Peto MacCallum Ltd.
CONSULTING ENGINEERS

PRELIMINARY GEOTECHNICAL INVESTIGATION
PROPOSED RESIDENTIAL SUBDIVISION
GREY ROAD 21
TOWN OF BLUE MOUNTAINS, ONTARIO

for

ROYALTON HOMES INC.

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PML Ref.: 18CF004
Report: 1
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Peto MacCallum Ltd.
CONSULTING ENGINEERS

June 19, 2018

PML Ref.: 18CF004
Report: 1

Mr. Samer Chaaya
Royalton Homes Inc.
10114 Highway 26
Unit 4
Collingwood, Ontario
L9Y 3Z1

Dear Mr. Chaaya

Preliminary Geotechnical Investigation
Proposed Residential Subdivision
Grey Road 21
Town of Blue Mountains, Ontario

Peto MacCallum Ltd. (PML) is pleased to present the results of the preliminary geotechnical investigation recently completed at the above noted project site. Authorization for this work was provided by Mr. J. Acres of C.C. Tatham & Associates Ltd. (CCT) in an email dated March 19, 2018, on behalf of the Client.

A 150 to 200 unit residential subdivision is proposed for the approximate 21 ha parcel of land just north of the Scandinave Spa on the west side of Grey Road 21 in the Town of Blue Mountains. A concept plan for the site has not been established at this time, however, full site servicing and paved roads are proposed.

A preliminary geotechnical investigation has been requested to determine the general subsurface conditions at the site, and based on this information, provide preliminary assessment of the geotechnical conditions for preliminary planning and design of the proposed residential subdivision, including earthworks, house foundations, service installation and pavement design.

A limited chemical testing program was included with the geotechnical work to check the geoenvironmental quality of the site soils in order to provide comments regarding on-site reuse or off-site reuse/disposal options for excess excavated soil.

The comments and recommendations provided in this report are based on the site conditions as revealed in a limited number of boreholes and test pits at the time of the investigation. Design is in the conceptual stages and the details of the development plans, including final grades were not available at the time of this study. Accordingly, the comments and recommendations provided in this report are general in nature and suitable only for preliminary design and planning purposes. When design details are available, supplementary investigation and analysis will be required to finalize the geotechnical recommendations.

INVESTIGATION PROCEDURES

The field work for this investigation consisted of Boreholes 2 to 4, 7 and 8, drilled to 6.2 to 6.5 m depth on April 20 and 23, 2018 and Test Pits 1, 5 and 6, excavated to 2.9 to 3.0 m depth on May 11, 2018. Borehole and Test Pit locations are shown on the Borehole/Test Pit Location Plan, Drawing 1, appended. It is noted that Boreholes 1, 5 and 6 were inaccessible with a drill rig. Test pits were carried out at the borehole locations and the numbering system was kept the same.

The locations of the boreholes and test pits were established in the field by PML during a site meeting with the Client and CCT. Co-ordination of clearances of underground utilities was provided by PML. Boreholes were drilled and test pits excavated cognizant of underground utilities.

The boreholes were advanced using continuous flight solid stem augers, powered by a track mounted D-50 drill rig, equipped with an automatic hammer, supplied and operated by a specialist drilling contractor working under the full time supervision of a member of our engineering staff.

The test pits were excavated using a track mounted excavator, operated by an excavating company working for the Client, supervised by a member of our engineering staff.

Representative samples of the subgrade soils in the boreholes were recovered at frequent depth intervals for identification purposes using a conventional split spoon sampler. Standard penetration tests were carried out simultaneously with the sampling operations to assess the strength characteristics of the substrata. The ground water conditions in the boreholes were assessed during drilling by visual examination of the soil samples, the sampler, and drill rods, as the samples were retrieved and measurement of the water level in the open boreholes, if any. The topsoil thicknesses at the surface in the boreholes were measured.

In the test pits the topsoil thickness was measured and the subsurface soil and ground water conditions were logged. Samples of the subgrade units were collected for identification purposes.

Piezometers comprising 19 mm diameter pipe (slots cut in bottom 1.5 m) with filter sand, bentonite seal and above grade protective casing were installed in three of the boreholes. A standpipe comprising 19 mm diameter pipe (slots cut in bottom 1.0 m) and native backfill was installed in one test pit. As per O.Reg. 903, the piezometers and standpipe become the property of the Owner and will have to be decommissioned when no longer required. PML would be pleased to assist in this regard.

A year long ground water level monitoring program is being conducted by PML and results will be provided under separate cover.

The boreholes without piezometers were decommissioned as per O.Reg. 903. The test pits were backfilled with excavated material.

Ground surface elevations of the boreholes and test pits were provided by CCT.

All recovered soil samples were returned to our laboratory for moisture content determinations and detailed examination to confirm field classification. Grain size analyses were carried out on three soil samples with accompanying Atterberg Limits testing. The results are displayed on Figures 1 to 3, appended.

Three soil samples from the boreholes and one from the test pits were submitted for chemical analysis. Geoenvironmental procedural protocols and analytical chemical testing results are presented and discussed later in the report.

SITE DESCRIPTION AND SUMMARIZED SUBSURFACE CONDITIONS

The property is flanked by the Grey Road 21 to the east, a portion of the Monterra golf course to the north, the Scandinave Spa to the south and formerly wooded lots (which have been clear-cut to accommodate new subdivisions) to the west/southwest. A densely wooded unevaluated wetland/creek identified by the Ministry of Natural Resources cuts through the centre of the site. The portion of the site west of the wetland is lightly wooded, while east of the wetland/creek the site comprises farmland. The site has about 8 m of relief, based on the boreholes, dropping from the southwest to the northeast.

Reference is made to the appended Log of Borehole sheets for details of the subsurface conditions, including soil classifications, topsoil thicknesses, inferred stratigraphy, Standard Penetration N values (N-Values), ground water observations, piezometer installation details and the results of laboratory water content determinations and Atterberg Limits testing.

Reference is also made to the appended Log of Test Pit sheets for details of the subsurface conditions, including soil classifications, stratigraphy, ground water observations, standpipe installation details and the results of laboratory water content determinations and Atterberg Limits testing.

Due to the soil sampling procedures and limited sample size, the depth demarcations on the borehole logs must be viewed as "transitional" zones between layers, and cannot be construed as exact geologic boundaries between layers. PML should be retained to assist in defining the geologic boundaries in the field during construction, if required.

The stratigraphic profile of the site comprises topsoil, locally overlying sand, over a major sand and silt layer, over clayey sandy silt till, locally underlain by a silt deposit.

Topsoil

A 100 to 400 mm thick layer of silty sand to sand topsoil was encountered at the surface of all boreholes and test pits.

Sand

A layer of sand with trace to some silt and trace gravel was noted below the topsoil in Boreholes 4 and 8, at the east end of the site, extending to 2.1 m depth (elevation 205.7 to 207.9). The layer was very loose to compact (N Values of 3 to 17) and moist to wet with depth, with moisture contents of 9 to 24%.

Silt and Sand

Underlying the topsoil, locally the sand unit in the east, a major sand and silt deposit was encountered in all boreholes and test pits, extending to 0.7 to 2.9 m depth (elevation 206.9 to 214.75) in Boreholes 2, 3 and 7 and Test Pits 1, 5 and 6, and to the 6.4 m depth of exploration in Boreholes 4 and 8. The deposit comprised silty fine sand to fine sandy silt, with trace clay and locally some gravel or trace organics noted. A sample of the material was submitted for grain size analysis and the results are presented on Figure 1, appended. Atterberg Limits testing showed the material to be non-plastic. The layer was judged to be loose in the test pits and was revealed as loose to very dense with depth in the boreholes. The unit was typically very moist to wet with depth, with moisture contents ranging from 11 to 24%.

Clayey Sandy Silt Till

Underlying the sand and silt in Boreholes 2 and 7 and Test Pits 1, 5 and 6, a clayey sandy silt till deposit was encountered, being penetrated at 5.5 m depth (elevation 204.3) in Borehole 7, and continuing to the 2.9 to 6.2 m depth of drilling/excavation in Borehole 2 and Test Pits 1, 5 and 6. A sample of the material was submitted for grain size analysis and the results are presented on Figure 2, appended. Accompanying Atterberg Limits testing showed the material to have a plastic limit of 11% and a liquid limit of 19%. The deposit was very stiff to hard (N Values greater than 50 in boreholes). The material was generally drier than plastic limit, locally about plastic limit with water contents of 6 to 13%. Wet layers were noted in the till in the test pits, as seepage was observed.

Silt

A localized deposit of silt was encountered in Boreholes 3 and 7 (central/east part of the site) beneath the till or sand and silt, extending to the 6.4 to 6.5 m depth of exploration. The silt was very dense with N Values greater than 50. A sample of the material was submitted for gradation and the results are presented on Figure 3, appended. Atterberg Limits testing showed the silt to be non-plastic. The material was very moist to moist with water contents of 12 to 18%.

Ground Water

The first ground water strike (water first noticed during drilling), the water level or wet cave observations in the boreholes/test pits upon completion, and the water levels in the piezometers/standpipe on May 4 and June 11, 2018 are noted in the table below:

BOREHOLE / TEST PIT	DEPTH (m) / ELEVATION			
	FIRST GROUND WATER STRIKE	SEEPAGE / WATER / WET CAVE LEVEL UPON COMPLETION	WATER LEVEL IN PIEZOMETERS MAY 4, 2018	WATER LEVEL IN PIEZOMETERS / STANDPIPE JUNE 11, 2018
1	2.9 / 209.8	Seepage at 2.9 / 209.8	--	--
2	1.2 / 209.8	Water at 0.1 / 210.9	-1.0 / 212.0	-0.6 / 211.6
3	0.9 / 208.7	Water at 2.7 / 206.9	--	--
4	2.0 / 205.8	Wet Cave at 1.8 / 206.0	1.2 / 206.6	1.9 / 205.9
5	2.9 / 212.6	Seepage at 2.9 / 212.6	--	0.5 / 215.0
6	1.0 / 211.0	Seepage at 1.0 / 211.0	--	--
7	0.8 / 209.0	Water at 0.6 / 209.2	0.4 / 209.4	1.2 / 208.6
8	1.5 / 208.5	Water at 1.8 / 208.2	--	--

* - Negative water level is above existing grades.

Ground water was generally encountered within the more pervious sand, or sand and silt deposits, perched within 1 to 2 m of the ground surface, over the less pervious clayey sandy silt till.

