.1.1 Metals and Inorganics 27
6.5.1.2 PHC Fractions F1 to F4 27
6.5.2 Waste Characterization 27
6.6 Ground Water Quality 27
6.7 Sediment Quality 28
6.8 Quality Assurance and Quality Control Results 28
6.9 Phase Two ESA Conceptual Site Model 29
6.9.1 PCAs and APECs 30
6.9.2 Summarized Geological and Hydrogeological Conditions 31
6.9.3 Areas of Contamination 31
6.9.4 Contaminant Distribution 32
7. CONCLUSIONS AND RECOMMENDATIONS 32
7.1 Area B 33
7.2 Area C 33
7.2.1 Topsoil Stockpile 33
7.2.2 Area 1 33
7.2.3 Area 2 34

7.2.4 Area 3 34
7.2.5 Next Steps 34
7.3 Signatures 36
8. REFERENCES 38
9. FIGURES AND TABLES 39
9.1 Tables 39
9.1.1 Monitoring Well Installation 39
9.1.2 Water Levels 39
9.1.3 LNAPLs and DNAPLs 39
9.1.4 Soil Data 39
9.1.5 Ground Water Data 39
9.1.6 Sediment Data 40
9.1.7 Ground Water, Sediment and Soil Maximum Concentration Data 40
9.2 Figures 40
9.2.1 Areas of Natural Significance and Water Bodies 40
9.2.2 Property Before Actions Taken to Reduce the Concentrations of Contaminants 40
9.2.3 Interpreted Contours of Ground Water Elevations 41
9.2.4 Contaminants in Soil before Actions Taken to Reduce the Concentration of Contaminants 41
9.2.5 Contaminants in Ground Water Before Actions Taken to Reduce the Concentration of Contaminants 41
9.2.6 Contaminants in Sediment Before Actions Taken to Reduce the Concentration of Contaminants 41
9.2.7 Delineation 41
9.2.8 Contaminants of Concern in Areas of Potential Environmental Concern 41
10. APPENDICES 42
10.1 General 42
10.1.1 Sampling and Analysis Plan 42
10.1.2 Finalized Field Logs 42
10.1.3 Certificates of Analysis or Analytical Reports from Laboratories 42
10.1.4 Residue Management 42
10.1.5 Survey of Phase Two Property 42
10.2 Remediation 42
10.3 Soil Excavated at or Brought to the Phase Two Property 42
10.4 Modified Generic Risk Assessment 42

Table 1A and 1B – Site Sensitivity Analysis
Table 2 – Summary of Samples Submitted for Chemical Analysis
Table 3 – Summary of Ground Water Data
Tables 4 to 6 – Results of Chemical Testing for Soil
Table 7 to 9 – Results of Chemical Testing for Ground Water
List of Abbreviations
Log of Borehole/Monitoring Well Sheets BH/MW101, BH/MW102 and BH/MW103
Log of Borehole Sheets BH104 through BH113
Drawing 2-1 – Phase One ESA Site Plan
Drawing 2-2 – Current Land Uses in the Phase One ESA Study Area
Drawing 2-3 – Phase One ESA Summary of PCAs and APECs
Drawing 2-4 – Borehole, Monitoring Well and Test Pit Location Plan
Drawing 2-5 – Contamination Plan
Drawing 2-6 – Cross Section A to A'
Drawing 2-7 – Cross Section B to B'
Appendix A – Survey Plan
Appendix B – Geoenvironmental Field Instructions / Sampling & Analysis Plans
Appendix C – AGAT Laboratories Limited – Certificates of Analysis
Appendix D – Statement of Limitations

1. EXECUTIVE SUMMARY

Peto MacCallum Ltd. (PML) has completed a Phase Two ESA for a parcel of land located on Stonehaven Drive in Burlington, Ontario. The Phase Two ESA property (referred to herein as the 'Site') comprises two vacant land parcels; Area C, which covers an approximate plan area of 1.51 ha (3.73 ac) and Area B, which covers an approximate plan area of 0.12 ha (0.30 ac), located on Stonehaven Drive, west of the recently constructed John William Boich Public School located at 2474 Sutton Drive in Burlington, Ontario. It is understood that the assessment was required in support of a planned divestiture of the Site. Authorization to proceed with this assignment was provided under Purchase Order No. 4500046552, dated January 16, 2013 with an Engineering Services Agreement to be signed and returned.

The appended Drawing 2-1 (Phase One ESA Site Plan) illustrates the location of the Site involved in the study.

PML recently completed a Phase One ESA for the Site with the findings presented in our report, PML Ref.: 13HX002, Report 1, dated April 25, 2013. The assessment was performed in accordance with the Phase One ESA protocols outlined in Ontario Regulation 153/04 (O. Reg. 153/04), as amended, which came into force on July 1, 2011 and meets the requirements of Schedule D of the Regulation.

The Site is situated within a recently developed portion of Burlington which is a primarily residential and commercial land use area with some institutional land uses as shown on the appended Drawing 2-2 "Current Land Uses in the Phase One ESA Study Area", from the Phase One ESA report.

During the Phase One ESA, three on Site potentially contaminating activities (PCAs), and six off Site PCAs were identified. The PCAs were evaluated to determine the Site's Areas of Potential Environmental Concern (APECs).

PCA 1 is considered to have contributed to one APEC, which is summarized below:

APEC NO.	APEC LOCATION	PCA	LOCATION OF PCA	CONTAMINANTS OF POTENTIAL CONCERN	MEDIA POTENTIALLY IMPACTED
1	Area C	PCA 1 Other PCA's the QP is aware of: Unknown activities that resulted in the presence of known soil contamination documented in previous reports.	Northeast, southeast corner, southwest corner, eastern portion and south central portion of Area C	- M&I, PHCs, and VOCs	Soil and ground water

In this regard, it was recommended that a Phase Two ESA consisting of a soil and ground water sampling and chemical testing program be conducted to address the potential for contaminants to exist at the APEC described above, due diligence purposes related to divestiture the surplus lands and to update previous ESA work at the Site. The above APEC was addressed as part of this Phase Two ESA.

This Phase Two ESA involved drilling 13 boreholes and installing 3 ground water monitoring wells, soil and ground water sampling and chemical analysis, data compilation, evaluation of the information gathered and preparation of this report.

Based on the findings of this Phase Two ESA, the chemical quality of the soil at the Site did not meet the applicable Site Condition Standards (SCSs); namely the Table 3 (T3) Full Depth Generic SCSs in a Non-Potable Ground Water Condition for residential/parkland/institutional land use (T3 RPI). The majority of the contamination was confined to surficial fill material in Area C and extended to a depth of 0.3 m below grade, with the exception of PHC Fraction F3 contamination encountered in TP 3 at a depth of 0.6 to 1.0 m below grade. Contamination in the ground water was not encountered on Site.

Three areas (Area 1 to 3) of contamination were identified on Site, all on the Area C parcel. The contaminants included PHCs, cadmium and boron HWS. Areas 1 to 3 are identified on Drawing 2-5.

Area 1 included PHC contamination in the northwest portion of the Area C land parcel. Soil analysis for sample TP9 GS2 from a 2006 Phase II ESA, which met the PHC Fraction F3 Standard at the time, no longer meets the current T3 RPI Standards. Additionally, chemical testing from the 2012 Terraprobe report identified PHC Fraction F3 and F4 exceedances of current T3 RPI Standards in the vicinity of TP9 GS2. Chemical testing of soil from BH111 met the T3 RPI Standards, however PHCs were detected.

PHC soil contamination in Area 1 has not yet been effectively delineated using the current 'clean to clean' criterion and hence no quantity of contaminated soil in this area is provided. It is noted that not all sample results from this area exceeded the current T3 RPI Standards and the contamination is confined to the relatively shallow surface soil.

Area 2 included boron HWS contamination in the northeast portion of the Area C land parcel, identified during a 2006 Phase II ESA. While boron HWS exceedances were not encountered during this investigation, previous studies identified boron HWS contamination at the Site. It is noted that the boron HWS Standard applies only to surface soil, whereas total boron applies to subsurface soil. While the boron HWS exceedances were all encountered in the surface soil and require removal from this position in order to meet the RPI or ICC Standards, this soil may not require disposal to a landfill. It may be re-used either on site or off site at RPI and ICC properties, provided it is placed below 1.5 m as subsurface soil.

Area 2 has not yet been effectively delineated using the current 'clean to clean' criterion and hence no quantity of contaminated soil in this area is provided. It is noted that not all sample results from this area exceeded the current T3 RPI Standards and contamination is confined to the relatively shallow surface soil.

Area 3 included PHC contamination in the southern portion of the Area C land parcel. Soil analysis from the 2006 Phase II ESA indicated that PHC contamination was present in the fill soils in this area and an estimated volume was provided in that ESA report. Subsequent soil analysis completed by Terraprobe in 2012 and in the current Phase Two ESA found PHC and now cadmium and boron HWS contamination beyond the 2006 delineation. As with Area 1, soil contamination in this area has not yet been effectively delineated; however, based on a very conservative 'clean to clean' approach the area of contamination may cover a plan area of 3,515 m^2, which equates to a volume of 3,515 m^3, or 7,030 tonnes (based on an average density of 2.0 tonnes/m^3).

The following recommendations for soil remediation were made for the contamination identified on the Area C land parcel.

Regarding, the PHC and cadmium contamination, it was recommended that this area be remediated by 'dig and dump' methods in order to meet the current T3 RPI SCSs and that contaminated soil be disposed of to a landfill.

For Areas 1 and 3 the following options are provided:

1. Proceed directly to site remediation with an unknown quantity of contaminated soil which requires disposal to landfill; or
2. Complete a program of delineation in order to provide an estimate of quantities, which require disposal to landfill, so that an estimated budget can be prepared.

Regarding Area 2, boron HWS contamination of surface soils, it is recommended that this area be remediated in order to meet the current T3 RPI SCSs, however soil with elevated boron HWS does not require landfill disposal.

It is further noted that the Area C parcel contains a topsoil stockpile and it is not known if divestiture of Area C is planned to include this material. It is noted that previous testing of this material indicated that it did not meet the currently applicable T3 RPI Standards for electrical conductivity (EC). With the exception of the sample from TP12 + TP13, which represents an area of the stockpile which appears to be no longer present, the other previous EC results met or were very close to the T2 or T3 ICC standards for EC. While the chemical testing of the existing stockpile does not meet the current SCSs and requires removal for the current property use it does not necessarily require disposal to a landfill. It may be re-useable at an ICC property.

Regarding the Area B land parcel, no visual or olfactory indication of contamination were noted on the parcel and chemical testing of soil samples from fill and native material met the T3 RPI Standards. In this regard, no further environmental work is recommended for Area B.

It should be noted that there is no legal requirement to remove or treat the soil that exceeds the Standards applicable to the Site provided it is demonstrated that there is no off Site impact or adverse effect. However, if contaminated soil is left on Site, the landowner assumes liability associated with the Site contamination. The liability concerns could include potential scrutiny from the MOE and the public, as well as concerns on the part of financiers, insurers, future owners and owners of neighbouring properties.

2. INTRODUCTION

Peto MacCallum Ltd. was retained by the Halton District School Board (referred to as the Client) to conduct a Phase Two ESA for surplus lands associated with the recent construction of John William Boich Public School located at 2474 Sutton Drive in Burlington, Ontario. The Phase Two ESA property (referred to herein as the 'Site') comprises two vacant land parcels; Area C, which covers an approximate plan area of 1.51 ha (3.73 ac) and Area B, which covers an approximate plan area of 0.12 ha (0.30 ac), located on Stonehaven Drive, west of the new school building. The appended Drawing 2-1 (Phase One ESA Site Plan) illustrates the two land parcels and the location of the Site involved in the study.

It is understood that the Phase Two ESA work was required by the HDSB for due diligence purposes related to divestiture the surplus lands. The Phase Two ESA was also required to update previous ESA work at the Site.

It is noted that PML previously completed a Phase I ESA (PML Ref.: 06HX011, Report 1, dated April 13, 2006) and a Phase II ESA (PML Ref.: 06HX011A, Report 1, dated July 10, 2006) for Area C. Also, a Phase One ESA update was completed for a site which included Area B (report titled "Preliminary Findings of a Phase I ESA Update", PML Ref.: 06HX045, Report 1, dated November 23, 2006). Information from these reports was used to supplement this Phase Two ESA.

2.1 Regulatory Requirements

Ontario Regulation 153/04 (O. Reg. 153/04), as amended is a provincial regulation enacted to provide detailed requirements that property owners must meet in order to file a Record of Site Condition (RSC). An RSC is a legal document filed on the Environmental Site Registry that certifies the environmental condition of the property meets the regulatory standards applicable for the proposed land use and contains information relating to the environmental status or condition of the property. The RSC regulation (O. Reg. 153/04, as amended) details the requirements related to site assessment, report contents, clean up and Risk Assessment (RA). RSCs may be requested under a number of circumstances, such as a condition of financing or as a condition by the Municipality for the proposed development. A RSC is required as a condition of O. Reg. 153/04, as amended, when changing from a less sensitive land use to a more sensitive land use.

The most recent property use for Area B was agricultural, while the most recent property use for Area C was a mix of residential and commercial. If redevelopment following divestiture includes a change to any property use other than industrial, commercial or community, a RSC will be required.

This Phase Two ESA was completed in accordance with the O. Reg. 153/04, as amended and Schedule E of the regulation. In accordance with the current regulatory requirements, all environmental site assessment work was carried out by a Qualified Person as defined in O. Reg. 153/04, as amended.

2.2 Site Description

The Site comprises two parcels of land; Area B, which is a rectangular shaped parcel covering an approximate plan area of 0.12 ha (0.30 ac) and Area C, which is an irregular shaped parcel covering an approximate plan area of 1.51 ha (3.73 ac), as shown on Drawing 2-1. The Site is located along Dundas Street West and is currently accessible from Orchard Road and Stonehaven Drive. Area B is located on the east side of Orchard Road, having a frontage of about 54 m along Orchard Road and is about 24 m deep. Area C is located on the north side of Stonehaven Drive, being about 180 m at its widest in the east-west direction, having a frontage of about 93 m along Stonehaven Drive and is about 103 m deep. The Site is currently vacant.

The Site currently represents parcels of a larger property with the municipal address 2474 Sutton Drive. A letter provided by the HDSB accompanying a survey plan for the Site from Cunningham McConnell Limited Ontario Land Surveyors (OLS) provides the following legal descriptions of the Site parcels:

- Area B – These lands are composed of balance of Block 57, Registered Plan 20M-794; the balance of Block 66, registered Plan 20M-794 and Part of Lot 4 Concession 1 SDS Nelson and more particularly the balance of PIN 07201-0087(LT), the balance of PIN 07184-1874(LT) and the balance of PIN 07154-1883(LT).
- Area C – These lands are composed of Blocks 28 and 29, Registered Plan 20M-857, Part of Lot 4 Concession 1 SDS Nelson and Part of Orchard Road, closed by bylaw. They are referred to as all of PINs 07184-2680(LT), PIN 07184-3074(LT), PIN 07184-3075(LT) and PIN 07184-4583(LT).

A copy of the letter and accompanying survey plan, dated May 13, 2011 showing the Site is included in Appendix A.

The Site is situated within a recently developed portion of Burlington which is a primarily residential and commercial land use area with some institutional land uses as shown in Drawing 2-2 (Current Land Uses in the Phase One ESA Study Area).

2.3 Property Ownership

PML's contact information for the Site owner / client is as follows:

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J.W. Singleton Education Centre
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2.4 Current and Proposed Future Uses

The most recent property use for Area B was agricultural, while the most recent property use for Area C was a mix of residential and commercial.

2.5 Applicable Site Condition Standard

In order to determine the Site Sensitivity, Sections 41 and 43 of O. Reg. 153/04 (as amended) were evaluated by PML as described in Tables 1A and 1B, appended. The Site is not considered to be Environmentally Sensitive, a Shallow Soil property nor within 30 m of a water body.

The Site is currently vacant and future property use is unknown, however surrounding properties are used for residential and institutional purposes and as such, a residential/parkland/institutional (RPI) property use designation applies under O. Reg. 153/04, as amended.

Potable water for the City of Burlington is supplied via a municipal distribution system, which does not draw from ground water sources; thus, ground water is not considered to be a source of drinking water at the Site.

The soil on Site generally comprised fill (silty sand or sandy silt topsoil, sand and gravel and crushed limestone gravel) underlain by native soils comprising clay till, silty clay till and/or sandy silt till.

Based on the above factors, we selected the Generic Criteria of the O. Reg. 153/04, Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act dated April 15, 2011. In particular, the Table 3 (T3) Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition (T3 RPI).

3. BACKGROUND INFORMATION

3.1 Physical Setting

The Site was not part of, or located adjacent to any water bodies or areas of natural significance.

According to the Ontario Base Map (OBM) data published in 2004, the topographic elevation of the Site was approximately 155.0 (metric, geodetic). The topography of the study area is relatively flat (elevation 140.0 to 160.0, metric, geodetic) and slopes down to the southeast.

Regional ground water flow is expected to be to the south, towards Lake Ontario. Local variations in ground water flow patterns should be expected due to the presence of buildings and buried utility infrastructure.

The area is part of the Lake Ontario drainage basin. Surface drainage at the Site comprises overland flow into municipal storm sewers on Orchard Road and Stonehaven Drive, which eventually drain into tributaries of Bronte Creek and Sheldon Creek which flow into Lake Ontario.

3.2 Past Investigations

3.2.1 Historical Investigations

In addition to the Phase One ESA recently completed as part of the current assignment (PML Ref.: 13HX002), the following previous environmental investigation reports for the Site and surrounding properties were made available for this assignment by the HDSB, or obtained from PML's archived files.

- Document 1: Phase I ESA, 2506 Orchard Road, Burlington, PML Ref.: 06HX011, Report 1, dated April 13, 2006;

- Document 2: Phase II ESA, 2506 Orchard Road, Burlington, PML Ref.: 06HX011A, Report 1, dated July 10, 2006;
- Document 4: Preliminary Findings, Phase I ESA Update, Bucci Property – Sutton Drive and Dundas Street, Burlington, PML Ref.: 06HX045, Report 1, dated November 23, 2006;
- Document 5: Phase I ESA, Part of Lots 3 and 4, Concession 1, S.D.S., Orchard Road and Dundas Street, Burlington, Terraprobe Ref.: 983140, dated January 11, 1999;
- Document 6: Phase I ESA, Proposed Orchard North Subdivision, Burlington, Soil-Mat Project No.: SM 021089-E, dated June 28, 2002; and
- Document 7: Environmental Investigation, Contractor Access Area, Dundas Street, Ontario, Terraprobe File No. 13-12-2106, dated October 24, 2012.

Pertinent information from the above mentioned reports is summarized below.

3.2.1.1 Document 1: 2006 PML Phase I ESA

A Phase One ESA completed by PML for 2506 Orchard Road in 2006 identified eight potential sources of contamination at the time of the assessment related to:

- The presence of aesthetic contaminants and miscellaneous debris scattered throughout Area C such as wood, scrap metal, two empty 2 L oil containers, four automotive tires, a compressed air tank, concrete blocks, pieces of red brick and a Sealtest trailer which may result in localized areas of staining;
- The potential presence of fill and building demolition rubble from former building structures that were located on Site, as indicated on a historical atlas, topographic maps, aerial photograph, and Ontario Base Map. Two building structures were formerly located within the northeast and northwest portions of Area C and a building structure was located within the southwest portion of Area C. Concrete foundations were noted within the southwest portion of the Site;
- The presence of cinders and ash scattered on the ground surface throughout the Site, specifically in the northwest and southeast corners of Area C. The cinders and ash originated from two wood burning stoves and fireplace located within the residential dwelling and from a brick enclosed exterior fire pit used for burning wood;
- The presence of a former septic bed located in the eastern portion of Area C;
- The presence of a heating oil above ground storage tank (AST) that was located in the southeast portion of Area C;

- The presence of on Site fill material as evidenced by a large stockpile located along the north portion of Area C. Reportedly, the fill material originated as part of the on Site family business (Altorf Garden Supply Ltd.) which sells topsoil, rockery, stone, sand and gravel; and
- Historical agricultural activities on the Site and surrounding lands.

A Phase Two ESA was recommended for the Site based on the findings of the Phase One ESA.

3.2.1.2 Document 2: 2006 PML Phase II ESA

PML completed a Phase Two ESA for 2506 Orchard Road in 2006, which was carried out in two stages. The report indicated that the subsurface conditions at the Site included a layer of fill soil 0.3 to 1.7 m thick. Locally deleterious materials were mixed with the fill, including brick, clay tile, asphalt, concrete, metal, plastic, slag, wood, cinders and ash. The fill soil was underlain by native silty clay and clayey silt till.

Samples of fill and native soil were analyzed for parameters such as metals and inorganics, petroleum hydrocarbon (PHC) fractions F1 to F4, polycyclic aromatic hydrocarbons (PAHs), volatile organic compounds (VOCs), organochlorine / organophosphorus (OC/OP) pesticides and phenoxy acid (PA) herbicides.

The results of the chemical analysis were compared to the O. Reg. 153/04 Full Depth Generic Site Condition Standards (Table 2) for Residential/Parkland/Institutional Property Uses in a Potable Groundwater Condition.

The report provided the following conclusions:

3.2.1.2.1 Electrical Conductivity (EC)

Elevated levels of EC were noted at the location of Test Pits 10 and 11, within the on Site stockpile. EC is a physical, nonhealth related parameter typically affecting vegetation. Elevated EC levels are usually an indication of salts within the soil, and may include de-icing salts. In this regard, it is our opinion the marginally elevated levels of EC should not pose an environmental concern to the planned secondary school development at the Site. PML recommended a landscape architect be consulted prior to reuse of the stockpile for landscaping purposes.

3.2.1.2.2 Boron

Elevated levels of boron were noted at the location of Test Pits 14, 14A and 14B within the surface sand and gravel fill (2.17 to 9.58 µg/g) and 0.536 µg/g in the underlying silty sand fill. Based on PML's experience in the Halton Region, boron is often found to be naturally elevated within native soils. The source of the boron at this location however, is unknown. PML could not define the extent of the elevated boron concentrations during this assignment. An estimate therefore, of the minimum volume was provided. It is noteworthy that the results for boron testing at six other locations on Site met the Table 2 Standards.

3.2.1.2.3 Petroleum Hydrocarbons

Elevated levels of PHC Fractions F2 to F4 were noted at the location of Test Pit 2 within the gravel fill, silt fill and upper level of the native clayey silt till. The elevated levels of PHC Fractions F1 to F3 in Test Pit 3 were within the gravel fill and clayey silt (original topsoil). PML could not define the east limit of the contamination near Test Pit 2 during that assignment. The extent of contamination therefore, was assumed to extend mid-way between the next clean sample location (TP3-W2).

3.2.1.2.4 Estimated Cleanup Costs

Based on the findings of the 2006 Phase II ESA, boron and PHC contamination was present in the area of Test Pits 2, 3 and 14 and covers an inferred minimum plan area of about 355 m^2, as shown on Drawing 2 (Contamination Plan). The thickness of the contaminated fill was variable, from 0.5 up to 1.5 m deep, depending on test pit location. The estimated in-place volume was at about 264 m^3. For budgeting purposes, a quantity of 264 m^3 or some 528 tonnes could be assumed (based on an average density of 2.0 tonnes/m^3).

3.2.1.2.5 Comparison to the Current T3 RPI Standards

The results from the 2006 Phase II ESA were compared to the current T3 RPI Standards and it was determined that the results from Test Pit 9 did not meet the current Standard for PHC Fraction F3. Contamination in the area of Test Pit 9 is discussed further in Section 6.2.2.

3.2.1.3 Document 3: 2006 PML Preliminary Findings, Phase I ESA Update

A Preliminary Findings, Phase One ESA Report Update was completed by PML for a portion of the Bucci Property located at Part of Lots 3 and 4, Concession 1, S.D.S., Orchard Road and Dundas Street. This report does not pertain directly to the Site, however it referenced two reports by others (1999 Terraprobe Phase I ESA and 2002 Soil-Mat Phase I ESA), which were reviewed for data relevant to the Site.

3.2.1.4 Document 4: 1999 Terraprobe Phase I ESA

A Phase I ESA was completed by Terraprobe for a larger land parcel referred to as the Bucci property, which included Area B of the Site. The report concluded that no issues of potential or obvious environmental concern associated with on site activities have been recognized and that a requirement for additional investigation had not been identified.

3.2.1.5 Document 5: 2002 Soil-Mat Phase I ESA

A Phase I ESA was completed by Soil-Mat for a larger parcel of land, which included a portion of Area C, west of the 2506 Orchard Road property. The report concluded that a Phase II ESA was not necessary at the time.

The report included chain of title / site ownership information which indicated that the western portion of Area C was transferred to Losani Homes (1998) Ltd. in 2002 from the Canadian National Railway Company (CN). CN owned this portion of Area C since at least 1953.

3.2.1.6 Document 6: 2012 Terraprobe Environmental Investigation

An Environmental Investigation was completed by Terraprobe for the contractor access area on Part C. The report indicates that a contractor conducting water main construction activities used a portion of the HDSB property as an access road and a temporary laydown area for equipment, which included a refuelling depot for construction equipment. The purpose of the investigation was to determine the potential environmental impact by the contractor on the property.

The results of the investigation identified the following exceedances of the Table 2 RPI Standards on Site:

- Boron in the south central portion of the Site (refuelling area);
- Cadmium in southwest portion of the Site (refuelling area);
- PHC Fraction F3 and F4 along the southern and northern portion of the Site (access road area, refuelling area and laydown area);
- BTEX and hexane in the southeast portion of the Site (access road area);
- Trichloroflouromethane in the south central portion of the Site (refuelling area).

It was Terraprobe's opinion that the contamination present on the property was a pre-existing condition of the property caused by the presence of impacted fill and previous site activities and that the contractor's activities did not introduce additional contamination onto the property.

3.2.2 Phase One ESA

PML recently completed a Phase One ESA for the Site, PML Ref.: 13HX002, Report 1, dated April 25, 2013. The assessment was performed in accordance with the Phase One ESA protocols outlined in O. Reg. 153/04, as amended, which came into force on July 1, 2011 and meets the requirements of Schedule D of the Regulation.

Based on the findings of this assessment, three on Site potentially contaminating activities (PCAs), and six off Site PCAs have been identified. The PCAs have been evaluated to determine the Site's Areas of Potential Environmental Concern (APECs).

PCA 1 is considered to have contributed to one APEC, which is summarized below:

APEC NO.	APEC LOCATION	PCA	LOCATION OF PCA	CONTAMINANTS OF POTENTIAL CONCERN	MEDIA POTENTIALLY IMPACTED
1	Area C	PCA 1 Other PCA's the QP is aware of: Unknown activities that resulted in the presence of known soil contamination documented in previous reports.	Northeast, southeast corner, southwest corner, eastern portion and south central portion of Area C	- M&I, PHCs, and VOCs	Soil and ground water

The above APEC was addressed as part of this Phase Two ESA.

4. SCOPE OF INVESTIGATION

4.1 Overview of Site Investigation

The Phase Two ESA, consisting of a soil and ground water sampling and chemical testing program, was conducted for the Site in order to check for surface and / or subsurface impacts as a result of APEC 1.

The scope of this assignment included:

- Drilling boreholes,
- Installing ground water monitoring wells,
- Ground water level monitoring,
- Soil and ground water sampling,
- Chemical analysis of soil and ground water samples,
- Data compilation and evaluation of the information gathered, and
- Preparation of this report, discussing the information compiled and the corresponding conclusions and recommendations.

4.2 Media Investigated

Based on the Phase One ESA, the media potentially impacted at the Site included soil and ground water, which were investigated as part of this Phase Two ESA through ten boreholes and three monitoring wells. No sediment was present.

4.3 Phase One Conceptual Site Model

Drawings 2-1, 2-2 and 2-3 (Phase One ESA Site Plan, Current Land Uses In the Phase One ESA Study Area and Phase One ESA Summary of PCAs and APECs) provide a depiction of the conceptual site model developed during the Phase One ESA and include current land uses, on Site PCAs, off Site PCAs and APECs.

Local and regional ground water flow is anticipated to be generally south, toward Lake Ontario. Local variations in ground water flow patterns however can be expected due to the presence of buried municipal utility infrastructures and building foundations. Bronte Creek is located 350 m east of the Site and Sheldon Creek is located about 1 km southwest of the Site.

4.4 Deviations from Sampling and Analysis Plan

Copies of the Geoenvironmental Field Instruction Sheet / Sampling and Analysis Plans are included in Appendix B. During completion of the Phase Two ESA, the following deviations were encountered from the sampling and analysis plan:

- In order to find the previously encountered PHC contamination in the areas of BH/MW 102, BH 106 and BH 107, five additional boreholes (BH/MW101, BH110, BH111, BH112 and BH113 were drilled to confirm the presence of PHC contamination on Site.

4.5 Impediments

No physical impediments occurred during the course of the Site reconnaissance, surveying, borehole drilling, monitoring well installation, monitoring well developing and purging, and soil and ground water sampling.

5. INVESTIGATION METHOD

5.1 General

The field work for the Phase Two ESA was carried out on March 4, 5 and 7, 2013. Thirteen boreholes (BH/MW 101 through BH 113) were completed on March 4 and 5, 2013 and drilled to depths of 0.3 to 7.6 m below grade.

Three monitoring wells were installed into these boreholes (BH/MW101, BH/MW102 and BH/MW103) and were used to facilitate water level monitoring and ground water sampling.

The boreholes were strategically located on Site in relation to the APEC identified during the Phase One ESA. A copy of the Geoenvironmental Field Instructions and Sampling & Analysis plan is included in Appendix B.

The borehole (BH) locations were established in the field by PML as shown on Drawing 2-4, appended.

In addition, two grab samples were obtained from the topsoil stockpile located on the northern portion of Area C on March 7, 2013, and analyzed for free cyanide. The previous results for free cyanide were below the detection limit, however, were considered inconclusive when compared to the current SCSs since the detection limits were greater than the value of the current SCS for cyanide.

It is noted that previous testing of the topsoil stockpile indicated that the material did not meet the current T3 RPI standards for EC and is further discussed in Section 6.2.1.

5.2 Drilling

The boreholes and monitoring wells for the Phase Two ESA (March 4 and 5, 2013) were advanced using continuous flight solid stem augers powered by a truck-mounted CME-55 drill rig, supplied and operated by a specialist drilling contractor (Elite Drilling), working under the full time supervision of a member of our technical staff.

Appropriate precautions were taken and equipment and sampling tools decontamination was carried out during field work to minimize potential cross-contamination between samples and boreholes.

In an effort to minimize potential cross-contamination between samples and boreholes, sampling and sample handling equipment were decontaminated prior to and between taking samples. New nitrile gloves were used for handling each sample.

PML understands the drilling contractor (Elite Drilling) precleaned a set of solid stem augers and tools prior to arriving on site. The drilling contractor (Elite Drilling) cleaned the split spoon samplers prior to and between taking samples by scrubbing with a wire brush and washing in a solution of Alconox soap. The sample spoons were then rinsed with distilled water.

During the field work for the Phase Two ESA, soil samples in the boreholes completed in March 4 and 5, 2013 were collected at near continuous depth intervals of every 0.8 m (2.5 ft.).

5.3 Soil: Sampling

During the field work, soil samples in the boreholes were collected in split spoon samplers. The soil samples were field logged and examined for geoenvironmental classification, placed in laboratory provided airtight amber glass containers and/or vials containing methanol preservative and stored in an insulated cooler with ice for transportation to our laboratory for additional examination. As well, a portion of each sample was placed in a sealed plastic bag for vapour screening. Particular attention was applied to visual and olfactory evidence of potential contamination such as odours and staining during the course of the field work.

The two topsoil stockpile grab samples were obtained using hand sampling methods. The sampling was facilitated by digging approximately 0.3 m deep into the pile using a washed shovel. The soil samples were field logged and examined for geoenvironmental classification, placed in laboratory provided airtight amber glass containers and stored in an insulated cooler with ice for transportation to our laboratory for additional examination.

The soil sampling and sample handling procedures were carried out according to the supporting documents of O. Reg. 153/04, as amended and established standards.

5.3.1 Summarized Subsurface Conditions

Reference is made to the appended Drawing 2-4, Log of Borehole/Monitoring Well Sheets BH/MW101 through BH/MW103 and Log of Borehole Sheets BH104 through BH113 for details of the field work including sampling locations, visual soil classification, standard penetration test N values (where applicable), inferred stratigraphy, soil vapour concentrations, ground water observations and monitoring well installation details.

Due to soil sampling procedures and limited sample size, the depth/elevation demarcations on the borehole logs must be viewed as transitional zones between layers, and cannot be construed as exact geologic boundaries between layers.

The subsurface stratigraphy revealed in the boreholes typically comprised 0.3 to 2.2 m of sand and gravel fill or topsoil fill or over native clay or silty clay till, which was penetrated at depths ranging from 0.7 to 3.7 m. The clay or silty clay till was underlain by native sandy silt till, which was encountered at depths of 1.7 to 3.2 m.

5.3.1.1 *Topsoil Fill*

Topsoil fill was contacted surficially in BH/MW102, BH/MW103, BH105, BH106, BH108 and BH109. The silty sand topsoil fill layer ranged in thickness from 100 to 700 mm.

5.3.1.2 *Fill*

Sand and/or gravel fill was contacted surficially in BH/MW101, BH104 and BH110 to BH113, extending to a depth of 0.3 m where fully penetrated.

Clay fill, sand and gravel fill and/or silty sand fill was encountered below the topsoil fill in BH/MW102, BH/MW103, BH105, BH108 and BH109 and ranged in thickness from 0.1 to 1.3 m.

5.3.1.3 *Clay Till*

Stiff to very stiff clay till and silty clay till was encountered beneath the fill in BH/MW101, BH/MW102 and BH104 through BH107. The clay till was contacted at depths ranging between 0.3 to 1.4 m.

5.3.1.4 *Silt Till*

Hard sandy silt till was contacted in BH/MW101, BH/MW102, BH/MW103, BH104, BH105, BH108 and BH109. The silt till was contacted at depths ranging between 1.5 to 3.2 m.

5.4 Field Screening Measurements

Soil samples were not screened in the field, however following completion of the field work, the soil samples were transported back to PML's laboratory where soil vapour concentrations (SVCs) were measured in the headspace of samples, which had sufficient recovery. The bagged soil samples were screened using a RKI Eagle Portable Gas Detector. The RKI Eagle detects a combination of combustible gases in parts per million (ppm) and was utilized with the methane response in the off position (to exclude methane). The accuracy of the RKI Eagle Portable Gas Detector is +/- 2% and the equipment is regularly calibrated using hexane by Argus-Hazco.

There are no regulatory criteria for soil vapours; however, soil vapours are often used as a screening tool to identify PHC impacted soils. Elevated SVCs, typically in the % of LEL range, are generally indicative of the presence of volatile products, such as gasoline or chlorinated degreasing solvents, and to a lesser extent diesel and fuel oil. It should be noted that 1% LEL is

equivalent to 110 ppm based on a hexane calibration; the % LEL scale is typically used for soil vapours in excess of 500 ppm.

