



July 13, 2018

3282 Ogden's Beach Road,
Midland, Ontario
L4R 4K6

Email via: Dave@rozycki.ca

Attn: Dave Rozycki (c/o WMI & Associates Ltd.)

Planning

Environmental

Geotechnical

Building Sciences

Construction Testing
& Inspection

Re: Soil Sampling Program
160 – 200 Fox Street (Bay Moorings Marina), Penetanguishene, Ontario
Cambium Reference: 7856-001

CONTACT US

Telephone

(905) 725.6280

(866) 217.7900

Facsimile

(705) 742.7907

Website

cambium-inc.com

PROJECT OFFICE

74 Cedar Pointe Drive

Unit 1009

Barrie, ON, L4N 5R7

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Dear Mr. Rozycki,

This letter report summarizes the results of a soil sampling program conducted by Cambium Inc. (Cambium) at the above mentioned site. Cambium understands that the Client proposes to construct a subdivision at the site, and based on the findings of the geotechnical investigation by MTE Consultants Inc. (MTE) the dwellings are to be founded on helical piles.

It is understood that there is large amount of fill at the site, which is believed to have been imported during previous dredging operations at the Marina. Following discussions with the Client, the majority of the fill has been stockpiled in a berm along the southern perimeter of the Site. Cambium was retained by Dave Rozycki (Client) to carry out soil sampling and testing of the existing fill material at the site in order to determine if it could be reused as backfill and grading at the site.

SITE INSPECTION

A Cambium Senior Technician conducted a soils sampling program at the site on July 4, 2018. The testing program was carried out concurrently with MTE, who were retained to conduct an environmental testing program on the fill material, the results of which will be provided under a separate cover.

Five (5) test pits were advanced on the site in strategically placed locations surrounding the fill berm to determine the quality of the fill material. Test pits TP1, TP2 and TP5 were conducted on the existing berm and extended to a depth of ± 2.8 mbgs. Test pits TP3 and TP4 were conducted adjacent to the lake to a depth of 1.8 mbgs. A test pit location plan is appended to this letter as Figure 1.

The Cambium Senior Technician logged the test pits at regular intervals using both visual and tactile methods. After completion, the test pits were checked for groundwater and general stability prior to backfilling by others.



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The berm area (test pits 1, 2 and 5) primarily consisted of a sand fill with traces of silt and gravel, in a dry loose state to an average depth ± 1.9 mbgs. ± 1.9 mbgs to ± 2.7 mbgs consisted of silty sand, with traces of organics and contained varying amounts of concrete and asphalt which was similar to the material observed adjacent to the berm.

The test pits adjacent to the berm (test pits 3 and 4) consisted of sand fill with cobbles and traces of silt, clay and organics. There was also a large amount of debris found, which consisted of concrete, asphalt and PVC piping. The groundwater table was only observed in TP3 at a depth of 1.8 mbgs.

PHYSICAL LABORATORY TESTING

Physical laboratory testing, including four (4) particle size distribution analyses (LS-702,705), was completed on selected soil samples to confirm textural classification and to assess geotechnical parameters. The analysis results, based on the Unified Soil Classification System (USCS) scale, are summarized below in Table 1 for samples grabbed within the fill berm and Table 2 for fill samples grabbed adjacent to the berm, with full results appended to this letter

Table 1 Particle Size Distribution Analysis Results for Berm Samples

Test Pit	Depth (mbgs)	Soil	% Gravel	% Sand	% Silt & Clay
TP1	0.9	Sand some Silt	6	71	23
TP5	1.8	Sand	2	91	7

Table 2 Particle Size Distribution Analysis Results Adjacent to the Berm

Test Pit	Depth (mbgs)	Soil	% Gravel	% Sand	% Silt	% Clay
TP3	0.6	Silty Sand some Gravel trace Clay	17	55	22	6
TP4	0.5	Sand some Silt some Gravel trace Clay	15	68	15	2

The laboratory test results indicate that the samples taken from within the berm are generally poorly graded fine sand, whilst the samples adjacent to the berm are generally well graded sand with varying amounts of silt.

FILL RECOMMENDATIONS

It is understood from the MTE draft geotechnical report dated May 8th, 2018 that the residential buildings are recommended to be founded on helical piles. Based on the results of the investigation, excavated fill from the site may be used for non-structural backfill material up to subgrade elevation provided the moisture content at the time of backfilling is appropriate for compaction. Backfill should be placed in maximum 250 mm thick lifts and should be compacted to a minimum of 98% of Standard Proctor Maximum Dry Density (SPMDD). The backfill material in the upper 500 mm below the pavement subgrade elevation should be compacted to 100 percent SPMDD in all areas.

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All existing vegetation, topsoil, organics, asphalt, concrete and construction debris should be removed from any fill which is to be reused. The backfill area must be approved by Cambium prior to placement of any new fill, to ensure the suitability of subgrade conditions.

Based on the laboratory testing results, the well graded silty sand adjacent to the berm is likely to compact easier than the poorly graded sand within the fill berm, if it is found to be difficult to achieve the minimum SPMD for the poorly graded sand during construction, it is advised that this material is predominantly used in landscaped areas and the well graded silty sand is used underneath structures and paved areas.

DESIGN REVIEW AND INSPECTIONS

Testing and inspections should be carried out during construction operations to examine and approve subgrade conditions, fill material, compaction of bedding, trench backfill, and granular base courses.

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CLOSING

Please note that this report letter is governed by the attached qualifications and limitations. We trust that the information contained in this report meets your current requirements. If you have questions or comments regarding this document, please do not hesitate to contact the undersigned at (705) 719-0700 ext. 405.

Respectfully submitted,

CAMBium INC.

Alex Griffin, EIT.
Engineer In Training

Rob Gethin, P.Eng.
Senior Project Manager



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Encl. *Figure 1 – Test Pit Location Plan
Laboratory Test Results*

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