The piezometer in Borehole 2 also demonstrates the ground water is locally under some artesian pressure, as evidenced by the water levels noted above existing site grades at this location.

A year-long water level monitoring program has been undertaken in an attempt to gain an appreciation for the seasonal variations of the ground water table. Results will be provided under separate cover.

Ground water levels are subject to seasonal variation and will fluctuate in response to precipitation.

GEOTECHNICAL ENGINEERING CONSIDERATIONS

General

A 150 to 200 unit residential subdivision is proposed for the approximate 21 ha parcel of land just north of the Scandinave Spa on the west side of Grey Road 21 in the Town of Blue Mountains. A concept plan for the site has not been established at this time, however, full site servicing and paved roads are proposed.

The site is characterized by topsoil, locally overlying sand, over a major sand and silt layer, over clayey sandy silt till, locally underlain by a silt deposit. Ground water levels were typically perched within 1 to 2 m of the ground surface. Local artesian ground water is present.

The soils are relatively competent and will provide adequate bearing for residences and other infrastructure. The high ground water level will impact construction and if basements are proposed grades will need to be raised.

The comments and recommendations provided in this report are preliminary in nature and are based on the subsurface conditions as revealed in a limited number of boreholes and test pits at the site. Details of the development plans, including layout and final grades were not available at the time of this study. Accordingly, the comments and recommendations provided in this report are general in nature, and suitable only for preliminary design and planning purposes. When design details are available, supplementary investigation and analysis will be required to finalize the geotechnical recommendations.

Site Grading and Engineered Fill

Grading at the site has yet to be established however it is anticipated that some cut/fill operations will be carried out. The site currently maintains about 8 m of relief, dropping from the southwest to the northeast.

Any upfilling under structures must be constructed as engineered fill. Topsoil and very loose to loose soil should be removed and engineered fill can be placed on the native very stiff to hard/compact to very dense soils encountered throughout the site typically below 0.5 to 1.0 m locally 1.5 m depth. Further recommendations can be provided, if required.

Foundations

House foundations can typically be supported on conventional spread and strip footings founded on the very stiff to hard/compact to very dense native soils typically encountered below 0.5 to 1.0 m depth, locally 1.5 m deep, across the site.

A net geotechnical bearing resistance at Serviceability Limit State (SLS) of 100 to 150 kPa, and a factored bearing resistance at Ultimate Limit State (ULS) of 150 to 225 kPa are available for design. Higher bearing capacities are available at increased depths.

Footings can also be supported on engineered fill where a net geotechnical bearing resistance at SLS of 150 kPa and factored bearing resistance at ULS of 225 kPa can be assumed for design.

The geotechnical bearing resistance at SLS is based on 25 mm or settlement in the bearing stratum with differential settlement of 75% of the value.

Footings subject to frost action should be provided with a minimum 1.2 m of earth cover or equivalent.

It is noted that if the subgrade soils are wet in-situ or allowed to become wet due to weather they will become easily disturbed under construction or pedestrian traffic. If the footing subgrade is disturbed it will have to be sub-excavated. As such, the contractor should adopt construction methodology and equipment to suit. Concrete skim coats may be required in some areas.

Prior to placement of structural concrete, all founding surfaces should be reviewed by PML to verify the design bearing capacity is available, or to reassess the design parameters based on the actual conditions revealed in the excavation.

Basement Walls and Floor Slabs

It is currently unknown if basements are planned.

Basement floor slabs should be established a minimum 0.5 m above the ground water level. In general grades will need to be raised in order to accommodate basements due to the high ground water levels.

A year long ground water level monitoring program is currently being conducted. Results will be provided under separate cover.

Basement walls must be designed to resist the unbalanced horizontal earth pressure imposed by the backfill adjacent to the walls. Also, basement wall backfill should comprise free draining granular material conforming to OPSS Granular B. Further recommendations can be provided if required.

Basement floor slab-on-grade construction is feasible on native soils or locally engineered fill. In general, a minimum 150 mm thick base layer of crushed stone (nominal 19 mm size) is recommended directly under the slab.

Exterior grades should be established to promote surface drainage away from the buildings.

Site Servicing

Design details were not finalized at the time of this report. However for purposes of this report it is assumed service inverts will be a maximum 3.0 m below existing grade.

Native clayey sandy silt till, silt, or sand and silt is expected at invert levels which is considered satisfactory for pipe support.

Native backfill is generally satisfactory for trench backfill, however, the high ground water table will require most of the soil to be dried out in order to achieve compaction.

Backfill in trenches should comprise select inorganic site soil at a suitable moisture content and be placed in maximum 200 mm thick loose lifts compacted to at least 95% Standard Proctor maximum dry density to minimize post construction settlement in the backfill.

Earthworks operations should be inspected by PML to verify subgrade preparation, backfill materials, placement and compaction efforts and ensure the specified degree of compaction is achieved throughout.

Excavation and Ground Water Control

Finished site grades are not known at this time.

Excavation is anticipated to a maximum of 3 m depth and will encounter topsoil and the underlying native sand, sand and silt, and clayey sandy silt till units. Perched ground water is anticipated within 1 to 2 m of the ground surface. Harder digging and the presence of cobbles and boulders should be anticipated in the till deposit.

Subject to effective ground water control, the site soils should be considered as Type 3 soil requiring excavation side walls to be constructed at no steeper than one horizontal to one vertical (1H:1V) from the base of the excavation in accordance with the Occupational Health and Safety Act.

In general for excavation to 1.0 to 1.5 m seepage volumes are expected to be handled by conventional sump pumping techniques. Deeper excavation or excavation adjacent the existing wetland/creek or in lower lying areas of the site will yield higher seepage volumes which will necessitate more aggressive ground water control measures such as pumping from keg wells, or possibly the use of well points.

Excavation should be carried out during the dry time of the year to minimize ground water control requirements.

A year-long water level monitoring program has been undertaken in an attempt to gain an appreciation for the seasonal variations of the ground water table. Results will be provided upon its projected completion in April 2019.

Pavement Design and Construction

The location of the roadways have yet to be finalized and grading is still to be determined. Based on the boreholes and test pits, it is anticipated that the pavement subgrade will comprise near surface soil (moderately to highly frost susceptible native sand/sand and silt, typically very moist or wet). The following preliminary pavement structure thicknesses are recommended and should be reviewed when grading/subgrade conditions have been finalized:

	Light Duty (Local Roads)	**Heavy Duty (Collector Roads)**
Asphalt (mm)	90	110
Granular A Base Course (mm)	150	150
Granular B Subbase Course (mm)	400	600
Total Thickness (mm)	640	860

Geotechnical Review

It is recommended that the final drawings be submitted to PML for general geotechnical review for compatibility with the site conditions and the recommendations provided in this report.

The comments and recommendations provided in the report are based on the site conditions as revealed in a limited number of boreholes and test pits at the time of the investigation. Further, details of the development plans, including layout and final grades were not available at the time of this study. Accordingly, the comments and recommendations provided in this report are general in nature and suitable only for preliminary design and planning purposes. When design details are available, they should be submitted for review by PML to verify the applicability of the recommendations presented in this report and may require additional investigation and/or analysis.

GEOENVIRONMENTAL CONSIDERATIONS

A limited chemical testing program was carried out to check the geoenvironmental quality of the soil at selected sampling locations in order to provide comments regarding on site reuse or off-site disposal options for excess excavated soil.

A Phase One Environmental Site Assessment (ESA) was not within the scope of work for this assignment. Accordingly, soil impairment that has not been identified by the limited chemical testing program may exist at the site. The limited chemical testing program does not constitute an Environmental Site Assessment as defined under the Environmental Protection Act and O. Reg. 153/04, as amended.

Chemical Testing Protocols

As part of the geoenvironmental procedural protocol, all recovered soil samples were examined for visual and olfactory evidence of potential contamination. It is noted that none of the samples contained olfactory evidence of contamination.

The selected geoenvironmental soil samples were placed in laboratory air tight glass containers and stored in an insulated cooler for transportation to our laboratory for detailed visual examination.

Soil samples were submitted for chemical analysis to a Canadian Association for Laboratory Accreditation Inc. (CALA) accredited laboratory. The chemical analyses conducted were in accordance with the O. Reg. 153/04, as amended 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.

For general environmental quality characterization, soil samples were tested for the following analyte groups:

- Metals and Inorganics;
- Petroleum Hydrocarbons (F1 to F4 fractions).

The following soil samples were submitted for chemical testing:

Borehole 2 SS 1, (sand and silt – 0.1 to 0.6 m)
Borehole 4 SS 2, (sand – 0.8 to 1.4 m)
Borehole 7 SS 3, (sand and silt – 1.5 to 2.1 m)
Test Pit 5 GS 2, (till – 0.7 to 2.0 m)

Site Condition Standards

In general, the applicable environmental quality guidelines depend on the site location, land use, soil texture and source of potable water at the site. In this regard, PML selected the Generic Criteria of the O. Reg. 153/04, as amended, Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act dated April 15, 2011.

Based on Sections 41 and 43 of O.Reg. 153/04, as amended, and a review of readily available information, the site is considered a sensitive site. The subject site is considered sensitive due to the presence of an area of natural significance. An unevaluated wetland identified by the Ministry of Natural Resources (MNR), traverses the centre of the site.

Further, the site was reviewed against the County of Grey's Intake Protection Zones (Map 2, June 2013) and other maps for watercourses and private wells as part of the protocol to determine the applicable Site Condition Standards (SCSs) for the site. In this regard, the site is not within an intake protection zone, however, has private drinking water wells within 250 m of the site based on the MOECC well records website, and is within 30 m of a water body as a creek/wetland passes through the middle of the site.

Based on the above reviews, the criteria of Table 1: Full Depth Background Site Condition Standards, Table 1 SCSs, are considered applicable to the site.

Analytical Findings and Conclusions

The Certificates of Analyses for Chemical Testing are included in Appendix A.

On-Site Reuse

In summary, the concentration of the tested parameters in the submitted soil samples were in conformance with the Table 1 SCSs applicable to the site. Accordingly, based on the testing results, excavated soil can be reused on-site, subject to geotechnical requirements.

It should be noted that there is no legal imperative to remove or treat soil that exceeds the applicable SCSs provided it is demonstrated that there is no off-site impact or adverse effect. If contaminated soil is left on-site, the landowner assumes liability associated with the site contamination and potential of off-site contamination. The liability concerns could include potential scrutiny from the MOECC and the public, potential for decreased value for the land, and issues during potential divesting of the property due to environmental liability concerns on the part of the future owners or their financiers/ insurers.