The correlation between combustible vapour concentrations and PHCs in soil is highly dependent on the soil type, moisture content and characteristics of the contaminant of concern. The results of the screening are used as a tool in establishing relative SVCs among samples and borehole locations.

5.5 Ground Water: Monitoring Well Installation

Upon completion of the borehole drilling, ground water monitoring wells (Borehole/Monitoring Wells 101, 102 and 103) were installed using clean 50 mm diameter screened and solid PVC Sch. 40 pipe, well gravel, bentonite, caps, j-plugs, well points, flush mount and/or stick-up well protectors. The wells were installed to depths of 5.2 m and were screened at the bottom over a length of 3.0 m. The annular space of the borehole around the screen was backfilled with clean filter sand (up to 0.5 m above the top of the well screen) followed by a bentonite seal and well protector set in concrete. No ground water sampling was completed during drilling. The details of the monitoring well construction are shown on the appended Log of Borehole/Monitoring Well sheets. Once the licenced well contractor provides the cluster well record, it will be kept on file for future reference in accordance with O. Reg. 903/90, amended to O. Reg. 372/07.

Upon completion of the drilling program, free water was observed at depths of 3.8 m in BH/MW101, BH/MW102 and BH/MW103 and 3.6 m in BH104. Cave was not observed in the boreholes.

Water levels were obtained in the monitoring wells on March 7, 2013 using a Solinst^{TM} ground water level reader. Development of the wells was completed on March 7, 2013 and involved removal of a minimum of three to five well volumes or until the wells were dry to remove any fluids that may have been introduced into the well during drilling and/or rock coring and to remove particulates that may have become entrained in the well and filter pack. Purging of the wells was completed on March 7, 2013 using fixed volume purging procedures as outlined in ASTM D6452-99 (2005).

The times of development of the monitoring wells is summarized below:

Monitoring Well ID	Time of Purging and Development	Total Volume of Water Removed (L)
	March 7, 2013	March 7, 2013
BH/MW101	2:02 p.m. – 2:25 p.m.	32
BH/MW102	1:32 p.m. – 1:55 p.m.	24
BH/MW103	1:06 p.m. – 1:25 p.m.	24

In an effort to minimize potential cross-contamination the following sampling equipment was used on the ground water wells:

1. Dedicated Waterra™ bailers;

The above equipment was used with new nitrile gloves for each well. Waterra™ filters were used only when sampling for metals, chromium IV and mercury.

The Solinst™ water level meter (P2/20m) was cleaned with distilled water between uses at each monitoring well location.

5.6 Ground Water: Field Measurements of Water Quality Parameters

Measuring of water quality parameters such as pH, specific conductance and temperature was not undertaken during this investigation.

5.7 Ground Water: Sampling

Ground water samples were collected by PML's technical staff on March 7, 2013 from monitoring wells installed in Boreholes 101, 102 and 103 (BH/MW101, BH/MW102 and BH/MW103) after well development and purging.

The ground water samples were field logged and placed in clean, laboratory provided bottles, stored in an insulated cooler on ice and returned to our laboratory where the samples were temporarily preserved in a fridge to maintain a cool environment until they were picked up by AGAT Laboratories Limited. Particular attention was applied to visual and olfactory evidence of potential contamination such as odours and sheens during the course of the field work.

The ground water sampling and sample handling procedures were carried out according to the supporting documents of O. Reg. 153/04, as amended and established standards.

5.8 Sediment Sampling

No surface water bodies, creeks, ditches or ponds were observed on Site; therefore sediment sampling was not conducted.

5.9 Analytical Testing

Selected soil and ground water samples were submitted for chemical analysis to AGAT Laboratories Limited (AGAT), a Canadian Association for Laboratory Accreditation Inc. (CALA) accredited laboratory in Mississauga, Ontario. The chemical analysis conducted by AGAT were in accordance with the O. Reg. 153/04 Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act dated March 9, 2004, amended as of July 1, 2011.

The rationale for sample selection was based on visual and olfactory evidence of potential contamination, historical use of the Site, and general coverage of APEC 1.

The soil and ground water samples were analyzed for the contaminants of concern (COC), namely metals and inorganics, petroleum hydrocarbon fractions (PHC) Fractions F1 to F4, and volatile organic compounds (VOCs).

A summary listing of all soil and ground water samples submitted for analysis is included as Table 2, appended.

5.10 Residue Management Procedures

Soil cuttings from drilling operations were stockpiled on Site adjacent to each of the boreholes. Ground water from development and purging of the wells, and fluids from equipment cleaning were placed into a 205 L steel drum on Site. Pending the results of the chemical analysis and plans for the Site moving forward, the soil and ground water residue will be incorporated into the soil and ground water management plan for remediation measures and disposed of off Site.

5.11 Elevation Surveying

The borehole locations were selected and established in the field by PML. Ground surface elevations and UTM co-ordinates at the borehole locations were determined by PML. The following temporary benchmark was used for vertical reference:

TBM: Top of top nut of fire hydrant east side of Area C, approximately 4 m west of chain link fence and approximately 3 m north east of sanitary manhole. Assigned elevation: 100.0 m

5.12 Quality Assurance and Quality Control Measures

Soil samples were field logged and examined for geoenvironmental classification, placed in laboratory provided airtight amber glass containers with Teflon® lined lids and stored in an insulated cooler for transportation to our laboratory for additional examination. Soil samples analyzed for VOCs or PHC Fraction F1 were preserved in methanol in laboratory provided septum vials using a Terra Core® sub-sampler. As well, a portion of each soil sample was placed in a sealed plastic bag for later vapour screening.

Ground water samples were also placed in laboratory provided containers. Samples analyzed for metals, hexavalent chromium and mercury were field filtered. Samples analyzed for VOCs and PHC Fraction F1 were placed in septum vials with Teflon® lined lids with zero head space. The following details the container types and preservatives for the ground water analytes sampled for:

Ground Water Analyte Group	Container Type	Preservative
PHC Fraction F1/BTEX and VOCs	3 - 40 ml Amber Vials	$NaHSO_4$
PHC Fraction F2 – F4	1 - 500 ml Amber Glass Bottle	None
Metals (field filter)	1 - 120 ml Plastic Bottle	HNO_3
Chromium VI (field filter)	1 - 120 ml Plastic Bottle	NaOH
Cyanide	1 - 120 ml Plastic Bottle	NaOH
Mercury (field filter)	1 - 120 ml Amber Glass Bottle	HCl
Various Inorganics	1 - 500 ml Plastic Bottle	None

Soil sample containers were labelled in the field with permanent marker by indicating the borehole, sample and project numbers and were cross referenced to the borehole logs. Ground water sample containers were pre-labelled from the laboratory based on the borehole/monitoring from which they were sampled from.

As previously indicated, the drilling contractor (Elite Drilling) precleaned a set of solid stem augers and tools prior to arriving on-site. The drilling contractor (Elite Drilling) cleaned the split spoon samplers which were decontaminated prior to and between taking samples by scrubbing with a wire brush and washing in a solution of Alconox soap. The sample spoons were then rinsed with distilled water. In an effort to minimize potential cross-contamination dedicated Waterra™ bailers, Waterra™ tubing and valve, and/or HDPE and silicone tubing with new nitrile gloves were used for each well. The Solinst™ ground water level reader was cleaned with distilled water between uses at each monitoring well location.

Field quality control measures were maintained through the use of borehole log sheets, field logbooks, sample labels and chain of custody records. Field logbooks and borehole log sheets were maintained by technical staff to record data collection and sampling activities. The equipment used to collect samples was noted, along with the time of sampling, sampling description, depth from which the samples were collected, volume and number of containers. In addition, all samples were accompanied by a properly completed chain of custody record, which listed the sample identification, sample dates and time, sample matrix, the number of containers, and analytes for which the samples are to be tested.

Since the quality of data depends upon planning, sampling, analysis and reporting, duplicate soil and ground water samples were analyzed for Quality Assurance/Quality Control (QA/QC) purposes. In addition to the equipment and sampling tools decontamination procedures described above, the field Quality Control (QC) measures consisted of soil and ground water duplicate samples and ground water trip blanks as per O. Reg. 153/04 as amended supporting documents.

The laboratory analytical methods consisted of the following:

- Soil and ground water samples were analysed by using standard reference methods and the testing methods were referenced in AGAT certificate of analysis (Appendix C) as required by the Ministry of Environment's (MOE's) protocol. Method blank, spiked method blank, laboratory spiked and duplicate soil and ground water samples were analysed with each batch of soil and ground water samples.
- A table of analytical data indicating parameters, estimated quantitation limit, corrected quantitation limit for dilute samples, percentage recovery, range of lower and upper limits was reported in AGAT certificate of analysis (Appendix C).

6. REVIEW AND EVALUATION

6.1 Geology

Based on the borehole data, an anthropogenic layer of fill material comprising silty sand or sandy silt topsoil fill, sand and gravel, gravel, and / or clay fill was encountered overlying a relatively impermeable geologic unit comprising native clay or silty clay till, overlying a relatively permeable geologic unit comprising sandy silt till.

The native sandy silt till was considered a potential aquifer and was partially saturated. The native clay and silty clay till was considered a potential aquitard.

The following is a summary of the general unit thicknesses and corresponding elevations on the west to east cross-section:

Approx. Depth (m)	Approximate Elevation (m)[1]	Geologic Unit
0.0 to 0.8	98.7 to 97.9	Anthropogenic layer of sand and gravel fill
0.8 to 3.2	97.9 to 95.5	Native clay till and/or silty clay till
3.2 to 8.2	95.5 to 90.5	Native sandy silt till

Note [1]: Based on temporary benchmark (TBM), assigned elevation of 100.0 m.

6.2 Ground Water: Elevations and Flow Direction

The monitoring well locations were selected based on the APECs identified for the Site and to provide general Site coverage. Based on the ground water conditions noted during drilling, two of the wells (BH/MW101, BH/MW102 and BH/MW103) were installed within the silt till to depths of 5.2 m. The wells were screened at the bottom over a length of 3.0 m to ensure recovery of ground water located within the overburden aquifer. Free flowing products were not present in the monitoring wells.

Ground water levels were recorded in monitoring wells BH/MW101, BH/MW102 and BH/MW103 on March 7, 2013. The local elevation of the top of the well casing and the ground surface were determined in the field, and ground water level measurements using a Solinst® water level meter (P2/20m) were taken by measuring to the surface of the ground water from the top of the well casing and / or from the ground surface with the necessary corrections made.

Ground water conditions were noted during and upon completion of drilling. Reference is made to the appended Log of Borehole sheets, Log of Monitoring Well sheets, Drawing 2-4 (Ground Water Elevations) and Table 3 for details of ground water observations.

Stabilized ground water levels were about 0.5 to 1.4 m below grade (elevations 98.9 to 97.9). Based on this information, the ground water flows in southeast direction towards Lake Ontario, which is consistent with the regional ground water flow expected in the area of the Site.

Ground water levels are subject to seasonal fluctuations and variations in precipitation.

6.2.1 Ground Water: Hydraulic Gradients

The ground water monitoring wells were strategically placed in a triangular position in order to facilitate calculation of ground water flow and gradient.

Based on our site observations and water level measurements, the ground water table underlying the Site has a horizontal gradient of about 0.016 (1.6 %) down toward the south southeast.

6.3 Fine-Medium Soil Texture

As previously indicated, the soil on Site generally comprised sand and gravel fill or topsoil fill or clay fill over native clay or silty clay till, underlain by native sandy silt till. The soils on Site vary between fine / medium texture to coarse texture. Due to the variation, the more stringent coarse textured soil criteria were chosen with respect to the regulatory criteria.

6.4 Soil: Field Screening

The measured concentrations on the headspace of recovered soil samples ranged from 0 to 15 parts per million (ppm), which are not considered to be significant.

6.5 Soil Quality

Laboratory certificates of analysis compared to Table 3 RPI Standards, are included in Appendix C. A summary of samples submitted for chemical testing including locations, depths and descriptions is included in Table 2, appended.

6.5.1 VOCs

The measured concentrations of VOCs in the tested samples were below the method detection limit (not detected) and/or met the respective T3 RPI Standards.

The following is a summary of the exceedances of the T3 RPI Standards.

6.5.1.1 Metals and Inorganics

Analyte	T3 RPI Standard	Units	Sample ID	Measured Concentration
Cadmium	1.2	µg/g	BH107 SS1A	1.7
			BH112 AS1	1.6

6.5.1.2 PHC Fractions F1 to F4

Analyte	T3 RPI Standard	Units	Sample ID	Measured Concentration
PHC Fraction F3	300	µg/g	BH110 AS1	550
			BH112 AS1	2400

6.5.2 Waste Characterization

The measured concentrations of the tested metals and inorganics parameters (Sample TCLP) met the Schedule 4 leachate quality criteria, VOCs and PCBs were not detected, and the material was not ignitable. Therefore, the material was classified as nonhazardous waste and could be disposed of at a landfill facility with a Certificate of Approval to receive the waste type, pending approval of landfill authorities.

6.6 Ground Water Quality

Laboratory certificates of analysis compared to Table 3 RPI Standards are included in Appendix C. A summary of samples submitted for chemical testing including locations, screened depths and descriptions is included in Table 2, appended.

The measured concentrations of metals and inorganics, PHC Fraction F1 to F4, and VOCs in the tested samples were below the reported detection limit (not detected) and/or met the respective T3 RPI Standards.

6.7 Sediment Quality

Sediment was not present on Site.

6.8 Quality Assurance and Quality Control Results

Soil and ground water samples were analysed by using standard reference methods and the testing methods were referenced in AGAT Certificate of Analysis, as required by the MOE's protocol. Laboratory QA/QC data is included with the Certificates of Analysis provided by in Appendix C. Method blank, spiked method blank, laboratory spiked and duplicate soil samples were analysed by the laboratory with each batch of samples. The results of chemical analysis of method blank sample indicated that the detected levels were within the acceptable range. The chemical test data for spiked method blank and laboratory spike samples indicated that the recovery ranges were within the statistically determined control limits.

The quality of data depends upon planning, sampling, analysis and reporting. As a means of determining the reproducibility or variability related to analytical procedures of the sample homogeneity, the relative percentage differences (RPD) between analyzed values for original and duplicate samples were calculated.

For sample reproducibility calculations, maximum relative percent difference (RPD) values were calculated using the following formula:

$$\text{RPD Value} = \left[\frac{\text{(Analyte A in Test 1 – Analyte A in Test 2)}}{\text{(Analyte A in Test 1 + Analyte A in Test 2) / 2}} \right] \times 100$$

Blind field duplicates were obtained by PML during the field work and submitted to AGAT; the maximum RPD values were as follows:

Sample ID(s)	Parameters Tested	Maximum RPD Values (%)
Soil		
Sample BH109 SS4 and Sample Duplicate 1 (BH109 SS4)	Metals and Inorganics	22
	PHC Fractions F1 to F4	NA
	VOCs	NA

Sample ID(s)	Parameters Tested	Maximum RPD Values (%)
Ground Water		
Sample BH/MW103 and Sample Duplicate A (BH/MW103)	Metals and Inorganics	18
	PHC Fractions F1 to F4	NA
	VOCs	NA

Note: Maximum RPD values are provided as not applicable (NA) where one or both of the results were less than the reported detection limits (RDLs).

The maximum RPD for the duplicate samples were within the acceptable statistical variation of 30 to 40%,

In addition, a 'trip blank' sample of ground water was prepared by AGAT and utilized by PML during the field ground water sampling activities. The samples were submitted for chemical testing for VOCs and the measured concentration of the tested parameters were below the method detection limit (not detected), which is acceptable.

6.9 Phase Two ESA Conceptual Site Model

Based on the review, interpretation and evaluation of the data compiled, a Phase Two Conceptual Site Model (CSM) of the Phase Two ESA property was prepared which demonstrates the current condition of the phase two property. Remedial actions have not yet been undertaken. It is understood that the Phase Two ESA work is required by the HDSB for due diligence purposes related to divestiture the surplus lands. The Phase Two ESA was also required to update previous ESA work at the Site.

The Site is not a shallow soil property nor within 30 m of a water body. The Site is not considered to be Environmentally Sensitive. Refer to Tables 1A and 1B for the Site Sensitivity Analysis.

The Site is situated within a predominantly commercial and residential area of Burlington; however there are some light industrial properties are located on the north side of Dundas Street West.

Our research indicates that historically the Site was first developed for residential/agricultural property use sometime prior to 1877. Site occupancy has comprised a mix of commercial (trucking company and garden centre) and residential uses since Site development. The Site has

been in its current configuration comprising vacant land since demolition of former on Site structures was completed between 2006 and 2009.

In addition to the following paragraphs describing the Site conditions encountered during the Phase One and Phase Two ESA, the CSM is illustrated on the following documents included in the Phase Two ESA report:

- Drawing 2-1 (Site Plan) shows the current Site boundaries, existing features and the location of utility services on Site.
- Drawing 2-2 shows the current land uses in the Phase One ESA Study Area.
- Drawing 2-3 depicts the location of potentially contaminating activities (PCAs) and the areas of potential environmental concern (APECs) on the Site.
- Drawing 2-4 shows the locations of the boreholes and monitoring wells completed for the Phase Two ESA and the locations of the exceedances of the Table 3 SCSs.

Ground water level data is depicted on Drawing 2-4.

The stratigraphy and hydrogeological characteristics of the Site are depicted in Cross-Section A - A' (Drawing 2-5) and Cross-Section B – B' (Drawing 2-6). The cross-sections show the approximate depth to the water table, and the stratigraphy from ground surface to the deepest aquifer investigated.

6.9.1 PCAs and APECs

Three on Site potentially contaminating activities (PCAs), and six off Site PCAs were identified. Based on review and evaluation of the information compiled, PCA 1 is considered to have contributed to one Area of Potential Environmental Concern (APEC):

APEC NO.	APEC LOCATION	PCA	LOCATION OF PCA	CONTAMINANTS OF POTENTIAL CONCERN	MEDIA POTENTIALLY IMPACTED
1	Area C	PCA 1 Other PCAs the QP is aware of: Unknown activities that resulted in the presence of known soil contamination documented in previous reports.	Northeast, southeast corner, southwest corner, eastern portion and south central portion of Area C	- M&I, PHCs, and VOCs	Soil and ground water

6.9.2 Summarized Geological and Hydrogeological Conditions

Reference is made to the appended Drawing 2-4 and 2-5 and Log of Borehole and Monitoring Well Sheets, for details of the field work including sampling locations, visual soil classification, standard penetration test N values (where applicable), inferred stratigraphy, soil vapour concentrations, ground water observations and monitoring well installation details.

Based on the borehole data, an anthropogenic layer of fill material comprising silty sand or sandy silt topsoil fill, sand and gravel, gravel, and / or clay fill was encountered overlying a relatively impermeable geologic unit comprising native clay or silty clay till, overlying a relatively permeable geologic unit comprising sandy silt till.

The native sandy silt till was considered a potential aquifer and was partially saturated. The native clay and silty clay till was considered a potential aquitard.

Stabilized ground water levels were about 0.5 to 1.4 m below grade (elevations 98.9 to 97.9). Based on this information, the ground water flows in southeast direction towards Lake Ontario, which is consistent with the regional ground water flow expected in the area of the Site.

Ground water levels are subject to seasonal fluctuations and variations in precipitation.

The following is a summary of the general unit thicknesses and corresponding elevations on the west to east cross-section:

Approx. Depth (m)	Approximate Elevation (m)[1]	Geologic Unit
0.0 to 0.8	98.7 to 97.9	Anthropogenic layer of sand and gravel fill
0.8 to 3.2	97.9 to 95.5	Native clay till and/or silty clay till
3.2 to 8.2	95.5 to 90.5	Native sandy silt till

Note [1]: Based on temporary benchmark (TBM), assigned elevation of 100.0 m.

6.9.3 Areas of Contamination

Soil contamination was confirmed within the sand and gravel fill material of the gravel pathway located in the southern portion of Area C. The identified contamination was metals and inorganics, specifically cadmium and PHCs, specifically Fraction F3. In addition to the contamination identified during this investigation, areas of contamination were encountered during

previous investigations in 2006 and 2012. Contamination in the ground water was not encountered on Site.

In total three areas of contamination (Areas 1, 2 and 3) were identified on the Site. The contaminant distributions of Areas 1 through 3 are depicted on Drawing 2-5.

Regarding the topsoil stockpile, the results of the free cyanide analysis indicated that the soil meets the current T3 RPI standards for the Site.

6.9.4 Contaminant Distribution

Further migration of these contaminants into the natural environment is not expected based on the following rationale:

- There are no preferential pathways to our knowledge,
- The location of the contaminants is surficial (0 – 0.3 m), within the sand and gravel fill, with the exception of PHC Fraction F3 in TP3 GS2 at a depth of 0.6 to 1.0 m below grade,
- Ground water contamination was not encountered on Site,
- The ground water table is located at an elevation of 98.0 to 98.9 m and the contaminated soil is located at about elevation 98.7 to 100.1 which is above the water table, or just near it,
- Metal contamination is not expected to be transported through the environment, and
- A series of investigative probes surrounding the areas of previously identified PHC contamination did not yield any visual or olfactory evidence of contamination.

Subsurface utilities at the Site are expected to be located about 1.0 to 2.0 m below grade corresponding to approximate elevations of 99.1 to 97.5, which is within the fill. Buried utilities may interact with the ground water at the Site.

7. CONCLUSIONS AND RECOMMENDATIONS

As a result of the findings from the Phase One ESA, a Phase Two ESA was completed for the HDSB surplus lands located on Stonehaven Drive. The purpose of the Phase Two ESA was to check if the chemical quality of the soil and ground water at the Site exceeds the applicable O. Reg. 153/04, as amended, Site Condition Standards (SCSs) for Table 3 RPI property use. In

addition, the Phase Two ESA was completed for due diligence purposes related to divestiture the surplus lands. The Phase Two ESA was also required to update previous ESA work at the Site.

The soil contamination documented at the Site is related to former activities performed on Site during previous ownership. The contamination identified on Site is boron HWS, cadmium, EC and PHCs.

7.1 Area B

No visual or olfactory indication of contamination were noted on the Area B Parcel and chemical testing of soil samples from fill and native material met the T2 RPI Standards. In this regard, no further environmental work is recommended for Area B.

7.2 Area C

7.2.1 Topsoil Stockpile

Regarding the topsoil stockpile, it is not known if divestiture of Area C is planned to include this material. It is noted that previous testing of this material indicated that it did not meet the T3 RPI Standards currently applicable to the Site for EC. With the exception of the sample from TP12 + TP13, which represents an area of the stockpile which appears to be no longer present, the other previous EC results met or were very close to the T2 or T3 ICC standards for EC. While the chemical testing of the existing stockpile does not meet the current SCSs and requires removal for the current property use it does not necessarily require disposal to a landfill. It may be re-useable at an ICC property.

7.2.2 Area 1

Soil analysis from the 2006 Phase II ESA for sample TP9 GS2, which met the PHC Fraction F3 Standard at the time, no longer meets the current T3 RPI Standards. Additionally, chemical testing from the 2012 Terraprobe report identified PHC Fraction F3 and F4 exceedances in the vicinity of TP9 GS2. Chemical testing of soil from BH111 met the T3 RPI Standards, however PHCs were detected.

PHC soil contamination in Area 1 has not yet been effectively delineated using the current clean to clean methodology and hence no quantity of contaminated soil in this area is provided. It is

noted that not all sample results from this area exceeded the T3 RPI Standards and the contamination is confined to the relatively shallow surface soil.

7.2.3 Area 2

While boron HWS exceedances were not encountered during this investigation, previous studies identified boron HWS contamination at the Site. It is noted that the boron HWS Standard applies only to surface soil, whereas total boron applies to subsurface soil. While the boron HWS exceedances were all encountered in the surface soil and require removal from this position in order to meet the RPI or ICC Standards, this soil may not require disposal to a landfill. It may be re-used either on site or off site at RPI and ICC properties, provided it is placed below 1.5 m as subsurface soil.

This area of contamination has not yet been effectively delineated using the current clean to clean methodology and hence no quantity of contaminated soil in this area is provided. It is noted that not all sample results from this area exceeded the T3 RPI Standards and contamination is confined to the relatively shallow surface soil.

7.2.4 Area 3

Soil analysis from the 2006 Phase II ESA indicated that PHC contamination was present in the fill soils in this area and an estimated volume was provided. Subsequent soil analysis completed by Terraprobe in 2012 and in this Phase Two ESA indicated that PHC and now cadmium and boron HWS contamination was documented beyond the 2006 delineation. As with Area 1, soil contamination in this area has not yet been effectively delineated, however based on a very conservative clean to clean approach the area of contamination may cover a plan area of 3515 m^2, which equates to a volume of 3515 m^3, or 7030 tonnes (based on an average density of 2.0 tonnes/m^3)

7.2.5 Next Steps

Regard the topsoil stockpile, it is recommended that the stockpile be surveyed in order to determine an accurate quantity and once a possible ICC receiving site is found for this material a program of additional soil sampling and chemical testing be completed for the stockpiled material in accordance with the receiving site requirements.

Regarding Area 2, boron HWS contamination of surface soils, it is recommended that this area be remediated in order to meet the current T3 RPI SCSs, however soil with elevated boron HWS does not require landfill disposal.

Regarding, the PHC and cadmium contamination, it is recommended that this area be remediated in order to meet the current T3 RPI SCSs and that contaminated soil be disposed of to a landfill.

For Areas 1 and 3 the following options are provided:

1. Proceed directly to site remediation with an unknown quantity of contaminated soil which requires disposal to landfill; or
2. Complete a program of delineation in order to provide a detailed estimate of quantities, which require disposal to landfill, so that an estimated budget can be prepared.

It is important to note that for the purposes of the full depth site cleanup, as compared with the Standards, the limits of the contaminated area were assumed to extend from an impacted soil sampling location to the next soil sampling location that was 'clean' or the property line. The subsurface conditions between the 'clean' limits may vary.

It should also be noted that there is no legal requirement to remove or treat the soil that exceeds the Standards applicable to the Site provided it is demonstrated that there is no off Site impact or adverse effect. However, if contaminated soil is left on Site, the landowner assumes liability associated with the Site contamination. The liability concerns could include potential scrutiny from the MOE and the public, as well as concerns on the part of financiers, insurers, future owners and owners of neighbouring properties.

The assignment is subject to the Statement of Limitations that is included in Appendix D and must be read in conjunction with this report.

Soil and ground water conditions between and beyond the sampled locations may differ from those encountered during this assignment. PML should be contacted if impacted soil conditions become apparent during future development to further access and appropriately handle the materials, if any, and evaluate whether modifications to the conclusions documented in this report are necessary.

7.3 Signatures

This report was completed by Sarah Murray, B.Sc., M.Env.Sc., who has been trained to conduct Phase One and Phase Two ESAs in accordance with O. Reg. 153/04, as amended.

The preparation of the Phase Two ESA was supervised by, David Smith, BSc. who has been trained to conduct Phase One and Two ESAs in accordance with O. Reg. 153/04, as amended. Mr. Smith is an environmental geoscience technologist with twelve years experience specializing in Phase One and Two ESAs, site remediation, ground water and soil sampling, excavation monitoring, underground and aboveground storage tank removals and preparation of Records of Site Condition. Mr. Smith has completed numerous Phase One and Two ESAs for commercial, industrial, and residential clients for a wide variety of project types (industrial complexes, commercial developments, entertainment and institutional buildings, and residential development).

This report was reviewed by Marian S. Molodecki, P.Eng., a Professional Engineer. Mr. Molodecki has over thirty eight years of interdisciplinary professional experience specializing in geoenvironmental and geotechnical investigations and project management. His main areas of expertise include Phase One and Phase Two ESAs, site cleanup/remediation planning and supervision, waste management, underground storage tank and above ground storage tank removals, site remediation, Risk Assessment, Records of Site Condition and hydrogeologic investigations. Mr. Molodecki is a Senior Consultant, Geotechnical and Geoenvironmental Services in PML's Kitchener branch office.

Peto MacCallum Ltd. was established in 1973 as a result of the merger of Peto Associates Ltd., founded in 1956, and the Ontario division of Racey MacCallum and Associates Limited, chartered in 1952. Peto MacCallum Ltd. is a consulting engineering firm that specializes in the fields of geoenvironmental, hydrogeological and geotechnical engineering, building sciences, construction supervision/inspection and materials engineering/testing. Personnel in our four branch offices form a network of full time dedicated environmental professionals.

We trust the information presented in this report is sufficient for your present purposes. If you have any questions, please do not hesitate to contact our office.

Sincerely

Peto MacCallum Ltd.

For Sarah Murray, BSc., M.Env.Sc.
Project Supervisor, Geoenvironmental Services

LICENSED PROFESSIONAL ENGINEER
M.S. MOLODECKI
32305013
May 8/13
PROVINCE OF ONTARIO

Marian S. Molodecki, P.Eng., QP_{ESA}
Senior Consultant
Geotechnical and Geoenvironmental Services

SM:lad

8. REFERENCES

Report titled "Phase I ESA, 2506 Orchard Road, Burlington", PML Ref.: 06HX0011, Report 1, dated April 13, 2006.

Report titled "Phase II ESA, 2506 Orchard Road, Burlington", PML Ref.: 06HX011A, Report 1, dated July 10, 2006.

Report titled "Environmental Investigation, Contactor Access Area, Dundas Street, Burlington, Ontario", Terraprobe File No. 13-12-2106, dated October 24, 2012.

Report titled "Phase One Environmental Site Assessment (ESA), HDSB Surplus Land on Stonehaven Drive, Stonehaven Drive, Burlington, Ontario", PML Ref.: 13HX002, Report 1, dated April XX, 2013.

AGAT Laboratories, Certificates of Analysis (appended).

American Society for Testing and Materials (ASTM) Standard D6452 – 99 (Reapproved 2005), Standard Guide for Purging Methods for Wells Used for Ground-Water Quality Investigations.

Guide for Completing Phase Two Environmental Site Assessments Under Ontario Regulation 153/04, Ministry of the Environment, Environmental Assessment and Approvals Branch, June 2011.

Ontario Regulation 153/04 (O. Reg. 153/04), Records of Site Condition - Part XV.1 of the Environmental Protection Act, amended July 1, 2011.

O. Reg. 179/11 made under the Environmental Protection Act amending O. Reg. 153/04 dated May 2011.

O. Reg. 245/10 made under the Environmental Protection Act amending O. Reg. 153/04 dated June 2010.

Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, Ministry of the Environment, April 15, 2011.

Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act, Laboratory Services Branch, Ministry of the Environment, March 9, 2004, as amended as of July 1, 2011.

9. FIGURES AND TABLES

9.1 Tables

Tables 1 to 9 are appended and form part of this report.

9.1.1 Monitoring Well Installation

Refer to Table 3 (Summary of Ground Water Data) and Log of Borehole/Monitoring Well Sheets BH/MW101, BH/MW102 and BH/MW103 regarding monitoring well construction details and elevations for all monitoring wells installed during the field investigation.

9.1.2 Water Levels

Refer to Table 3 (Summary of Ground Water Data) regarding all water level measurements, including depth to water and reference elevations.

9.1.3 LNAPLs and DNAPLs

Light non-aqueous phase liquids (LNAPLs) and dense non-aqueous phase liquids (DNAPLs) were not encountered at the Phase Two ESA property.

9.1.4 Soil Data

Soil quality data contained in laboratory certificates of analysis are included in Appendix C, which includes the results of chemical testing, date of sample collection, date of analysis and analytical report reference number. In addition, Tables 4 to 6 provide a comparison of the data to applicable site condition standards, the borehole and monitoring well identification numbers, sample depths, and sample identification number.

9.1.5 Ground Water Data

Ground water quality data contained in laboratory certificates of analysis are included in Appendix C, which includes the results of chemical testing, date of sample collection, date of analysis and analytical report reference number. In addition, Tables 7 to 9 provide a comparison

of the data to applicable site condition standards, the borehole and monitoring well identification numbers, sample depths, and sample identification number.

9.1.6 Sediment Data

Not applicable.

9.1.7 Ground Water, Sediment and Soil Maximum Concentration Data

A table of maximum Soil and Ground Water Concentration Data will be created following Site remediation and prior to filing of a RSC if required.

9.2 Figures

9.2.1 Areas of Natural Significance and Water Bodies

There are no areas of natural significance that:

- Include the Phase Two ESA property;
- Are adjacent to the Phase Two ESA property;
- Are located, wholly or partly, on the Phase Two ESA property;
- Are located within 30 metres of the Phase Two ESA property.

There are no water bodies located that:

- Are adjacent to the Phase Two ESA property
- Are located, wholly or partly, on the Phase Two ESA property
- Are located within 30 metres of the Phase Two ESA property.

9.2.2 Property Before Actions Taken to Reduce the Concentrations of Contaminants

Refer to Drawing 2-4 for a plan view of all features relevant to the Phase Two ESA prior to any actions being taken to reduce the concentration of contaminants and prior to completion of an RSC including:

i) Areas where a contaminant is present at a concentration greater than the applicable site condition standards for the contaminant; and

ii) The locations of any buildings, storage tanks, drainage features and fill areas on or under the Phase Two ESA property.

9.2.3 Interpreted Contours of Ground Water Elevations

Refer to Drawing 2-4 showing the monitoring well identification numbers, water elevation at each monitoring well used for contouring, the ground water elevation contour and inferred direction of ground water flow.

9.2.4 Contaminants in Soil before Actions Taken to Reduce the Concentration of Contaminants

Refer to Drawing 2-5 showing the plan view of the Phase Two ESA property that shows the contamination identified on Site, and corresponding boreholes and monitoring well locations.

9.2.5 Contaminants in Ground Water Before Actions Taken to Reduce the Concentration of Contaminants

No ground water contamination was identified at the Site.

9.2.6 Contaminants in Sediment Before Actions Taken to Reduce the Concentration of Contaminants

Not applicable.

9.2.7 Delineation

Refer to Drawing 2-5 showing the plan view of the Phase Two ESA property that shows the contamination identified on Site, and corresponding boreholes and monitoring well locations. The contamination is located in three areas (Area 1, 2 and 3) identified in Drawing 2-5.

9.2.8 Contaminants of Concern in Areas of Potential Environmental Concern

One APEC was identified for the Site and included five locations of known contamination identified during previous investigations in 2006 and 2012, as such refer to Section 6.5 and 6.6 and Drawing 2-5 showing the plan view of the Phase Two ESA property that shows the contamination identified on Site, and corresponding boreholes and monitoring well locations.

Ground water contamination was not encountered on Site.

10. APPENDICES

10.1 General

Appendices A to C are appended and form part of this report.

10.1.1 Sampling and Analysis Plan

The Geoenvironmental Field Instruction Sheet/Sampling and Analysis Plans are included in Appendix B.

10.1.2 Finalized Field Logs

Geologic descriptions of the soil samples are provided on the appended Log of Borehole/Monitoring Well Sheets (BH/MW101, BH/MW102 and BH/MW103) and Log of Borehole Sheets (BH104 through BH113).

10.1.3 Certificates of Analysis or Analytical Reports from Laboratories

A copy of the AGAT Laboratories Limited Certificates of Analysis is included in Appendix C.

10.1.4 Residue Management

Permits and approvals from municipal, provincial or federal governments or agencies were not required for this project.

10.1.5 Survey of Phase Two Property

A signed and sealed survey of the Phase Two Property will be completed and appended prior to filing a RSC.

10.2 Remediation

Remediation was not completed at the time of the issuance of this report.

10.3 Soil Excavated at or Brought to the Phase Two Property

Not applicable.

10.4 Modified Generic Risk Assessment

Not applicable.

TABLE 1A

Site Sensitivity Analysis
Site Condition Standards, Environmentally Sensitive Areas
Section 41, Ontario Regulation 153/04, as amended

Criteria	Decision for the Subject Site
41. (1) This section applies in relation to a property if,	
(a) the property is within an area of natural significance, includes or is adjacent to an area of natural significance or part of such an area, or includes land that is within 30 m of an area of natural significance or part of such area;	No
(b) the soil at the property has a pH value as follows: (i) for surface soil, less than 5 or greater than 9, (ii) for subsurface soil, less than 5 or greater than 11;	No
(c) a qualified person is of the opinion that, given the characteristics of the property and the certifications the qualified person would be required to make in a record of site condition in relation to the property as specified in Schedule A, it is appropriate to apply this section to the property.	No

In Section 41 (1) (a) above, "area of natural significance" means any of the following:

1. A provincial park designated by a regulation under the *Provincial Parks Act.*
2. A conservation reserve established under the *Public Lands Act.*
3. An area of natural and scientific interest (life science) identified by the Ministry of Natural Resources as having provincial significance.
4. A wetland identified by the Ministry of Natural Resources as having provincial significance.
5. An area designated by a municipality in its official plan as environmentally significant, however expressed, including designations of areas as environmentally sensitive, as being of environmental concern and as being ecologically significant.
6. An area designated as an escarpment natural area or an escarpment protection area by the Niagara Escarpment Plan under the *Niagara Escarpment Planning and Development Act.*
7. A habitat of endangered or threatened species identified by the Ministry of Natural Resources.
8. Property within an area designated as a natural core area or natural linkage area within the area to which the Oak Ridges Moraine Conservation Plan under the *Oak Ridges Moraine Conservation Act, 2001.*

TABLE 1B

Site Condition Standards, Shallow Soil or Water Body
Section 43.1, Ontario Regulation 153/04, as amended

Criteria	Decision for the Subject Site
43.1. (1) This section applies in relation to a property if,	
(a) the property is a shallow soil property; or	No
(b) the property includes all or part of a water body or is adjacent to a water body or includes land that is within 30 metres of a water body.	No
(c) a qualified person is of the opinion that, given the characteristics of the property and the certifications the qualified person would be required to make in a record of site condition in relation to the property as specified in Schedule A, it is appropriate to apply this section to the property.	No

In Section 43.1 (1) (a) above:

"shallow soil property" means a property of which 1/3 or more of the area consists of soil equal to or less than 2 metres in depth beneath the soil surface, excluding any non-soil surface treatment such as asphalt, concrete or aggregate;

"soil" means, for the purposes of the definition of shallow soil property, unconsolidated naturally occurring mineral particles and other naturally occurring material resulting from the natural breakdown of rock or organic matter by physical, chemical or biological processes that are smaller than 2 millimetres in size or that pass the US #10 sieve, and includes a mixture of soil and rock if less than 50 per cent by mass of the mixture is rock. O. Reg. 511/09, s. 21.

TABLE 2

Summary of Samples Submitted for Chemical Testing

Location	Sample ID	Approx. Depth (m)	Description	Type of Chemical Analysis
Soil				
Borehole/ Monitoring Well 101	BH/MW101 SS2B	0.8 – 1.4	Reddish brown clay Fill, becoming black at bottom 0.05 m, trace sand and gravel	Metals and inorganics PHC Fractions F1 to F4 VOCs
Borehole/ Monitoring Well 102	BH/MW102 SS1	0.0 – 0.6	Compact brown silty sand topsoil fill, trace gravel; occasional asphalt pieces	Metals and inorganics
Borehole/ Monitoring Well 103	BH/MW103 SS1	0.0 – 0.6	Very loose, brown silty sand topsoil fill, trace clay	Metals and inorganics
Borehole 104	BH104 SS1B	0.2 – 0.6	Brown sand and gravel fill, trace clay	Metals and Inorganics PHC Fractions F1 to F4 VOCs
Borehole 105	BH105 SS3	1.5 – 2.1	Hard reddish brown silty clay till, trace sand and gravel	PHC Fractions F1 to F4 VOCs
Borehole 107	BH107 SS1A	0.0 – 0.3	Compact brown sand and gravel fill	Metals and inorganics
Borehole 108	BH108 SS2	0.8 – 1.4	Hard brown sandy silt till, trace clay and gravel; occasional red and grey shale fragments	Metals and Inorganics PHC Fractions F1 to F4 VOCs
Borehole 109	BH109 SS4	2.3 – 2.9	Hard light brown sandy silt till, trace clay and gravel; occasional red and grey shale fragments	Metals and Inorganics PHC Fractions F1 to F4 VOCs
Borehole 110	BH110 AS1	0.0 – 0.3	Dark brown/black sand and gravel fill	PHC Fractions F1 to F4 VOCs
Borehole 111	BH111 AS1A	0.0 – 0.2	Dark brown/black sand and gravel fill	PHC Fractions F1 to F4 VOCs

TABLE 2

Summary of Samples Submitted for Chemical Testing

Location	Sample ID	Approx. Depth (m)	Description	Type of Chemical Analysis
Borehole 112	BH112 AS1	0.0 – 0.3	Dark brown/black sand and gravel fill	Metals and Inorganics PHC Fractions F1 to F4 VOCs
Borehole 113	BH113 AS1	0.0 – 0.3	Greyish brown silty sand and gravel fill, trace silt	Metals and Inorganics PHC Fractions F1 to F4 VOCs
Borehole 109	DUPLICATE 1 (BH109 SS4)	2.3 – 2.9	Hard light brown sandy silt till, trace clay and gravel; occasional red and grey shale fragments	Metals and Inorganics PHC Fractions F1 to F4 VOCs
West Side of Stockpile	GS1	-	Brown topsoil mixed fill	Free Cyanide
East Side of Stockpile	GS2	-	Brown topsoil mixed fill	Free Cyanide
Ground Water				
Borehole/ Monitoring Well 101	BH/MW101	Screened 2.1 – 5.2	Reddish brown, silty, no odours or sheens	Metals and inorganics PHC Fractions F1 to F4 VOCs
Borehole/ Monitoring Well 102	BH/MW102	Screened 2.1 – 5.2	Reddish brown, silty, no odours or sheens	Metals and inorganics PHC Fractions F1 to F4 VOCs
Borehole/ Monitoring Well 103	BH/MW103	Screened 2.1 – 5.2	Reddish brown, silty, no odours or sheens	Metals and inorganics PHC Fractions F1 to F4 VOCs
Borehole/ Monitoring Well 103	BH/MW103 (DUPLICATE A)	Screened 2.1 – 5.2	Reddish brown, silty, no odours or sheens	Metals and inorganics PHC Fractions F1 to F4 VOCs

TABLE 2

Summary of Samples Submitted for Chemical Testing

Location	Sample ID	Approx. Depth (m)	Description	Type of Chemical Analysis
Quality Control				
TRIP BLANK	TRIP BLANK	--	AGAT Sample ID: 4179210	VOCs
Waste Characterization				
Borehole 101, Borehole 104 and Borehole 105	TCLP (composite of BH101 SS2B, BH104 SS2A and BH105 SS1B)	-	FILL: reddish brown silty clay fill, brown sand and gravel fill, trace clay, reddish brown clay fill, trace sand and gravel; occasional pieces of charcoal.	TCLP Metals and Inorganics TCLP VOCs TCLP PCBs Ignitability

Note:
PHC – Petroleum Hydrocarbon
VOCs – Volatile Organic Compounds
PCBs – Polychlorinated Biphenyls

Table 3

Summary of Ground Water Data

Location	Elevation of Ground Surface (m)	Screened Interval (Elevations) (m) Top to Bottom	Approx. Depth of Well (m)	Depth to Ground Water (metres below ground surface) March 7, 2013	Ground Water Elevation (m) March 7, 2013
BH/MW101	98.7	1.2 to 5.2 97.5 to 93.5	8.2	0.7	98.0
BH/MW102	99.4	1.4 to 5.2 98.0 to 94.2	8.2	0.5	98.9
BH/MW103	100.1	1.7 to 5.2 98.4 to 94.9	8.2	1.4	98.6

Table 4: Metals and Inorganics in Soil

Results of Chemical Testing Compared to the Table 3 Standards for Residential/Parkland/Institutional Property Use

Sample ID				BH/MW 101 SS2B	BH/MW 102 SS1	BH/MW 103 SS1	BH 104 SS1B	BH 107 SS1A	BH 108 SS2	BH 109 SS4	BH 112 AS1
Depth (At the Time of Sampling)				0.8 - 1.4 m	0.0 - 0.6 m	0.0 - 0.6 m	0.2 - 0.6 m	0.0 - 0.3 m	0.8 - 1.4 m	2.3 - 2.9 m	0.0 - 0.3 m
Sample Date (Year/Month/Day)				2013-03-05	2013-03-04	2013-03-05	2013-03-04	2013-03-04	2013-03-05	2013-03-05	2013-03-05
Description				Clay till	Silty sand topsoil fill	Silty sand topsoil fill	Sand and gravel fill	Sand and gravel fill	Silty clay fill	Sandy silt till	Sand and gravel fill
Contaminant	Table 3 RPI SCS	Unit	RDL	4174583	4174592	4174596	4174599	4174604	4174605	4174611	4174620
Antimony	7.5	µg/g	0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Arsenic	18	µg/g	1	6	4	5	9	6	5	5	6
Barium	390	µg/g	2	82	35	57	37	48	88	79	42
Beryllium	(5) 4	µg/g	0.5	0.8	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	<0.5
Boron (Hot Water Extractable)	1.5	µg/g	0.10	0.32	1.25	0.45	0.21	0.77	0.14	0.15	1.31
Boron (Total)	120	µg/g	5	9	8	6	9	13	7	<5	9
Cadmium	1.2	µg/g	0.5	<0.5	<0.5	<0.5	<0.5	1.7	<0.5	<0.5	1.6
Chromium (Total)	160	µg/g	2	22	17	19	14	85	20	7	20
Chromium, Hexavalent	(10) 8	µg/g	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cobalt	22	µg/g	0.5	12.0	3.7	7.4	4.7	5.9	11.2	5.0	3.9
Copper	(180) 140	µg/g	1	41	18	21	20	38	28	19	29
Cyanide, Free	0.051	µg/g	0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
Electrical Conductivity	0.7	mS/cm	0.005	0.346	0.277	0.161	0.281	0.209	0.199	0.137	0.310
Lead	120	µg/g	1	14	18	21	40	88	11	6	99
Mercury	(1.8) 0.27	µg/g	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Molybdenum	6.9	µg/g	0.5	1.0	0.8	0.6	1.2	2.7	<0.5	<0.5	2.2
Nickel	(130) 100	µg/g	1	26	7	16	7	14	23	8	10
pH	See Note[1]	pH Units	NA	7.30	7.63	7.59	8.16	7.97	7.71	8.12	8.21
Selenium	2.4	µg/g	0.4	<0.4	0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Silver	(25) 20	µg/g	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Sodium Adsorption Ratio	5	NA	N/A	1.22	0.157	0.142	0.477	0.41	0.42	0.29	0.718
Thallium	1	µg/g	0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Uranium	23	µg/g	0.5	0.9	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	<0.5
Vanadium	86	µg/g	1	30	17	21	15	49	26	10	15
Zinc	340	µg/g	5	68	53	110	126	238	54	27	330

Comments:
RDL - Reported Detection Limit
"( )" = Standard in bracket applies to medium and fine textured soils
"<" = Less than
"-" - Not Analyzed
NL - Not Listed
NV - No Value Provided in Standards
NA - Not Applicable
[1] pH 5 to 9 when soils are less than 1.5 m deep
pH 5 to 11 when soils are greater than 1.5 m deep
Red Fill Entries exceed the 2011 Table 3 Standards

Table 4: Metals and Inorganics in Soil

Results of Chemical Testing Compared to the Table 3 Standards for Residential/Parkland/Institutional Property Use

Sample ID				BH 113 AS1	DUP 1	GS1	GS2
Depth (At the Time of Sampling)				0.0 - 0.3 m	2.3 - 2.9 m	NA	NA
Sample Date (Year/Month/Day)				2013-03-05	2013-03-05	2013-03-07	2013-03-07
Description				Sand and gravel fill	Sandy silt till	Stockpile Fill	Stockpile Fill
Contaminant	Table 3 RPI SCS	Unit	RDL	4174624	4174628	4179214	4179215
Antimony	7.5	ug/g	0.8	<0.8	<0.8	-	-
Arsenic	18	ug/g	1	8	4	-	-
Barium	390	ug/g	2	39	74	-	-
Beryllium	(5) 4	ug/g	0.5	<0.5	<0.5	-	-
Boron (Hot Water Extractable)	1.5	ug/g	0.10	0.72	0.12	-	-
Boron (Total)	120	ug/g	5	10	<5	-	-
Cadmium	1.2	ug/g	0.5	0.5	<0.5	-	-
Chromium (Total)	160	ug/g	2	9	7	-	-
Chromium, Hexavalent	(10) 8	ug/g	0.2	<0.2	<0.2	-	-
Cobalt	22	ug/g	0.5	3.6	4.9	-	-
Copper	(180) 140	ug/g	1	15	21	-	-
Cyanide, Free	0.051	ug/g	0.040	<0.040	<0.040	<0.040	<0.040
Electrical Conductivity	0.7	mS/cm	0.005	0.45	0.134	-	-
Lead	120	ug/g	1	66	6	-	-
Mercury	(1.8) 0.27	ug/g	0.10	<0.10	<0.10	-	-
Molybdenum	6.9	ug/g	0.5	1.1	<0.5	-	-
Nickel	(130) 100	ug/g	1	5	8	-	-
pH	See Note[1]	pH Units	NA	8.35	8.18	-	-
Selenium	2.4	ug/g	0.4	<0.4	<0.4	-	-
Silver	(25) 20	ug/g	0.2	<0.2	<0.2	-	-
Sodium Adsorption Ratio	5	NA	N/A	0.73	0.29	-	-
Thallium	1	ug/g	0.4	<0.4	<0.4	-	-
Uranium	23	ug/g	0.5	<0.5	<0.5	-	-
Vanadium	86	ug/g	1	9	10	-	-
Zinc	340	ug/g	5	115	26	-	-

Comments:
RDL - Reported Detection Limit
"( )" = Standard in bracket applies to medium and fine textured soils
"<" = Less than
"-" - Not Analyzed
NL - Not Listed
NV - No Value Provided in Standards
NA - Not Applicable

[1] pH 5 to 9 when soils are less than 1.5 m deep
pH 5 to 11 when soils are greater than 1.5 m deep

Red Fill Entries exceed the 2011 Table 3 Standards

Table 5: Volatile Organic Compounds (VOCs) in Soil

Results of Chemical Testing Compared to the Table 3 Standards for Residential/Parkland/Institutional Property Use

Sample ID				BH/MW 101 SS2B	BH 104 SS1B	BH 105 SS3	BH 108 SS2	BH 109 SS4	BH 110 AS1	BH 111 AS1A	BH 112 AS1
Depth (At the Time of Sampling)				0.8 - 1.4 m	0.2 - 0.6 m	1.5 - 2.1 m	0.8 - 1.4 m	2.3 - 2.9 m	0.0 - 0.3 m	0.0 - 0.2	0.0 - 0.3 m
Sample Date (Year/Month/Day)				2013-03-05	2013-03-04	2013-03-05	2013-03-05	2013-03-05	2013-03-05	2013-03-05	2013-03-05
Description				Clay till	Sand and gravel fill	Silty clay till	Silty clay fill	Sandy silt till	Sand and gravel fill	Sand and gravel fill	Sand and gravel fill
Contaminant	Table 3 RPI SCS	Unit	RDL	4174583	4174599	3252035	4174605	4174611	4174614	4174618	4174620
Acetone	(28) 16	µg/g	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Benzene	(0.17) 0.21	µg/g	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Bromodichloromethane	13	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Bromoform	(0.26) 0.27	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Bromomethane	0.05	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Carbon Tetrachloride	(0.12) 0.05	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorobenzene	(2.7) 2.4	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Chloroform	(0.18) 0.05	µg/g	0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Dibromochloromethane	9.4	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1,2-Dichlorobenzene	(4.3) 3.4	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1,3-Dichlorobenzene	(6) 4.8	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1,4-Dichlorobenzene	(0.097) 0.083	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Dichlorodifluoromethane	(25) 16	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1,1-Dichloroethane	(11) 3.5	µg/g	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
1,2- Dichloroethane	0.05	µg/g	0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
1,1-Dichloroethylene	0.05	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
CIS-1,2-Dichloroethylene	(30) 3.4	µg/g	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
TRANS-1,2-Dichloroethylene	(0.75) 0.084	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1,2-Dichloropropane	(0.085) 0.05	µg/g	0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
1,3-Dichloropropene (Cis + Trans)	(0.083) 0.05	µg/g	0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Ethylbenzene	(15) 2	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Ethylene Dibromide	0.05	µg/g	0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
n-Hexane	(34) 2.8	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Methyl Ethyl Ketone (MEK)	(44) 16	µg/g	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Methyl Isobutyl Ketone	(4.3) 1.7	µg/g	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Methyl tert-butyl Ether (MTBE)	(1.4) 0.75	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Methylene Chloride	(0.96) 0.1	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Styrene	(2.2) 0.7	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1,1,1,2-Tetrachloroethane	(0.05) 0.058	µg/g	0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
1,1,2,2- Tetrachloroethane	0.05	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Tetrachloroethylene	(2.3) 0.28	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Toluene	(6) 2.3	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1,1,1-Trichloroethane	(3.4) 0.38	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1,1,2-Trichloroethane	0.05	µg/g	0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Trichloroethylene	(0.52) 0.061	µg/g	0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Trichlorofluoromethane	(5.8) 4	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Vinyl Chloride	(0.022) 0.02	µg/g	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Xylene Mixture (Total)	(25) 3.1	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

Comments:
RDL - Reported Detection Limit
"( )" = Standard in bracket applies to medium and fine textured soils
"<" = Less than
"-" - Not Analyzed
NL - Not Listed
NV - No Value Provided in Standards
NA - Not Applicable

Table 5: Volatile Organic Compounds (VOCs) in Soil

Results of Chemical Testing Compared to the Table 3 Standards for Residential/Parkland/Institutional Property Use

Sample ID				BH 113 AS1	DUP 1
Depth (At the Time of Sampling)				0.0 - 0.3 m	2.3 - 2.9 m
Sample Date (Year/Month/Day)				2013-03-05	2013-03-05
Description				Sand and gravel fill	Sandy silt till
Contaminant	Table 3 RPI SCS	Unit	RDL	4174624	4174628
Acetone	(28) 16	µg/g	0.50	<0.50	<0.50
Benzene	(0.17) 0.21	µg/g	0.02	<0.02	<0.02
Bromodichloromethane	13	µg/g	0.05	<0.05	<0.05
Bromoform	(0.26) 0.27	µg/g	0.05	<0.05	<0.05
Bromomethane	0.05	µg/g	0.05	<0.05	<0.05
Carbon Tetrachloride	(0.12) 0.05	µg/g	0.05	<0.05	<0.05
Chlorobenzene	(2.7) 2.4	µg/g	0.05	<0.05	<0.05
Chloroform	(0.18) 0.05	µg/g	0.04	<0.04	<0.04
Dibromochloromethane	9.4	µg/g	0.05	<0.05	<0.05
1,2-Dichlorobenzene	(4.3) 3.4	µg/g	0.05	<0.05	<0.05
1,3-Dichlorobenzene	(6) 4.8	µg/g	0.05	<0.05	<0.05
1,4-Dichlorobenzene	(0.097) 0.083	µg/g	0.05	<0.05	<0.05
Dichlorodifluoromethane	(25) 16	µg/g	0.05	<0.05	<0.05
1,1-Dichloroethane	(11) 3.5	µg/g	0.02	<0.02	<0.02
1,2- Dichloroethane	0.05	µg/g	0.03	<0.03	<0.03
1,1-Dichloroethylene	0.05	µg/g	0.05	<0.05	<0.05
CIS-1,2-Dichloroethylene	(30) 3.4	µg/g	0.02	<0.02	<0.02
TRANS-1,2-Dichloroethylene	(0.75) 0.084	µg/g	0.05	<0.05	<0.05
1,2-Dichloropropane	(0.085) 0.05	µg/g	0.03	<0.03	<0.03
1,3-Dichloropropene (Cis + Trans)	(0.083) 0.05	µg/g	0.04	<0.04	<0.04
Ethylbenzene	(15) 2	µg/g	0.05	<0.05	<0.05
Ethylene Dibromide	0.05	µg/g	0.04	<0.04	<0.04
n-Hexane	(34) 2.8	µg/g	0.05	<0.05	<0.05
Methyl Ethyl Ketone (MEK)	(44) 16	µg/g	0.50	<0.50	<0.50
Methyl Isobutyl Ketone	(4.3) 1.7	µg/g	0.50	<0.50	<0.50
Methyl tert-butyl Ether (MTBE)	(1.4) 0.75	µg/g	0.05	<0.05	<0.05
Methylene Chloride	(0.96) 0.1	µg/g	0.05	<0.05	<0.05
Styrene	(2.2) 0.7	µg/g	0.05	<0.05	<0.05
1,1,1,2-Tetrachloroethane	(0.05) 0.058	µg/g	0.04	<0.04	<0.04
1,1,2,2- Tetrachloroethane	0.05	µg/g	0.05	<0.05	<0.05
Tetrachloroethylene	(2.3) 0.28	µg/g	0.05	<0.05	<0.05
Toluene	(6) 2.3	µg/g	0.05	<0.05	<0.05
1,1,1-Trichloroethane	(3.4) 0.38	µg/g	0.05	<0.05	<0.05
1,1,2-Trichloroethane	0.05	µg/g	0.04	<0.04	<0.04
Trichloroethylene	(0.52) 0.061	µg/g	0.03	<0.03	<0.03
Trichlorofluoromethane	(5.8) 4	µg/g	0.05	<0.05	<0.05
Vinyl Chloride	(0.022) 0.02	µg/g	0.02	<0.02	<0.02
Xylene Mixture (Total)	(25) 3.1	µg/g	0.05	<0.05	<0.05

Comments:
RDL - Reported Detection Limit
"( )" = Standard in bracket applies to medium and fine textured soils
"<" = Less than
"-" - Not Analyzed
NL - Not Listed
NV - No Value Provided in Standards
NA - Not Applicable

Table 6: Petroleum Hydrocarbon (PHC) Concentrations in Soil

Results of Chemical Testing Compared to the Table 3 Standards for Residential/Parkland/Institutional Property Use

Sample ID				BH/MW 101 SS2B	BH 104 SS1B	BH 105 SS3	BH 108 SS2	BH 109 SS4	BH 110 AS1	BH 111 AS1A	BH 112 AS1
Depth (At the Time of Sampling)				0.8 - 1.4 m	0.2 - 0.6 m	1.5 - 2.1 m	0.8 - 1.4 m	2.3 - 2.9 m	0.0 - 0.3 m	0.0 - 0.2	0.0 - 0.3 m
Sample Date (Year/Month/Day)				2013-03-05	2013-03-04	2013-03-05	2013-03-05	2013-03-05	2013-03-05	2013-03-05	2013-03-05
Description				Clay till	Sand and gravel fill	Silty clay till	Silty clay fill	Sandy silt till	Sand and gravel fill	Sand and gravel fill	Sand and gravel fill
Contaminant	Table 3 RPI SCS	Unit	RDL	4174583	4174599	3252035	4174605	4174611	4174614	4174618	4174620
F1 (C6 to C10)	NV	µg/g	5	<5	<5	<5	<5	<5	<5	<5	<5
F1 (C6 to C10) minus BTEX	55	µg/g	5	<5	<5	<5	<5	<5	<5	<5	<5
F2 (C10 to C16)	98	µg/g	10	<10	<10	<10	<10	<10	<10	<10	<10
F3 (C16 to C34)	300	µg/g	50	<50	190	<50	<50	<50	550	250	2400
F4 (C34 to C50)	2800	µg/g	50	<50	250	<50	<50	<50	370	330	1800
Gravimetric Heavy Hydrocarbons	2800	µg/g	50	NA	NA	NA	NA	NA	NA	NA	NA

Sample ID				BH 113 AS1	DUP 1
Depth (At the Time of Sampling)				0.0 - 0.3 m	2.3 - 2.9 m
Sample Date (Year/Month/Day)				2013-03-05	2013-03-05
Description				Sand and gravel fill	Sandy silt till
Contaminant	Table 3 RPI SCS	Unit	RDL	4174624	4174628
F1 (C6 to C10)	NV	µg/g	5	<5	<5
F1 (C6 to C10) minus BTEX	55	µg/g	5	<5	<5
F2 (C10 to C16)	98	µg/g	10	<10	<10
F3 (C16 to C34)	300	µg/g	50	170	<50
F4 (C34 to C50)	2800	µg/g	50	100	<50
Gravimetric Heavy Hydrocarbons	2800	µg/g	50	NA	NA

Comments:
RDL - Reported Detection Limit
"( )" = Standard in bracket applies to medium and fine textured soils
"<" = Less than
"-" - Not Analyzed
NL - Not Listed
NV - No Value Provided in Standards
NA - Not Applicable
Red Fill Entries exceed the 2011 Table 3 Standards

Table 7: Metals and Inorganics in Ground Water

Results of Chemical Testing Compared to the Table 3 Non-Potable Ground Water Standards

Sample ID				BH/MW101	BH/MW102		BH/MW103	DUPLICATE A
Screened Interval (Depth Below Ground Surface)				2.1 - 5.2	2.1 - 5.2		2.1 - 5.2	2.1 - 5.2
Sample Date (Year/Month/Day)				2013-03-07	2013-03-07		2013-03-07	2013-03-07
Contaminant	Table 3 SCS	Unit	RDL	4180699	4180710	RDL	4180719	4180728
Antimony	20,000	µg/L	0.5	<0.5	<0.5	0.5	<0.5	<0.5
Arsenic	1,900	µg/L	1.0	1.5	1.3	1.0	1.7	1.6
Barium	29,000	µg/L	2.0	70.4	92.5	2.0	73.2	73.1
Beryllium	67	µg/L	0.5	<0.5	<0.5	0.5	<0.5	<0.5
Boron	45,000	µg/L	10.0	60.3	462	10.0	300	302
Cadmium	2.7	µg/L	0.2	<0.2	<0.2	0.2	<0.2	<0.2
Chloride	2,300,000	µg/L	100	188,000	110,000	200	424,000	413,000
Chromium	810	µg/L	2.0	5.5	4.2	2.0	9.8	8.2
Chromium VI	140	µg/L	5	<5	<5	5	<5	<5
Cobalt	66	µg/L	0.5	1.6	2.3	0.5	3.9	3.9
Copper	87	µg/L	1.0	2.8	13.7	1.0	6.9	6.9
Cyanide, Free	66	µg/L	2	<2	<2	2	<2	<2
Electrical Conductivity	NA	uS/cm	2	1800	1,790	2	2,930	2,890
Lead	25	µg/L	0.5	<0.5	<0.5	0.5	<0.5	<0.5
Mercury	(2.8) 0.29	µg/L	0.02	<0.02	<0.02	0.02	<0.02	<0.02
Molybdenum	9,200	µg/L	0.5	21.3	6.9	0.5	8.5	8.8
Nickel	490	µg/L	1.0	6.8	13.5	1.0	15.1	14.7
pH	--	pH Units	NA	7.99	7.71	NA	7.80	7.76
Selenium	63	µg/L	1.0	<1.0	<1.0	1.0	<1.0	<1.0
Silver	1.5	µg/L	0.2	<0.2	<0.2	0.2	<0.2	<0.2
Sodium	2,300,000	µg/L	500	131,000	72,200	500	481,000	459,000
Thallium	510	µg/L	0.3	<0.3	<0.3	0.3	<0.3	<0.3
Uranium	420	µg/L	0.5	10.3	7.8	0.5	13.5	13.3
Vanadium	250	µg/L	0.4	1.0	0.9	0.4	1.8	2.0
Zinc	1,100	µg/L	5.0	7.1	<5.0	5.0	<5.0	<5.0

Comments:
RDL - Reported Detection Limit
"( )" = Standard in bracket applies to medium and fine textured soils
"<" = Less than
"-" - Not Analyzed
NL - Not Listed
NV - No Value Provided in Standards
NA - Not Applicable

Table 8: Volatile Organic Compounds (VOCs) in Ground Water

Results of Chemical Testing Compared to the Table 3 Non-Potable Ground Water Standards

Sample ID				BH/MW101	Trip Blank		BH/MW102	BH/MW103	DUPLICATE A
Screened Interval (Depth Below Ground Surface)				2.1 - 5.2	NA		2.1 - 5.2	2.1 - 5.2	2.1 - 5.2
Sample Date (Year/Month/Day)				2013-03-07	2013-03-07		2013-03-07	2013-03-07	2013-03-07
Contaminant	Table 3 SCS	Unit	RDL	4180699	4179210	RDL	4180710	4180719	4180728
Acetone	130,000	ug/L	1.0	<1.0	<1.0	2.0	<2.0	<2.0	<2.0
Benzene	(430) 44	ug/L	0.20	0.3	<0.20	0.40	<0.40	<0.40	<0.40
Bromodichloromethane	85,000	ug/L	0.20	<0.20	<0.20	0.40	<0.40	<0.40	<0.40
Bromoform	(770) 380	ug/L	0.10	<0.10	<0.10	0.20	<0.20	<0.20	<0.20
Bromomethane	(56) 5.6	ug/L	0.20	<0.20	<0.20	0.40	<0.40	<0.40	<0.40
Carbon Tetrachloride	(8.4) 0.79	ug/L	0.20	<0.20	<0.20	0.40	<0.40	<0.40	<0.40
Chlorobenzene	630	ug/L	0.10	<0.10	<0.10	0.20	<0.20	<0.20	<0.20
Chloroform	(22) 2.4	ug/L	0.20	<0.20	<0.20	0.40	<0.40	<0.40	<0.40
Dibromochloromethane	82,000	ug/L	0.10	<0.10	<0.10	0.20	<0.20	<0.20	<0.20
1,3-Dichlorobenzene	9,600	ug/L	0.10	<0.10	<0.10	0.20	<0.20	<0.20	<0.20
1,4-Dichlorobenzene	(67) 8	ug/L	0.10	<0.10	<0.10	0.20	<0.20	<0.20	<0.20
1,2-Dichlorobenzene	(9,600) 4,600	ug/L	0.10	<0.10	<0.10	0.20	<0.20	<0.20	<0.20
Dichlorodifluoromethane	4,400	ug/L	0.20	<0.20	<0.20	0.40	<0.40	<0.40	<0.40
1,1-Dichloroethane	(3,100) 320	ug/L	0.30	<0.30	<0.30	0.60	<0.60	<0.60	<0.60
1,2-Dichloroethane	(12) 1.6	ug/L	0.20	<0.20	<0.20	0.40	<0.40	<0.40	<0.40
1,1-Dichloroethylene	(17) 1.6	ug/L	0.30	<0.30	<0.30	0.60	<0.60	<0.60	<0.60
cis-1,2-Dichloroethylene	(17) 1.6	ug/L	0.20	<0.20	<0.20	0.40	<0.40	<0.40	<0.40
trans-1,2-Dichloroethylene	(17) 1.6	ug/L	0.20	<0.20	<0.20	0.40	<0.40	<0.40	<0.40
1,2-Dichloropropane	(140) 16	ug/L	0.20	<0.20	<0.20	0.40	<0.40	<0.40	<0.40
1,3-Dichloropropene (Cis + Trans)	(45) 5.2	ug/L	0.30	<0.30	<0.30	0.60	<0.60	<0.60	<0.60
Ethylbenzene	2,300	ug/L	0.10	<0.10	<0.10	0.20	<0.20	<0.20	<0.20
Ethylene Dibromide (1,2-Dibromoethane)	(0.83) 0.25	ug/L	0.10	<0.10	<0.10	0.20	<0.20	<0.20	<0.20
n-Hexane	(520) 51	ug/L	0.20	<0.20	<0.20	0.40	<0.40	<0.40	<0.40
Methyl Ethyl Ketone (2-Butanone)	(1,500,000) 470,000	ug/L	1.0	<1.0	<1.0	2.0	<2.0	<2.0	<2.0
Methyl Isobutyl Ketone (MIBK)	(580,000) 140,000	ug/L	1.0	<1.0	<1.0	2.0	<2.0	<2.0	<2.0
Methyl t-butyl ether (MTBE)	(1,400) 190	ug/L	0.20	<0.20	<0.20	0.40	<0.40	<0.40	<0.40
Methylene Chloride (Dichloromethane)	(5,500) 610	ug/L	0.30	<0.30	<0.30	0.60	<0.60	<0.60	<0.60
Styrene	(9,100) 1,300	ug/L	0.10	<0.10	<0.10	0.20	<0.20	<0.20	<0.20
1,1,1,2-Tetrachloroethane	(28) 3.3	ug/L	0.10	<0.10	<0.10	0.20	<0.20	<0.20	<0.20
1,1,2,2-Tetrachloroethane	(15) 3.2	ug/L	0.10	<0.10	<0.10	0.20	<0.20	<0.20	<0.20
Tetrachloroethylene	(17) 1.6	ug/L	0.20	<0.20	<0.20	0.40	<0.40	<0.40	<0.40
Toluene	18,000	ug/L	0.20	0.36	<0.20	0.40	<0.40	<0.40	<0.40
1,1,1-Trichloroethane	(6,700) 640	ug/L	0.30	<0.30	<0.30	0.60	<0.60	<0.60	<0.60
1,1,2-Trichloroethane	(30) 4.7	ug/L	0.20	<0.20	<0.20	0.40	<0.40	<0.40	<0.40
Trichloroethylene	(17) 1.6	ug/L	0.20	<0.20	<0.20	0.40	<0.40	<0.40	<0.40
Trichlorofluoromethane (FREON 11)	2,500	ug/L	0.40	<0.40	<0.40	0.80	<0.80	<0.80	<0.80
Vinyl Chloride	(1.7) 0.5	ug/L	0.17	<0.17	<0.17	0.34	<0.34	<0.34	<0.34
Xylene Mixture (Total)	4,200	ug/L	0.20	<0.20	<0.20	0.40	<0.40	<0.40	<0.40

Comments:
RDL - Reported Detection Limit
"( )" = Standard in bracket applies to medium and fine textured soils
"<" = Less than
"-" - Not Analyzed
NL - Not Listed
NV - No Value Provided in Standards
NA - Not Applicable

Table 9: Petroleum Hydrocarbons (PHCs) in the Ground Water

Results of Chemical Testing Compared to the Table 3 Non-Potable Ground Water

Sample ID				**BH/MW101**	**BH/MW102**	**BH/MW103**	**DUPLICATE**
Screened Interval (Depth Below Ground Surface)				2.1 - 5.2	2.1 - 5.2	2.1 - 5.2	2.1 - 5.2
Sample Date (Year/Month/Day)				2013-03-07	2013-03-07	2013-03-07	2013-03-07
Contaminant	Table 3 SCS	Unit	RDL	4180699	4180710	4180719	4180728
F1 (C6 to C10)	NL	µg/L	25	<25	<25	<25	<25
F1 (C6 to C10) minus BTEX	750	µg/L	25	<25	<25	<25	<25
F2 (C10 to C16)	150	µg/L	100	<100	<100	<100	<100
F3 (C16 to C34)	500	µg/L	100	<100	<100	<100	<100
F4 (C34 to C50)	500	µg/L	100	<100	<100	<100	<100
Gravimetric Heavy Hydrocarbons	500	µg/L	500	NA	NA	NA	NA

Comments:

BTEX - Benzene, Toluene, Ethylbenzene, Xylenes

PAHs - Polycyclic Aromatic Hydrocarbons

RDL - Reported Detection Limit

"( )" = Standard in bracket applies to medium and fine textured soils

"<" = Less than

"-" - Not Analyzed

NL - Not Listed

NV - No Value Provided in Standards

NA - Not Applicable

LIST OF ABBREVIATIONS

PENETRATION RESISTANCE

Standard Penetration Resistance N: - The number of blows required to advance a standard split spoon sampler 0.3 m into the subsoil. Driven by means of a 63.5 kg hammer falling freely a distance of 0.76 m.