It should also be noted that the soil 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 assess and appropriately handle the materials, if any, and evaluate whether modifications to the conclusions documented in this report are necessary.

This assessment is subject to the Statement of Limitations that is included with this report (Appendix B) which must be read in conjunction with the report.

Off-Site Reuse/Disposal

O. Reg. 153/04, as amended has nine tables outlining SCSs (Tables 1 to 9) for evaluating Environmental Soil Characteristics. These tables are further divided based on land use. The chemical testing results from this project were compared to the various SCSs to evaluate where the excess soil can be transported.

Based on the limited chemical testing results the site soil meets the most stringent SCSs (Table 1) and can be transported to any landsite, subject to approval of receiving site authority.

Alternatively, excess excavated soil can be transported to a landfill site, however, additional testing for Toxicity Characteristic Leaching Procedure (TCLP) will be required, in accordance with Ontario Regulation 347, Schedule 4, as amended to Ontario Regulation 558/00, dated March 2001.

When transporting excavated site soil to another site the following are recommended:

- The work must be completed in accordance with local by-laws governing soil movement and/or placement at other sites;
- All analytical results and environmental assessment reports must be fully disclosed to the receiving site owners/authorities and they have agreed to receive the material;
- The applicable SCSs for the receiving site have been determined, as confirmed by the environmental consultant and the SCSs are consistent with the chemical quality of the soil originating at the source site;
- Transportation and placement of the surplus soil is monitored by the environmental consultant to check the material is appropriately placed at the pre-approved site;
- The receiving site must be arranged and/or approved in advance of excavation in order to avoid delays during construction. As well, it is noted the chemical testing requirements for various receiving sites is site-specific and additional testing may be required, beyond that provided in this limited sampling and testing report;
- The excavation work should be conducted in accordance with a written Soil Management Plan prepared by a qualified professional to ensure that all surplus excavated material is tested and managed appropriately, and that imported fill material is of suitable quality and meets the SCSs applicable to the site. Reuse of surplus excavated soil on site is also subject to acceptance for reuse by the geotechnical consultant at the time of construction based on geotechnical considerations;
- Additional sampling and chemical testing should be carried out during construction to verify the chemical quality of the excess soil to assess the appropriate management/disposal options for the actual soil leaving the site;

- It is recommended that transportation of fill material from the Source Site (s) to the Receiving Site (s) be carried out in accordance with the MOECC document *Management of Excess Soil – A Guide for Best Management Practices* dated January 2014.

This assessment is subject to the Statement of Limitations that is included with this report (Appendix B) which must be read in conjunction with the report.

CLOSURE

We trust this report is complete within our terms of reference, and the information presented is sufficient for your present purposes. If you have any questions, or when we may be of further assistance, please do not hesitate to call our office.

Sincerely

Peto MacCallum Ltd.

Richard Blair, P.Eng.
Project Engineer, Geotechnical Services

Geoffrey R. White, P.Eng.
Associate
Manager, Geotechnical and Geoenvironmental Services

RB/GRW:jlb

Enclosure(s):
Figures 1 to 3 – Particle Size Distribution Charts
List of Abbreviations
Log of Test Pit No's 1, 5, 6
Log of Borehole No's 2 to 4, 7, 8
Drawing No. 1 – Borehole/Test Pit Location Plan
Appendix A - Certificates of Analyses for Chemical Testing
Appendix B - Statement of Limitations

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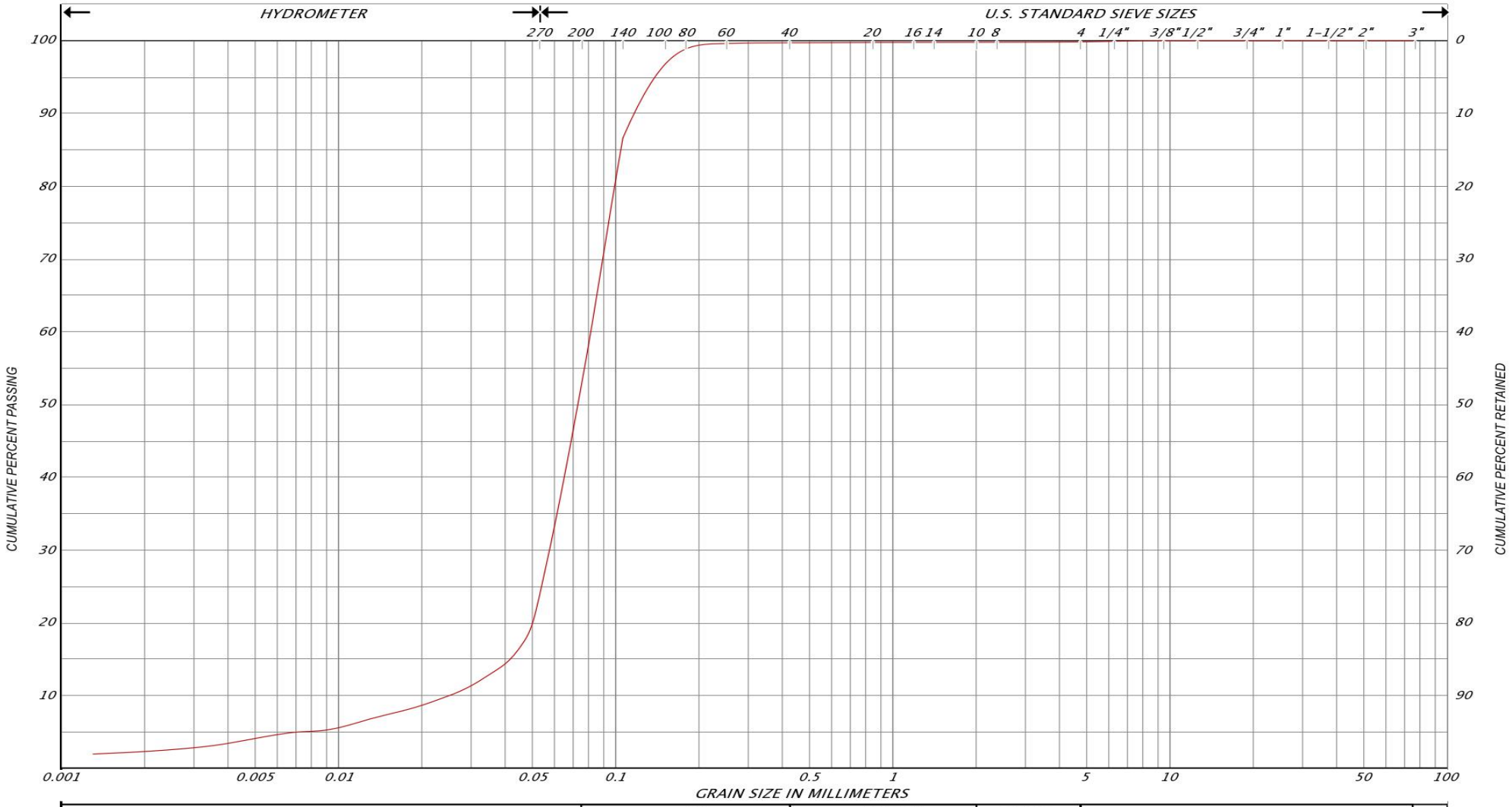
PROJECT NO.18CF004
FIGURE NO.1

PARTICLE SIZE DISTRIBUTION CHART



SILT & CLAY			FINE	MEDIUM	COARSE	GRAVEL		COB BLES	UNIFIED
			SAND						
CLAY	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	GRAVEL	COBBLES	M.I.T
	SILT			SAND					
CLAY	SILT		V.FINE	FINE	MED.	COARSE	GRAVEL		US BUREAU
			SAND						

SYMBOL	BH No.	SAMPLE No.	DEPTH (ft)	WL	WP	PI
●	3	3	5-7			

REMARKS: Borehole 3, SS 3, 1.5 to 1.9 m depth; SAND AND SILT, Trace Clay; Non-Plastic

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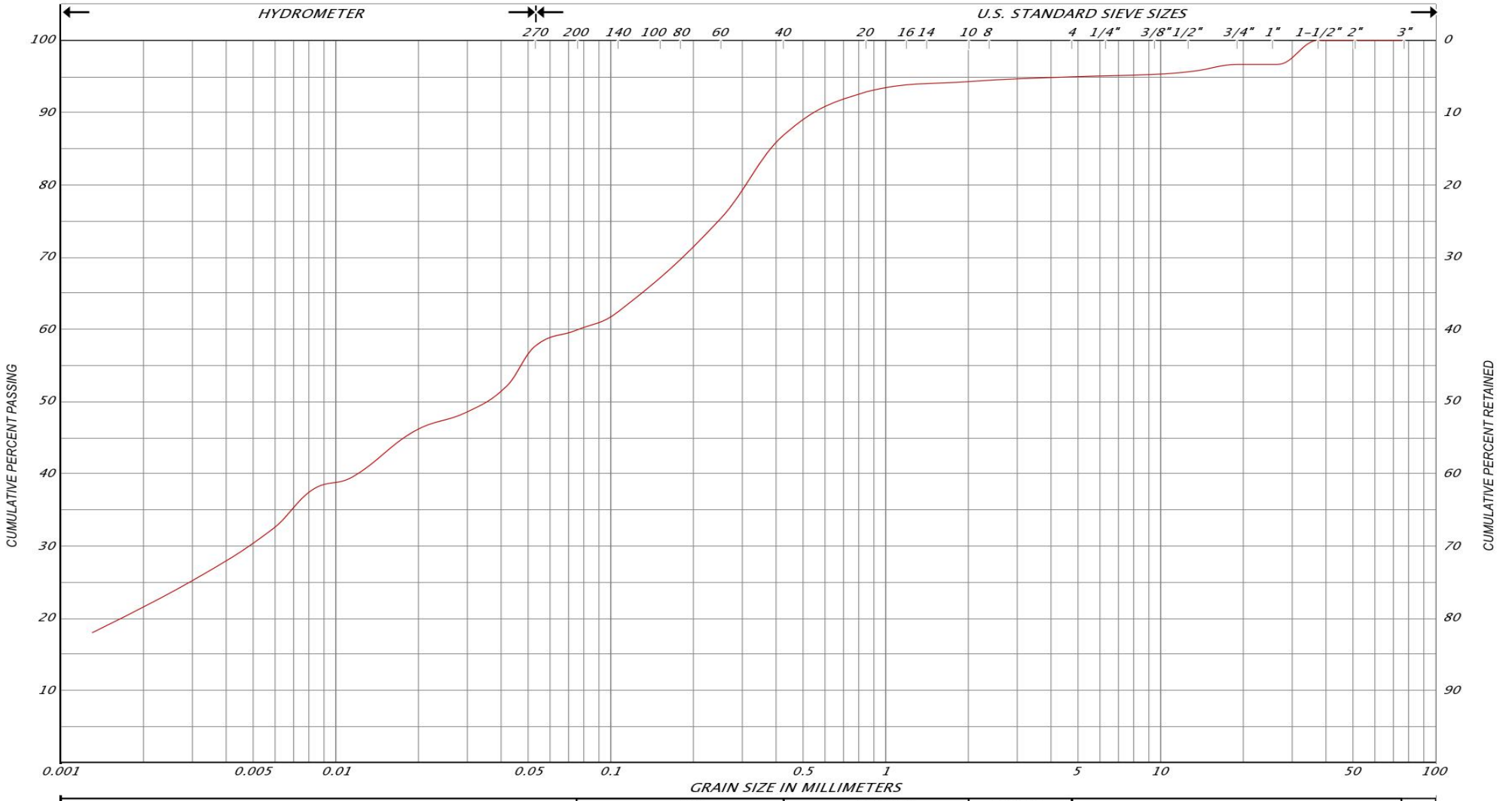
PROJECT NO.18CF004
FIGURE NO.2