Dynamic Penetration Resistance: - The number of blows required to advance a 51 mm, 60 degree cone, fitted to the end of drill rods, 0.3 m into the subsoil. The driving energy being 475 J per blow.

DESCRIPTION OF SOIL

The consistency of cohesive soils and the relative density or denseness of cohesionless soils are described in the following terms:

CONSISTENCY	N (blows/0.3 m)	c (kPa)	DENSENESS	N (blows/0.3 m)
Very Soft	0 - 2	0 - 12	Very Loose	0 - 4
Soft	2 - 4	12 - 25	Loose	4 - 10
Firm	4 - 8	25 - 50	Compact	10 - 30
Stiff	8 - 15	50 - 100	Dense	30 - 50
Very Stiff	15 - 30	100 - 200	Very Dense	> 50
Hard	> 30	> 200		

WTPL	Wetter Than Plastic Limit
APL	About Plastic Limit
DTPL	Drier Than Plastic Limit

TYPE OF SAMPLE

SS	Split Spoon	TW	Thinwall Open
WS	Washed Sample	TP	Thinwall Piston
SB	Scraper Bucket Sample	OS	Oesterberg Sample
AS	Auger Sample	FS	Foil Sample
CS	Chunk Sample	RC	Rock Core
ST	Slotted Tube Sample		

- PH Sample Advanced Hydraulically
- PM Sample Advanced Manually

SOIL TESTS

Qu	Unconfined Compression	LV	Laboratory Vane
Q	Undrained Triaxial	FV	Field Vane
Qcu	Consolidated Undrained Triaxial	C	Consolidation
Qd	Drained Triaxial		

Peto MacCallum Ltd.
CONSULTING ENGINEERS

LOG OF BOREHOLE/MONITORING WELL NO. 101

METRIC

17T 0596911E
4806990N

1 of 1

PROJECT Halton District School Board Surplus Land
LOCATION Stonehaven Drive, Burlington, Ontario
BORING METHOD Continuous Flight Solid Stem Augers
BORING DATE March 5, 2013
OUR PROJECT NO. 13HX002
ENGINEER M. S. Molodecki
TECHNICIAN S. Murray

ELEV / DEPTH in meters	DESCRIPTION	NUMBER	TYPE	"N" VALUES
99.7 / 0	Ground Surface			
	FILL: Brown sand and gravel fill, damp	1	AS	
97.9 / 0.8	reddish brown silty clay fill, becoming black at bottom 50 mm, trace sand and gravel, damp	2A	SS	8
97.3 / 1.4		2B*	SS	
	CLAY TILL: Very stiff, greyish brown, trace red and grey shale fragments, DTPL	3	SS	24
96.5 / 2.2	becoming hard, reddish brown with iron staining	4	SS	49
95.5 / 3.2	SILT TILL: Hard, reddish brown to brown sandy silt till, trace clay and gravel, damp, occasional grey shale fragments	5A	SS	81/280mm
		5B	SS	
		6	SS	50/130mm
94.2 / 4.5	becoming moist	7	SS	50/80mm
		8	SS	50/150mm
		9	SS	50/130mm
91.1 / 7.6	becoming wet	10	SS	50/130mm
90.5 / 8.2	BOREHOLE TERMINATED AT 8.2 m			

SHEAR STRENGTH kPa
○ UNCONFINED + FIELD VANE
▲/△ POCKET PENETROMETER/TORVANE
50 100 150 200
DYNAMIC CONE PENETRATION ×
STANDARD PENETRATION TEST ●
20 40 60 80

PLASTIC LIMIT w_P — NATURAL MOISTURE CONTENT w — LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30 40

GAS READINGS (ppm): 0 0 0 0 0 0 0 0 0 0 0

REMARKS & GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

Stick-up Well Protector Set in Concrete
Bentonite Seal
Screen
Filter Sand

Upon completion of augering, free water at 3.8 m, cave at 3.8 m

* Sample submitted for chemical testing

Water Level Readings:

Date	Depth(m)	EL.
2012-03-07	0.7	98.0

+7, ×5 : Numbers refer to Sensitivity

20
15 5
10
(%) STRAIN AT FAILURE

Peto MacCallum Ltd.
CONSULTING ENGINEERS

LOG OF BOREHOLE/MONITORING WELL NO. 102

METRIC

17T 0596867E
4807007N

1 of 1

PROJECT Halton District School Board Surplus Land
LOCATION Stonehaven Drive, Burlington, Ontario
BORING METHOD Continuous Flight Solid Stem Augers
BORING DATE March 4, 2013
OUR PROJECT NO. 13HX002
ENGINEER M. S. Molodecki
TECHNICIAN S. Murray

ELEV / DEPTH in meters	DESCRIPTION	NUMBER	TYPE	"N" VALUES	GAS READINGS (ppm)	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
99.4	Ground Surface					
98.7 / 0.7	FILL: Compact brown silty sand topsoil fill, trace gravel, damp; occasional asphalt pieces	1*	SS	13	15	Stick-up Well Protector Set in Concrete Bentonite Seal
	loose brown silty sand fill, trace gravel, moist	2A	SS	9	5	
		2B	SS			
97.9 / 1.5	greyish brown silty clay fill, trace sand and gravel, damp; occasional red and grey shale fragments	3	SS	20	5	
97.3 / 2.1	CLAY TILL: Very stiff, light to reddish brown silty clay till, DTPL	4A	SS	42	0	
	SILT TILL: Hard, brown sandy silt till, trace clay and gravel, damp; with iron staining	4B	SS			Screen
		5	SS	35	0	Filter Sand
		6	SS	50/100mm	0	
94.9 / 4.5	becoming moist; with green and grey shale fragments	7	SS	75/300mm	0	
		8	SS	50/80mm	0	
93.4 / 6.0	becoming reddish brown, wet	9	SS	77/250mm	0	
		10	SS	77/230mm	0	
91.2 / 8.2	BOREHOLE TERMINATED AT 8.2 m					

Upon completion of augering, free water at 3.8 m, no cave

* Sample submitted for chemical testing

Water Level Readings:

Date	Depth(m)	EL.
2012-03-07	0.5	98.9

SHEAR STRENGTH kPa
○ UNCONFINED + FIELD VANE
▲/△ POCKET PENETROMETER/TORVANE
DYNAMIC CONE PENETRATION ×
STANDARD PENETRATION TEST ●
PLASTIC LIMIT w_P NATURAL MOISTURE CONTENT w LIQUID LIMIT w_L
WATER CONTENT (%)

PML - BH LOG GEO/ENV WITH MWS 13HX002 BH LOGS 2013-03-06 SM.GPJ ON_MOT.GDT 5/8/2013 2:19:45 PM

Numbers refer to Sensitivity

(%) STRAIN AT FAILURE

Peto MacCallum Ltd.
CONSULTING ENGINEERS

LOG OF BOREHOLE/MONITORING WELL NO. 103

METRIC

17T 0596911E
4807051N

1 of 1

PROJECT Halton District School Board Surplus Land
LOCATION Stonehaven Drive, Burlington, Ontario
BORING METHOD Continuous Flight Solid Stem Augers
BORING DATE March 5, 2013
OUR PROJECT NO. 13HX002
ENGINEER M. S. Molodecki
TECHNICIAN S. Murray

ELEV / DEPTH in meters	DESCRIPTION	NUMBER	TYPE	"N" VALUES	GAS READINGS (ppm)	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
100.1	Ground Surface					
99.4 / 0.7	FILL: Very loose, brown silty sand topsoil fill, trace clay, damp	1*	SS	1	10	Stick-up Well Protector Set In Concrete
	very soft brown clay fill, some sand, trace gravel, damp; with iron staining	2	SS	2	5	Bentonite Seal
98.4 / 1.7		3A	SS	42	5	
	SILT TILL: Hard, brown sandy silt till, moist	3B	SS		5	
		4	SS	55	0	Screen
97.1 / 3.0	becoming trace to some gravel, some red and grey shale fragments	5	SS	61	0	Filter Sand
		6	SS	50/100mm	6	
		7	SS	90/230mm	0	
94.8 / 5.3	becoming light reddish brown, wet	8	SS	50/100mm	0	
94.1 / 6.0	becoming coarse sand, trace clay and gravel	9	SS	50/130mm	0	
		10	SS	50/100mm		
91.9 / 8.2	BOREHOLE TERMINATED AT 8.2 m					

SHEAR STRENGTH kPa
○ UNCONFINED + FIELD VANE
▲/△ POCKET PENETROMETER/TORVANE
50 100 150 200
DYNAMIC CONE PENETRATION ×
STANDARD PENETRATION TEST ●
20 40 60 80

PLASTIC LIMIT W_P — NATURAL MOISTURE CONTENT W — LIQUID LIMIT W_L
WATER CONTENT (%)
10 20 30 40

ELEVATION SCALE: 100, 99, 98, 97, 96, 95, 94, 93, 92

Upon completion of augering, free water at 3.8 m, no cave

* Sample submitted for chemical testing

Water Level Readings:

Date	Depth(m)	EL.
2012-03-07	1.4	97.9

+ , × : Numbers refer to Sensitivity

20
15 — 5 (%) STRAIN AT FAILURE
10

Peto MacCallum Ltd.
CONSULTING ENGINEERS

LOG OF BOREHOLE NO. 104

METRIC

17T 0596916E
4807009N

1 of 1

PROJECT Halton District School Board Surplus Land
LOCATION Stonehaven Drive, Burlington, Ontario
BORING METHOD Continuous Flight Solid Stem Augers
BORING DATE March 4, 2013
OUR PROJECT NO. 13HX002
GEOSCIENTIST M. S. Molodecki
TECHNICIAN S. Murray

ELEV / DEPTH in meters	DESCRIPTION	STRAT PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" VALUES	ELEVATION SCALE	SHEAR STRENGTH kPa (O UNCONFINED + FIELD VANE; ▲ POCKET PENETROMETER; DYNAMIC CONE PENETRATION / STANDARD PENETRATION TEST ×/●) 50 100 150 200 / 20 40 60 80	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L; WATER CONTENT (%) 10 20 30 40	GAS READINGS ppm	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
99.0	**Ground Surface**									
0.0	FILL: Dense, dark grey/black gravel fill, moist		1A	SS	39				10	
0.2	brown sand and gravel fill, trace clay, damp		1B*	SS					5	
1.0			2A	SS	16	98				
97.6			2B	SS					5	
1.4	SILT TILL: Very stiff, brown clayey silt till, trace gravel, damp; with iron staining and red and grey shale fragments		3	SS	24				0	
2.0						97				
96.8										
2.2	SILT TILL: Hard, brown sandy silt till, trace gravel, moist		4	SS	74/250mm				0	
3.0						96				
95.5			5	SS	78/205mm				0	
3.5	becoming wet									
3.7	BOREHOLE TERMINATED AT 3.7 m									Upon completion of augering, free water at 3.6 m, no cave * Sample submitted for chemical testing
4.0										
5.0										
6.0										
7.0										
8.0										
9.0										
10.0										
11.0										
12.0										
13.0										
14.0										
15.0										

+7, ×5: Numbers refer to Sensitivity

20 / 15 5 / 10 (%) STRAIN AT FAILURE

Peto MacCallum Ltd.
CONSULTING ENGINEERS

LOG OF BOREHOLE NO. 105

METRIC

17T 0596930E
4807034N

1 of 1

PROJECT Halton District School Board Surplus Land
LOCATION Stonehaven Drive, Burlington, Ontario
BORING METHOD Continuous Flight Solid Stem Augers
BORING DATE March 5, 2013
OUR PROJECT NO. 13HX002
GEOSCIENTIST M. S. Molodecki
TECHNICIAN S. Murray

ELEV / DEPTH in meters	DESCRIPTION	STRAT PLOT	SAMPLES NUMBER	TYPE	"N" VALUES	ELEVATION SCALE	SHEAR STRENGTH kPa (O UNCONFINED + FIELD VANE ▲ POCKET PENETROMETER; DYNAMIC CONE PENETRATION / STANDARD PENETRATION TEST ×/●)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L — WATER CONTENT (%)	GAS READINGS ppm	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
99.1	**Ground Surface**						20 40 60 80	10 20 30 40		
0.0 / 0.1	FILL: Compact brown silty sand topsoil fill, damp		1A	SS	12	99			0	
			1B	SS					5	
98.3 / 0.8	reddish brown clay fill, trace sand and gravel, damp; occasional pieces of charcoal		2A	SS	20				0	
			2B	SS		98			0	
97.7 / 1.4	brown sand and crushed limestone gravel fill, damp									
	CLAY TILL: Hard reddish brown silty clay till, trace sand and gravel, DTPL		3*	SS	34				0	
96.9 / 2.2	SILT TILL: Hard brown sandy silt till, trace clay and gravel, moist; occasional shale pieces		4	SS	74/280mm	97		>>	0	
			5	SS	79/250mm	96		>>	0	
95.4 / 3.7	BOREHOLE TERMINATED AT 3.7 m									Upon completion of augering, no free water, no cave * Sample submitted for chemical testing

PML- BH LOG ENV 13HX002 BH LOGS 2013-03-06 SM.GPJ ON_MOT.GDT 5/8/2013 10:27:28 AM

+7, X5: Numbers refer to Sensitivity

(%) STRAIN AT FAILURE

Peto MacCallum Ltd.
CONSULTING ENGINEERS

LOG OF BOREHOLE NO. 106

METRIC

17T 0596910E
4806990N

1 of 1

PROJECT Halton District School Board Surplus Land
LOCATION Stonehaven Drive, Burlington, Ontario
BORING METHOD Continuous Flight Solid Stem Augers
BORING DATE March 4, 2013
OUR PROJECT NO. 13HX002
GEOSCIENTIST M. S. Molodecki
TECHNICIAN S. Murray

ELEV / DEPTH in meters	DESCRIPTION	STRAT PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" VALUES	ELEVATION SCALE	SHEAR STRENGTH kPa (O UNCONFINED + FIELD VANE ▲ POCKET PENETROMETER; DYNAMIC CONE PENETRATION / STANDARD PENETRATION TEST ×/●)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L — WATER CONTENT (%)	GAS READINGS ppm	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
98.7	**Ground Surface**									
0.0	FILL: Compact silty sand topsoil fill, trace gravel, damp		1	SS	14	98			10	
98.0										
0.7	CLAY TILL: Very stiff to hard brown silty clay till, trace to some gravel, DTPL		2	SS	20				5	
			3	SS	30	97			0	
			4	SS	60	96			0	
95.6										
3.1	BOREHOLE TERMINATED AT 3.1 m									Upon completion of augering, no free water, no cave * Sample submitted for chemical testing

SHEAR STRENGTH kPa: 20 40 60 80 (60 100 150 200)
WATER CONTENT (%): 10 20 30 40

PML- BH LOG ENV 13HX002 BH LOGS 2013-03-06 SM.GPJ ON_MOT.GDT 5/8/2013 10:27:32 AM

+7, X5: Numbers refer to Sensitivity

20
15 — 5
10

(%) STRAIN AT FAILURE

Peto MacCallum Ltd.
CONSULTING ENGINEERS

LOG OF BOREHOLE NO. 107

METRIC

17T 0596921E
4806998N

1 of 1

PROJECT Halton District School Board Surplus Land
LOCATION Stonehaven Drive, Burlington, Ontario
BORING METHOD Continuous Flight Solid Stem Augers
BORING DATE March 4, 2013
OUR PROJECT NO. 13HX002
GEOSCIENTIST M. S. Molodecki
TECHNICIAN S. Murray

ELEV / DEPTH in meters	DESCRIPTION	STRAT PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" VALUES	ELEVATION SCALE
98.6 / 0.0	**Ground Surface**					
	FILL: Compact brown sand and gravel fill, moist		1A*	SS	21	
0.3			1B	SS		
	CLAY TILL: Very stiff, reddish brown silty clay till, trace gravel, DTPL		2	SS	19	98
97.5 / 1.3	becoming hard, blackish grey, organic odour		3	SS	21	97
			4	SS	66	
95.8 / 3.0	becoming reddish brown; occasional grey shale fragments		5	SS	50/130mm	96
95.1 / 3.7	BOREHOLE TERMINATED AT 3.7 m					

SHEAR STRENGTH kPa
○ UNCONFINED + FIELD VANE
▲ POCKET PENETROMETER
50 100 150 200
DYNAMIC CONE PENETRATION ×
STANDARD PENETRATION TEST ●
20 40 60 80

PLASTIC LIMIT w_P — NATURAL MOISTURE CONTENT w — LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30 40

GAS READINGS ppm	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
0	
0	
0	
0	
0	
0	

Upon completion of augering, no free water, no cave

* Sample submitted for chemical testing

PML- BH LOG ENV 13HX002 BH LOGS 2013-03-06 SM.GPJ ON_MOT.GDT 5/8/2013 10:27:36 AM

+7, ×5 : Numbers refer to Sensitivity

20
15 — 5
10

(%) STRAIN AT FAILURE

Peto MacCallum Ltd.
CONSULTING ENGINEERS

LOG OF BOREHOLE NO. 108

METRIC

17T 0596990E
4807083N

1 of 1

PROJECT Halton District School Board Surplus Land
LOCATION Stonehaven Drive, Burlington, Ontario
BORING METHOD Continuous Flight Solid Stem Augers
BORING DATE March 4, 2013
OUR PROJECT NO. 13HX002
GEOSCIENTIST M. S. Molodecki
TECHNICIAN S. Murray

ELEV / DEPTH in meters	DESCRIPTION	STRAT PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" VALUES	ELEVATION SCALE	SHEAR STRENGTH kPa (O UNCONFINED, + FIELD VANE, ▲ POCKET PENETROMETER; DYNAMIC CONE PENETRATION / STANDARD PENETRATION TEST ×)	WATER CONTENT (%) PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L	GAS READINGS ppm	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
98.8 / 0.0	**Ground Surface**									
0.1	FILL: Loose, brown sandy silt topsoil fill, moist		1A	SS	9				5	
	reddish brown silty clay fill, trace sand and gravel, damp; with iron staining		1B	SS					5	
1.0			2*	SS	21	98			5	
97.4 / 1.4	SILT TILL: Hard, brown sandy silt till, trace clay and gravel, damp; occasional red and grey shale fragments		3	SS	34	97			5	
2.0			4	SS	74/280mm				10	
95.8 / 3.0	becoming light brown		5	SS	78/230mm	96			5	
95.1 / 3.7	BOREHOLE TERMINATED AT 3.7 m									Upon completion of augering, no free water, no cave * Sample submitted for chemical testing
4.0										
5.0										
6.0										
7.0										
8.0										
9.0										
10.0										
11.0										
12.0										
13.0										
14.0										
15.0										

+ / ×: Numbers refer to Sensitivity

(%) STRAIN AT FAILURE

Peto MacCallum Ltd.
CONSULTING ENGINEERS

LOG OF BOREHOLE NO. 109

METRIC

17T 0597003E
4807025N

1 of 1

PROJECT Halton District School Board Surplus Land
LOCATION Stonehaven Drive, Burlington, Ontario
BORING METHOD Continuous Flight Solid Stem Augers

BORING DATE March 5, 2013

OUR PROJECT NO. 13HX002
GEOSCIENTIST M. S. Molodecki
TECHNICIAN S. Murray

ELEV / DEPTH in meters	DESCRIPTION	STRAT PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" VALUES	ELEVATION SCALE	SHEAR STRENGTH kPa (O UNCONFINED + FIELD VANE; ▲ POCKET PENETROMETER; DYNAMIC CONE PENETRATION / STANDARD PENETRATION TEST)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L — WATER CONTENT (%)	GAS READINGS ppm	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
98.5	**Ground Surface**						50 100 150 200 / 20 40 60 80	10 20 30 40		
0.0	FILL: Loose, brown sandy silt topsoil till, moist		1A	SS	24				5	
0.2	reddish brown silty clay fill, trace sand and gravel, damp; with iron staining and occasional red brick fragments		1B	SS		98			0	
1.0			2	SS	15				0	
97.1						97				
1.4	SILT TILL: Hard, light brown sandy silt till, trace clay and gravel, damp; occasional red and grey shale fragments		3	SS	22				0	
2.0										
			4*	SS	76	96			0	
3.0										
94.8			5	SS	100/80mm	95			5	
3.7	BOREHOLE TERMINATED AT 3.7 m									Upon completion of augering, no free water, no cave * Sample submitted for chemical testing
4.0										
5.0										
6.0										
7.0										
8.0										
9.0										
10.0										
11.0										
12.0										
13.0										
14.0										
15.0										

+7, ×5 : Numbers refer to Sensitivity

(%) STRAIN AT FAILURE

Peto MacCallum Ltd.
CONSULTING ENGINEERS

LOG OF BOREHOLE NO. 110

METRIC

17T 0596931E
4807017N

1 of 1

PROJECT Halton District School Board Surplus Land
LOCATION Stonehaven Drive, Burlington, Ontario
BORING METHOD Continuous Flight Solid Stem Augers
BORING DATE March 5, 2013
OUR PROJECT NO. 13HX002
GEOSCIENTIST M. S. Molodecki
TECHNICIAN S. Murray

SOIL PROFILE ELEV / DEPTH in meters	DESCRIPTION	STRAT PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" VALUES	ELEVATION SCALE	SHEAR STRENGTH kPa (O UNCONFINED + FIELD VANE ▲ POCKET PENETROMETER; DYNAMIC CONE PENETRATION / STANDARD PENETRATION TEST ×/●)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L — WATER CONTENT (%)	GAS READINGS ppm	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
99.1	**Ground Surface**						50 100 150 200 / 20 40 60 80	10 20 30 40		
0.0	FILL: Dark brown/black silty, sand and gravel fill, damp		1*	AS		99			5	
0.3	BOREHOLE TERMINATED AT 0.3 m									Upon completion of augering, no free water, no cave * Sample submitted for chemical testing

1.0 2.0 3.0 4.0 5.0 6.0 7.0 8.0 9.0 10.0 11.0 12.0 13.0 14.0 15.0

PML- BH LOG ENV 13HX002 BH LOGS 2013-03-06 SM.GPJ ON_MOT.GDT 5/8/2013 10:27:47 AM

+7, ×5 : Numbers refer to Sensitivity

20
15 5 (%) STRAIN AT FAILURE
10

Peto MacCallum Ltd.
CONSULTING ENGINEERS

LOG OF BOREHOLE NO. 111

METRIC

17T 0596841E
4807008N

1 of 1

PROJECT Halton District School Board Surplus Land
LOCATION Stonehaven Drive, Burlington, Ontario
BORING METHOD Continuous Flight Solid Stem Augers
BORING DATE March 5, 2013
OUR PROJECT NO. 13HX002
GEOSCIENTIST M. S. Molodecki
TECHNICIAN S. Murray

ELEV / DEPTH in meters	DESCRIPTION	STRAT PLOT	SAMPLES NUMBER	SAMPLES TYPE	"N" VALUES	GAS READINGS ppm	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
99.5	**Ground Surface**						
0.0	FILL: Dark brown/black silty, sand and gravel fill, damp		1A*	AS		5	
0.2			1B	AS		5	
0.3	reddish brown clay fill, trace sand and gravel, damp						Upon completion of augering, no free water, no cave
	BOREHOLE TERMINATED AT 0.3 m						* Sample submitted for chemical testing

ELEVATION SCALE

SHEAR STRENGTH kPa
○ UNCONFINED + FIELD VANE
▲ POCKET PENETROMETER
50 100 150 200
DYNAMIC CONE PENETRATION ×
STANDARD PENETRATION TEST ●
20 40 60 80

PLASTIC LIMIT W_P — NATURAL MOISTURE CONTENT W — LIQUID LIMIT W_L
WATER CONTENT (%)
10 20 30 40

1.0 2.0 3.0 4.0 5.0 6.0 7.0 8.0 9.0 10.0 11.0 12.0 13.0 14.0 15.0

+7, ×5 : Numbers refer to Sensitivity

20
15 — 5
10
(%) STRAIN AT FAILURE

Peto MacCallum Ltd.
CONSULTING ENGINEERS

LOG OF BOREHOLE NO. 112

METRIC

17T 0596903E
4806981N

1 of 1

PROJECT Halton District School Board Surplus Land
LOCATION Stonehaven Drive, Burlington, Ontario
BORING METHOD Continuous Flight Solid Stem Augers
BORING DATE March 5, 2013
OUR PROJECT NO. 13HX002
GEOSCIENTIST M. S. Molodecki
TECHNICIAN S. Murray

SOIL PROFILE			SAMPLES				SHEAR STRENGTH kPa			GAS READINGS	REMARKS & GRAIN SIZE DISTRIBUTION (%)
ELEV / DEPTH in meters	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES	ELEVATION SCALE	O UNCONFINED + FIELD VANE ▲ POCKET PENETROMETER; DYNAMIC CONE PENETRATION ×; STANDARD PENETRATION TEST ●	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L; WATER CONTENT (%)			
98.9	**Ground Surface**						50 100 150 200				
0.0	FILL: Dark brown/black silty, sand and gravel fill, damp		1*	AS			20 40 60 80	10 20 30 40		ppm	GR SA SI CL
0.3	BOREHOLE TERMINATED AT 0.3 m									0	Upon completion of augering, no free water, no cave * Sample submitted for chemical testing

1.0 2.0 3.0 4.0 5.0 6.0 7.0 8.0 9.0 10.0 11.0 12.0 13.0 14.0 15.0

PML- BH LOG ENV 13HX002 BH LOGS 2013-03-06 SM.GPJ ON_MOT.GDT 5/8/2013 10:27:53 AM

+ / X : Numbers refer to Sensitivity

20
15 — 5
10

(%) STRAIN AT FAILURE

Peto MacCallum Ltd
CONSULTING ENGINEERS

LOG OF BOREHOLE NO. 113

METRIC

17T 0596906E
4807003N

1 of 1

PROJECT Halton District School Board Surplus Land
LOCATION Stonehaven Drive, Burlington, Ontario
BORING METHOD Continuous Flight Solid Stem Augers
BORING DATE March 5, 2013
OUR PROJECT NO. 13HX002
GEOSCIENTIST M. S. Molodecki
TECHNICIAN S. Murray

SOIL PROFILE			SAMPLES			ELEVATION SCALE	SHEAR STRENGTH kPa (O UNCONFINED + FIELD VANE ▲ POCKET PENETROMETER; DYNAMIC CONE PENETRATION STANDARD PENETRATION TEST ×/●)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L — WATER CONTENT (%)	GAS READINGS	REMARKS & GRAIN SIZE DISTRIBUTION (%)
ELEV / DEPTH in meters	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES		50 100 150 200 / 20 40 60 80	10 20 30 40	ppm	GR SA SI CL
98.8 / 0.0	**Ground Surface**									
0.0 / 0.3	FILL: Greyish brown silty sand and gravel fill, trace silt, damp		1*	AS					0	
	BOREHOLE TERMINATED AT 0.3 m									Upon completion of augering, no free water, no cave * Sample submitted for chemical testing

1.0 2.0 3.0 4.0 5.0 6.0 7.0 8.0 9.0 10.0 11.0 12.0 13.0 14.0 15.0

PML- BH LOG ENV 13HX002 BH LOGS 2013-03-06 SM.GPJ ON_MOT.GDT 5/8/2013 10:27:56 AM

+7, X5: Numbers refer to Sensitivity

20 / 15 5 / 10 (%) STRAIN AT FAILURE

DUNDAS STREET (HIGHWAY 5)

RAIL LINE

UNMAINTAINED GRASSLAND

WOOD DEBRIS

SLOPES DOWN

GRASSLAND

FILL STOCKPILE

FILL STOCKPILE

GRANITE BOULDERS PILE

JOHN WILLIAM BOICH PUBLIC SCHOOL

GRAVEL WALKWAY

GRAVEL PILE

GRAVEL PILE

FIRE HYDRANT

STORMWATER/OVERLAND FLOW PIPE

TP1 TP2 TP2-W1 TP2-W2 TP2-W3 TP2-N1 TP2-E1 TP2-S1 TP3-W1 TP3-W2 TP3-N1 TP3-E1 TP3-S1 TP4 TP5 TP6 TP7 TP8 TP9 TP10 TP-10A TP11 TP11-A TP12 TP13 TP14-A TP14-B

SA-1 SA-2 SA-3 SA-4 SA-5 SA-6

GRAVEL PATHWAY

TIRE AND LADDER

ASPHALT WALKWAY

RESIDENTIAL TOWNHOMES

GARDENING DEBRIS (PLANT POTS)

AREA C

BIRD BOULEVARD

STONEHAVEN DRIVE

STORMWATER SEWER GRATE

ORCHARD ROAD

VACANT GRASSLAND

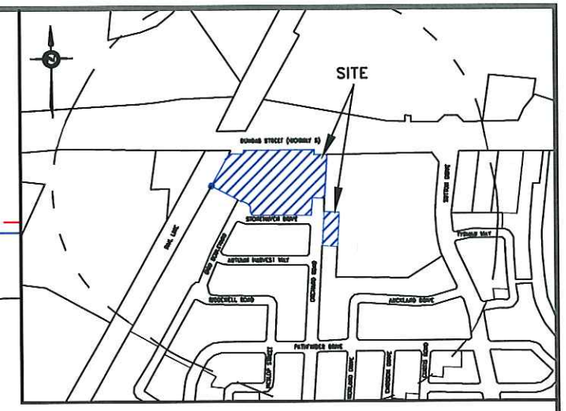
DOMESTIC DEBRIS

AREA B

RESIDENTIAL TOWNHOMES

RESIDENTIAL TOWNHOMES

AUTUMN HARVEST WAY



KEY PLAN
BURLINGTON, ONTARIO

LEGEND:

- SITE LIMITS
- PROPERTY LINES
- UNDERGROUND WATER UTILITY (APPROXIMATE LOCATION)
- UNDERGROUND SANITARY LINE
- UNDEGROUND BELL/CATV UTILITY (APPROXIMATE LOCATION)
- OVERHEAD HYDRO UTILTY (APPROXIMATE LOCATION)
- ASPHALT PAVEMENT
- APPROXIMATE LOCATION OF GRAVEL PATHWAY
- APPROXIMATE BOUNDARY OF AREA OF POTENTIAL ENVIRONMENTAL CONCERN (APEC)
- TP14 PML TESTPIT (TP) LOCATION, MAY 25, 2006
- PML TESTPIT (TP) LOCATION, JUNE 8, 2006
- SAMPLE AREA (SA-1) LOCATION BY OTHERS, 2012
- APPROXIMATE MINIMUM AREA OF SOIL NOT MEETING TABLE 2 STANDARDS IDENTIFIED IN 2006

REFERENCE:

PLAN PRODUCED FROM GIS INFORMATION FROM THE CITY OF BURLINGTON ONLINE INTERACTIVE MAPPING SERVICE.

5 0m 5 10 15 20 30
SCALE

HALTON DISTRICT SCHOOL BOARD

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
HDSB SURPLUS LANDS ON STONEHAVEN DRIVE
STONEHAVEN DRIVE, BURLINGTON, ONTARIO

PHASE ONE ESA SITE PLAN

PML Peto MacCallum Ltd.
CONSULTING ENGINEERS

		DATE	SCALE	PML REF.	DRAWING NO.
DRAWN	SM	MAY 2013	AS SHOWN	13HX002	2-1
CHECKED	DS				
APPROVED	MSM				

APPLEBY LINE

HARRISON COURT

DUNDAS STREET (HIGHWAY 5)

RAIL LINE

BIRD BOULEVARD

STONEHAVEN DRIVE

AUTUMN HARVEST WAY

ORCHARD ROAD

RIDGEWELL ROAD

AUCKLAND DRIVE

PATHFINDER DRIVE

HESLOP STREET

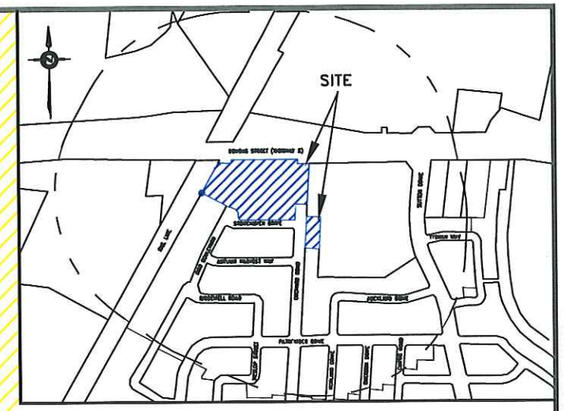
NORLAND DRIVE

EMERSON DRIVE

CURTIS ROAD

SUTTON DRIVE

TYDMAN WAY



KEY PLAN
BURLINGTON, ONTARIO

LEGEND:

- SITE LIMITS
- LIMITS OF PHASE ONE ESA STUDY AREA
- 250 m FROM SITE BOUNDARIES
- RESIDENTAL PROPERTY USE
- COMMERCIAL PROPERTY USE
- INDUSTRIAL PROPERTY USE
- INSTITUTIONAL PROPERTY USE

REFERENCE:

PLAN PRODUCED FROM GIS INFORMATION FROM THE CITY OF BURLINGTON ONLINE INTERACTIVE MAPPING SERVICE.

25 0m 25 50 75 100 150
SCALE

HALTON DISTRICT SCHOOL BOARD

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
HDSB SURPLUS LANDS ON STONEHAVEN DRIVE
STONEHAVEN DRIVE, BURLINGTON, ONTARIO

CURRENT LAND USES IN THE PHASE ONE ESA STUDY AREA

PML Peto MacCallum Ltd.
CONSULTING ENGINEERS

		DATE	SCALE	PML REF.	DRAWING NO.
DRAWN	SM	MAY 2013	AS SHOWN	13HX002	2-2
CHECKED	DS				
APPROVED	MSM				

APPLEBY LINE

HARRISON COURT

PCA 8

PCAs 5, 7 AND 9

PCA 6

PCA 4

PCA 2

PCA 3

APEC 1
AREA C
(PCA 1)

DUNDAS STREET (HIGHWAY 5)

AREA C

AREA B

STONEHAVEN DRIVE

RAIL LINE

BIRD BOULEVARD

AUTUMN HARVEST WAY

ORCHARD ROAD

RIDGEWELL ROAD

AUCKLAND DRIVE

SUTTON DRIVE

TYDMAN WAY

PATHFINDER DRIVE

HESLOP STREET

NORLAND DRIVE

EMERSON DRIVE

CURTIS ROAD

SUMMARY OF PCAS:

ON-SITE:

PCA 1 – OTHER PCA'S THE QP IS AWARE OF: UKNOWN ACTIVITIES THAT RESULTED IN THE PRESENCE OF KNOWN SOIL CONTAMINATION DOCUMENTED IN PREVIOUS REPORTS

PCA 2 – ITEM 30: IMPORTATION OF FILL MATERIAL OF UNKNOWN QUALITY

PCA 3 – ITEM 28: GASOLINE AND ASSOCIATED PRODUCTS STORED IN FIXED TANKS

OFF-SITE:

PCA 4 – ITEM 40: PESTICIDES MANUFACTURING, PROCESSING, BULK STORAGE AND LARGE-SCALE APPLICATIONS

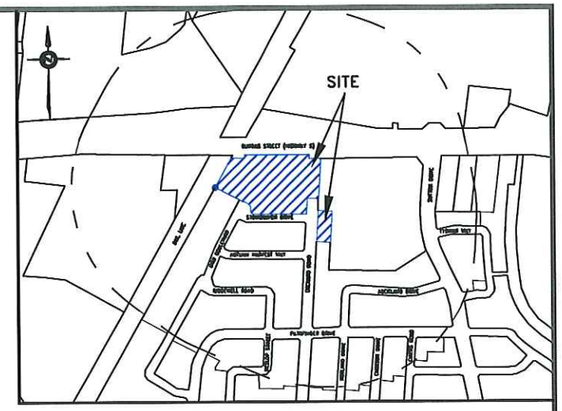
PCA 5 – ITEM 28: GASOLINE AND ASSOCIATED PRODUCTS STORED IN FIXED TANKS

PCA 6 – ITEM 28: GASOLINE AND ASSOCIATED PRODUCTS STORED IN FIXED TANKS

PCA 7 – ITEM 28: GASOLINE AND ASSOCIATED PRODUCTS STORED FIXED TANKS
ITEM 8: CHEMICAL MANUFACTURING, PROCESSING AND BULK STORAGE

PCA 8 – ITEM 12: CONCRETE, CEMENT AND LIME MANUFACTURING

PCA 9 – ITEM 55: TRANSFORMER MANUFACTURING, PROCESSING AND USE



KEY PLAN
BURLINGTON, ONTARIO

LEGEND:

- SITE LIMITS
- LIMITS OF PHASE I ESA STUDY AREA
- 250 m FROM SITE BOUNDARIES
- APPROXIMATE BOUNDARY OF AREA OF POTENTIAL ENVIRONMENTAL CONCERN (APEC)

NOTE:
1. REFER TO TABLE 8 FOR DETAILS OF THE POTENTIALLY CONTAMINATING ACTIVITIES (PCA'S).

2. REFER TO TABLE 9 FOR DETAILS OF THE AREAS OF POTENTIAL ENVIRONMENTAL CONCERN (APEC'S).

REFERENCE:

PLAN PRODUCED FROM GIS INFORMATION FROM THE CITY OF BURLINGTON ONLINE INTERACTIVE MAPPING SERVICE.

25 0m 25 50 75 100 150
SCALE

HALTON DISTRICT SCHOOL BOARD

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
HDSB SURPLUS LANDS ON STONEHAVEN DRIVE
STONEHAVEN DRIVE, BURLINGTON, ONTARIO

PHASE ONE ESA SUMMARY OF PCAs AND APECs

Peto MacCallum Ltd.
CONSULTING ENGINEERS

		DATE	SCALE	PML REF.	DRAWING NO.
DRAWN	SM	MAY 2013	AS SHOWN	13HX002	2–3
CHECKED	DS				
APPROVED	MSM				

DUNDAS STREET (HIGHWAY 5)

RAIL LINE

JOHN WILLIAM BOICH PUBLIC SCHOOL

BH 111 EL. 99.5

BH/MW 102 EL. 99.4

BH/MW 103 EL. 99.3

GS 1

GS 2

GW EL. 98.7

INFERRED DIRECTION OF GROUND WATER FLOW GRADIENT=1.6%

BH 104 EL. 99.0

BH 105 EL. 99.1

BH 113 EL. 98.8

BH 112 EL. 98.9

BH/MW 101 EL. 98.7

BH 107 EL. 98.8

BH 106 EL. 98.7

BH 110 EL. 99.1

BH 108 EL. 98.8

BH 109 EL. 98.5

A

A'

B

B'

AREA C

AREA B

BIRD BOULEVARD

STONEHAVEN DRIVE

ORCHARD ROAD

SOIL SAMPLE:

BH 112 AS1 0.0 – 0.3m FILL: BROWN SAND AND GRAVEL FILL	UNITS	MEASURED VALUE	TABLE 3 (RPI) STANDARDS
CADMIUM	ug/g	1.6	1.2
PHC FRACTION F3	ug/g	2400	300

SOIL SAMPLE:

BH 110 AS1 0.0 – 0.3m FILL: BROWN SAND AND GRAVEL FILL	UNITS	MEASURED VALUE	TABLE 3 (RPI) STANDARDS
PHC FRACTION F3	ug/g	500	300

SOIL SAMPLE:

BH 107 SS1A 0.0 – 0.3m FILL: BROWN SAND AND GRAVEL FILL	UNITS	MEASURED VALUE	TABLE 3 (RPI) STANDARDS
CADMIUM	ug/g	1.7	1.2

SITE

KEY PLAN
BURLINGTON, ONTARIO

LEGEND:

- SITE LIMITS
- APPROXIMATE PROPERTY LINE OF 2506 ORCHARD ROAD IDENTIFIED IN 2006
- BH 113 EL. 98.8 — PML BOREHOLE (BH) LOCATION
- BH/MW 103 EL. 99.3 — PML BOREHOLE/MONITORING WELL (BH/MW) LOCATION
- PML TEST PROBE LOCATION
- GS 2 — PML GRAB SAMPLE LOCATION
- APPROXIMATE BOUNDARY OF AREA OF POTENTIAL ENVIRONMENTAL CONCERN (APEC)
- # 98.7 — GROUND WATER (GW) ELEVATION
- CROSS SECTION LOCATIONS
- TEMPORARY BENCHMARK (TBM)

TEMPORARY BENCHMARK:

TOP OF TOP NUT OF FIRE HYDRANT EAST SIDE OF SITE, APPROX. 4 m WEST OF CHAIN LINK FENCE, APPROX. 3 m NORTHEAST OF SANITARY MANHOLE.
ASSIGNED ELEVATION: 100.0 m

REFERENCE:

PLAN PRODUCED FROM GIS INFORMATION FROM THE CITY OF BURLINGTON ONLINE INTERACTIVE MAPPING SERVICE.

NOTE:

THE INFERRED STRATIGRAPHY REFERRED TO IN THE REPORT IS BASED ON THE DATA FROM THESE BOREHOLES SUPPLEMENTED BY GEOLOGICAL EVIDENCE. THE ACTUAL STRATIGRAPHY BETWEEN THE BOREHOLES MAY VARY.

SAMPLE WHERE SOIL QUALITY WAS ABOVE O. REG. 153/04, AS AMENDED, TABLE 3 STANDARDS

SAMPLE MEDIUM
SAMPLE ID
SAMPLE DEPTH
SAMPLE DESCRIPTION
ANALYTE

SOIL SAMPLE:

BH/MW2 AS1 0.3 – 0.8m FILL: BROWN SAND FILL, RACE GRAVES	UNITS	MEASURED VALUE	TABLE 3 (RPI) STANDARDS
MERCURY	ug/g	1.84	0.27

5 0m 5 10 15 20 30
SCALE

HALTON DISTRICT SCHOOL BOARD

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
HDSB SURPLUS LANDS ON STONEHAVEN DRIVE
STONEHAVEN DRIVE, BURLINGTON, ONTARIO

BOREHOLE AND MONITORING WELL LOCATION PLAN

PML Peto MacCallum Ltd.
CONSULTING ENGINEERS

		DATE	SCALE	PML REF.	DRAWING NO.
DRAWN	SM	MAY 2013	AS SHOWN	13HX002	2–4
CHECKED	DS				
APPROVED	MSM				

DUNDAS STREET (HIGHWAY 5)

SOIL SAMPLE:

TP9 GS1 0.0 – 0.4m TOPSOIL FILL: GRASS AND ROOT MAT OVER BROWN SILTY TOPSOIL WITH TRACE PIECES OF RED BRICK, ASPHALT/SLAG, ROOTLETS	UNITS	MEASURED VALUE	TABLE 3 (RPI) STANDARDS
PHC FRACTION F3	ug/g	350	300

SOIL SAMPLE:

TP14-B GS1 0.0 – 0.5m FILL: BROWN/BLACK SAND AND GRAVEL FILL	UNITS	MEASURED VALUE	TABLE 3 (RPI) STANDARDS
BORON (HOT WATER EXTRACTABLE)	ug/g	2.17	1.5

SOIL SAMPLE:

SA-6 0.0-0.3m	UNITS	MEASURED VALUE	TABLE 3 (RPI) STANDARDS
PHC FRACTION F3	ug/g	500	300
PHC FRACTION F4 (GRAVIMETRIC)	ug/g	7,500	--

SOIL SAMPLE:

TP14-A GS1 0.0 – 0.45m FILL: BROWN/BLACK SAND AND GRAVEL FILL, TRACE PIECES OF WOOD, COBBLE	UNITS	MEASURED VALUE	TABLE 3 (RPI) STANDARDS
BORON (HOT WATER EXTRACTABLE)	ug/g	9.58	1.5

SOIL SAMPLE:

TP2 GS1 0.0 – 0.5m FILL: BROWN CRUSHED GRAVEL AND SAND FILL WITH RED/BROWN CLAYEY SILT, TRACE PIECES OF ASPHALT, ORGANICS	UNITS	MEASURED VALUE	TABLE 3 (RPI) STANDARDS
PHC FRACTION F2	ug/g	220	98
PHC FRACTION F3	ug/g	24,000	300
PHC FRACTION F4	ug/g	7,600	2,800

SOIL SAMPLE:

TP14 GS1 0.0 – 0.6m FILL: BROWN SAND AND GRAVEL FILL, TRACE PIECES OF WOOD, TRACE RED BRICK AND METAL WIRE	UNITS	MEASURED VALUE	TABLE 3 (RPI) STANDARDS
BORON (HOT WATER EXTRACTABLE)	ug/g	5.65	1.5

SOIL SAMPLE:

SA-4 0.0 – 0.3m	UNITS	MEASURED VALUE	TABLE 3 (RPI) STANDARDS
BORON (HOT WATER EXTRACTABLE)	ug/g	1.8	1.5

SOIL SAMPLE:

BH 112 AS1 0.0 – 0.3m FILL: BROWN SAND AND GRAVEL FILL	UNITS	MEASURED VALUE	TABLE 3 (RPI) STANDARDS
CADMIUM	ug/g	1.6	1.2
PHC FRACTION F3	ug/g	2400	300

SOIL SAMPLE:

BH 110 AS1 0.0 – 0.3m FILL: BROWN SAND AND GRAVEL FILL	UNITS	MEASURED VALUE	TABLE 3 (RPI) STANDARDS
PHC FRACTION F3	ug/g	500	300

SOIL SAMPLE:

SA-3 0.0-0.3m	UNITS	MEASURED VALUE	TABLE 3 (RPI) STANDARDS
PHC FRACTION F3	ug/g	1,300	300
PHC FRACTION F4 (GRAVIMETRIC)	ug/g	9,700	--
CADMIUM	ug/g	1.4	1.2

SOIL SAMPLE:

SA-1 0.0-0.3m	UNITS	MEASURED VALUE	TABLE 3 (RPI) STANDARDS
PHC FRACTION F3	ug/g	320	300
PHC FRACTION F4 (GRAVIMETRIC)	ug/g	5,000	--

SOIL SAMPLE:

TP2-W2 GS1 0.0 – 0.4m FILL: BROWN CRUSHED GRAVEL AND SAND FILL WITH BROWN/BLACK CLAYEY SILT, TRACE PIECES OF ASPHALT	UNITS	MEASURED VALUE	TABLE 3 (RPI) STANDARDS
PHC FRACTION F2	ug/g	1,300	98

SOIL SAMPLE:

TP3 GS2 0.6-1.0m FILL: BLACK GRAVEL WITH CLAYEY SILT	UNITS	MEASURED VALUE	TABLE 3 (RPI) STANDARDS
PHC FRACTION F1	ug/g	68	55
PHC FRACTION F2	ug/g	370	98
PHC FRACTION F3	ug/g	3,300	300

SOIL SAMPLE:

TP2 -E1 GS1 0.0 – 0.2m FILL: BROWN CRUSHED GRAVEL AND SAND FILL	UNITS	MEASURED VALUE	TABLE 3 (RPI) STANDARDS
PHC FRACTION F2	ug/g	1,000	98

SOIL SAMPLE:

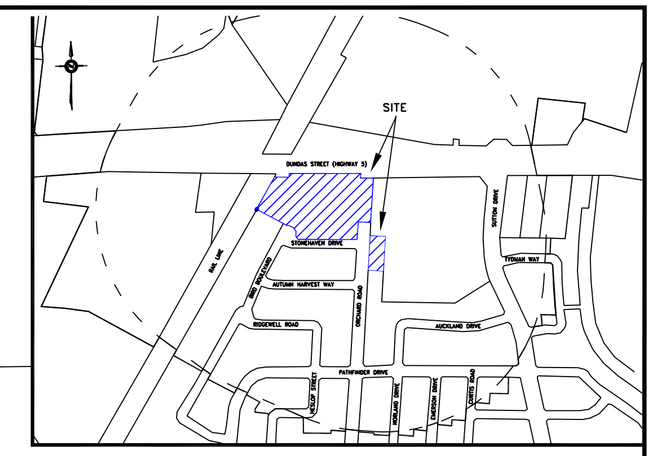
BH 107 SS1A 0.0 – 0.3m FILL: BROWN SAND AND GRAVEL FILL	UNITS	MEASURED VALUE	TABLE 3 (RPI) STANDARDS
CADMIUM	ug/g	1.7	1.2

SOIL SAMPLE:

SA-2 0.0-0.3m	UNITS	MEASURED VALUE	TABLE 3 (RPI) STANDARDS
PHC FRACTION F3	ug/g	390	300
PHC FRACTION F4 (GRAVIMETRIC)	ug/g	5,400	--
BORON (HOT WATER EXTRACTABLE)	ug/g	1.8	1.5

AREA 1
AREA 2
AREA 3
AREA B
AREA C
RAIL LINE
BIRD BOULEVARD
STONEHAVEN DRIVE
ORCHARD ROAD
JOHN WILLIAM BOICH PUBLIC SCHOOL

TP9
BH 111 EL. 99.5
SA-6
SA-5
TP11
TP11-A
GS 1
GS 2
TP10
TP-10A
TP13
TP12
TP8
BH/MW 102 EL. 99.4
TP14-B
TP14-A
TP14
BH/MW 103 EL. 99.3
TP6
TP7
TP5
TP4
BH 104 EL. 99.0
BH 105 EL. 99.1
BH 113 EL. 98.8
SA-4
TP1
BH 112 EL. 98.9
SA-3
TP2-W2
TP2-W1
TP2-N1
TP2-E1
SA-2
BH/MW 101 EL. 98.7
TP2-W3
TP2
TP2-S1
BH 106 EL. 98.7
TP3-W1
TP3-N1
TP3-W2
TP3-E1
TP3
BH 107 EL. 98.8
TP3-S1
BH 110 EL. 99.1
SA-1
BH 108 EL. 98.8
BH 109 EL. 98.5



KEY PLAN
BURLINGTON, ONTARIO

LEGEND:

- SITE LIMITS
- BH 113 EL. 98.8 — PML BOREHOLE (BH) LOCATION
- BH/MW 103 EL. 99.3 — PML BOREHOLE/MONITORING WELL (BH/MW) LOCATION
- PML TEST PROBE LOCATION
- GS 2 — PML GRAB SAMPLE LOCATION
- TP14 — PML TESTPIT (TP) LOCATION, MAY 25, 2006
- PML TESTPIT (TP) LOCATION, JUNE 8, 2006
- SAMPLE AREA (SA-1) LOCATION BY OTHERS, 2012
- APPROXIMATE MINIMUM AREA OF SOIL NOT MEETING THE SITE CONDITION STANDARDS IDENTIFIED IN 2006
- APPROXIMATE MAXIMUM AREA OF SOIL NOT MEETING TABLE 3 STANDARDS, ESTABLISHED USING 'CLEAN TO CLEAN' SAMPLE AREAS

REFERENCE:

PLAN PRODUCED FROM GIS INFORMATION FROM THE CITY OF BURLINGTON ONLINE INTERACTIVE MAPPING SERVICE.

SAMPLE WHERE SOIL QUALITY WAS ABOVE O. REG. 153/04, AS AMENDED, TABLE 3 STANDARDS IDENTIFIED IN 2013

SOIL SAMPLE:

BH 107 SS1A 0.0 – 0.3m FILL: BROWN SAND AND GRAVEL FILL	UNITS	MEASURED VALUE	TABLE 3 (RPI) STANDARDS
CADMIUM	ug/g	1.7	1.2

SAMPLE WHERE SOIL QUALITY WAS ABOVE O. REG. 153/04, AS AMENDED, TABLE 3 STANDARDS IDENTIFIED IN 2012

SOIL SAMPLE:

SA-4 0.0 – 0.3m	UNITS	MEASURED VALUE	TABLE 3 (RPI) STANDARDS
BORON (HOT WATER EXTRACTABLE)	ug/g	1.8	1.5

SAMPLE WHERE SOIL QUALITY WAS ABOVE O. REG. 153/04, AS AMENDED, TABLE 3 STANDARDS IDENTIFIED IN 2006

SOIL SAMPLE:

TP2 -E1 GS1 0.0 – 0.2m FILL: BROWN CRUSHED GRAVEL AND SAND FILL	UNITS	MEASURED VALUE	TABLE 3 (RPI) STANDARDS
PHC FRACTION F2	ug/g	1,000	98

5 0m 5 10 15 20 30
SCALE

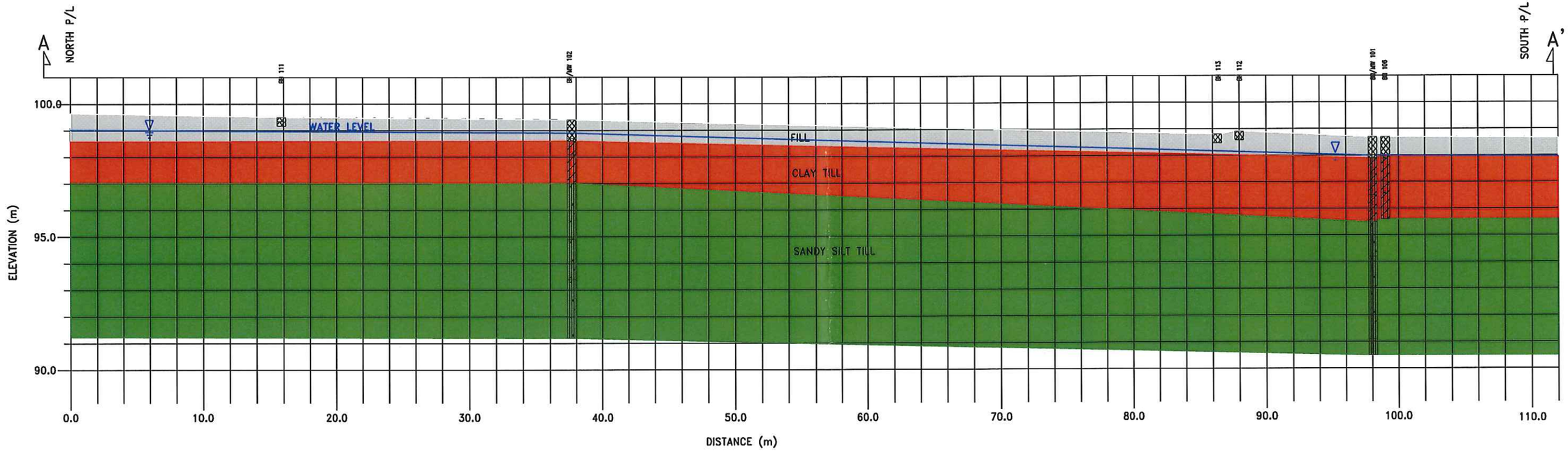
HALTON DISTRICT SCHOOL BOARD

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
HDSB SURPLUS LANDS ON STONEHAVEN DRIVE
STONEHAVEN DRIVE, BURLINGTON, ONTARIO

AREAS OF CONTAMINATION PLAN

Peto MacCallum Ltd.
CONSULTING ENGINEERS

DRAWN	SM	DATE	SCALE	PML REF.	DRAWING NO.
CHECKED	DS	MAY 2013	AS SHOWN	13HX002	2-5
APPROVED	MSM				



NOTES:
1. REFER TO DRAWING 2-1 FOR SECTION LOCATION.
2. P/L = PROPERTY LINE, EC = ELECTRICAL CONDUCTIVITY, SAR = SODIUM ADSORPTION RATIO
3. REFER TO BOREHOLE LOGS, DRAWING 2-1 AND TABLES 4 TO 13 FOR THE FOLLOWING; THE DELINEATION OF THE LATERAL AND VERTICAL EXTENT OF CONTAMINANTS OF CONCERN IN SOIL, SHOWING SAMPLING LOCATIONS, SAMPLE IDENTIFICATION NUMBERS, SAMPLING POINTS AND SAMPLING DEPTHS; CONCENTRATION OF CONTAMINANTS ANALYZED IN AN ACCREDITED LABORATORY; HIGHLIGHTING ALL CONCENTRATIONS IN EXCESS OF THE APPLICABLE SITE CONDITION STANDARDS; THE STRATIGRAPHY FROM GROUND SURFACE TO THE DEEPEST AQUIFER OR AQUITARD INVESTIGATED.

LEGEND:
- FILL
- CLAY TILL
- SANDY SILT TILL
- WATER LEVEL READINGS TAKEN ON MARCH 7, 2013

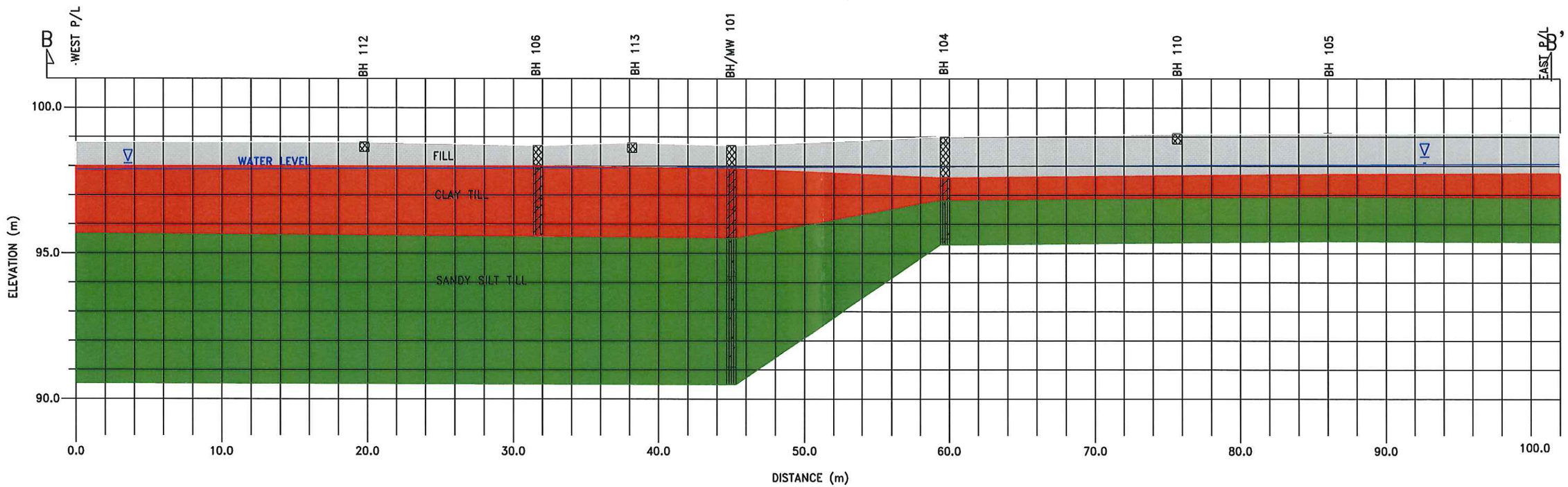
HALTON DISTRICT SCHOOL BOARD

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
HDSB SURPLUS LANDS ON STONEHAVEN DRIVE
STONEHAVEN DRIVE, BURLINGTON, ONTARIO

SECTION A-A' (NORTH-SOUTH)

Peto MacCallum Ltd.
CONSULTING ENGINEERS

		DATE	SCALE	PML REF.	DRAWING NO.
DRAWN	SM	MAY 2013	AS SHOWN	13HX002	2-6
CHECKED	DS				
APPROVED	MSM				



NOTES:
1. REFER TO DRAWING 2-1 FOR SECTION LOCATION.
2. P/L = PROPERTY LINE, EC = ELECTRICAL CONDUCTIVITY, SAR = SODIUM ADSORPTION RATIO
3. REFER TO BOREHOLE LOGS, DRAWING 2-1 AND TABLES 4 TO 13 FOR THE FOLLOWING; THE DELINEATION OF THE LATERAL AND VERTICAL EXTENT OF CONTAMINANTS OF CONCERN IN SOIL, SHOWING SAMPLING LOCATIONS, SAMPLE IDENTIFICATION NUMBERS, SAMPLING POINTS AND SAMPLING DEPTHS; CONCENTRATION OF CONTAMINANTS ANALYZED IN AN ACCREDITED LABORATORY; HIGHLIGHTING ALL CONCENTRATIONS IN EXCESS OF THE APPLICABLE SITE CONDITION STANDARDS; THE STRATIGRAPHY FROM GROUND SURFACE TO THE DEEPEST AQUIFER OR AQUITARD INVESTIGATED.

LEGEND:
- FILL
- CLAY TILL
- SANDY SILT TILL
- WATER LEVEL READINGS TAKEN ON MARCH 7, 2013

HALTON DISTRICT SCHOOL BOARD

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
HDSB SURPLUS LANDS ON STONEHAVEN DRIVE
STONEHAVEN DRIVE, BURLINGTON, ONTARIO

SECTION B-B' (EAST-WEST)

Peto MacCallum Ltd.
CONSULTING ENGINEERS

DRAWN	SM	DATE	SCALE	PML REF.	DRAWING NO.
CHECKED	DS	MAY 2013	AS SHOWN	13HX002	2-7
APPROVED	MSM				

Appendix A

Survey Plan

CUNNINGHAM McCONNELL LIMITED

ONTARIO LAND SURVEYORS

205 Main Street, Milton, Ontario L9T 1N7 Phone: (905) 878-7810 Fax: (905) 878-6672
E-mail: cml@primus.ca

Halton District School Board
J. W. S. Education Centre
2050 Guelph Line
Burlington Ontario L7R 3Z2
Attention: Mr. D. Renzella
Manager of Planning

Dear Sir:

May 13, 2011
Our File 09-4

Re: Area calculations of Halton District School Board and
Easement list for
Known as the Orchard # 3 site
City of Burlington, Regional Municipality of Halton

Further to your request, we are pleased to provide a summary of area calculations for the following three areas of land owned by the Halton District School Board (HDSB) as identified in your email of April 29, 2011. We have also included the various easements referred to in the documentation from our title search of the subject lands. The area calculations are based on Registry Office documentation only and are subject to verification by a field survey.

Area A

These lands are composed of Part of Block 57, Registered Plan 20M-794*; Part of Block 66, Registered Plan 20M-794* and Part of Lot 4, Concession 1 SDS Nelson and more particularly part of Property Identifier Number (PIN) 07201-0087(LT)*, part of PIN 07184-1874(LT)*, part of PIN 07184-1883(LT)*, all of PIN 07184-4587(LT) and all of PIN 07184-4589(LT).
* the balance of these parts are contained within the portion designated as Area B.

Easements

Instrument No.	Description	Area (sq. m.)	In Favour of
HR 68488	Pts. 68 & 69, 20R-14221	2 @ 6 each	City of Burlington
HR 121999	Pts. 5 & 74, 20R-14639	2 @ 6 each	City of Burlington
HR 99308	Pt. 16, 20R-14289	25	Bell Canada
HR 158644	Pt. 14, 20R-14289	1146	HDSB[1]
HR 184878	Pt. 13& 16, 20R-14289	1342	Region of Halton

1 The HDSB is both the dominant and servient tenement.

The total area contained with **Area A is 3.24 ha.**

Area B

For area B we estimated the size as the equivalent of four (4) residential lots, the size of the lots immediately abutting area B as in Registered Plan 20M-794.

.....

Oakville Office:
1200 Speers Road, Unit 38
Oakville, Ontario L6L 2X4
Tel: (905) 845-3497
Fax: (905) 845-3519
cmlols@cogeco.net

ASSOCIATION OF ONTARIO LAND SURVEYORS
MEMBER

Principals:
Thomas J. Packowski, B.Sc., O.L.S., O.L.I.P.
Robert D. McConnell, B.Sc., O.L.S., O.L.I.P.
Jaro A. Legat, M.Sc., O.L.S., O.L.I.P.

Records of:
Fred G. Cunningham Incorporated
McConnell Maughan Limited
McConnell Jackson
K.H. McConnell
Sewell & Sewell (Oakville)
H.D. Sewell (Oakville)
J.A. Aitken

Area B continued
These lands are composed of balance of Block 57, Registered Plan 20M-794; the balance of Block 66, Registered Plan 20M-794 and Part of Lot 4, Concession 1 SDS Nelson and more particularly the balance of PIN 07201-0087(LT), the balance of PIN 07184-1874(LT) and the balance of PIN 07184-1883(LT).

There are no easements registered on title affecting Area B.

The total area contained within **Area B is 0.123 ha.**

Area C
These lands are composed of Blocks 28 and 29, Registered Plan 20M-857, Part of Lot 4 Concession 1 SDS Nelson and Part of Orchard Road, closed by bylaw. They are referred to as all of PINs 07184-2680(LT), PIN 07184-3074(LT), PIN 07184-3075(LT) and PIN 07184-4583(LT).

Easements

Instrument No.	Description	Area (sq. m.)	In Favour of
HR 158644	Pts. 7, 8 & 14 20R-14289	1253	HDSB[1]
HR 190294	Pt. 27 20R-15041	92	Region of Halton
HR 190310	Pt. 27 20R-15041	92	Burlington Hydro
HR 190304	Pt. 27-33 20R-15042	478	City of Burlington
HR 190310	Pt. 29, 30 & 33 20R-15042	224	Burlington Hydro
HR 368397	Pt. 27, 28 & 29 20R-15042	244	See Note 2
HR 833506	Pt. 29, 30 & 33 20R-15042	224	Bell
HR 158644	Pt. 7 & 8 20R-14289	107	HDSB[1]
HR 184878	Pt. 6, 8 to 12 20R-14289	1207	Region of Halton
HR 124693	Pt. 5, 7, 9 & 11 20R-14289	695	Burlington Hydro

1 The HDSB is both the dominant and servient tenement.
2 The owners of Lots 1 – 12, Registered Plan 20M-857 and the owners of Lots 140 – 153, Registered Plan 20M-711.

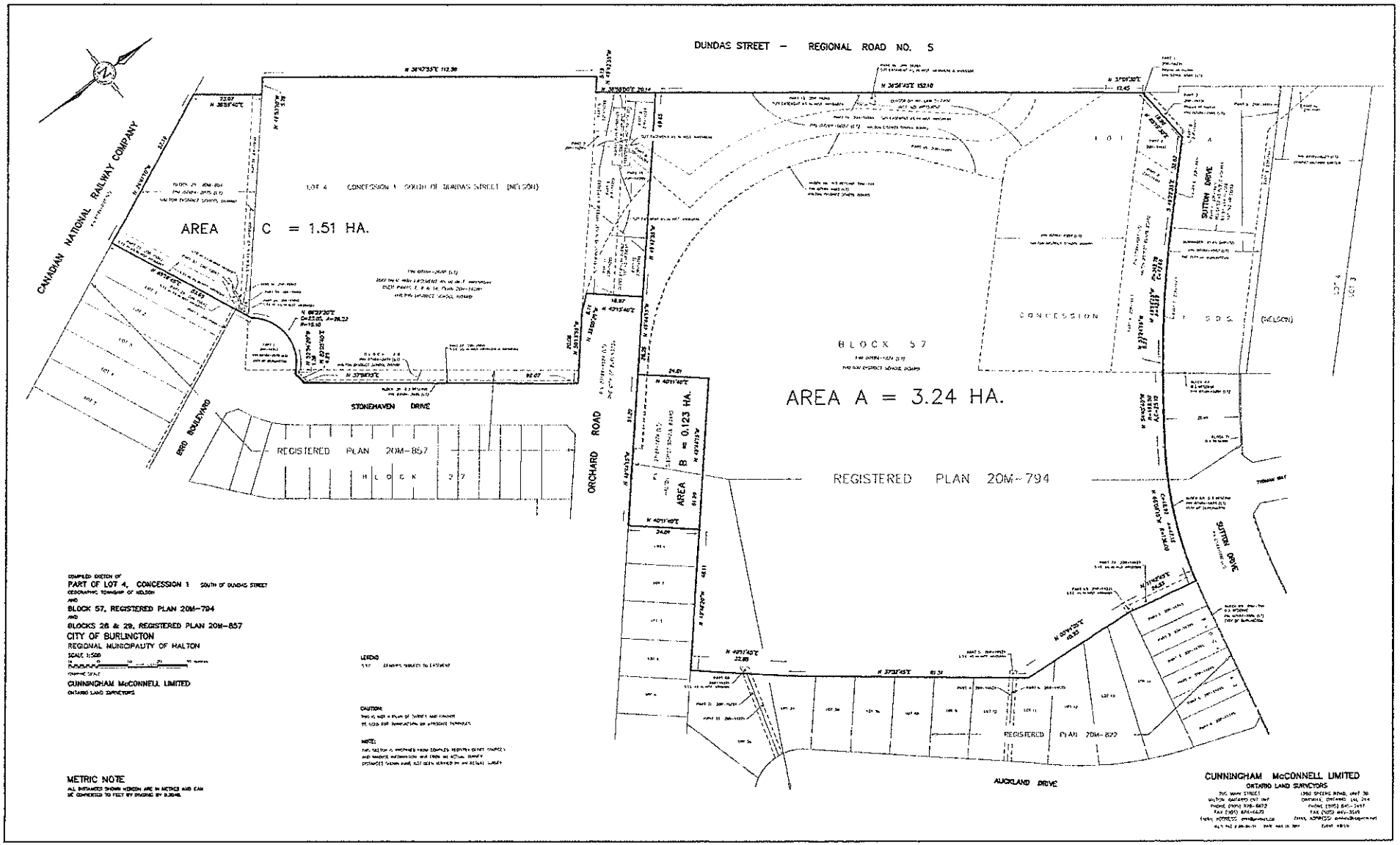
The total area contained within **Area C is 1.51 ha.**

We trust you will find this in order and enclose our fees for services rendered. If you do have any questions, please contact the undersigned.