PARTICLE SIZE DISTRIBUTION CHART



SILT & CLAY			FINE	MEDIUM	COARSE	GRAVEL	COBBLES
			SAND				UNIFIED
CLAY	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	GRAVEL	COBBLES
	SILT			SAND				M.I.T
CLAY	SILT		V.FINE	FINE	MED.	COARSE	GRAVEL	
			SAND					US BUREAU

SYMBOL	BH No.	SAMPLE No.	DEPTH (ft)	WL	WP	PI
●	TP5	GS3	2.0-2.9			

REMARKS: Test Pit 5, GS 3, 2.0 to 2.9 m depth; Clayey Sandy Silt Till, Trace Gravel; Plastic Limit: 11%; Liquid Limit: 19%;

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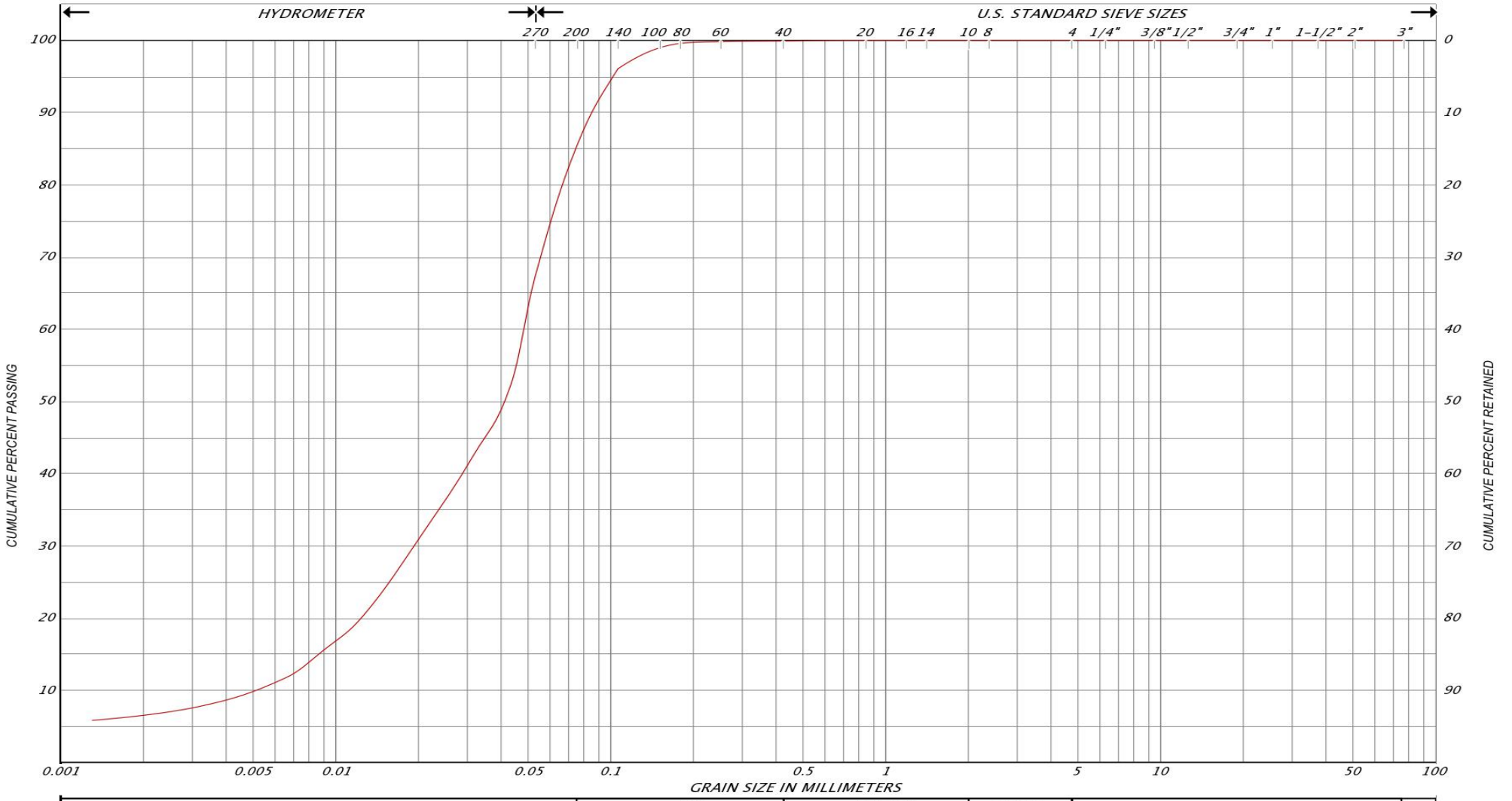
PROJECT NO.18CF004
FIGURE NO.3

PARTICLE SIZE DISTRIBUTION CHART



SILT & CLAY			FINE	MEDIUM	COARSE	GRAVEL		COB BLES	UNIFIED
			SAND						
CLAY	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	GRAVEL	COBBLES	M.I.T
	SILT			SAND					
CLAY	SILT		V.FINE	FINE	MED.	COARSE	GRAVEL		US BUREAU
			SAND						

SYMBOL	BH No.	SAMPLE No.	DEPTH (ft)	WL	WP	PI
●	3	5	10-12			

REMARKS: Borehole 3, SS 5, 3.1 to 3.5 m depth; SILT, Some Sand, Trace Clay; Non-Plastic

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		

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

TYPE OF SAMPLE

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

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 TEST PIT NO. 1

17T 556100E 4926096N

PROJECT Proposed Residential Subdivision
PML REF. 18CF004
LOCATION Grey Road 21, Town of Blue Mountains, Ontario
BORING DATE May 11, 2018
ENGINEER GW
EXCAVATION METHOD Excavator
TECHNICIAN AT

DEPTH (metres) / ELEV	DESCRIPTION	STRAT PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" VALUES	ELEVATION SCALE	SHEAR STRENGTH (kPa) / WATER CONTENT (%)	UNIT WEIGHT kN/m³	GROUND WATER OBSERVATIONS AND REMARKS / GRAIN SIZE DISTRIBUTION (%) GR SA SI&CL
	SURFACE ELEVATION 212.70								
0.30 / 212.40	TOPSOIL: Black, silty sand, trace gravel, very moist								
0.80 / 211.90	SAND AND SILT: Loose, brown to grey, silty fine sand to fine sandy silt, trace clay, moist to very moist		1	GS	-	212			
2.2 / 210.5	CLAYEY SANDY SILT TILL: Very stiff to hard, brown, clayey sandy silt, trace gravel, cobbles and boulders, DTPL Becoming grey, APL, wet layers		2 3	GS GS	- -	211 210			
3.0 / 209.7	TEST PIT TERMINATED AT 3.0 m								Upon completion of test pit Seepage at 2.9 m No sidewall sloughing

SHEAR STRENGTH (kPa): + FIELD VANE △ TORVANE ○ Qu ▲ POCKET PENETROMETER ○ Q; 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

NOTES

Peto MacCallum Ltd.
CONSULTING ENGINEERS

LOG OF BOREHOLE NO. 2

17T 556219E 4928139N

PROJECT Proposed Residential Subdivision
PML REF. 18CF004
LOCATION Grey Road 21, Town of Blue Mountains, Ontario
BORING DATE April 23, 2018
ENGINEER GW
BORING METHOD Continuous Flight Solid Stem Augers
TECHNICIAN AT

DEPTH (metres) / ELEV	DESCRIPTION	STRAT PLOT	SAMPLES NUMBER	TYPE	"N" VALUES	ELEVATION SCALE
	SURFACE ELEVATION 210.95					
0.10 / 210.85	TOPSOIL: Dark brown, sand, trace silt, trace gravel, wet		1	SS	8	
	SAND AND SILT: Loose to very dense, brown, silty fine sand to fine sandy silt, trace clay, wet		2	SS	25	210
			3	SS	41	209
			4	SS	74/290mm	
2.9 / 208.1	CLAYEY SANDY SILT TILL: Hard, grey, clayey sandy silt, trace gravel, cobbles and boulders, DTPL		5	SS	50/140mm	208
			6	SS	92/270mm	207
			7	SS	50/140mm	206
6.2 / 204.8	BOREHOLE TERMINATED AT 6.2 m					205

SHEAR STRENGTH (kPa)
+ FIELD VANE △ TORVANE ○ Qu
▲ POCKET PENETROMETER O Q
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

UNIT WEIGHT kN/m³

GROUND WATER OBSERVATIONS AND REMARKS
GRAIN SIZE DISTRIBUTION (%) GR SA SI&CL

Upon completion of augering
Water at 0.1 m
Cave at 4.9 m
Water Level Readings:

Date	Depth	Elev.
2018-05-04	-1.0	212.0
2018-06-11	-0.6	211.6

NOTES 1 - Sample submitted for chemical testing.