Yours Truly,
Cunningham McConnell Limited

Thomas J. Packowski
Ontario Land Surveyor

09-4



COMPILED SKETCH OF
PART OF LOT 4, CONCESSION 1 SOUTH OF DUNDAS STREET
GEOGRAPHIC TOWNSHIP OF NELSON
AND
BLOCK 57, REGISTERED PLAN 20M-794
AND
BLOCKS 26 & 29, REGISTERED PLAN 20M-857
CITY OF BURLINGTON
REGIONAL MUNICIPALITY OF HALTON
SCALE 1:500
0 10 20 30 40 METRES
GRAPHIC SCALE
CUNNINGHAM McCONNELL LIMITED
ONTARIO LAND SURVEYORS

LEGEND
XXX DENOTES SUBJECT TO EASEMENT

CAUTION:
THIS IS NOT A PLAN OF SURVEY AND CANNOT BE USED FOR CONVEYANCING OR MORTGAGE PURPOSES

NOTE:
THE NELSON IS PROTRACTED FROM COMPILED REGISTRY SKETCH SOURCES AND MINOR INFORMATION WAS TAKEN AS ACTUAL SURVEY DISTANCES SHOWN HAVE NOT BEEN VERIFIED BY AN ACTUAL SURVEY

METRIC NOTE
ALL DISTANCES SHOWN HEREON ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048.

CUNNINGHAM McCONNELL LIMITED
ONTARIO LAND SURVEYORS
THE MAIN STREET
HILTON ONTARIO CNT 1N7
PHONE (905) 528-8612
FAX (905) 634-6675
EMAIL ADDRESS: ...@...
1300 SPEERS ROAD, UNIT 30
ONTARIO, ONTARIO L6L 2X4
PHONE (905) 845-3437
FAX (905) 845-3519
EMAIL ADDRESS: ...@...

Appendix B

Geoenvironmental Field Instructions / Sampling & Analysis Plans

Peto MacCallum Ltd.
CONSULTING ENGINEERS

SAMPLING AND ANALYSIS PLAN

PROJECT NO.	**13HX002**	DATE	**February 27, 2013**
PROJECT NAME	**HDSB Surplus Land on Stonehaven Drive**	PROJECT LOCATION	**Stonehaven Drive, Burlington**

NO. OF BH's/TEST PITS AND DEPTHS:

3 Boreholes to 7.6 m, 6 boreholes to 3.0 m, 4 on Area C and 2 on Area B. Dig 2 testpits within the large stockpile located in the northern portion of Area C. Install monitoring wells in BH1, BH3 and BH6. Develop, purge monitor and sample wells as soon as possible after installation.

ENVIRONMENTAL SAMPLING: Near continuous sampling at 0.8 m depth intervals.

Soil Analysis
10 metals and Inorganics including one duplicate.
10 PHC Fractions F1 to F4 including one duplicate.
10 VOCs including one duplicate.
1 Sample for TCLP M&I, VOCs, PCBs and ignitability
2 cyanide samples from test pits

Ground Water Analysis
4 metals and Inorganics including one duplicate.
4 PHC Fractions F1 to F4 including one duplicate.
4 VOCs including one duplicate.
1 Trip Blank for VOCs

OTHER: Take headspace readings on all recovered soil samples.

UNDERGROUND SERVICES:

See the locate sheets.

STARTING DATE: March 4, 2013 **HOURS ALLOWED:**

CLIENT CONTACT: Domenico Renzella **PHONE:** 905-335-3665

REPORT DUE DATE:

SPECIAL INSTRUCTIONS:

Use fixed volume purging technique for Ground Water Monitoring Wells

Place soil cuttings and purge water in drums on site.

Appendix C

AGAT Laboratories Limited

Certificates of Analysis

O. Reg. 153/04, As Amended, Table 3 Standards (Soil)

Residential/Parkland/Institutional Property Use

AGAT Laboratories

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

CLIENT NAME: PETO MACCALLUM LIMITED
45 BURFORD ROAD
HAMILTON, ON L8E3C5
(905) 561-2231

ATTENTION TO: Dave Smith

PROJECT NO: 13HX002

AGAT WORK ORDER: 13T694478

SOIL ANALYSIS REVIEWED BY: Mike Muneswar, BSc (Chem), Senior Inorganic Analyst

TRACE ORGANICS REVIEWED BY: Manpreet Sarao, Senior Analyst

DATE REPORTED: Mar 13, 2013

PAGES (INCLUDING COVER): 16

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

NOTES

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

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

AGAT Laboratories is accredited to ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA) and/or Standards Council of Canada (SCC) for specific tests listed on the scope of accreditation. AGAT Laboratories (Mississauga) is also accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA) for specific drinking water tests. Accreditations are location and parameter specific. A complete listing of parameters for each location is available from www.cala.ca and/or www.scc.ca. The tests in this report may not necessarily be included in the scope of accreditation.

Results relate only to the items tested and to all the items tested

AGAT Laboratories

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

Certificate of Analysis

AGAT WORK ORDER: 13T694478

PROJECT NO: 13HX002

CLIENT NAME: PETO MACCALLUM LIMITED

ATTENTION TO: Dave Smith

O. Reg. 153(511) - Metals & Inorganics (Soil) - custom

DATE RECEIVED: 2013-03-06 **DATE REPORTED: 2013-03-13**

SAMPLE DESCRIPTION:				BH/MW 101 SS2B	BH/MW 102 SS1	BH/MW 103 SS1	BH 104 SS1B	BH 107 SS1A	BH 108 SS2	BH 109 SS4	BH 112 AS1
SAMPLE TYPE:				Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
DATE SAMPLED:				3/5/2013	3/4/2013	3/5/2013	3/4/2013	3/4/2013	3/5/2013	3/5/2013	3/5/2013
Parameter	Unit	G / S	RDL	4174583	4174592	4174596	4174599	4174604	4174605	4174611	4174620
Antimony	µg/g	7.5	0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Arsenic	µg/g	18	1	6	4	5	9	6	5	5	6
Barium	µg/g	390	2	82	35	57	37	48	88	79	42
Beryllium	µg/g	4	0.5	0.8	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	<0.5
Boron	µg/g	120	5	9	8	6	9	13	7	<5	9
Boron (Hot Water Soluble)	µg/g	1.5	0.10	0.32	1.25	0.45	0.21	0.77	0.14	0.15	1.31
Cadmium	µg/g	1.2	0.5	<0.5	<0.5	<0.5	<0.5	**1.7**	<0.5	<0.5	**1.6**
Chromium	µg/g	160	2	22	17	19	14	85	20	7	20
Chromium VI	µg/g	8	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cobalt	µg/g	22	0.5	12.0	3.7	7.4	4.7	5.9	11.2	5.0	3.9
Copper	µg/g	140	1	41	18	21	20	38	28	19	29
Cyanide	µg/g	0.051	0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
Electrical Conductivity	mS/cm	0.7	0.005	0.346	0.277	0.161	0.281	0.209	0.199	0.137	0.310
Lead	µg/g	120	1	14	18	21	40	88	11	6	99
Mercury	µg/g	0.27	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Molybdenum	µg/g	6.9	0.5	1.0	0.8	0.6	1.2	2.7	<0.5	<0.5	2.2
Nickel	µg/g	100	1	26	7	16	7	14	23	8	10
Selenium	µg/g	2.4	0.4	<0.4	0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Silver	µg/g	20	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Sodium Adsorption Ratio (2:1)	N/A	5	N/A	1.22	0.157	0.142	0.477	0.410	0.419	0.285	0.718
Thallium	µg/g	1	0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Uranium	ug/g	23	0.5	0.9	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	<0.5
Vanadium	µg/g	86	1	30	17	21	15	49	26	10	15
Zinc	µg/g	340	5	68	53	110	126	238	54	27	330
pH, 2:1 CaCl2 Extraction	pH Units		NA	7.30	7.63	7.59	8.16	7.97	7.71	8.12	8.21

Certified By:

Results relate only to the items tested and to all the items tested

AGAT Laboratories

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

Certificate of Analysis

AGAT WORK ORDER: 13T694478

PROJECT NO: 13HX002

CLIENT NAME: PETO MACCALLUM LIMITED

ATTENTION TO: Dave Smith

O. Reg. 153(511) - Metals & Inorganics (Soil) - custom

DATE RECEIVED: 2013-03-06

DATE REPORTED: 2013-03-13

		SAMPLE DESCRIPTION:		BH 113 AS1	DUP 1
		SAMPLE TYPE:		Soil	Soil
		DATE SAMPLED:		3/5/2013	3/5/2013
Parameter	Unit	G / S	RDL	4174624	4174628
Antimony	µg/g	7.5	0.8	<0.8	<0.8
Arsenic	µg/g	18	1	8	4
Barium	µg/g	390	2	39	74
Beryllium	µg/g	4	0.5	<0.5	<0.5
Boron	µg/g	120	5	10	<5
Boron (Hot Water Soluble)	µg/g	1.5	0.10	0.72	0.12
Cadmium	µg/g	1.2	0.5	0.5	<0.5
Chromium	µg/g	160	2	9	7
Chromium VI	µg/g	8	0.2	<0.2	<0.2
Cobalt	µg/g	22	0.5	3.6	4.9
Copper	µg/g	140	1	15	21
Cyanide	µg/g	0.051	0.040	<0.040	<0.040
Electrical Conductivity	mS/cm	0.7	0.005	0.452	0.134
Lead	µg/g	120	1	66	6
Mercury	µg/g	0.27	0.10	<0.10	<0.10
Molybdenum	µg/g	6.9	0.5	1.1	<0.5
Nickel	µg/g	100	1	5	8
Selenium	µg/g	2.4	0.4	<0.4	<0.4
Silver	µg/g	20	0.2	<0.2	<0.2
Sodium Adsorption Ratio (2:1)	N/A	5	N/A	0.729	0.291
Thallium	µg/g	1	0.4	<0.4	<0.4
Uranium	ug/g	23	0.5	<0.5	<0.5
Vanadium	µg/g	86	1	9	10
Zinc	µg/g	340	5	115	26
pH, 2:1 CaCl2 Extraction	pH Units		NA	8.35	8.18

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to T3(RPI) - Current

4174583-4174628 EC & SAR were determined on the DI water extract obtained from the 2:1 leaching procedure (2 parts DI water:1 part soil). pH was determined on the 0.01M CaCl2 extract prepared at 2:1 ratio.

Certified By:

Results relate only to the items tested and to all the items tested

AGAT Laboratories

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

Certificate of Analysis

AGAT WORK ORDER: 13T694478

PROJECT NO: 13HX002

CLIENT NAME: PETO MACCALLUM LIMITED

ATTENTION TO: Dave Smith

O. Reg. 153(511) - PHCs F1 - F4 (-BTEX) (Soil)

DATE RECEIVED: 2013-03-06

DATE REPORTED: 2013-03-13

Parameter	Unit	G / S	RDL	BH/MW 101 SS2B Soil 3/5/2013 4174583	BH 104 SS1B Soil 3/4/2013 4174599	BH 105 SS3 Soil 3/5/2013 4174602	BH 108 SS2 Soil 3/5/2013 4174605	BH 109 SS4 Soil 3/5/2013 4174611	BH 110 AS1 Soil 3/5/2013 4174614	BH 111 AS1A Soil 3/5/2013 4174618	BH 112 AS1 Soil 3/5/2013 4174620
F1 (C6 to C10)	µg/g		5	<5	<5	<5	<5	<5	<5	<5	<5
F1 (C6 to C10) minus BTEX	µg/g	55	5	<5	<5	<5	<5	<5	<5	<5	<5
F2 (C10 to C16)	µg/g	98	10	<10	<10	<10	<10	<10	<10	<10	<10
F3 (C16 to C34)	µg/g	300	50	<50	190	<50	<50	<50	**550**	250	**2400**
F4 (C34 to C50)	µg/g	2800	50	<50	250	<50	<50	<50	370	330	1800
Gravimetric Heavy Hydrocarbons	µg/g	2800	50	NA	NA	NA	NA	NA	NA	NA	NA
Moisture Content	%		0.1	22.1	5.4	10.7	16.3	10.4	6.2	16.4	6.9
Surrogate	**Unit**	**Acceptable Limits**									
Terphenyl	%	60-140		91	113	107	126	81	110	97	125

Parameter	Unit	G / S	RDL	BH 113 AS1 Soil 3/5/2013 4174624	DUP 1 Soil 3/5/2013 4174628
F1 (C6 to C10)	µg/g		5	<5	<5
F1 (C6 to C10) minus BTEX	µg/g	55	5	<5	<5
F2 (C10 to C16)	µg/g	98	10	<10	<10
F3 (C16 to C34)	µg/g	300	50	170	<50
F4 (C34 to C50)	µg/g	2800	50	100	<50
Gravimetric Heavy Hydrocarbons	µg/g	2800	50	NA	NA
Moisture Content	%		0.1	4.4	10.0
Surrogate	**Unit**	**Acceptable Limits**			
Terphenyl	%	60-140		110	74

Certified By: Manpreet Sarao

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Certificate of Analysis

AGAT WORK ORDER: 13T694478

PROJECT NO: 13HX002

CLIENT NAME: PETO MACCALLUM LIMITED

ATTENTION TO: Dave Smith

O. Reg. 153(511) - PHCs F1 - F4 (-BTEX) (Soil)

DATE RECEIVED: 2013-03-06

DATE REPORTED: 2013-03-13

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to T3(RPI) - Current

4174583-4174628 Results are based on sample dry weight.
The C6-C10 fraction is calculated using toluene response factor.
The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and n-C34.
Gravimetric Heavy Hydrocarbons are not included in the Total C16-C50 and are only determined if the chromatogram of the C34 - C50 hydrocarbons indicates that hydrocarbons >C50 are present.
Total C6 - C50 results are corrected for BTEX contributions.
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
nC6 and nC10 response factors are within 30% of Toluene response factor.
nC10, nC16 and nC34 response factors are within 10% of their average.
C50 response factor is within 70% of nC10 + nC16 + nC34 average.
Linearity is within 15%.
Extraction and holding times were met for this sample.
Fractions 1-4 are quantified without the contribution of PAHs. Under Ontario Regulation 153, results are considered valid without determining the PAH contribution if not requested by the client.

Certified By: Manpreet Saroo

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AGAT WORK ORDER: 13T694478

PROJECT NO: 13HX002

CLIENT NAME: PETO MACCALLUM LIMITED

ATTENTION TO: Dave Smith

O. Reg. 153(511) - VOCs (Soil)

DATE RECEIVED: 2013-03-06

DATE REPORTED: 2013-03-13

SAMPLE DESCRIPTION:				BH/MW 101 SS2B	BH 104 SS1B	BH 105 SS3	BH 108 SS2	BH 109 SS4	BH 110 AS1	BH 111 AS1A	BH 112 AS1
SAMPLE TYPE:				Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
DATE SAMPLED:				3/5/2013	3/4/2013	3/5/2013	3/5/2013	3/5/2013	3/5/2013	3/5/2013	3/5/2013
Parameter	Unit	G / S	RDL	4174583	4174599	4174602	4174605	4174611	4174614	4174618	4174620
Acetone	ug/g	16	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Benzene	ug/g	0.21	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Bromodichloromethane	ug/g	13	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Bromoform	ug/g	0.27	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Bromomethane	ug/g	0.05	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Carbon Tetrachloride	ug/g	0.05	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorobenzene	ug/g	2.4	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Chloroform	ug/g	0.05	0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Cis- 1,2-Dichloroethylene	ug/g	3.4	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Dibromochloromethane	ug/g	9.4	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1,3-Dichlorobenzene	ug/g	4.8	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1,2-Dichlorobenzene	ug/g	3.4	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1,4-Dichlorobenzene	ug/g	0.083	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Dichlorodifluoromethane	µg/g	16	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1,1-Dichloroethane	ug/g	3.5	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
1,2-Dichloroethane	ug/g	0.05	0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
1,1-Dichloroethylene	ug/g	0.05	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1,2-Dichloropropane	ug/g	0.05	0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
1,3-Dichloropropene	µg/g	0.05	0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Ethylbenzene	ug/g	2	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Ethylene Dibromide	ug/g	0.05	0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Methyl Ethyl Ketone	ug/g	16	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Methyl Isobutyl Ketone	ug/g	1.7	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Methyl tert-butyl Ether	ug/g	0.75	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Methylene Chloride	ug/g	0.1	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Styrene	ug/g	0.7	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1,1,1,2-Tetrachloroethane	ug/g	0.058	0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
1,1,2,2-Tetrachloroethane	ug/g	0.05	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Tetrachloroethylene	ug/g	0.28	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Toluene	ug/g	2.3	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

Certified By: Manpreet Saroo

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Certificate of Analysis

AGAT WORK ORDER: 13T694478

PROJECT NO: 13HX002

CLIENT NAME: PETO MACCALLUM LIMITED

ATTENTION TO: Dave Smith

O. Reg. 153(511) - VOCs (Soil)

DATE RECEIVED: 2013-03-06

DATE REPORTED: 2013-03-13

				BH/MW 101							
		SAMPLE DESCRIPTION:		SS2B	BH 104 SS1B	BH 105 SS3	BH 108 SS2	BH 109 SS4	BH 110 AS1	BH 111 AS1A	BH 112 AS1
		SAMPLE TYPE:		Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
		DATE SAMPLED:		3/5/2013	3/4/2013	3/5/2013	3/5/2013	3/5/2013	3/5/2013	3/5/2013	3/5/2013
Parameter	**Unit**	**G / S**	**RDL**	**4174583**	**4174599**	**4174602**	**4174605**	**4174611**	**4174614**	**4174618**	**4174620**
Trans- 1,2-Dichloroethylene	ug/g	0.084	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1,1,1-Trichloroethane	ug/g	0.38	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1,1,2-Trichloroethane	ug/g	0.05	0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Trichloroethylene	ug/g	0.061	0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Trichlorofluoromethane	ug/g	4	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Vinyl Chloride	ug/g	0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Xylene Mixture	ug/g	3.1	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
m & p-Xylene	ug/g		0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
n-Hexane	µg/g	2.8	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
o-Xylene	ug/g		0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Surrogate	**Unit**	**Acceptable Limits**									
4-Bromofluorobenzene	% Recovery	50-140		125	120	120	122	122	120	121	122
Toluene-d8	% Recovery	50-140		95	96	93	95	95	93	97	96

Certified By: Manpreet Saroo

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Certificate of Analysis

AGAT WORK ORDER: 13T694478

PROJECT NO: 13HX002

CLIENT NAME: PETO MACCALLUM LIMITED

ATTENTION TO: Dave Smith

O. Reg. 153(511) - VOCs (Soil)

DATE RECEIVED: 2013-03-06

DATE REPORTED: 2013-03-13

		SAMPLE DESCRIPTION:		BH 113 AS1	DUP 1
		SAMPLE TYPE:		Soil	Soil
		DATE SAMPLED:		3/5/2013	3/5/2013
Parameter	Unit	G / S	RDL	4174624	4174628
Acetone	ug/g	16	0.50	<0.50	<0.50
Benzene	ug/g	0.21	0.02	<0.02	<0.02
Bromodichloromethane	ug/g	13	0.05	<0.05	<0.05
Bromoform	ug/g	0.27	0.05	<0.05	<0.05
Bromomethane	ug/g	0.05	0.05	<0.05	<0.05
Carbon Tetrachloride	ug/g	0.05	0.05	<0.05	<0.05
Chlorobenzene	ug/g	2.4	0.05	<0.05	<0.05
Chloroform	ug/g	0.05	0.04	<0.04	<0.04
Cis- 1,2-Dichloroethylene	ug/g	3.4	0.02	<0.02	<0.02
Dibromochloromethane	ug/g	9.4	0.05	<0.05	<0.05
1,3-Dichlorobenzene	ug/g	4.8	0.05	<0.05	<0.05
1,2-Dichlorobenzene	ug/g	3.4	0.05	<0.05	<0.05
1,4-Dichlorobenzene	ug/g	0.083	0.05	<0.05	<0.05
Dichlorodifluoromethane	µg/g	16	0.05	<0.05	<0.05
1,1-Dichloroethane	ug/g	3.5	0.02	<0.02	<0.02
1,2-Dichloroethane	ug/g	0.05	0.03	<0.03	<0.03
1,1-Dichloroethylene	ug/g	0.05	0.05	<0.05	<0.05
1,2-Dichloropropane	ug/g	0.05	0.03	<0.03	<0.03
1,3-Dichloropropene	µg/g	0.05	0.04	<0.04	<0.04
Ethylbenzene	ug/g	2	0.05	<0.05	<0.05
Ethylene Dibromide	ug/g	0.05	0.04	<0.04	<0.04
Methyl Ethyl Ketone	ug/g	16	0.50	<0.50	<0.50
Methyl Isobutyl Ketone	ug/g	1.7	0.50	<0.50	<0.50
Methyl tert-butyl Ether	ug/g	0.75	0.05	<0.05	<0.05
Methylene Chloride	ug/g	0.1	0.05	<0.05	<0.05
Styrene	ug/g	0.7	0.05	<0.05	<0.05
1,1,1,2-Tetrachloroethane	ug/g	0.058	0.04	<0.04	<0.04
1,1,2,2-Tetrachloroethane	ug/g	0.05	0.05	<0.05	<0.05
Tetrachloroethylene	ug/g	0.28	0.05	<0.05	<0.05
Toluene	ug/g	2.3	0.05	<0.05	<0.05
Trans- 1,2-Dichloroethylene	ug/g	0.084	0.05	<0.05	<0.05

Certified By: Manpreet Sarao

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AGAT WORK ORDER: 13T694478

PROJECT NO: 13HX002

CLIENT NAME: PETO MACCALLUM LIMITED

ATTENTION TO: Dave Smith

O. Reg. 153(511) - VOCs (Soil)

DATE RECEIVED: 2013-03-06

DATE REPORTED: 2013-03-13

		SAMPLE DESCRIPTION:		BH 113 AS1	DUP 1
		SAMPLE TYPE:		Soil	Soil
		DATE SAMPLED:		3/5/2013	3/5/2013
Parameter	Unit	G / S	RDL	4174624	4174628
1,1,1-Trichloroethane	ug/g	0.38	0.05	<0.05	<0.05
1,1,2-Trichloroethane	ug/g	0.05	0.04	<0.04	<0.04
Trichloroethylene	ug/g	0.061	0.03	<0.03	<0.03
Trichlorofluoromethane	ug/g	4	0.05	<0.05	<0.05
Vinyl Chloride	ug/g	0.02	0.02	<0.02	<0.02
Xylene Mixture	ug/g	3.1	0.05	<0.05	<0.05
m & p-Xylene	ug/g		0.05	<0.05	<0.05
n-Hexane	µg/g	2.8	0.05	<0.05	<0.05
o-Xylene	ug/g		0.05	<0.05	<0.05
Surrogate	**Unit**	**Acceptable Limits**			
4-Bromofluorobenzene	% Recovery	50-140		114	119
Toluene-d8	% Recovery	50-140		97	94

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to T3(RPI) - Current

4174583-4174602 The sample was analysed using the high level technique. The sample was extracted using methanol, a small amount of the methanol extract was diluted in water and the purge & trap GC/MS analysis was performed. Results are based on the dry weight of the soil.

4174605 The sample was analysed using the high level technique. The sample was extracted using methanol, a small amount of the methanol extract was diluted in water and the purge & trap GC/MS analysis was performed. Results are based on the dry weight of the soil.

4174611-4174628 The sample was analysed using the high level technique. The sample was extracted using methanol, a small amount of the methanol extract was diluted in water and the purge & trap GC/MS analysis was performed. Results are based on the dry weight of the soil.

Certified By: Manpreet Saleo

Results relate only to the items tested and to all the items tested

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Guideline Violation

AGAT WORK ORDER: 13T694478

PROJECT NO: 13HX002

CLIENT NAME: PETO MACCALLUM LIMITED

ATTENTION TO: Dave Smith

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	GUIDEVALUE	RESULT
4174604	BH 107 SS1A	T3(RPI) - Current	O. Reg. 153(511) - Metals & Inorganics (Soil) - custom	Cadmium	1.2	1.7
4174614	BH 110 AS1	T3(RPI) - Current	O. Reg. 153(511) - PHCs F1 - F4 (-BTEX) (Soil)	F3 (C16 to C34)	300	550
4174620	BH 112 AS1	T3(RPI) - Current	O. Reg. 153(511) - Metals & Inorganics (Soil) - custom	Cadmium	1.2	1.6
4174620	BH 112 AS1	T3(RPI) - Current	O. Reg. 153(511) - PHCs F1 - F4 (-BTEX) (Soil)	F3 (C16 to C34)	300	2400

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Quality Assurance

CLIENT NAME: PETO MACCALLUM LIMITED

AGAT WORK ORDER: 13T694478

PROJECT NO: 13HX002

ATTENTION TO: Dave Smith

Soil Analysis

RPT Date: Mar 13, 2013			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - Metals & Inorganics (Soil) - custom															
Antimony	1	4174583	< 0.8	< 0.8	0.0%	< 0.8	73%	70%	130%	97%	80%	120%	96%	70%	130%
Arsenic	1	4174583	6	6	0.0%	< 1	103%	70%	130%	102%	80%	120%	98%	70%	130%
Barium	1	4174583	82	83	1.2%	< 2	100%	70%	130%	107%	80%	120%	118%	70%	130%
Beryllium	1	4174583	0.8	0.8	0.0%	< 0.5	95%	70%	130%	102%	80%	120%	94%	70%	130%
Boron	1	4174583	9	9	0.0%	< 5	79%	70%	130%	104%	80%	120%	90%	70%	130%
Boron (Hot Water Soluble)	1	4174592	1.25	1.32	5.6%	< 0.10	108%	60%	140%	96%	70%	130%	104%	70%	140%
Cadmium	1	4174583	< 0.5	< 0.5	0.0%	< 0.5	107%	70%	130%	104%	80%	120%	109%	70%	130%
Chromium	1	4174583	22	22	0.0%	< 2	98%	70%	130%	102%	80%	120%	92%	70%	130%
Chromium VI	1	4174592	< 0.2	< 0.2	0.0%	< 0.2	100%	70%	130%	106%	80%	120%	110%	70%	130%
Cobalt	1	4174583	12.0	11.3	6.0%	< 0.5	101%	70%	130%	100%	80%	120%	97%	70%	130%
Copper	1	4174583	41	42	2.4%	< 1	100%	70%	130%	101%	80%	120%	87%	70%	130%
Cyanide	1	4174583	< 0.040	< 0.040	0.0%	< 0.040	97%	70%	130%	106%	80%	120%	108%	70%	130%
Electrical Conductivity	1	4174624	0.452	0.458	1.3%	< 0.005	95%	90%	110%	NA			NA		
Lead	1	4174583	14	15	6.9%	< 1	105%	70%	130%	102%	80%	120%	94%	70%	130%
Mercury	1	4174583	< 0.10	< 0.10	0.0%	< 0.10	125%	70%	130%	104%	80%	120%	101%	70%	130%
Molybdenum	1	4174583	1.0	1.0	0.0%	< 0.5	101%	70%	130%	102%	80%	120%	113%	70%	130%
Nickel	1	4174583	26	25	3.9%	< 1	102%	70%	130%	108%	80%	120%	100%	70%	130%
Selenium	1	4174583	< 0.4	< 0.4	0.0%	< 0.4	85%	70%	130%	104%	80%	120%	98%	70%	130%
Silver	1	4174583	< 0.2	< 0.2	0.0%	< 0.2	75%	70%	130%	104%	80%	120%	103%	70%	130%
Sodium Adsorption Ratio (2:1)	1	4174624	0.729	0.754	3.4%	N/A	NA			NA			NA		
Thallium	1	4174583	< 0.4	< 0.4	0.0%	< 0.4	103%	70%	130%	101%	80%	120%	96%	70%	130%
Uranium	1	4174583	0.9	0.9	0.0%	< 0.5	98%	70%	130%	94%	80%	120%	92%	70%	130%
Vanadium	1	4174583	30	30	0.0%	< 1	94%	70%	130%	97%	80%	120%	97%	70%	130%
Zinc	1	4174583	68	59	14.2%	< 5	103%	70%	130%	101%	80%	120%	88%	70%	130%
pH, 2:1 CaCl2 Extraction	1	4174624	8.35	8.35	0.0%	NA	103%	90%	110%	NA			NA		

Comments: NA signifies Not Applicable

Certified By:

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Quality Assurance

CLIENT NAME: PETO MACCALLUM LIMITED

AGAT WORK ORDER: 13T694478

PROJECT NO: 13HX002

ATTENTION TO: Dave Smith

Trace Organics Analysis

RPT Date: Mar 13, 2013			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - VOCs (Soil)															
Acetone	1	4174628	< 0.50	< 0.50	0.0%	< 0.50	113%	50%	140%	105%	50%	140%	121%	50%	140%
Benzene	1	4174628	< 0.02	< 0.02	0.0%	< 0.02	102%	50%	140%	108%	60%	130%	115%	50%	140%
Bromodichloromethane	1	4174628	< 0.05	< 0.05	0.0%	< 0.05	125%	50%	140%	121%	60%	130%	128%	50%	140%
Bromoform	1	4174628	< 0.05	< 0.05	0.0%	< 0.05	119%	50%	140%	115%	60%	130%	126%	50%	140%
Bromomethane	1	4174628	< 0.05	< 0.05	0.0%	< 0.05	116%	50%	140%	121%	50%	140%	124%	50%	140%
Carbon Tetrachloride	1	4174628	< 0.05	< 0.05	0.0%	< 0.05	123%	50%	140%	120%	60%	130%	127%	50%	140%
Chlorobenzene	1	4174628	< 0.05	< 0.05	0.0%	< 0.05	113%	50%	140%	114%	60%	130%	124%	50%	140%
Chloroform	1	4174628	< 0.04	< 0.04	0.0%	< 0.04	127%	50%	140%	127%	60%	130%	123%	50%	140%
Cis- 1,2-Dichloroethylene	1	4174628	< 0.02	< 0.02	0.0%	< 0.02	100%	50%	140%	98%	60%	130%	107%	50%	140%
Dibromochloromethane	1	4174628	< 0.05	< 0.05	0.0%	< 0.05	120%	50%	140%	119%	60%	130%	126%	50%	140%
1,3-Dichlorobenzene	1	4174628	< 0.05	< 0.05	0.0%	< 0.05	109%	50%	140%	102%	60%	130%	112%	50%	140%
1,2-Dichlorobenzene	1	4174628	< 0.05	< 0.05	0.0%	< 0.05	111%	50%	140%	106%	60%	130%	114%	50%	140%
1,4-Dichlorobenzene	1	4174628	< 0.05	< 0.05	0.0%	< 0.05	113%	50%	140%	107%	60%	130%	117%	50%	140%
Dichlorodifluoromethane	1	4174628	< 0.05	< 0.05	0.0%	< 0.05	130%	50%	140%	96%	50%	140%	113%	50%	140%
1,1-Dichloroethane	1	4174628	< 0.02	< 0.02	0.0%	< 0.02	127%	50%	140%	121%	60%	130%	130%	50%	140%
1,2-Dichloroethane	1	4174628	< 0.03	< 0.03	0.0%	< 0.03	115%	50%	140%	117%	60%	130%	127%	50%	140%
1,1-Dichloroethylene	1	4174628	< 0.05	< 0.05	0.0%	< 0.05	110%	50%	140%	127%	60%	130%	129%	50%	140%
1,2-Dichloropropane	1	4174628	< 0.03	< 0.03	0.0%	< 0.03	108%	50%	140%	111%	60%	130%	119%	50%	140%
1,3-Dichloropropene	1	4174628	< 0.04	< 0.04	0.0%	< 0.04	92%	50%	140%	96%	60%	130%	102%	50%	140%
Ethylbenzene	1	4174628	< 0.05	< 0.05	0.0%	< 0.05	94%	50%	140%	98%	60%	130%	108%	50%	140%
Ethylene Dibromide	1	4174628	< 0.04	< 0.04	0.0%	< 0.04	113%	50%	140%	114%	60%	130%	117%	50%	140%
Methyl Ethyl Ketone	1	4174628	< 0.50	< 0.50	0.0%	< 0.50	90%	50%	140%	97%	50%	140%	97%	50%	140%
Methyl Isobutyl Ketone	1	4174628	< 0.50	< 0.50	0.0%	< 0.50	66%	50%	140%	97%	50%	140%	99%	50%	140%
Methyl tert-butyl Ether	1	4174628	< 0.05	< 0.05	0.0%	< 0.05	94%	50%	140%	105%	60%	130%	115%	50%	140%
Methylene Chloride	1	4174628	< 0.05	< 0.05	0.0%	< 0.05	126%	50%	140%	127%	60%	130%	119%	50%	140%
Styrene	1	4174628	< 0.05	< 0.05	0.0%	< 0.05	88%	50%	140%	96%	60%	130%	106%	50%	140%
1,1,1,2-Tetrachloroethane	1	4174628	< 0.04	< 0.04	0.0%	< 0.04	NA	50%	140%	120%	60%	130%	129%	50%	140%
1,1,2,2-Tetrachloroethane	1	4174628	< 0.05	< 0.05	0.0%	< 0.05	NA	50%	140%	130%	60%	130%	127%	50%	140%
Tetrachloroethylene	1	4174628	< 0.05	< 0.05	0.0%	< 0.05	101%	50%	140%	108%	60%	130%	120%	50%	140%
Toluene	1	4174628	< 0.05	< 0.05	0.0%	< 0.05	108%	50%	140%	104%	60%	130%	112%	50%	140%
Trans- 1,2-Dichloroethylene	1	4174628	< 0.05	< 0.05	0.0%	< 0.05	117%	50%	140%	112%	60%	130%	120%	50%	140%
1,1,1-Trichloroethane	1	4174628	< 0.05	< 0.05	0.0%	< 0.05	124%	50%	140%	120%	60%	130%	128%	50%	140%
1,1,2-Trichloroethane	1	4174628	< 0.04	< 0.04	0.0%	< 0.04	130%	50%	140%	121%	60%	130%	125%	50%	140%
Trichloroethylene	1	4174628	< 0.03	< 0.03	0.0%	< 0.03	130%	50%	140%	104%	60%	130%	116%	50%	140%
Trichlorofluoromethane	1	4174628	< 0.05	< 0.05	0.0%	< 0.05	121%	50%	140%	122%	50%	140%	130%	50%	140%
Vinyl Chloride	1	4174628	< 0.02	< 0.02	0.0%	< 0.02	129%	50%	140%	123%	50%	140%	128%	50%	140%
Xylene Mixture	1	4174628	< 0.05	< 0.05	0.0%	< 0.05	95%	50%	140%	92%	60%	130%	102%	50%	140%
m & p-Xylene	1	4174628	< 0.05	< 0.05	0.0%	< 0.05	105%	50%	140%	102%	60%	130%	113%	50%	140%
n-Hexane	1	4174628	< 0.05	< 0.05	0.0%	< 0.05	NA	50%	140%	81%	60%	130%	97%	50%	140%