Peto MacCallum Ltd.
CONSULTING ENGINEERS

LOG OF BOREHOLE NO. 3

17T 556392E 4928194N

PROJECT Proposed Residential Subdivision
PML REF. 18CF004
LOCATION Grey Road 21, Town of Blue Mountains, Ontario
BORING DATE April 23, 2018
ENGINEER GW
BORING METHOD Continuous Flight Solid Stem Augers
TECHNICIAN AT

DEPTH (metres)	ELEV	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES	ELEVATION SCALE	SHEAR STRENGTH (kPa) +FIELD VANE △TORVANE ○Qu ▲POCKET PENETROMETER ○Q / DYNAMIC CONE PENETRATION × STANDARD PENETRATION TEST ●	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L / WATER CONTENT (%)	UNIT WEIGHT kN/m³	GROUND WATER OBSERVATIONS AND REMARKS / GRAIN SIZE DISTRIBUTION (%) GR SA SI&CL
		SURFACE ELEVATION 209.55						50 100 150 200 / 20 40 60 80	10 20 30 40		
0.16	209.39	TOPSOIL: Black to dark brown, silty sand, trace gravel, very moist		1	SS	4	209				
		SAND AND SILT: Loose to dense, brown to grey, silty fine sand to fine sandy silt, trace clay, very moist to wet		2	SS	40					First water strike at 0.9 m
				3	SS	34	208				Non plastic
2.1	207.5	SILT: Very dense, grey, silt, some sand, trace clay, very moist to moist		4	SS	68	207				
				5	SS	65					Non plastic
							206				
				6	SS	77/295mm	205	>>			
							204				
6.4	203.2	BOREHOLE TERMINATED AT 6.4 m		7	SS	95/290mm		>>			Upon completion of augering Water at 2.7 m Cave at 3.3 m

NOTES

Peto MacCallum Ltd.
CONSULTING ENGINEERS

LOG OF BOREHOLE NO. 4

17T 556543E 4928249N

PROJECT Proposed Residential Subdivision
PML REF. 18CF004
LOCATION Grey Road 21, Town of Blue Mountains, Ontario
BORING DATE April 20, 2018
ENGINEER GW
BORING METHOD Continuous Flight Solid Stem Augers
TECHNICIAN AT

DEPTH (metres)	ELEV	DESCRIPTION	STRAT PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" VALUES	ELEVATION SCALE	SHEAR STRENGTH (kPa) / DYNAMIC CONE PENETRATION / STANDARD PENETRATION TEST	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L / WATER CONTENT (%)	UNIT WEIGHT kN/m³	GROUND WATER OBSERVATIONS AND REMARKS / GRAIN SIZE DISTRIBUTION (%) GR SA SI&CL
		SURFACE ELEVATION 207.80									
0.0	0.12 207.68	TOPSOIL: Black to dark brown, silty sand, trace gravel, moist		1	SS	4					Stick-up casing Concrete
		SAND: Loose to compact, brown, sand, trace silt, trace gravel, moist to wet		2[1]	SS	5	207				Bentonite Seal
2.0	2.1			3	SS	17	206				
	205.7	SAND AND SILT: Dense to very dense, brown, silty fine sand to fine sandy silt, trace clay, very moist to wet		4	SS	33	205				First water strike at 2.0 m
3.0				5	SS	41					19 mm slotted pipe Filter sand
4.0							204				
				6	SS	83/290mm	203	>>			
5.0											
6.0							202				
	6.4			7	SS	72/290mm		>>			
	201.4	BOREHOLE TERMINATED AT 6.4 m									Upon completion of augering Wet cave at 1.8 m
7.0											Water Level Readings:
											Date / Depth / Elev.
											2018-05-04 1.2 206.6
											2018-06-11 1.9 205.9
8.0											
9.0											
10.0											
11.0											
12.0											
13.0											
14.0											
15.0											

NOTES 1 - Sample submitted for chemical testing.

Peto MacCallum Ltd.
CONSULTING ENGINEERS

LOG OF TEST PIT NO. 5

17T 556151E 4927968N

PROJECT Proposed Residential Subdivision
PML REF. 18CF004
LOCATION Grey Road 21, Town of Blue Mountains, Ontario
BORING DATE May 11, 2018
ENGINEER GW
EXCAVATION METHOD Excavator
TECHNICIAN AT

DEPTH (metres) / ELEV	DESCRIPTION	STRAT PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" VALUES	ELEVATION SCALE
	SURFACE ELEVATION 215.45					
0.0	TOPSOIL: Black to brown, silty sand, trace gravel, very moist to wet					
0.30 / 215.15	SAND AND SILT: Loose, brown, silty fine sand to fine sandy silt, some gravel, trace organics, wet		1	GS	-	215
0.70 / 214.75	CLAYEY SANDY SILT TILL: Very stiff to hard, brown, clayey sandy silt, trace gravel, cobbles and boulders, DTPL		2[1]	GS	-	214
2.0 / 213.5	Becoming grey, wet layers		3	GS	-	213
2.9 / 212.6	TEST PIT TERMINATED AT 2.9 m					

SHEAR STRENGTH (kPa)
+ FIELD VANE △ TORVANE ○ Qu
▲ POCKET PENETROMETER ○ Q
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

UNIT WEIGHT kN/m³

GROUND WATER OBSERVATIONS AND REMARKS
GRAIN SIZE DISTRIBUTION (%) GR SA SI&CL

Upon completion of test pit
Seepage at 2.9 m
No sidewall sloughing
Water Level Readings:

Date	Depth	Elev.
2018-06-11	0.5	215.0

NOTES 1 - Sample submitted for chemical testing.

Peto MacCallum Ltd.
CONSULTING ENGINEERS

LOG OF TEST PIT NO. 6

17T 556249E 4927986N

PROJECT Proposed Residential Subdivision
PML REF. 18CF004
LOCATION Grey Road 21, Town of Blue Mountains, Ontario
BORING DATE May 11, 2018
ENGINEER GW
EXCAVATION METHOD Excavator
TECHNICIAN AT

DEPTH ELEV (metres)	DESCRIPTION	STRAT PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" VALUES	ELEVATION SCALE	SHEAR STRENGTH (kPa) / DYNAMIC CONE PENETRATION / STANDARD PENETRATION TEST	PLASTIC LIMIT / NATURAL MOISTURE CONTENT / LIQUID LIMIT / WATER CONTENT (%)	UNIT WEIGHT kN/m³	GROUND WATER OBSERVATIONS AND REMARKS / GRAIN SIZE DISTRIBUTION (%) GR SA SI&CL
	SURFACE ELEVATION 211.95									
0.40	TOPSOIL: Black, sand, some silt, trace gravel, very moist									
211.55 0.80	SAND AND SILT: Loose, brown, silty fine sand to fine sandy silt, trace gravel, very moist		1	GS	-					
211.15	CLAYEY SANDY SILT TILL: Very stiff to hard, grey, clayey sandy silt, trace gravel, cobbles and boulders, DTPL, wet layers		2	GS	-	211				
2.9						210				
209.1	TEST PIT TERMINATED AT 2.9 m									Upon completion of augering Seepage at 1.0 m Sidewall sloughing at 1.0 m

SHEAR STRENGTH (kPa): + FIELD VANE △ TORVANE ○ Qu ▲ POCKET PENETROMETER O Q (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)

NOTES

Peto MacCallum Ltd.
CONSULTING ENGINEERS

LOG OF BOREHOLE NO. 7

17T 556448E 4928075N

PROJECT Proposed Residential Subdivision
PML REF. 18CF004
LOCATION Grey Road 21, Town of Blue Mountains, Ontario
BORING DATE April 23, 2018
ENGINEER GW
BORING METHOD Continuous Flight Solid Stem Augers
TECHNICIAN AT

DEPTH (metres)	ELEV	DESCRIPTION	NUMBER	TYPE	"N" VALUES
		SURFACE ELEVATION 209.80			
0.0	209.65	TOPSOIL: Dark brown, silty sand, trace gravel, moist	1	SS	4
		SAND AND SILT: Loose to very dense, brown, silty fine sand to fine sandy silt, trace clay, very moist to wet	2	SS	25
2.0			3[1]	SS	32
			4	SS	75/270mm
2.9	206.9	CLAYEY SANDY SILT TILL: Hard, clayey sandy silt, trace gravel, cobbles and boulders, DTPL	5	SS	50/145mm
4.0					
			6	SS	68/295mm
5.5	204.3	SILT: Very dense, grey, silt, trace sand, trace clay, moist			
6.0			7	SS	72
6.5	203.3	BOREHOLE TERMINATED AT 6.5 m			

SHEAR STRENGTH (kPa)
+ FIELD VANE △ TORVANE ○ Qu
▲ POCKET PENETROMETER O Q
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

UNIT WEIGHT kN/m³

GROUND WATER OBSERVATIONS AND REMARKS
GRAIN SIZE DISTRIBUTION (%) GR SA SI&CL

Stick-up casing
Concrete
Bentonite seal
First water strike at 0.8 m
19 mm slotted pipe
Filter sand

Upon completion of augering
Water at 0.6 m
Cave at 3.3 m
Water Level Readings:

Date	Depth	Elev.
2018-05-04	0.4	209.4
2018-06-11	1.2	208.6

NOTES 1 - Sample submitted for chemical testing.