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Quality Assurance

CLIENT NAME: PETO MACCALLUM LIMITED

AGAT WORK ORDER: 13T694478

PROJECT NO: 13HX002

ATTENTION TO: Dave Smith

Trace Organics Analysis (Continued)

RPT Date: Mar 13, 2013			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
o-Xylene	1	4174628	< 0.05	< 0.05	0.0%	< 0.05	84%	50%	140%	82%	60%	130%	90%	50%	140%
O. Reg. 153(511) - PHCs F1 - F4 (-BTEX) (Soil)															
F1 (C6 to C10)	1	4174628	< 5	< 5	0.0%	< 5	106%	60%	140%	105%	80%	120%	90%	60%	140%
F2 (C10 to C16)	1	4174602	< 10	< 10	0.0%	< 10	110%	60%	140%	102%	80%	120%	86%	60%	140%
F3 (C16 to C34)	1	4174602	<50	<50	0.0%	< 50	111%	60%	140%	93%	80%	120%	107%	60%	140%
F4 (C34 to C50)	1	4174602	<50	<50	0.0%	< 50	106%	60%	140%	93%	80%	120%	89%	60%	140%

Certified By: Manpreet Saleo

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Method Summary

CLIENT NAME: PETO MACCALLUM LIMITED

AGAT WORK ORDER: 13T694478

PROJECT NO: 13HX002

ATTENTION TO: Dave Smith

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Soil Analysis			
Antimony	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Arsenic	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Barium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Beryllium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Boron	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Boron (Hot Water Soluble)	MET-93-6104	EPA SW 846 6010C; MSA, Part 3, Ch.21	ICP/OES
Cadmium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium VI	INOR-93-6029	SM 3500 B; MSA Part 3, Ch. 25	SPECTROPHOTOMETER
Cobalt	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Copper	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Cyanide	INOR-93-6052	MOE CN-3015 & E 3009 A;SM 4500 CN	TECHNICON AUTO ANALYZER
Electrical Conductivity	INOR-93-6036	McKeague 4.12, SM 2510 B	EC METER
Lead	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Mercury	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Molybdenum	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Nickel	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Selenium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Silver	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Sodium Adsorption Ratio (2:1)	INOR-93-6007	McKeague 4.12 & 3.26 & EPA SW-846 6010C	ICP/OES
Thallium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Uranium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Zinc	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
pH, 2:1 CaCl2 Extraction	INOR-93-6031	MSA part 3 & SM 4500-H+ B	PH METER

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Method Summary

CLIENT NAME: PETO MACCALLUM LIMITED

AGAT WORK ORDER: 13T694478

PROJECT NO: 13HX002

ATTENTION TO: Dave Smith

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
F1 (C6 to C10)	VOL-91-5009	CCME Tier 1 Method, SW846 5035	P &T GC / FID
F1 (C6 to C10) minus BTEX	VOL-91-5009	CCME Tier 1 Method, SW846 5035	P & T GC / FID
F2 (C10 to C16)	VOL-91-5009	CCME Tier 1 Method	GC / FID
F3 (C16 to C34)	VOL-91-5009	CCME Tier 1 Method	GC / FID
F4 (C34 to C50)	VOL-91-5009	CCME Tier 1 Method	GC / FID
Gravimetric Heavy Hydrocarbons	VOL-91-5009	CCME Tier 1 Method	GRAVIMETRIC ANALYSIS
Moisture Content	VOL-91-5009	CCME Tier 1 Method, SW846 5035,8015	BALANCE
Terphenyl	VOL-91-5009		GC/FID
Acetone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Benzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromodichloromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
4-Bromofluorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromoform	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromomethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Carbon Tetrachloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Chlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Chloroform	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Cis- 1,2-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Dibromochloromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,3-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,4-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Dichlorodifluoromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1-Dichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichloropropane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,3-Dichloropropene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Ethylbenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Ethylene Dibromide	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl Ethyl Ketone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl Isobutyl Ketone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl tert-butyl Ether	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methylene Chloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Styrene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,1,2-Tetrachloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,2,2-Tetrachloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Tetrachloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Toluene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Toluene-d8	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trans- 1,2-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,1-Trichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,2-Trichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trichlorofluoromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Vinyl Chloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Xylene Mixture	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
m & p-Xylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS

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Method Summary

CLIENT NAME: PETO MACCALLUM LIMITED

AGAT WORK ORDER: 13T694478

PROJECT NO: 13HX002

ATTENTION TO: Dave Smith

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
n-Hexane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
o-Xylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS

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CLIENT NAME: PETO MACCALLUM LIMITED
45 BURFORD ROAD
HAMILTON, ON L8E3C5
(905) 561-2231

ATTENTION TO: Dave Smith

PROJECT NO: 13HX002

AGAT WORK ORDER: 13T695312

SOIL ANALYSIS REVIEWED BY: Elizabeth Polakowska, MSc (Animal Sci), PhD (Agri Sci), Inorganic Lab Supervisor

DATE REPORTED: Mar 15, 2013

PAGES (INCLUDING COVER): 4

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

NOTES

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

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Western Enviro-Agricultural Laboratory Association (WEALA)
Environmental Services Association of Alberta (ESAA)

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Certificate of Analysis

AGAT WORK ORDER: 13T695312

PROJECT NO: 13HX002

CLIENT NAME: PETO MACCALLUM LIMITED

ATTENTION TO: Dave Smith

O. Reg. 153(511) - ORPs (Soil) CN

DATE RECEIVED: 2013-03-08

DATE REPORTED: 2013-03-15

		SAMPLE DESCRIPTION:		GS1	GS2
		SAMPLE TYPE:		Soil	Soil
		DATE SAMPLED:		3/7/2013	3/7/2013
Parameter	Unit	G / S	RDL	4179214	4179215
Cyanide	µg/g	0.051	0.040	<0.040	<0.040

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to T3(RPI) - Current

Certified By: Elizabeth Polakowska

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Quality Assurance

CLIENT NAME: PETO MACCALLUM LIMITED

AGAT WORK ORDER: 13T695312

PROJECT NO: 13HX002

ATTENTION TO: Dave Smith

Soil Analysis

RPT Date: Mar 15, 2013			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - ORPs (Soil) CN															
Cyanide	1		< 0.040	< 0.040	0.0%	< 0.040	105%	70%	130%	101%	80%	120%	80%	70%	130%

Certified By: Elizabeth Rotakowska

AGAT Laboratories is accredited to ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA) and/or Standards Council of Canada (SCC) for specific tests listed on the scope of accreditation. AGAT Laboratories (Mississauga) is also accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA) for specific drinking water tests. Accreditations are location and parameter specific. A complete listing of parameters for each location is available from www.cala.ca and/or www.scc.ca. The tests in this report may not necessarily be included in the scope of accreditation.

Results relate only to the items tested and to all the items tested

AGAT Laboratories

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http://www.agatlabs.com

Method Summary

CLIENT NAME: PETO MACCALLUM LIMITED

AGAT WORK ORDER: 13T695312

PROJECT NO: 13HX002

ATTENTION TO: Dave Smith

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Soil Analysis			
Cyanide	INOR-93-6052	MOE CN-3015 & E 3009 A;SM 4500 CN	TECHNICON AUTO ANALYZER

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O. Reg. 153/04, As Amended, Table 3 Standards (Ground Water)

All Types of Property Uses

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CLIENT NAME: PETO MACCALLUM LIMITED
45 BURFORD ROAD
HAMILTON, ON L8E3C5
(905) 561-2231

ATTENTION TO: Dave Smith

PROJECT NO: 13HX002

AGAT WORK ORDER: 13T695308

TRACE ORGANICS REVIEWED BY: Manpreet Sarao, Senior Analyst

WATER ANALYSIS REVIEWED BY: Inesa Alizarchyk, Inorganic Lab Supervisor

DATE REPORTED: Mar 15, 2013

PAGES (INCLUDING COVER): 10

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

NOTES

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

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

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Certificate of Analysis

AGAT WORK ORDER: 13T695308

PROJECT NO: 13HX002

CLIENT NAME: PETO MACCALLUM LIMITED

ATTENTION TO: Dave Smith

O. Reg. 153(511) - PHCs F1 - F4 (-BTEX) (Water)

DATE RECEIVED: 2013-03-08

DATE REPORTED: 2013-03-15

		SAMPLE DESCRIPTION:		BH/MW101	BH/MW102	BH/MW103	Duplicate A
		SAMPLE TYPE:		Water	Water	Water	Water
		DATE SAMPLED:		3/7/2013	3/7/2013	3/7/2013	3/7/2013
Parameter	Unit	G / S	RDL	4180699	4180710	4180719	4180728
F1 (C6 to C10)	µg/L		25	<25	<25	<25	<25
F1 (C6 to C10) minus BTEX	µg/L	750	25	<25	<25	<25	<25
F2 (C10 to C16)	µg/L	150	100	<100	<100	<100	<100
F3 (C16 to C34)	µg/L	500	100	<100	<100	<100	<100
F4 (C34 to C50)	µg/L	500	100	<100	<100	<100	<100
Gravimetric Heavy Hydrocarbons	µg/L	500	500	NA	NA	NA	NA
Surrogate	**Unit**	**Acceptable Limits**					
Terphenyl	%	60-140		78	81	87	70

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to T3(NPGW) - Current

4180699-4180728 The C6-C10 fraction is calculated using Toluene response factor.
The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and nC34.
Gravimetric Heavy Hydrocarbons are not included in the Total C16 - C50 and are only determined if the chromatogram of the C34 - C50 Hydrocarbons indicated that hydrocarbons >C50 are present.
Total C6-C50 results are corrected for BTEX and PAH contributions.
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
nC6 and nC10 response factors are within 30% of Toluene response factor.
nC10, nC16 and nC34 response factors are within 10% of their average.
C50 response factor is within 70% of nC10 + nC16 nC34 average.
Linearity is within 15%.
Extraction and holding times were met for this sample.
Fractions 1-4 are quantified without the contribution of PAHs. Under Ontario Regulation 153, results are considered valid without determining the PAH contribution if not requested by the client.

Certified By: Manpreet Saroo

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Certificate of Analysis

AGAT WORK ORDER: 13T695308

PROJECT NO: 13HX002

CLIENT NAME: PETO MACCALLUM LIMITED

ATTENTION TO: Dave Smith

O. Reg. 153(511) - VOCs (Water)

DATE RECEIVED: 2013-03-08

DATE REPORTED: 2013-03-15

		SAMPLE DESCRIPTION:		BH/MW101		BH/MW102	BH/MW103	Duplicate A
		SAMPLE TYPE:		Water		Water	Water	Water
		DATE SAMPLED:		3/7/2013		3/7/2013	3/7/2013	3/7/2013
Parameter	Unit	G / S	RDL	4180699	RDL	4180710	4180719	4180728
Acetone	µg/L	130000	1.0	<1.0	2.0	<2.0	<2.0	<2.0
Benzene	µg/L	44	0.20	0.30	0.40	<0.40	<0.40	<0.40
Bromodichloromethane	µg/L	85000	0.20	<0.20	0.40	<0.40	<0.40	<0.40
Bromoform	µg/L	380	0.10	<0.10	0.20	<0.20	<0.20	<0.20
Bromomethane	µg/L	5.6	0.20	<0.20	0.40	<0.40	<0.40	<0.40
Carbon Tetrachloride	µg/L	0.79	0.20	<0.20	0.40	<0.40	<0.40	<0.40
Chlorobenzene	µg/L	630	0.10	<0.10	0.20	<0.20	<0.20	<0.20
Chloroform	µg/L	2.4	0.20	<0.20	0.40	<0.40	<0.40	<0.40
Dibromochloromethane	µg/L	82000	0.10	<0.10	0.20	<0.20	<0.20	<0.20
1,3-Dichlorobenzene	µg/L	9600	0.10	<0.10	0.20	<0.20	<0.20	<0.20
1,2-Dichlorobenzene	µg/L	4600	0.10	<0.10	0.20	<0.20	<0.20	<0.20
1,4-Dichlorobenzene	µg/L	8	0.10	<0.10	0.20	<0.20	<0.20	<0.20
Dichlorodifluoromethane	µg/L	4400	0.20	<0.20	0.40	<0.40	<0.40	<0.40
1,1-Dichloroethane	µg/L	320	0.30	<0.30	0.60	<0.60	<0.60	<0.60
1,2-Dichloroethane	µg/L	1.6	0.20	<0.20	0.40	<0.40	<0.40	<0.40
1,1-Dichloroethylene	µg/L	1.6	0.30	<0.30	0.60	<0.60	<0.60	<0.60
1,2-Dichloropropane	µg/L	16	0.20	<0.20	0.40	<0.40	<0.40	<0.40
1,3-Dichloropropene	µg/L	5.2	0.30	<0.30	0.60	<0.60	<0.60	<0.60
Ethylbenzene	µg/L	2300	0.10	<0.10	0.20	<0.20	<0.20	<0.20
Ethylene Dibromide	µg/L	0.25	0.10	<0.10	0.20	<0.20	<0.20	<0.20
Methyl Ethyl Ketone	µg/L	470000	1.0	<1.0	2.0	<2.0	<2.0	<2.0
Methyl Isobutyl Ketone	µg/L	140000	1.0	<1.0	2.0	<2.0	<2.0	<2.0
Methyl tert-butyl ether	µg/L	190	0.20	<0.20	0.40	<0.40	<0.40	<0.40
Methylene Chloride	µg/L	610	0.30	<0.30	0.60	<0.60	<0.60	<0.60
Styrene	µg/L	1300	0.10	<0.10	0.20	<0.20	<0.20	<0.20
1,1,1,2-Tetrachloroethane	µg/L	3.3	0.10	<0.10	0.20	<0.20	<0.20	<0.20
1,1,2,2-Tetrachloroethane	µg/L	3.2	0.10	<0.10	0.20	<0.20	<0.20	<0.20
Tetrachloroethylene	µg/L	1.6	0.20	<0.20	0.40	<0.40	<0.40	<0.40
Toluene	µg/L	18000	0.20	0.36	0.40	<0.40	<0.40	<0.40
1,1,1-Trichloroethane	µg/L	640	0.30	<0.30	0.60	<0.60	<0.60	<0.60
1,1,2-Trichloroethane	µg/L	4.7	0.20	<0.20	0.40	<0.40	<0.40	<0.40

Certified By: Manpreet Saleo

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AGAT WORK ORDER: 13T695308

PROJECT NO: 13HX002

CLIENT NAME: PETO MACCALLUM LIMITED

ATTENTION TO: Dave Smith

O. Reg. 153(511) - VOCs (Water)

DATE RECEIVED: 2013-03-08

DATE REPORTED: 2013-03-15

		SAMPLE DESCRIPTION:		BH/MW101		BH/MW102	BH/MW103	Duplicate A
		SAMPLE TYPE:		Water		Water	Water	Water
		DATE SAMPLED:		3/7/2013		3/7/2013	3/7/2013	3/7/2013
Parameter	Unit	G / S	RDL	4180699	RDL	4180710	4180719	4180728
Trichloroethylene	µg/L	1.6	0.20	<0.20	0.40	<0.40	<0.40	<0.40
Trichlorofluoromethane	µg/L	2500	0.40	<0.40	0.80	<0.80	<0.80	<0.80
Vinyl Chloride	µg/L	0.5	0.17	<0.17	0.34	<0.34	<0.34	<0.34
Xylene Mixture	µg/L	4200	0.20	<0.20	0.40	<0.40	<0.40	<0.40
cis- 1,2-Dichloroethylene	µg/L	1.6	0.20	<0.20	0.40	<0.40	<0.40	<0.40
m & p-Xylene	µg/L		0.20	<0.20	0.40	<0.40	<0.40	<0.40
n-Hexane	µg/L	51	0.20	<0.20	0.40	<0.40	<0.40	<0.40
o-Xylene	µg/L		0.10	<0.10	0.20	<0.20	<0.20	<0.20
trans- 1,2-Dichloroethylene	µg/L	1.6	0.20	<0.20	0.40	<0.40	<0.40	<0.40
Surrogate	**Unit**	**Acceptable Limits**						
4-Bromofluorobenzene	% Recovery	50-140		90		83	90	94
Toluene-d8	% Recovery	50-140		97		96	100	103

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to T3(NPGW) - Current

4180710 Dilution factor=2
The sample was diluted because it was foamy. The reporting detection limit has been corrected for the dilution factor used.

4180719 Dilution factor=2
The sample was diluted because it was foamy . The reporting detection limit has been corrected for the dilution factor used.

4180728 Dilution factor=2
The sample was diluted because it was foamy. The reporting detection limit has been corrected for the dilution factor used.

Certified By: Manpreet Saroo

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AGAT WORK ORDER: 13T695308

PROJECT NO: 13HX002

CLIENT NAME: PETO MACCALLUM LIMITED

ATTENTION TO: Dave Smith

O. Reg. 153(511) - Metals & Inorganics (Water) - Custom

DATE RECEIVED: 2013-03-08

DATE REPORTED: 2013-03-15

		SAMPLE DESCRIPTION:		BH/MW101	BH/MW102		BH/MW103	Duplicate A
		SAMPLE TYPE:		Water	Water		Water	Water
		DATE SAMPLED:		3/7/2013	3/7/2013		3/7/2013	3/7/2013
Parameter	Unit	G / S	RDL	4180699	4180710	RDL	4180719	4180728
Antimony	µg/L	20000	0.5	<0.5	<0.5	0.5	<0.5	<0.5
Arsenic	µg/L	1900	1.0	1.5	1.3	1.0	1.7	1.6
Barium	µg/L	29000	2.0	70.4	92.5	2.0	73.2	73.1
Beryllium	µg/L	67	0.5	<0.5	<0.5	0.5	<0.5	<0.5
Boron	µg/L	45000	10.0	60.3	462	10.0	300	302
Cadmium	µg/L	2.7	0.2	<0.2	<0.2	0.2	<0.2	<0.2
Chloride	µg/L	2300000	100	188000	110000	200	424000	413000
Chromium	µg/L	810	2.0	5.5	4.2	2.0	9.8	8.2
Chromium VI	µg/L	140	5	<5	<5	5	<5	<5
Cobalt	µg/L	66	0.5	1.6	2.3	0.5	3.9	3.9
Copper	µg/L	87	1.0	2.8	13.7	1.0	6.9	6.9
Cyanide	µg/L	66	2	<2	<2	2	<2	<2
Electrical Conductivity	uS/cm		2	1800	1790	2	2930	2890
Lead	µg/L	25	0.5	<0.5	<0.5	0.5	<0.5	<0.5
Mercury	µg/L	0.29	0.02	<0.02	<0.02	0.02	<0.02	<0.02
Molybdenum	µg/L	9200	0.5	21.3	6.9	0.5	8.5	8.8
Nickel	µg/L	490	1.0	6.8	13.5	1.0	15.1	14.7
Selenium	µg/L	63	1.0	<1.0	<1.0	1.0	<1.0	<1.0
Silver	µg/L	1.5	0.2	<0.2	<0.2	0.2	<0.2	<0.2
Sodium	µg/L	2300000	500	131000	72200	500	481000	459000
Thallium	µg/L	510	0.3	<0.3	<0.3	0.3	<0.3	<0.3
Uranium	µg/L	420	0.5	10.3	7.8	0.5	13.5	13.3
Vanadium	µg/L	250	0.4	1.0	0.9	0.4	1.8	2.0
Zinc	µg/L	1100	5.0	7.1	<5.0	5.0	<5.0	<5.0
pH	pH Units		NA	7.99	7.71	NA	7.80	7.76

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to T3(NPGW) - Current

Certified By:

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Quality Assurance

CLIENT NAME: PETO MACCALLUM LIMITED

AGAT WORK ORDER: 13T695308

PROJECT NO: 13HX002

ATTENTION TO: Dave Smith

Trace Organics Analysis

RPT Date: Mar 15, 2013			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - VOCs (Water)															
Acetone	1		< 1.0	< 1.0	0.0%	< 1.0	101%	50%	140%	108%	50%	140%	85%	50%	140%
Benzene	1		< 0.20	< 0.20	0.0%	< 0.20	101%	50%	140%	110%	60%	130%	88%	50%	140%
Bromodichloromethane	1		< 0.20	< 0.20	0.0%	< 0.20	97%	50%	140%	110%	60%	130%	89%	50%	140%
Bromoform	1		< 0.10	< 0.10	0.0%	< 0.10	98%	50%	140%	104%	60%	130%	89%	50%	140%
Bromomethane	1		< 0.20	< 0.20	0.0%	< 0.20	99%	50%	140%	91%	50%	140%	100%	50%	140%
Carbon Tetrachloride	1		< 0.20	< 0.20	0.0%	< 0.20	94%	50%	140%	106%	60%	130%	88%	50%	140%
Chlorobenzene	1		< 0.10	< 0.10	0.0%	< 0.10	108%	50%	140%	112%	60%	130%	93%	50%	140%
Chloroform	1		< 0.20	< 0.20	0.0%	< 0.20	102%	50%	140%	113%	60%	130%	96%	50%	140%
Dibromochloromethane	1		< 0.10	< 0.10	0.0%	< 0.10	110%	50%	140%	113%	60%	130%	95%	50%	140%
1,3-Dichlorobenzene	1		< 0.10	< 0.10	0.0%	< 0.10	82%	50%	140%	86%	60%	130%	85%	50%	140%
1,2-Dichlorobenzene	1		< 0.10	< 0.10	0.0%	< 0.10	88%	50%	140%	91%	60%	130%	77%	50%	140%
1,4-Dichlorobenzene	1		< 0.10	< 0.10	0.0%	< 0.10	95%	50%	140%	94%	60%	130%	82%	50%	140%
Dichlorodifluoromethane	1		< 0.20	< 0.20	0.0%	< 0.20	117%	50%	140%	109%	50%	140%	81%	50%	140%
1,1-Dichloroethane	1		< 0.30	< 0.30	0.0%	< 0.30	95%	50%	140%	98%	60%	130%	84%	50%	140%
1,2-Dichloroethane	1		< 0.20	< 0.20	0.0%	< 0.20	96%	50%	140%	114%	60%	130%	96%	50%	140%
1,1-Dichloroethylene	1		< 0.30	< 0.30	0.0%	< 0.30	111%	50%	140%	100%	60%	130%	88%	50%	140%
1,2-Dichloropropane	1		< 0.20	< 0.20	0.0%	< 0.20	86%	50%	140%	99%	60%	130%	87%	50%	140%
1,3-Dichloropropene	1		< 0.30	< 0.30	0.0%	< 0.30	79%	50%	140%	83%	60%	130%	80%	50%	140%
Ethylbenzene	1		< 0.10	< 0.10	0.0%	< 0.10	101%	50%	140%	107%	60%	130%	86%	50%	140%
Ethylene Dibromide	1		< 0.10	< 0.10	0.0%	< 0.10	103%	50%	140%	106%	60%	130%	93%	50%	140%
Methyl Ethyl Ketone	1		< 1.0	< 1.0	0.0%	< 1.0	100%	50%	140%	97%	50%	140%	87%	50%	140%
Methyl Isobutyl Ketone	1		< 1.0	< 1.0	0.0%	< 1.0	116%	50%	140%	118%	50%	140%	102%	50%	140%
Methyl tert-butyl ether	1		< 0.20	< 0.20	0.0%	< 0.20	88%	50%	140%	110%	60%	130%	106%	50%	140%
Methylene Chloride	1		< 0.30	< 0.30	0.0%	< 0.30	117%	50%	140%	119%	60%	130%	103%	50%	140%
Styrene	1		< 0.10	< 0.10	0.0%	< 0.10	74%	50%	140%	87%	60%	130%	77%	50%	140%
1,1,1,2-Tetrachloroethane	1		< 0.10	< 0.10	0.0%	< 0.10	NA	50%	140%	105%	60%	130%	89%	50%	140%
1,1,2,2-Tetrachloroethane	1		< 0.10	< 0.10	0.0%	< 0.10	NA	50%	140%	117%	60%	130%	106%	50%	140%
Tetrachloroethylene	1		< 0.20	< 0.20	0.0%	< 0.20	114%	50%	140%	111%	60%	130%	92%	50%	140%
Toluene	1		< 0.20	< 0.20	0.0%	< 0.20	115%	50%	140%	118%	60%	130%	98%	50%	140%
1,1,1-Trichloroethane	1		< 0.30	< 0.30	0.0%	< 0.30	80%	50%	140%	86%	60%	130%	76%	50%	140%
1,1,2-Trichloroethane	1		< 0.20	< 0.20	0.0%	< 0.20	108%	50%	140%	84%	60%	130%	102%	50%	140%
Trichloroethylene	1		< 0.20	< 0.20	0.0%	< 0.20	105%	50%	140%	116%	60%	130%	89%	50%	140%
Trichlorofluoromethane	1		< 0.40	< 0.40	0.0%	< 0.40	115%	50%	140%	103%	50%	140%	87%	50%	140%
Vinyl Chloride	1		< 0.17	< 0.17	0.0%	< 0.17	116%	50%	140%	98%	50%	140%	97%	50%	140%
Xylene Mixture	1		< 0.20	< 0.20	0.0%	< 0.20	112%	50%	140%	112%	60%	130%	92%	50%	140%
cis- 1,2-Dichloroethylene	1		< 0.20	< 0.20	0.0%	< 0.20	94%	50%	140%	109%	60%	130%	91%	50%	140%
m & p-Xylene	1		< 0.20	< 0.20	0.0%	< 0.20	111%	50%	140%	110%	60%	130%	90%	50%	140%
n-Hexane	1		< 0.20	< 0.20	0.0%	< 0.20	NA	50%	140%	76%	60%	130%	88%	50%	140%
o-Xylene	1		< 0.10	< 0.10	0.0%	< 0.10	113%	50%	140%	114%	60%	130%	93%	50%	140%

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AGAT Laboratories

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http://www.agatlabs.com

Quality Assurance

CLIENT NAME: PETO MACCALLUM LIMITED

AGAT WORK ORDER: 13T695308

PROJECT NO: 13HX002

ATTENTION TO: Dave Smith

Trace Organics Analysis (Continued)

RPT Date: Mar 15, 2013			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
trans- 1,2-Dichloroethylene	1		< 0.20	< 0.20	0.0%	< 0.20	94%	50%	140%	102%	60%	130%	87%	50%	140%
O. Reg. 153(511) - PHCs F1 - F4 (-BTEX) (Water)															
F1 (C6 to C10)	1		< 25	< 25	0.0%	< 25	102%	60%	140%	87%	60%	140%	84%	60%	140%
F2 (C10 to C16)			<100	<100	0.0%	< 100	100%	60%	140%	60%	60%	140%	108%	60%	140%
F3 (C16 to C34)			<100	<100	0.0%	< 100	103%	60%	140%	68%	60%	140%	108%	60%	140%
F4 (C34 to C50)			<100	<100	0.0%	< 100	99%	60%	140%	84%	60%	140%	115%	60%	140%

Certified By: Manpreet Saleo

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Quality Assurance

CLIENT NAME: PETO MACCALLUM LIMITED

AGAT WORK ORDER: 13T695308

PROJECT NO: 13HX002

ATTENTION TO: Dave Smith

Water Analysis

RPT Date: Mar 15, 2013			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - Metals & Inorganics (Water) - Custom															
Antimony	1		< 0.5	< 0.5	0.0%	< 0.5	105%	70%	130%	97%	80%	120%	97%	70%	130%
Arsenic	1		< 1.0	< 1.0	0.0%	< 1.0	98%	70%	130%	94%	80%	120%	100%	70%	130%
Barium	1		41.4	42.7	3.1%	< 2.0	101%	70%	130%	103%	80%	120%	98%	70%	130%
Beryllium	1		< 0.5	< 0.5	0.0%	< 0.5	100%	70%	130%	98%	80%	120%	102%	70%	130%
Boron	1		72.6	83.6	14.1%	< 10.0	100%	70%	130%	96%	80%	120%	101%	70%	130%
Cadmium	1		< 0.2	< 0.2	0.0%	< 0.2	99%	70%	130%	109%	80%	120%	113%	70%	130%
Chloride	4178250		79600	79300	0.4%	< 100	105%	70%	130%	100%	70%	130%	104%	70%	130%
Chromium	1		5.5	6.3	13.6%	< 2.0	95%	70%	130%	93%	80%	120%	92%	70%	130%
Chromium VI	1	4180699	< 5	< 5	0.0%	< 5	99%	70%	130%	105%	80%	120%	102%	70%	130%
Cobalt	1		2.3	2.3	0.0%	< 0.5	98%	70%	130%	97%	80%	120%	98%	70%	130%
Copper	1		2.1	2.2	4.7%	< 1.0	101%	70%	130%	100%	80%	120%	98%	70%	130%
Cyanide	1	4180699	< 2	< 2	0.0%	< 2	97%	70%	130%	95%	80%	120%	80%	70%	130%
Electrical Conductivity	4180852		1960	1970	0.3%	< 2	104%	90%	110%	NA			NA		
Lead	1		< 0.5	< 0.5	0.0%	< 0.5	99%	70%	130%	100%	80%	120%	96%	70%	130%
Mercury	1	4180699	<0.02	<0.02	0.0%	< 0.02	103%	70%	130%	96%	80%	120%	99%	70%	130%
Molybdenum	1		3.0	3.2	6.5%	< 0.5	103%	70%	130%	98%	80%	120%	100%	70%	130%
Nickel	1		5.9	5.8	1.7%	< 1.0	101%	70%	130%	99%	80%	120%	100%	70%	130%
Selenium	1		1.2	1.6	NA	< 1.0	100%	70%	130%	96%	80%	120%	102%	70%	130%
Silver	1		< 0.2	< 0.2	0.0%	< 0.2	99%	70%	130%	104%	80%	120%	106%	70%	130%
Sodium	1		1790	1760	1.7%	< 500	96%	70%	130%	100%	80%	120%	96%	70%	130%
Thallium	1		< 0.3	< 0.3	0.0%	< 0.3	97%	70%	130%	97%	80%	120%	94%	70%	130%
Uranium	1		0.5	0.5	0.0%	< 0.5	99%	70%	130%	95%	80%	120%	98%	70%	130%
Vanadium	1		0.7	1.0	NA	< 0.4	100%	70%	130%	101%	80%	120%	100%	70%	130%
Zinc	1		57.8	60.6	4.7%	< 5.0	101%	70%	130%	98%	80%	120%	100%	70%	130%
pH	4180852		7.68	7.85	2.2%	NA	98%	90%	110%	NA			NA		

Comments: RPD Qualifier: As the average value of 2 sample replicates is less than 5X RDL, the lab's RPD acceptance criteria is not applicable (NA).

Certified By:

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Method Summary

CLIENT NAME: PETO MACCALLUM LIMITED

AGAT WORK ORDER: 13T695308

PROJECT NO: 13HX002

ATTENTION TO: Dave Smith

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
F1 (C6 to C10)	VOL-91-5010	MOE PHC E3421	(P&T)GC/FID
F1 (C6 to C10) minus BTEX	VOL-91-5010	MOE PHC E3421	(P&T)GC/FID
F2 (C10 to C16)	VOL-91-5010	MOE PHC E3421	GC / FID
F3 (C16 to C34)	VOL-91-5010	MOE PHC E3421	GC / FID
F4 (C34 to C50)	VOL-91-5010	MOE PHC E3421	GC / FID
Gravimetric Heavy Hydrocarbons	VOL-91-5010	MOE PHC E3421	BALANCE
Terphenyl	VOL-91-5010		GC/FID
Acetone	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Benzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Bromodichloromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
4-Bromofluorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Bromoform	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Bromomethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Carbon Tetrachloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Chlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Chloroform	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Dibromochloromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,3-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,2-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,4-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Dichlorodifluoromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1-Dichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,2-Dichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1-Dichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,2-Dichloropropane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,3-Dichloropropene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Ethylbenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Ethylene Dibromide	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methyl Ethyl Ketone	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methyl Isobutyl Ketone	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methyl tert-butyl ether	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methylene Chloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Styrene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,1,2-Tetrachloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,2,2-Tetrachloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Tetrachloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Toluene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Toluene-d8	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,1-Trichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,2-Trichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Trichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Trichlorofluoromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Vinyl Chloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Xylene Mixture	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
cis- 1,2-Dichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
m & p-Xylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
n-Hexane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
o-Xylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
trans- 1,2-Dichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS

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Method Summary

CLIENT NAME: PETO MACCALLUM LIMITED **AGAT WORK ORDER: 13T695308**

PROJECT NO: 13HX002 **ATTENTION TO: Dave Smith**

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Antimony	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Arsenic	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Barium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Beryllium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Boron	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cadmium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Chloride	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Chromium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Chromium VI	INOR-93-6034	SM 3500-Cr B	SPECTROPHOTOMETER
Cobalt	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Copper	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cyanide	INOR-93-6052	MOE METHOD CN- 3015 & SM 4500 CN- I	TECHNICON AUTO ANALYZER
Electrical Conductivity	INOR-93-6000	SM 2510 B	PC TITRATE
Lead	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Mercury	MET-93-6100	EPA SW-846 7470 & 245.1	CVAAS
Molybdenum	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Nickel	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Selenium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Silver	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Sodium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Thallium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Uranium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Zinc	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
pH	INOR-93-6000	SM 4500-H+ B	PC TITRATE

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CLIENT NAME: PETO MACCALLUM LIMITED
45 BURFORD ROAD
HAMILTON, ON L8E3C5
(905) 561-2231

ATTENTION TO: Dave Smith

PROJECT NO: 13HX002

AGAT WORK ORDER: 13T695310

TRACE ORGANICS REVIEWED BY: Oksana Gushyla, Analyst

DATE REPORTED: Mar 15, 2013

PAGES (INCLUDING COVER): 6

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

NOTES

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

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Western Enviro-Agricultural Laboratory Association (WEALA)
Environmental Services Association of Alberta (ESAA)

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Certificate of Analysis

AGAT WORK ORDER: 13T695310

PROJECT NO: 13HX002

CLIENT NAME: PETO MACCALLUM LIMITED

ATTENTION TO: Dave Smith

O. Reg. 153(511) - VOCs (Water)

DATE RECEIVED: 2013-03-08

DATE REPORTED: 2013-03-15

		SAMPLE DESCRIPTION:		Trip Blank
		SAMPLE TYPE:		Water
		DATE SAMPLED:		3/7/2013
Parameter	Unit	G / S	RDL	4179210
Dichlorodifluoromethane	µg/L	590	0.20	<0.20
Vinyl Chloride	µg/L	0.5	0.17	<0.17
Bromomethane	µg/L	0.89	0.20	<0.20
Trichlorofluoromethane	µg/L	150	0.40	<0.40
Acetone	µg/L	2700	1.0	<1.0
1,1-Dichloroethylene	µg/L	0.5	0.30	<0.30
Methylene Chloride	µg/L	5	0.30	<0.30
trans- 1,2-Dichloroethylene	µg/L	1.6	0.20	<0.20
Methyl tert-butyl ether	µg/L	15	0.20	<0.20
1,1-Dichloroethane	µg/L	0.5	0.30	<0.30
Methyl Ethyl Ketone	µg/L	400	1.0	<1.0
cis- 1,2-Dichloroethylene	µg/L	1.6	0.20	<0.20
Chloroform	µg/L	2	0.20	<0.20
1,2-Dichloroethane	µg/L	0.5	0.20	<0.20
1,1,1-Trichloroethane	µg/L	0.5	0.30	<0.30
Carbon Tetrachloride	µg/L	0.2	0.20	<0.20
Benzene	µg/L	0.5	0.20	<0.20
1,2-Dichloropropane	µg/L	0.5	0.20	<0.20
Trichloroethylene	µg/L	0.5	0.20	<0.20
Bromodichloromethane	µg/L	2	0.20	<0.20
Methyl Isobutyl Ketone	µg/L	640	1.0	<1.0
1,1,2-Trichloroethane	µg/L	0.5	0.20	<0.20
Toluene	µg/L	0.8	0.20	<0.20
Dibromochloromethane	µg/L	2	0.10	<0.10
Ethylene Dibromide	µg/L	0.2	0.10	<0.10
Tetrachloroethylene	µg/L	0.5	0.20	<0.20
1,1,1,2-Tetrachloroethane	µg/L	1.1	0.10	<0.10
Chlorobenzene	µg/L	0.5	0.10	<0.10
Ethylbenzene	µg/L	0.5	0.10	<0.10
m & p-Xylene	µg/L		0.20	<0.20
Bromoform	µg/L	5	0.10	<0.10

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Certificate of Analysis

AGAT WORK ORDER: 13T695310

PROJECT NO: 13HX002

CLIENT NAME: PETO MACCALLUM LIMITED

ATTENTION TO: Dave Smith

O. Reg. 153(511) - VOCs (Water)

DATE RECEIVED: 2013-03-08

DATE REPORTED: 2013-03-15

		SAMPLE DESCRIPTION:		Trip Blank
		SAMPLE TYPE:		Water
		DATE SAMPLED:		3/7/2013
Parameter	Unit	G / S	RDL	4179210
Styrene	µg/L	0.5	0.10	<0.10
1,1,2,2-Tetrachloroethane	µg/L	0.5	0.10	<0.10
o-Xylene	µg/L		0.10	<0.10
1,3-Dichlorobenzene	µg/L	0.5	0.10	<0.10
1,4-Dichlorobenzene	µg/L	0.5	0.10	<0.10
1,2-Dichlorobenzene	µg/L	0.5	0.10	<0.10
1,3-Dichloropropene	µg/L	0.5	0.30	<0.30
Xylene Mixture	µg/L	72	0.20	<0.20
n-Hexane	µg/L	5	0.20	<0.20
Surrogate	**Unit**	**Acceptable Limits**		
Toluene-d8	% Recovery	50-140		108
4-Bromofluorobenzene	% Recovery	50-140		97

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to T1(ALL GW) - Current

4179210 Dilution factor=
The sample was diluted to keep the target compounds in the calibration range of the instrument and avoid contaminating the Purge and Trap system. The reporting detection limit has been corrected for the dilution factor used.

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Quality Assurance

CLIENT NAME: PETO MACCALLUM LIMITED

AGAT WORK ORDER: 13T695310

PROJECT NO: 13HX002

ATTENTION TO: Dave Smith

Trace Organics Analysis

RPT Date: Mar 15, 2013			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - VOCs (Water)															
Dichlorodifluoromethane	1		< 0.20	< 0.20	0.0%	< 0.20	117%	50%	140%	110%	50%	140%	85%	50%	140%
Vinyl Chloride	1		< 0.17	< 0.17	0.0%	< 0.17	111%	50%	140%	104%	50%	140%	110%	50%	140%
Bromomethane	1		< 0.20	< 0.20	0.0%	< 0.20	117%	50%	140%	97%	50%	140%	104%	50%	140%
Trichlorofluoromethane	1		< 0.40	< 0.40	0.0%	< 0.40	110%	50%	140%	109%	50%	140%	118%	50%	140%
Acetone	1		< 1.0	< 1.0	0.0%	< 1.0	110%	50%	140%	115%	50%	140%	107%	50%	140%
1,1-Dichloroethylene	1		< 0.30	< 0.30	0.0%	< 0.30	103%	50%	140%	103%	60%	130%	107%	50%	140%
Methylene Chloride	1		< 0.30	< 0.30	0.0%	< 0.30	102%	50%	140%	116%	60%	130%	116%	50%	140%
trans- 1,2-Dichloroethylene	1		< 0.20	< 0.20	0.0%	< 0.20	86%	50%	140%	107%	60%	130%	91%	50%	140%
Methyl tert-butyl ether	1		< 0.20	< 0.20	0.0%	< 0.20	79%	50%	140%	107%	60%	130%	87%	50%	140%
1,1-Dichloroethane	1		< 0.30	< 0.30	0.0%	< 0.30	89%	50%	140%	106%	60%	130%	107%	50%	140%
Methyl Ethyl Ketone	1		< 1.0	< 1.0	0.0%	< 1.0	77%	50%	140%	103%	50%	140%	97%	50%	140%
cis- 1,2-Dichloroethylene	1		< 0.20	< 0.20	0.0%	< 0.20	73%	50%	140%	107%	60%	130%	97%	50%	140%
Chloroform	1		< 0.20	< 0.20	0.0%	< 0.20	83%	50%	140%	105%	60%	130%	116%	50%	140%
1,2-Dichloroethane	1		< 0.20	< 0.20	0.0%	< 0.20	81%	50%	140%	107%	60%	130%	108%	50%	140%
1,1,1-Trichloroethane	1		< 0.30	< 0.30	0.0%	< 0.30	86%	50%	140%	108%	60%	130%	113%	50%	140%
Carbon Tetrachloride	1		< 0.20	< 0.20	0.0%	< 0.20	86%	50%	140%	107%	60%	130%	117%	50%	140%
Benzene	1		< 0.20	< 0.20	0.0%	< 0.20	92%	50%	140%	108%	60%	130%	108%	50%	140%
1,2-Dichloropropane	1		< 0.20	< 0.20	0.0%	< 0.20	83%	50%	140%	108%	60%	130%	97%	50%	140%
Trichloroethylene	1		< 0.20	< 0.20	0.0%	< 0.20	82%	50%	140%	107%	60%	130%	106%	50%	140%
Bromodichloromethane	1		< 0.20	< 0.20	0.0%	< 0.20	86%	50%	140%	108%	60%	130%	113%	50%	140%
Methyl Isobutyl Ketone	1		< 1.0	< 1.0	0.0%	< 1.0	68%	50%	140%	108%	50%	140%	99%	50%	140%
1,1,2-Trichloroethane	1		< 0.20	< 0.20	0.0%	< 0.20	89%	50%	140%	108%	60%	130%	105%	50%	140%
Toluene	1		< 0.20	< 0.20	0.0%	< 0.20	90%	50%	140%	105%	60%	130%	119%	50%	140%
Dibromochloromethane	1		< 0.10	< 0.10	0.0%	< 0.10	87%	50%	140%	107%	60%	130%	113%	50%	140%
Ethylene Dibromide	1		< 0.10	< 0.10	0.0%	< 0.10	83%	50%	140%	107%	60%	130%	100%	50%	140%
Tetrachloroethylene	1		< 0.20	< 0.20	0.0%	< 0.20	85%	50%	140%	109%	60%	130%	109%	50%	140%
1,1,1,2-Tetrachloroethane	1		< 0.10	< 0.10	0.0%	< 0.10	NA	50%	140%	108%	60%	130%	112%	50%	140%
Chlorobenzene	1		< 0.10	< 0.10	0.0%	< 0.10	89%	50%	140%	106%	60%	130%	118%	50%	140%
Ethylbenzene	1		< 0.10	< 0.10	0.0%	< 0.10	85%	50%	140%	105%	60%	130%	118%	50%	140%
m & p-Xylene	1		< 0.20	< 0.20	0.0%	< 0.20	91%	50%	140%	105%	60%	130%	115%	50%	140%
Bromoform	1		< 0.10	< 0.10	0.0%	< 0.10	86%	50%	140%	106%	60%	130%	113%	50%	140%
Styrene	1		< 0.10	< 0.10	0.0%	< 0.10	75%	50%	140%	109%	60%	130%	110%	50%	140%
1,1,2,2-Tetrachloroethane	1		< 0.10	< 0.10	0.0%	< 0.10	97%	50%	140%	104%	60%	130%	119%	50%	140%
o-Xylene	1		< 0.10	< 0.10	0.0%	< 0.10	90%	50%	140%	108%	60%	130%	116%	50%	140%
1,3-Dichlorobenzene	1		< 0.10	< 0.10	0.0%	< 0.10	85%	50%	140%	109%	60%	130%	100%	50%	140%
1,4-Dichlorobenzene	1		< 0.10	< 0.10	0.0%	< 0.10	90%	50%	140%	107%	60%	130%	115%	50%	140%
1,2-Dichlorobenzene	1		< 0.10	< 0.10	0.0%	< 0.10	84%	50%	140%	108%	60%	130%	98%	50%	140%
1,3-Dichloropropene	1		< 0.30	< 0.30	0.0%	< 0.30	91%	50%	140%	110%	60%	130%	91%	50%	140%
Xylene Mixture	1		< 0.20	< 0.20	0.0%	< 0.20	91%	50%	140%	107%	60%	130%	116%	50%	140%

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FAX (905)712-5122
http://www.agatlabs.com

Quality Assurance

CLIENT NAME: PETO MACCALLUM LIMITED

AGAT WORK ORDER: 13T695310

PROJECT NO: 13HX002

ATTENTION TO: Dave Smith

Trace Organics Analysis (Continued)

RPT Date: Mar 15, 2013			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
n-Hexane	1		< 0.20	< 0.20	0.0%	< 0.20	NA	50%	140%	113%	60%	130%	90%	50%	140%

Certified By:

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Method Summary

CLIENT NAME: PETO MACCALLUM LIMITED

AGAT WORK ORDER: 13T695310

PROJECT NO: 13HX002

ATTENTION TO: Dave Smith

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Dichlorodifluoromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Vinyl Chloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Bromomethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Trichlorofluoromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Acetone	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1-Dichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methylene Chloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
trans- 1,2-Dichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methyl tert-butyl ether	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1-Dichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methyl Ethyl Ketone	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
cis- 1,2-Dichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Chloroform	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,2-Dichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,1-Trichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Carbon Tetrachloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Benzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,2-Dichloropropane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Trichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Bromodichloromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methyl Isobutyl Ketone	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,2-Trichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Toluene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Dibromochloromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Ethylene Dibromide	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Tetrachloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,1,2-Tetrachloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Chlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Ethylbenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
m & p-Xylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Bromoform	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Styrene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,2,2-Tetrachloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
o-Xylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,3-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,4-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,2-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,3-Dichloropropene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Xylene Mixture	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
n-Hexane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Toluene-d8	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
4-Bromofluorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS

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AGAT Laboratories

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Chain of Custody Record

Laboratory Use Only
Arrival Temperature: 4.2-3.9-4.7
AGAT WO #:
Lab Temperature: 3.7 2.9 3.4
Notes: 13T695310

Client Information

Company: Peto MacCallum Ltd
Contact: David Smith
Address: 45 Burford Road
Hamilton L8E 3L6
Phone: 905-561-7223 Fax: 905-561-6366
Project: 13HA002 PO:
AGAT Quotation #:

Please note, if quotation number is not provided, client will be billed full price for analysis.

Regulatory Requirements

- [x] Regulation 153/04 (reg. 511 Amended)
  - Table 1 (indicate one)
  - [ ] Ind/Com
  - [ ] Res/Park
  - [ ] Agriculture
  - Soil Texture (check one): [x] Coarse [ ] Fine
- [ ] Sewer Use
  - Region (indicate one)
  - [ ] Sanitary
  - [ ] Storm
- [ ] Regulation 558
- [ ] CCME
- [ ] Other (specify)
- [ ] Prov. Water Quality Objectives (PWQO)
- [ ] None

Turnaround Time Required (TAT) Required*

Regular TAT
[x] 5 to 7 Working Days

Rush TAT (please provide prior notification)
Rush Surcharges Apply
- [ ] 3 Working Days
- [ ] 2 Working Days
- [ ] 1 Working Day

OR
Date Required (Rush surcharges may apply):

*TAT is exclusive of weekends and statutory holidays

Invoice To

Same: Yes [x] No [ ]
Company:
Contact:
Address:

Is this a drinking water sample? (potable water intended for human consumption) [ ] Yes [x] No
If "Yes", please use the *Drinking Water Chain of Custody Form*

Is this submission for a Record of Site Condition? [ ] Yes [x] No

Legend Matrix

GW Ground Water O Oil
SW Surface Water P Paint
SD Sediment S Soil

Report Information – reports to be sent to:

1. Name: David Smith
   Email: dsmith@petomaccallum.com
2. Name: Sarah Murray
   Email: SMurray@petomaccallum.com

Sample Identification	Date Sampled	Time Sampled	Sample Matrix	# of Containers	Comments Site/Sample Information	Metals and Inorganics	Metal Scan	Hydride Forming Metals	Client Custom Metals	ORPs: ☐ B-HWS ☐ Cl- ☐ CN- ☐ EC ☐ FOC ☐ Cr+6 ☐ SAR ☐ NO3/NO2 ☐ N-Total ☐ Hg ☐ pH	Nutrients: ☐ TP ☐ NH3 ☐ TKN ☐ NO3 ☐ NO2 ☐ NO3/NO2	VOC: [x] VOC [x] THM [x] BTEX	CCME Fractions 1 to 4	ABNs	PAHs	Chlorophenols	PCBs	Organochlorine Pesticides	TCLP Metals/Inorganics	Sewer Use
Trip Blank	Mar 7/13	1:00 pm	GW	3								X								

Samples Relinquished By (Print Name and Sign): Sarah Murray S. Murray
Date/Time: Mar 8/13
Date/Time: 9:00am
Samples Received By (Print Name and Sign): Mel B
Date/Time: 1:45
Date/Time: 1:45

Pink Copy - Client
Yellow Copy - AGAT
White Copy - AGAT

Page 1 of 1
N°: 185935

Waste Characterization

Toxicity Characteristic Leachate Procedure (TCLP)

AGAT Laboratories

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FAX (905)712-5122
http://www.agatlabs.com

CLIENT NAME: PETO MACCALLUM LIMITED
45 BURFORD ROAD
HAMILTON, ON L8E3C5
(905) 561-2231

ATTENTION TO: Dave Smith

PROJECT NO: 13HX002

AGAT WORK ORDER: 13T694482

SOIL ANALYSIS REVIEWED BY: Inesa Alizarchyk, Inorganic Lab Supervisor

TRACE ORGANICS REVIEWED BY: Mervat Armanious, Senior Analyst

DATE REPORTED: Mar 13, 2013

PAGES (INCLUDING COVER): 8

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

NOTES

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

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

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Certificate of Analysis

AGAT WORK ORDER: 13T694482

PROJECT NO: 13HX002

CLIENT NAME: PETO MACCALLUM LIMITED

ATTENTION TO: Dave Smith

Ignitability in Soil

DATE RECEIVED: 2013-03-06

DATE REPORTED: 2013-03-13

			SAMPLE DESCRIPTION:	TCLP
			SAMPLE TYPE:	Soil
			DATE SAMPLED:	3/5/2013
Parameter	Unit	G / S	RDL	4173774
Ignitability				N

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

4173774 N = No Ignition when flame was applied.
Wet soil sample with pebbles.

Certified By:

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Certificate of Analysis

AGAT WORK ORDER: 13T694482

PROJECT NO: 13HX002

CLIENT NAME: PETO MACCALLUM LIMITED

ATTENTION TO: Dave Smith

O. Reg. 558 Metals and Inorganics

DATE RECEIVED: 2013-03-06

DATE REPORTED: 2013-03-13

		SAMPLE DESCRIPTION:		TCLP
		SAMPLE TYPE:		Soil
		DATE SAMPLED:		3/5/2013
Parameter	Unit	G / S	RDL	4173774
Arsenic Leachate	mg/L	2.5	0.010	<0.010
Barium Leachate	mg/L	100	0.100	0.640
Boron Leachate	mg/L	500	0.050	0.120
Cadmium Leachate	mg/L	0.5	0.010	<0.010
Chromium Leachate	mg/L	5.0	0.010	0.014
Lead Leachate	mg/L	5.0	0.010	0.174
Mercury Leachate	mg/L	0.1	0.01	<0.01
Selenium Leachate	mg/L	1.0	0.010	<0.010
Silver Leachate	mg/L	5.0	0.010	<0.010
Uranium Leachate	mg/L	10.0	0.050	<0.050
Fluoride Leachate	mg/L	150	0.05	0.39
Cyanide Leachate	mg/L	20.0	0.05	<0.05
(Nitrate + Nitrite) as N Leachate	mg/L	1000	0.70	<0.70

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Regulation 558

Certified By:



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Certificate of Analysis

AGAT WORK ORDER: 13T694482

PROJECT NO: 13HX002

CLIENT NAME: PETO MACCALLUM LIMITED

ATTENTION TO: Dave Smith

ON Regulation 558 PCBs

DATE RECEIVED: 2013-03-06

DATE REPORTED: 2013-03-13

		SAMPLE DESCRIPTION:		TCLP
		SAMPLE TYPE:		Soil
		DATE SAMPLED:		3/5/2013
Parameter	**Unit**	**G / S**	**RDL**	**4173774**
Polychlorinated Biphenyls	mg/L	0.3	0.005	<0.005
Surrogate	**Unit**	**Acceptable Limits**		
Decachlorobiphenyl	%	60-130		81

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Regulation 558

4173774 The soil sample was leached using the Regulation 558 procedure. Analysis was performed on the leachate.

Certified By: Mervat

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Certificate of Analysis

AGAT WORK ORDER: 13T694482

PROJECT NO: 13HX002

CLIENT NAME: PETO MACCALLUM LIMITED

ATTENTION TO: Dave Smith

ON Regulation 558 VOCs

DATE RECEIVED: 2013-03-06

DATE REPORTED: 2013-03-13

		SAMPLE DESCRIPTION:		TCLP
		SAMPLE TYPE:		Soil
		DATE SAMPLED:		3/5/2013
Parameter	Unit	G / S	RDL	4173774
Vinyl Chloride	mg/L	0.2	0.030	<0.030
1,1 Dichloroethene	mg/L	1.4	0.020	<0.020
Dichloromethane	mg/L	5.0	0.030	<0.030
Methyl Ethyl Ketone	mg/L	200	0.090	<0.090
Chloroform	mg/L	10.0	0.020	<0.020
1,2-Dichloroethane	mg/L	0.5	0.020	<0.020
Carbon Tetrachloride	mg/L	0.5	0.020	<0.020
Benzene	mg/L	0.5	0.020	<0.020
Trichloroethene	mg/L	5.0	0.020	<0.020
Tetrachloroethene	mg/L	3.0	0.050	<0.050
Chlorobenzene	mg/L	8.0	0.010	<0.010
1,2-Dichlorobenzene	mg/L	20.0	0.010	<0.010
1,4-Dichlorobenzene	mg/L	0.5	0.010	<0.010
Surrogate	**Unit**	**Acceptable Limits**		
Toluene-d8	% Recovery	60-130		92

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Reg. 558

4173774 Sample was prepared using Regulation 558 protocol and a zero headspace extractor.

Certified By: Merwat

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Quality Assurance

CLIENT NAME: PETO MACCALLUM LIMITED

AGAT WORK ORDER: 13T694482

PROJECT NO: 13HX002

ATTENTION TO: Dave Smith

Soil Analysis

RPT Date: Mar 13, 2013			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 558 Metals and Inorganics															
Arsenic Leachate	1		< 0.010	< 0.010	0.0%	< 0.010	97%	90%	110%	109%	80%	120%	111%	70%	130%
Barium Leachate	1		0.572	0.574	0.3%	< 0.100	93%	90%	110%	99%	80%	120%	102%	70%	130%
Boron Leachate	1		0.561	0.554	1.3%	< 0.050	104%	90%	110%	101%	80%	120%	104%	70%	130%
Cadmium Leachate	1		< 0.010	< 0.010	0.0%	< 0.010	100%	90%	110%	100%	80%	120%	104%	70%	130%
Chromium Leachate	1		< 0.010	< 0.010	0.0%	< 0.010	96%	90%	110%	108%	80%	120%	109%	70%	130%
Lead Leachate	1		0.013	0.013	0.0%	< 0.010	93%	90%	110%	90%	80%	120%	92%	70%	130%
Mercury Leachate	1		< 0.01	< 0.01	0.0%	< 0.01	104%	90%	110%	98%	80%	120%	97%	70%	130%
Selenium Leachate	1		< 0.010	< 0.010	0.0%	< 0.010	96%	90%	110%	107%	80%	120%	108%	70%	130%
Silver Leachate	1		< 0.010	< 0.010	0.0%	< 0.010	97%	90%	110%	102%	80%	120%	106%	70%	130%
Uranium Leachate	1		< 0.050	< 0.050	0.0%	< 0.050	102%	90%	110%	93%	80%	120%	93%	70%	130%
Fluoride Leachate	1		0.12	0.12	0.0%	< 0.05	96%	90%	110%	92%	90%	110%	80%	70%	130%
Cyanide Leachate	1		< 0.05	< 0.05	0.0%	< 0.05	104%	90%	110%	93%	90%	110%	107%	70%	130%
(Nitrate + Nitrite) as N Leachate	4174520		<0.70	<0.70	0.0%	< 0.70	88%	80%	120%	99%	80%	120%	91%	70%	130%

Certified By:

AGAT Laboratories is accredited to ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA) and/or Standards Council of Canada (SCC) for specific tests listed on the scope of accreditation. AGAT Laboratories (Mississauga) is also accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA) for specific drinking water tests. Accreditations are location and parameter specific. A complete listing of parameters for each location is available from www.cala.ca and/or www.scc.ca. The tests in this report may not necessarily be included in the scope of accreditation.

Results relate only to the items tested and to all the items tested

AGAT Laboratories

5835 COOPERS AVENUE
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TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

Quality Assurance

CLIENT NAME: PETO MACCALLUM LIMITED

AGAT WORK ORDER: 13T694482

PROJECT NO: 13HX002

ATTENTION TO: Dave Smith

Trace Organics Analysis

RPT Date: Mar 13, 2013			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
ON Regulation 558 VOCs															
Vinyl Chloride	1		< 0.030	< 0.030	0.0%	< 0.030	119%	60%	140%	80%	60%	140%	119%	60%	140%
1,1 Dichloroethene	1		< 0.020	< 0.020	0.0%	< 0.020	127%	70%	130%	96%	70%	130%	123%	60%	140%
Dichloromethane	1		< 0.030	< 0.030	0.0%	< 0.030	113%	70%	130%	111%	70%	130%	121%	60%	140%
Methyl Ethyl Ketone	1		< 0.090	< 0.090	0.0%	< 0.090	117%	70%	130%	89%	70%	130%	117%	60%	140%
Chloroform	1		< 0.020	< 0.020	0.0%	< 0.020	116%	70%	130%	101%	70%	130%	122%	60%	140%
1,2-Dichloroethane	1		< 0.020	< 0.020	0.0%	< 0.020	109%	70%	130%	97%	70%	130%	120%	60%	140%
Carbon Tetrachloride	1		< 0.020	< 0.020	0.0%	< 0.020	110%	70%	130%	98%	70%	130%	124%	60%	140%
Benzene	1		< 0.020	< 0.020	0.0%	< 0.020	112%	70%	130%	90%	70%	130%	120%	60%	140%
Trichloroethene	1		< 0.020	< 0.020	0.0%	< 0.020	126%	70%	130%	85%	70%	130%	124%	60%	140%
Tetrachloroethene	1		< 0.050	< 0.050	0.0%	< 0.050	94%	70%	130%	95%	70%	130%	110%	60%	140%
Chlorobenzene	1		< 0.010	< 0.010	0.0%	< 0.010	100%	70%	130%	92%	70%	130%	110%	60%	140%
1,2-Dichlorobenzene	1		< 0.010	< 0.010	0.0%	< 0.010	112%	70%	130%	82%	70%	130%	118%	60%	140%
1,4-Dichlorobenzene	1		< 0.010	< 0.010	0.0%	< 0.010	107%	70%	130%	86%	70%	130%	117%	60%	140%
ON Regulation 558 PCBs															
Polychlorinated Biphenyls	1		< 0.005	< 0.005	0.0%	< 0.005	109%	60%	130%	98%	60%	130%	98%	60%	130%

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Method Summary

CLIENT NAME: PETO MACCALLUM LIMITED **AGAT WORK ORDER: 13T694482**

PROJECT NO: 13HX002 **ATTENTION TO: Dave Smith**

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Soil Analysis			
Ignitability		EPA SW-846 1030	BURN MOLD
Arsenic Leachate	MET-93-6103	EPA SW-846 1311 & 3010A & 6020A	ICP-MS
Barium Leachate	MET-93-6103	EPA SW-846 1311 & 3010A & 6020A	ICP-MS
Boron Leachate	MET-93-6103	EPA SW-846 1311 & 3010A & 6020A	ICP-MS
Cadmium Leachate	MET-93-6103	EPA SW-846 1311 & 3010A & 6020A	ICP-MS
Chromium Leachate	MET-93-6103	EPA SW-846 1311 & 3010A & 6020A	ICP-MS
Lead Leachate	MET-93-6103	EPA SW-846 1311 & 3010A & 6020A	ICP-MS
Mercury Leachate	MET-93-6103	EPA SW-846 1311 & 3010A & 6020A	ICP-MS
Selenium Leachate	MET-93-6103	EPA SW-846 1311 & 3010A & 6020A	ICP-MS
Silver Leachate	MET-93-6103	EPA SW-846 1311 & 3010A & 6020A	ICP-MS
Uranium Leachate	MET-93-6103	EPA SW-846 1311 & 3010A & 6020A	ICP-MS
Fluoride Leachate	INOR-93-6018	EPA SW-846-1311 & SM4500-F- C	ION SELECTIVE ELECTRODE
Cyanide Leachate	INOR-93-6052	EPA SW-846-1311 & MOE 3015 & SM 4500 CN- I	TECHNICON AUTO ANALYZER
(Nitrate + Nitrite) as N Leachate	INOR-93-6053	EPA SW 846-1311 & SM 4500 - NO3- I	LACHAT FIA
Trace Organics Analysis			
Polychlorinated Biphenyls	ORG-91-5112	Regulation 558, EPA SW846 3510C/8082	GC/ECD
Decachlorobiphenyl	ORG-91-5112	EPA SW846 3510C/8082	GC/ECD
Vinyl Chloride	VOL-91-5001	EPA SW-846 5230B & 8260	(P&T)GC/MS
1,1 Dichloroethene	VOL-91-5001	EPA SW-846 5230B & 8260	(P&T)GC/MS
Dichloromethane	VOL-91-5001	EPA SW-846 5230B & 8260	(P&T)GC/MS
Methyl Ethyl Ketone	VOL-91-5001	EPA SW-846 5230B & 8260	(P&T)GC/MS
Chloroform	VOL-91-5001	EPA SW-846 5230B & 8260	(P&T)GC/MS
1,2-Dichloroethane	VOL-91-5001	EPA SW-846 5230B & 8260	(P&T)GC/MS
Carbon Tetrachloride	VOL-91-5001	EPA SW-846 5230B & 8260	(P&T)GC/MS
Benzene	VOL-91-5001	EPA SW-846 5230B & 8260	(P&T)GC/MS
Trichloroethene	VOL-91-5001	EPA SW-846 5230B & 8260	(P&T)GC/MS
Tetrachloroethene	VOL-91-5001	EPA SW-846 5230B & 8260	(P&T)GC/MS
Chlorobenzene	VOL-91-5001	EPA SW-846 5230B & 8260	(P&T)GC/MS
1,2-Dichlorobenzene	VOL-91-5001	EPA SW-846 5230B & 8260	(P&T)GC/MS
1,4-Dichlorobenzene	VOL-91-5001	EPA SW-846 5230B & 8260	(P&T)GC/MS
Toluene-d8	VOL-91-5001	EPA SW-846 5230B & 8260	(P&T)GC/MS

Results relate only to the items tested and to all the items tested

AGAT Laboratories

Old ICE

5835 Coopers Avenue
Mississauga, ON
L4Z 1Y2
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P: 905.712.5100 - F: 905.712.5122 - TF: 800.856.6261

Chain of Custody Record

Laboratory Use Only
Arrival Temperature: 13.5 11.6 13.3
AGAT WO #: 13T694482
Lab Temperature: 9.1 7.2 9.3
Notes:

Client Information
Company: Peto MacCallum Ltd
Contact: David Smith
Address: 45 Burford Road
Hamilton L8E 3L6
Phone: 905-561-2231 Fax: 905-561-6366
Project: 13HX002 PO:
AGAT Quotation #:
Please note, if quotation number is not provided, client will be billed full price for analysis.

Regulatory Requirements
☑ Regulation 153/04 (Reg. 511 Amended)
Table ___ (Indicate one)
☐ Ind/Com ☐ Res/Park ☐ Agriculture
Soil Texture (check one): ☑ Coarse ☐ Fine
☐ Sewer Use
Region ___ (Indicate one)
☐ Sanitary ☐ Storm
☐ Regulation 558 ☐ CCME ☐ Other (specify) ___
☐ Prov. Water Quality Objectives (PWQO) ☐ None

Turnaround Time Required (TAT) Required*
Regular TAT
☑ 5 to 7 Working Days
Rush TAT (please provide prior notification)
Rush Surcharges Apply
☐ 3 Working Days ☐ 2 Working Days ☐ 1 Working Day
OR
Date Required (Rush surcharges may apply): ___
*TAT is exclusive of weekends and statutory holidays

Invoice To
Same: Yes ☑ No ☐
Company:
Contact:
Address:

Is this a drinking water sample? (potable water intended for human consumption) ☐ Yes ☑ No
If "Yes", please use the *Drinking Water Chain of Custody Form*

Is this submission for a **Record of Site Condition?** ☐ Yes ☑ No

Legend Matrix
GW Ground Water **O** Oil
SW Surface Water **P** Paint
SD Sediment **S** Soil

Report Information – reports to be sent to:
1. Name: David Smith
Email: dsmith@petomaccallum.com
2. Name: Sarah Murray
Email: Smurray@petomaccallum.com

Sample Identification	Date Sampled	Time Sampled	Sample Matrix	# of Containers	Comments Site/Sample Information	Metals and Inorganics	Metal Scan	Hydride Forming Metals	Client Custom Metals	ORPs: ☐ B-HWS ☐ Cl- ☐ CN- ☐ EC ☐ FOC ☐ Cr+6 ☐ SAR ☐ NO_3/NO_2 ☐ N-Total ☐ Hg ☐ pH	Nutrients: ☐ TP ☐ NH_3 ☐ TKN ☐ NO_3 ☐ NO_2 ☐ NO_3/NO_2	VOC: ☐ VOC ☐ THM ☐ BTEX	CCME Fractions 1 to 4	ABNs	PAHs	Chlorophenols	PCBs	Organochlorine Pesticides	TCLP Metals/Inorganics	Sewer Use	TCLP VOCs, PCBs, Ignitability
TCLP	Mar.5/13	9:00am	S	3														X		X

Samples Relinquished By (Print Name and Sign):	Date/Time	Samples Received By (Print Name and Sign):	Date/Time
		A. Gilmour 6.3.13	1:15
Samples Relinquished By (Print Name and Sign):	Date/Time	Samples Received By (Print Name and Sign):	Date/Time
			4:15

Pink Copy - Client
Yellow Copy - AGAT
White Copy - AGAT

Page 1 of 1
N°: 185139

Document ID: Dw-Fm-455-Lab1

Appendix D

Statement of Limitations

STATEMENT OF LIMITATIONS

This report is prepared for and made available for the sole use of the client named. Peto MacCallum Ltd. (PML) hereby disclaims any liability or responsibility to any person or entity, other than those for whom this report is specifically issued, for any loss, damage, expenses, or penalties that may arise or result from the use of any information or recommendations contained in this report. The contents of this report may not be used or relied upon by any other person without the express written consent and authorization of PML.

This report shall not be relied upon for any purpose other than as agreed with the client named without the written consent of PML. It shall not be used to express or imply warranty as to the fitness of the property for a particular purpose. A portion of this report may not be used as a separate entity: that is to say the report is to be read in its entirety at all times.

The report is based solely on the scope of services which are specifically referred to in this report. No physical or intrusive testing has been performed, except as specifically referenced in this report. This report is not a certification of compliance with past or present regulations, codes, guidelines and policies.

The scope of services carried out by PML is based on details of the proposed development and land use to address certain issues, purposes and objectives with respect to the specific site as identified by the client. Services not expressly set forth in writing are expressly excluded from the services provided by PML. In other words, PML has not performed any observations, investigations, study analysis, engineering evaluation or testing that is not specifically listed in the scope of services in this report. PML assumes no responsibility or duty to the client for any such services and shall not be liable for failing to discover any condition, whose discovery would require the performance of services not specifically referred to in this report.

The findings and comments made by PML in this report are based on the conditions observed at the time of PML's site reconnaissance. No assurances can be made and no assurances are given with respect to any potential changes in site conditions following the time of completion of PML's field work. Furthermore, regulations, codes and guidelines may change at any time subsequent to the date of this report and these changes may effect the validity of the findings and recommendations given in this report.

The results and conclusions with respect to site conditions are therefore in no way intended to be taken as a guarantee or representation, expressed or implied, that the Site is free from any contaminants from past or current land use activities or that the conditions in all areas of the Site and beneath or within structures are the same as those areas specifically sampled.

Any investigation, examination, measurements or sampling explorations at a particular location may not be representative of conditions between sampled locations. Soil, ground water, surface water, or building material conditions between and beyond the sampled locations may differ from those encountered at the sampling locations and conditions may become apparent during construction which could not be detected or anticipated at the time of the intrusive sampling investigation.

STATEMENT OF LIMITATIONS

Budget estimates contained in this report are to be viewed as an engineering estimate of probable costs and provided solely for the purposes of assisting the client in its budgeting process. It is understood and agreed that PML will not in any way be held liable as a result of any budget figures provided by it.

The Client expressly waives its right to withhold PML's fees, either in whole or in part, or to make any claim or commence an action or bring any other proceedings, whether in contract, tort, or otherwise against PML in any way connected with advice or information given by PML relating to the cost estimate or Environmental Remediation/Cleanup and Restoration or Soil and Ground Water Management Plan Cost Estimate.

Environmental site assessment studies are performed in different phases by the application of different levels of effort and expense. The phase or phases in this report and the level of effort proposed for this assignment were based solely on PML's understanding of the client's needs as described in the scope of services contained in this report.

This assessment does not wholly eliminate uncertainty regarding the potential for existing or future costs, hazards or losses in connection with the subject property and must be viewed as a mechanism to reduce risk rather than eliminate the risk of contamination concerns.

The parties agree that PML cannot and does not warrant or represent that bids or negotiated prices will not vary from the Environmental Remediation/Cleanup and Restoration or Soil and Ground Water Management Plan Cost Estimate. The parties further agree that nothing in their agreement shall be deemed to be a cost condition or representation that the project cleanup can be completed for the amount of the Environmental Remediation/Cleanup and Restoration or Soil and Ground Water Management Plan Cost Estimate or any other amount.