Peto MacCallum Ltd.
CONSULTING ENGINEERS

LOG OF BOREHOLE NO. 8

17T 556575E 4928104N

PROJECT Proposed Residential Subdivision
PML REF. 18CF004
LOCATION Grey Road 21, Town of Blue Mountains, Ontario
BORING DATE April 23, 2018
ENGINEER GW
BORING METHOD Continuous Flight Solid Stem Augers
TECHNICIAN AT

DEPTH ELEV (metres)	DESCRIPTION	STRAT PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" VALUES	ELEVATION SCALE	SHEAR STRENGTH (kPa) / DYNAMIC CONE PENETRATION / STANDARD PENETRATION TEST	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L / WATER CONTENT (%)	UNIT WEIGHT kN/m³	GROUND WATER OBSERVATIONS AND REMARKS / GRAIN SIZE DISTRIBUTION (%) GR SA SI&CL
	SURFACE ELEVATION 210.00									
0.14 / 209.86	TOPSOIL: Brown, sand, trace silt, trace gravel, moist		1	SS	3					
	SAND: Very loose to compact, brown, sand, trace to some silt, trace gravel, very moist to wet		2	SS	12	209				
			3	SS	13					First water strike at 1.5 m
2.1 / 207.9	SAND AND SILT: Very dense, brown, silty fine sand to fine sandy silt, very moist to wet		4	SS	56	208				
			5	SS	75	207				
			6	SS	83/270mm	206				
			7	SS	83/270mm	205				
6.4 / 203.6	BOREHOLE TERMINATED AT 6.4 m					204				Upon completion of augering Water at 1.8 m Cave at 2.7 m

NOTES

KEY PLAN
TOWN OF BLUE MOUNTAINS, ONTARIO

LEGEND:

BH 3 EL. 209.55	BOREHOLE 3 SURFACE ELEVATION
BH 2 EL. 210.95	BOREHOLE 2 (WITH PIEZOMETER) SURFACE ELEVATION
TP 1 EL. 212.70	TEST PIT 1 SURFACE ELEVATION
TP 5 EL. 215.45	TEST PIT 5 (WITH STANDPIPE) SURFACE ELEVATION
	SITE LIMITS

REFERENCE:

BASE PLAN PRODUCED USING GREY COUNTY GIS. SURFACE ELEVATIONS PROVIDED BY C.C. TATHAM & ASSOCIATES LTD.

0m 30 60 90 120 150

SCALE

BOREHOLE/TEST PIT LOCATION PLAN

PROPOSED RESIDENTIAL SUBDIVISION
GREY COUNTY ROAD 21
TOWNSHIP OF BLUE MOUNTAINS, ONTARIO

Peto MacCallum Ltd.
CONSULTING ENGINEERS

		DATE	SCALE	PML REF.	DRAWING NO.
DRAWN	RB	JUNE 2018	AS SHOWN	18CF004	1
CHECKED	GW				
APPROVED	GW				

APPENDIX A

Certificates of Analyses for Chemical Testing

CADUCEON™ ENVIRONMENTAL LABORATORIES
Client committed. Quality assured.

CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: G75184

REPORT No. B18-10833 (i)

Rev. 1

Report To:

Peto MacCallum Ltd
19 Churchill Drive,
Barrie ON L4N 8Z5
Attention: Geoff White

Caduceon Environmental Laboratories
112 Commerce Park Drive
Barrie ON L4N 8W8
Tel: 705-252-5743
Fax: 705-252-5746

DATE RECEIVED: 25-Apr-18
DATE REPORTED: 15-Jun-18
SAMPLE MATRIX: Soil

JOB/PROJECT NO.:

P.O. NUMBER: 18CF004
WATERWORKS NO.

Parameter	Qty	Site Analyzed	Analyst Initials	Date Analyzed	Lab Method	Reference Method
Cyanide	3	Kingston	US	01-May-18	A-CN s K	in house
Conductivity	3	Richmond Hill	ABL	30-Apr-18	A-COND-02 s RH	MOEE3138
pH	3	Richmond Hill	ABL	27-Apr-18	A-pH-02 (rh)	MOEE 3137
Chromium (VI)	3	Richmond Hill	ABL	01-May-18	D-CrVI-02 s RH	EPA3060A
Mercury	3	Holly Lane	PBK	27-Apr-18	D-HG-01 (o)	EPA 7471A
Sodium Adsorption Ratio	3	Holly Lane	TPR	27-Apr-18	D-ICP-01 SAR (o)	SM 3120
Metals - ICP-OES	3	Holly Lane	TPR	27-Apr-18	D-ICP-02 (o)	EPA 6010
Metals - ICP-MS	3	Holly Lane	RPE	27-Apr-18	D-ICPMS-01 (o)	EPA 6020

µg/g = micrograms per gram (parts per million) and is equal to mg/Kg
F1 C6-C10 hydrocarbons in µg/g, (F1-btex if requested)
F2 C10-C16 hydrocarbons in µg/g, (F2-napth if requested)
F3 C16-C34 hydrocarbons in µg/g, (F3-pah if requested)
F4 C34-C50 hydrocarbons in µg/g
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
Any deviations from the method are noted and reported for any particular sample.
nC6 and nC10 response factor is within 30% of response factor for toluene:
nC10,nC16 and nC34 response factors within 10% of each other:
C50 response factors within 70% of nC10+nC16+nC34 average:
Linearity is within 15%:
All results expressed on a dry weight basis.
Unless otherwise noted all chromatograms returned to baseline by the retention time of nC50.

Unless otherwise noted all extraction, analysis, QC requirements and limits for holding time were met.
If analyzed for F4 and F4G they are not to be summed but the greater of the two numbers are to be used in application to the CWS PHC
QC will be made available upon request.

O. Reg. 153 - Soil, Ground Water and Sediment Standards
Tbl. 1 - All - Table 1 - Res/Park/Institutional/Indus/Com/Commun

Christine Burke
Lab Manager

R.L. = Reporting Limit
Test methods may be modified from specified reference method unless indicated by an *
Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill,B-Barrie

CADUCEON™ ENVIRONMENTAL LABORATORIES
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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: G75184

REPORT No. B18-10833 (i)

Rev. 1

Report To:

Peto MacCallum Ltd
19 Churchill Drive,
Barrie ON L4N 8Z5
Attention: Geoff White

Caduceon Environmental Laboratories
112 Commerce Park Drive
Barrie ON L4N 8W8
Tel: 705-252-5743
Fax: 705-252-5746

DATE RECEIVED: 25-Apr-18
DATE REPORTED: 15-Jun-18
SAMPLE MATRIX: Soil

JOB/PROJECT NO.:
P.O. NUMBER: 18CF004
WATERWORKS NO.

	Client I.D.		BH 2 SS 1	BH 4 SS 2	BH 7 SS 3		O. Reg. 153	
	Sample I.D.		B18-10833-1	B18-10833-2	B18-10833-3		Tbl. 1 - All	
	Date Collected		23-Apr-18	20-Apr-18	23-Apr-18			
Parameter	**Units**	**R.L.**						
pH @25°C	pH Units		7.37	7.86	7.95			
Conductivity @25°C	mS/cm	0.07	0.11	0.07	0.09		0.57	
Cyanide (Free)	µg/g	0.05	< 0.05	< 0.05	< 0.05		0.051	
Sodium Adsorption Ratio	units		0.127	0.0571	0.0877		2.4	
Antimony	µg/g	0.5	< 0.5	< 0.5	< 0.5		1.3	
Arsenic	µg/g	0.5	1.2	0.8	0.6		18	
Barium	µg/g	1	27	9	12		220	
Beryllium	µg/g	0.2	0.2	< 0.2	< 0.2		2.5	
Boron	µg/g	0.5	4.1	2.9	4.4		36	
Cadmium	µg/g	0.5	< 0.5	< 0.5	< 0.5		1.2	
Chromium	µg/g	1	11	5	7		70	
Chromium (VI)	µg/g	0.5	< 0.5	< 0.5	< 0.5		0.66	
Cobalt	µg/g	1	3	2	3		21	
Copper	µg/g	1	9	5	9		92	
Lead	µg/g	5	12	< 5	< 5		120	
Mercury	µg/g	0.005	0.028	0.005	< 0.005		0.27	
Molybdenum	µg/g	1	< 1	< 1	< 1		2	
Nickel	µg/g	1	6	5	5		82	
Selenium	µg/g	0.5	< 0.5	< 0.5	< 0.5		1.5	
Silver	µg/g	0.2	< 0.2	< 0.2	< 0.2		0.5	
Thallium	µg/g	0.1	< 0.1	< 0.1	< 0.1		1	
Uranium	µg/g	0.1	0.5	0.3	0.4		2.5	
Vanadium	µg/g	1	18	10	12		86	
Zinc	µg/g	3	24	11	14		290	

1 Revised report to change guidelines as per client request.

O. Reg. 153 - Soil, Ground Water and Sediment Standards
Tbl. 1 - All - Table 1 - Res/Park/Institutional/Indus/Com/Commun

Christine Burke
Lab Manager

R.L. = Reporting Limit
Test methods may be modified from specified reference method unless indicated by an *
Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill,B-Barrie

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ENVIRONMENTAL LABORATORIES
Client committed. Quality assured.

CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: G75184

REPORT No. B18-10833 (i)

Rev. 1

Report To:

Peto MacCallum Ltd
19 Churchill Drive,
Barrie ON L4N 8Z5
Attention: Geoff White

Caduceon Environmental Laboratories
112 Commerce Park Drive
Barrie ON L4N 8W8
Tel: 705-252-5743
Fax: 705-252-5746

DATE RECEIVED: 25-Apr-18
DATE REPORTED: 15-Jun-18
SAMPLE MATRIX: Soil

JOB/PROJECT NO.:
P.O. NUMBER: 18CF004
WATERWORKS NO.

Summary of Exceedances

O. Reg. 153 - Soil, Ground Water and Sediment Standards
Tbl. 1 - All - Table 1 - Res/Park/Institutional/Indus/Com/Commun

Christine Burke
Lab Manager

R.L. = Reporting Limit
Test methods may be modified from specified reference method unless indicated by an *
Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill,B-Barrie

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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: G75184

REPORT No. B18-10833 (ii)

Rev. 1

Report To:

Peto MacCallum Ltd
19 Churchill Drive,
Barrie ON L4N 8Z5
Attention: Geoff White

Caduceon Environmental Laboratories
112 Commerce Park Drive
Barrie ON L4N 8W8
Tel: 705-252-5743
Fax: 705-252-5746

DATE RECEIVED: 25-Apr-18
DATE REPORTED: 15-Jun-18
SAMPLE MATRIX: Soil

JOB/PROJECT NO.:

P.O. NUMBER: 18CF004
WATERWORKS NO.

Parameter	Qty	Site Analyzed	Analyst Initials	Date Analyzed	Lab Method	Reference Method
% Moisture	3	Richmond Hill	FAL	26-Apr-18	A-% moisture RH	
PHC(F2-F4)	3	Kingston	KPR	26-Apr-18	C-PHC-S-001 (k)	CWS Tier 1
PHC(F1)	3	Richmond Hill	FAL	26-Apr-18	C-VPHS-01 (rh)	CWS Tier 1

µg/g = micrograms per gram (parts per million) and is equal to mg/Kg
F1 C6-C10 hydrocarbons in µg/g, (F1-btex if requested)
F2 C10-C16 hydrocarbons in µg/g, (F2-napth if requested)
F3 C16-C34 hydrocarbons in µg/g, (F3-pah if requested)
F4 C34-C50 hydrocarbons in µg/g
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
Any deviations from the method are noted and reported for any particular sample.
nC6 and nC10 response factor is within 30% of response factor for toluene:
nC10,nC16 and nC34 response factors within 10% of each other:
C50 response factors within 70% of nC10+nC16+nC34 average:
Linearity is within 15%:
All results expressed on a dry weight basis.
Unless otherwise noted all chromatograms returned to baseline by the retention time of nC50.

Unless otherwise noted all extraction, analysis, QC requirements and limits for holding time were met.
If analyzed for F4 and F4G they are not to be summed but the greater of the two numbers are to be used in application to the CWS PHC
QC will be made available upon request.

O. Reg. 153 - Soil, Ground Water and Sediment Standards
Tbl. 1 - All - Table 1 - Res/Park/Institutional/Indus/Com/Commun

Christine Burke
Lab Manager

R.L. = Reporting Limit
Test methods may be modified from specified reference method unless indicated by an *
Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill,B-Barrie

CADUCEON™ ENVIRONMENTAL LABORATORIES
Client committed. Quality assured.

CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: G75184

REPORT No. B18-10833 (ii)

Rev. 1

Report To:

Peto MacCallum Ltd
19 Churchill Drive,
Barrie ON L4N 8Z5
Attention: Geoff White

Caduceon Environmental Laboratories
112 Commerce Park Drive
Barrie ON L4N 8W8
Tel: 705-252-5743
Fax: 705-252-5746

DATE RECEIVED: 25-Apr-18
DATE REPORTED: 15-Jun-18
SAMPLE MATRIX: Soil

JOB/PROJECT NO.:
P.O. NUMBER: 18CF004
WATERWORKS NO.

	Client I.D.		BH 2 SS 1	BH 4 SS 2	BH 7 SS 3		O. Reg. 153	
	Sample I.D.		B18-10833-1	B18-10833-2	B18-10833-3		Tbl. 1 - All	
	Date Collected		23-Apr-18	20-Apr-18	23-Apr-18			
Parameter	**Units**	**R.L.**						
PHC F1 (C6-C10)	µg/g	10	< 10	< 10	< 10		25	
PHC F2 (>C10-C16)	µg/g	5	7	6	< 5		10	
PHC F3 (>C16-C34)	µg/g	10	15	18	< 10		240	
PHC F4 (>C34-C50)	µg/g	10	< 10	< 10	< 10		120	
% moisture	%		33.1	6.8	16.0			

1 Revised report to change guidelines as per client request.

O. Reg. 153 - Soil, Ground Water and Sediment Standards
Tbl. 1 - All - Table 1 - Res/Park/Institutional/Indus/Com/Commun

Christine Burke
Lab Manager

R.L. = Reporting Limit
Test methods may be modified from specified reference method unless indicated by an *
Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill,B-Barrie

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REPORT No. B18-10833 (ii)

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Caduceon Environmental Laboratories
112 Commerce Park Drive
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Tel: 705-252-5743
Fax: 705-252-5746

DATE RECEIVED: 25-Apr-18
DATE REPORTED: 15-Jun-18
SAMPLE MATRIX: Soil

JOB/PROJECT NO.:
P.O. NUMBER: 18CF004
WATERWORKS NO.

Summary of Exceedances

O. Reg. 153 - Soil, Ground Water and Sediment Standards
Tbl. 1 - All - Table 1 - Res/Park/Institutional/Indus/Com/Commun

Christine Burke
Lab Manager

R.L. = Reporting Limit
Test methods may be modified from specified reference method unless indicated by an *
Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill,B-Barrie

CADUCEON
ENVIRONMENTAL LABORATORIES

TESTING REQUIREMENTS

- [x] O.Reg 153 — Table 8
- [ ] Surface Soil
- [ ] Sub Surface Soil (O.Reg 153)
- [ ] Yes [ ] No Record of Site Condition (O.Reg 153)
- [ ] Provincial Water Quality Objectives
- [ ] Sewer Use By-Law:
- [ ] MISA Guidelines
- [ ] O.Reg 558 Leachate Analysis
- Disposal Site:
- [ ] Landfill Monitoring
- [ ] Other:

REPORT NUMBER (Lab Use)

B18-10833

Are any samples to be submitted intended for Human Consumption under any Drinking Water Regulations? [ ] Yes [x] No (If yes, submit all Drinking Water Samples on a Drinking Water Chain of Custody)

Indicate Laboratory Samples are submitted to: [ ] Kingston [ ] Ottawa [ ] Richmond Hill [ ] Windsor [x] Barrie [ ] London

Organization: Peto MacCallum Ltd.	Address and Invoicing Address (if different): ALL PML Invoices to barrie@petomaccallum.com
Contact: Geoff White	
Tel: 705-734-7900	
Fax: 705-734-9911	Quote No.: P17-PETO comp
Email: barrie@petomaccallum.com	P.O. No.: 18CF004
	Project Name: 18CF004
	Additional Info: Peto Soil 1 for All

ANALYSES REQUESTED (Print Test in Boxes)

- MGT
- PHC (F1-F4)
- Suspected Highly Contaminated

TURNAROUND SERVICE REQUESTED (see back page)

- [ ] Platinum 200% Surcharge**
- [ ] Gold 100% Surcharge
- [ ] Silver 50% Surcharge
- [ ] Bronze 25% Surcharge
- [x] Standard 5-7 days
- [ ] Specific Date:

* Sample Matrix Legend: WW=Waste Water, SW=Surface Water, GW=Groundwater, LS=Liquid Sludge, SS=Solid Sludge, S=Soil, Sed=Sediment, PC=Paint Chips, F=Filter, Oil = Oil

Lab No:	Sample Identification	S.P.L.	Sample Matrix*	Date Collected (yy-mm-dd)	Time Collected	Indicate Test For Each Sample By Using A Check Mark In The Box Provided (MGT, PHC (F1-F4))	✓	Field pH	Field Temp.	# Bottles Sample	Field Filtered(Y/N)
	BH 2 SS1		S	18-04-23		✓ ✓				4	
	BH 4 SS2		S	18-04-20		✓ ✓				4	
	BH 7 SS3		S	18-04-23		✓ ✓				4	
	per cup -> C										
	per -> K										
	per 4 vials -> RH										

SAMPLE SUBMISSION INFORMATION

	Sampled by:	Submitted by:
Print:	Alan Turner	Alan Turner
Sign:		
	2018-04-25	2018-04-25
	Date (yy-mm-dd)/Time:	Date (yy-mm-dd)/Time:

SHIPPING INFORMATION

- [ ] Client's Courier
- [ ] Caduceon's Courier
- [x] Drop Off
- [ ] Caduceon (Pick-up)
- [ ] Invoice
- # of Pieces

REPORTING / INVOICING

- [ ] Report by Fax
- [x] Report by Email
- [x] Invoice by Email
- [ ] Invoice by Mail

SAMPLE RECEIVING INFORMATION (LABORATORY USE ONLY)

- Received By (print): David Lung — Signature:
- Date Received (yy-mm-dd): 18-04-25 — Time Received: 14:00
- Laboratory Prepared Bottles: [x] Yes [ ] No
- Sample Temperature °C: 9
- Labeled by:

Comments:

Page 1 of 1

G 75184

White: Lab Copy / Yellow: Invoicing Copy / Pink: Client Copy

CADUCEON™ ENVIRONMENTAL LABORATORIES
Client committed. Quality assured.

CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: G75186

REPORT No. B18-12842 (i)

Rev. 1

Report To:

Peto MacCallum Ltd
19 Churchill Drive,
Barrie ON L4N 8Z5
Attention: Geoff White

Caduceon Environmental Laboratories
112 Commerce Park Drive
Barrie ON L4N 8W8
Tel: 705-252-5743
Fax: 705-252-5746

DATE RECEIVED: 14-May-18
DATE REPORTED: 15-Jun-18
SAMPLE MATRIX: Soil

JOB/PROJECT NO.:

P.O. NUMBER: 18CF004
WATERWORKS NO.

Parameter	Qty	Site Analyzed	Analyst Initials	Date Analyzed	Lab Method	Reference Method
Cyanide	1	Kingston	US	17-May-18	A-CN s K	in house
Conductivity	1	Richmond Hill	ABL	16-May-18	A-COND-02 s RH	MOEE3138
pH	1	Richmond Hill	ABL	15-May-18	A-pH-02 (rh)	MOEE 3137
Chromium (VI)	1	Holly Lane	VK	16-May-18	D-CRVI-02 (o)	EPA7196A
Mercury	1	Holly Lane	PBK	18-May-18	D-HG-01 (o)	EPA 7471A
Sodium Adsorption Ratio	1	Holly Lane	TPR	18-May-18	D-ICP-01 SAR (o)	SM 3120
Metals - ICP-OES	1	Holly Lane	TPR	18-May-18	D-ICP-02 (o)	EPA 6010
Metals - ICP-MS	1	Holly Lane	RPE	18-May-18	D-ICPMS-01 (o)	EPA 6020

µg/g = micrograms per gram (parts per million) and is equal to mg/Kg
F1 C6-C10 hydrocarbons in µg/g, (F1-btex if requested)
F2 C10-C16 hydrocarbons in µg/g, (F2-napth if requested)
F3 C16-C34 hydrocarbons in µg/g, (F3-pah if requested)
F4 C34-C50 hydrocarbons in µg/g
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
Any deviations from the method are noted and reported for any particular sample.
nC6 and nC10 response factor is within 30% of response factor for toluene:
nC10,nC16 and nC34 response factors within 10% of each other:
C50 response factors within 70% of nC10+nC16+nC34 average:
Linearity is within 15%:
All results expressed on a dry weight basis.
Unless otherwise noted all chromatograms returned to baseline by the retention time of nC50.

Unless otherwise noted all extraction, analysis, QC requirements and limits for holding time were met.
If analyzed for F4 and F4G they are not to be summed but the greater of the two numbers are to be used in application to the CWS PHC
QC will be made available upon request.

O. Reg. 153 - Soil, Ground Water and Sediment Standards
Tbl. 1 - All - Table 1 - Res/Park/Institutional/Indus/Com/Commun

Christine Burke
Lab Manager

R.L. = Reporting Limit
Test methods may be modified from specified reference method unless indicated by an *
Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill,B-Barrie

CADUCEON™ ENVIRONMENTAL LABORATORIES
Client committed. Quality assured.

CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: G75186

REPORT No. B18-12842 (i)

Rev. 1

Report To:

Peto MacCallum Ltd
19 Churchill Drive,
Barrie ON L4N 8Z5
Attention: Geoff White

Caduceon Environmental Laboratories
112 Commerce Park Drive
Barrie ON L4N 8W8
Tel: 705-252-5743
Fax: 705-252-5746

DATE RECEIVED: 14-May-18
DATE REPORTED: 15-Jun-18
SAMPLE MATRIX: Soil

JOB/PROJECT NO.:
P.O. NUMBER: 18CF004
WATERWORKS NO.

	Client I.D.		TP 5 GS 2				O. Reg. 153 Tbl. 1 - All	
	Sample I.D.		B18-12842-1					
	Date Collected		11-May-18					
Parameter	**Units**	**R.L.**						
pH @25°C	pH Units		7.88					
Conductivity @25°C	mS/cm	0.07	0.12				0.57	
Cyanide (Free)	µg/g	0.05	< 0.05				0.051	
Sodium Adsorption Ratio	units		0.144				2.4	
Antimony	µg/g	0.5	< 0.5				1.3	
Arsenic	µg/g	0.5	2.2				18	
Barium	µg/g	1	29				220	
Beryllium	µg/g	0.2	0.3				2.5	
Boron	µg/g	0.5	7.5				36	
Cadmium	µg/g	0.5	< 0.5				1.2	
Chromium	µg/g	1	12				70	
Chromium (VI)	µg/g	0.2	< 0.2				0.66	
Cobalt	µg/g	1	6				21	
Copper	µg/g	1	14				92	
Lead	µg/g	5	< 5				120	
Mercury	µg/g	0.005	0.008				0.27	
Molybdenum	µg/g	1	< 1				2	
Nickel	µg/g	1	14				82	
Selenium	µg/g	0.5	< 0.5				1.5	
Silver	µg/g	0.2	0.2				0.5	
Thallium	µg/g	0.1	< 0.1				1	
Uranium	µg/g	0.1	0.4				2.5	
Vanadium	µg/g	1	16				86	
Zinc	µg/g	3	22				290	

1 Revised report to change guidelines as per client request.

O. Reg. 153 - Soil, Ground Water and Sediment Standards
Tbl. 1 - All - Table 1 - Res/Park/Institutional/Indus/Com/Commun

Christine Burke
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Rev. 1

Report To:

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19 Churchill Drive,
Barrie ON L4N 8Z5
Attention: Geoff White

Caduceon Environmental Laboratories
112 Commerce Park Drive
Barrie ON L4N 8W8
Tel: 705-252-5743
Fax: 705-252-5746

DATE RECEIVED: 14-May-18
DATE REPORTED: 15-Jun-18
SAMPLE MATRIX: Soil

JOB/PROJECT NO.:
P.O. NUMBER: 18CF004
WATERWORKS NO.

Summary of Exceedances

O. Reg. 153 - Soil, Ground Water and Sediment Standards
Tbl. 1 - All - Table 1 - Res/Park/Institutional/Indus/Com/Commun

Christine Burke
Lab Manager

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Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill,B-Barrie

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Final Report

C.O.C.: G75186

REPORT No. B18-12842 (ii)

Rev. 1

Report To:

Peto MacCallum Ltd
19 Churchill Drive,
Barrie ON L4N 8Z5
Attention: Geoff White

Caduceon Environmental Laboratories
112 Commerce Park Drive
Barrie ON L4N 8W8
Tel: 705-252-5743
Fax: 705-252-5746

DATE RECEIVED: 14-May-18
DATE REPORTED: 15-Jun-18
SAMPLE MATRIX: Soil

JOB/PROJECT NO.:

P.O. NUMBER: 18CF004
WATERWORKS NO.

Parameter	Qty	Site Analyzed	Analyst Initials	Date Analyzed	Lab Method	Reference Method
% Moisture	1	Richmond Hill	JE	15-May-18	A-% moisture RH	
PHC(F2-F4)	1	Kingston	KPR	15-May-18	C-PHC-S-001 (k)	CWS Tier 1
PHC(F1)	1	Richmond Hill	JE	15-May-18	C-VPHS-01 (rh)	CWS Tier 1

µg/g = micrograms per gram (parts per million) and is equal to mg/Kg
F1 C6-C10 hydrocarbons in µg/g, (F1-btex if requested)
F2 C10-C16 hydrocarbons in µg/g, (F2-napth if requested)
F3 C16-C34 hydrocarbons in µg/g, (F3-pah if requested)
F4 C34-C50 hydrocarbons in µg/g
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
Any deviations from the method are noted and reported for any particular sample.
nC6 and nC10 response factor is within 30% of response factor for toluene:
nC10,nC16 and nC34 response factors within 10% of each other:
C50 response factors within 70% of nC10+nC16+nC34 average:
Linearity is within 15%:
All results expressed on a dry weight basis.
Unless otherwise noted all chromatograms returned to baseline by the retention time of nC50.

Unless otherwise noted all extraction, analysis, QC requirements and limits for holding time were met.
If analyzed for F4 and F4G they are not to be summed but the greater of the two numbers are to be used in application to the CWS PHC
QC will be made available upon request.

O. Reg. 153 - Soil, Ground Water and Sediment Standards
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DATE RECEIVED: 14-May-18
DATE REPORTED: 15-Jun-18
SAMPLE MATRIX: Soil

JOB/PROJECT NO.:
P.O. NUMBER: 18CF004
WATERWORKS NO.

	Client I.D.		TP 5 GS 2				O. Reg. 153	
	Sample I.D.		B18-12842-1				Tbl. 1 - All	
	Date Collected		11-May-18					
Parameter	**Units**	**R.L.**						
PHC F1 (C6-C10)	µg/g	10	< 10				25	
PHC F2 (>C10-C16)	µg/g	5	< 5				10	
PHC F3 (>C16-C34)	µg/g	10	14				240	
PHC F4 (>C34-C50)	µg/g	10	< 10				120	
% moisture	%		8.4					

1 Revised report to change guidelines as per client request.

O. Reg. 153 - Soil, Ground Water and Sediment Standards
Tbl. 1 - All - Table 1 - Res/Park/Institutional/Indus/Com/Commun

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DATE RECEIVED: 14-May-18
DATE REPORTED: 15-Jun-18
SAMPLE MATRIX: Soil

JOB/PROJECT NO.:
P.O. NUMBER: 18CF004
WATERWORKS NO.

Summary of Exceedances

O. Reg. 153 - Soil, Ground Water and Sediment Standards
Tbl. 1 - All - Table 1 - Res/Park/Institutional/Indus/Com/Commun

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Lab Manager

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Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill,B-Barrie

CADUCEON
ENVIRONMENTAL LABORATORIES

TESTING REQUIREMENTS

- [x] O.Reg 153 — Table 8
- [ ] Surface Soil
- [ ] Sub Surface Soil (O.Reg 153)
- [ ] Yes [ ] No Record of Site Condition (O.Reg 153)
- [ ] Provincial Water Quality Objectives
- [ ] Sewer Use By-Law:
- [ ] MISA Guidelines
- [ ] O.Reg 558 Leachate Analysis
- Disposal Site:
- [ ] Landfill Monitoring
- [ ] Other:

REPORT NUMBER (Lab Use)

B18-12842

Are any samples to be submitted intended for Human Consumption under any Drinking Water Regulations? [ ] Yes [x] No (If yes, submit all Drinking Water Samples on a Drinking Water Chain of Custody)

Indicate Laboratory Samples are submitted to: [ ] Kingston [ ] Ottawa [ ] Richmond Hill [ ] Windsor [x] Barrie [ ] London

Organization: Peto MacCallum Ltd.	Address and Invoicing Address (if different): All PML invoices to barrie@petomaccallum.com
Contact: Geoff White	
Tel: 705-734-5900	
Fax: 705-734-9911	Quote No.:
Email: Blair@petomaccallum.com	P.O. No.: 18CF004
	Project Name: 18CF004
	Additional Info:

ANALYSES REQUESTED (Print Test in Boxes)

MgT
PHC CFA-FH
Suspected Highly Contaminated

TURNAROUND SERVICE REQUESTED (see back page)

- [ ] Platinum 200% Surcharge**
- [ ] Gold 100% Surcharge
- [ ] Silver 50% Surcharge
- [ ] Bronze 25% Surcharge
- [x] Standard 5-7 days
- [ ] Specific Date:

* Sample Matrix Legend: WW=Waste Water, SW=Surface Water, GW=Groundwater, LS=Liquid Sludge, SS=Solid Sludge, S=Soil, Sed=Sediment, PC=Paint Chips, F=Filter, Oil = Oil

Lab No:	Sample Identification	S.P.L.	Sample Matrix *	Date Collected (yy-mm-dd)	Time Collected	Indicate Test For Each Sample By Using A Check Mark In The Box Provided	✓	Field pH	Field Temp.	# Bottles Sample	Field Filtered(Y/N)
	TP5 GS 2		S	18-05-11		✓ ✓				4	
	Split for RH + vials										
	1jar -> K										
	1jar -PO										

SAMPLE SUBMISSION INFORMATION

	Sampled by:	Submitted by:
Print:	Alan Turner	R. Blair
Sign:		
	2018-05-11	2018-05-14
	Date (yy-mm-dd)/Time:	Date (yy-mm-dd)/Time:

SHIPPING INFORMATION

- [ ] Client's Courier
- [ ] Caduceon's Courier
- [ ] Drop Off
- [ ] Caduceon (Pick-up)
- Invoice [ ]
- # of Pieces

REPORTING / INVOICING

- [ ] Report by Fax
- [x] Report by Email
- [x] Invoice by Email
- [ ] Invoice by Mail

SAMPLE RECEIVING INFORMATION (LABORATORY USE ONLY)

- Received By (print): S.K.D. Signature:
- Date Received (yy-mm-dd): 18/05/14 Time Received: 12:30
- Laboratory Prepared Bottles: [x] Yes [ ] No
- Sample Temperature °C: 12.6
- Labeled by:

Comments:

Page 1 of 1

G 75186

White: Lab Copy / Yellow: Invoicing Copy / Pink: Client Copy

APPENDIX B

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.

STATEMENT OF LIMITATIONS
(continued)

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.

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 anyway 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.