Peto MacCallum Ltd.
CONSULTING ENGINEERS

SLOPE STABILITY ASSESSMENT
PROPOSED RESIDENTIAL SUBDIVISION
161 LAKESHORE ROAD EAST
TOWN OF THE BLUE MOUNTAINS, ONTARIO

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PML Ref.: 15BF041
Report: 3
December 2016

Peto MacCallum Ltd.
CONSULTING ENGINEERS

December 21, 2016

PML Ref.: 15BF041
Report: 3

Mr. Robert Wagner
Parkbridge Lifestyle Communities Inc.
85 Theme Park Drive
Wasaga Beach, Ontario
L4M 4T5

Dear Mr. Wagner

Slope Stability Assessment
Proposed Residential Subdivision
161 Lakeshore Road East
Town of The Blue Mountains, Ontario

Peto MacCallum Ltd. (PML) is pleased to present the results of the slope stability assessment recently completed at the above noted project site. Authorization for this assignment was provided by Mr. T. Exner of Parkbridge Lifestyle Communities Inc. (Parkbridge) in the signed Engineering Services Agreement Change Order 3, dated October 28, 2016.

Parkbridge is planning an approximate 200 lot residential subdivision for the approximate 25 Ha parcel of land at 161 Lakeshore Road East. The site is terraced comprising low lying ground, with frontage on Lakeshore Drive East, rising some 15 to 20 m up the Niagara Escarpment in the west and south parts of the site. The southwest part of the site has limited frontage along Grey Road 19. The configuration of the subdivision is in the preliminary stages and current concept plan has lots on both the high and low ground, however grading has yet to be determined. It is understood that site servicing is proposed and full depth basements are preferred.

Reference is made to Report 1, dated August 24, 2015 which was a factual report providing the subsurface conditions as revealed in 16 test pits dug in the lower lying northern part of the site. Also, Report 2, dated December 7, 2015 provided further subsurface investigation through boreholes and provided geotechnical recommendations for the proposed development.

Houses are planned at the top of the slope along a section of the escarpment as shown on Drawing 3-1. A study is being carried out by others to determine the required set back for houses at the top of the slope. As part of that study, PML has been requested to assess the stability of the existing slope, and if required, provide a recommendation for the safe slope inclination. This Report 3, provides the findings of two boreholes drilled in order to develop a geotechnical model of the slope, and the results of the slope stability assessment.

Geo-environmental services (observations, recording, testing or assessment of the environmental conditions of the soil and ground water) were not within the terms of reference for this assignment, and no work has been carried out in this regard. PML would be pleased to provide such services, if required.

The comments and recommendations provided in this report are based on the site conditions at the time of the investigation, and are applicable only to the proposed works as addressed in the report. Any changes in the proposed plans will require review by PML to assess the validity of the report, and may require modified recommendations, additional investigation and/or analysis.

INVESTIGATION PROCEDURES

On September 28, 2016 the site was attended by a senior member of our engineering staff to carry out a visual review and assessment of the slope in accordance with the MNR Technical Guide – River and Stream Systems: Erosion Hazard Limit, dated 2002. The results of this review are summarized in the appended Slope Stability Rating Chart. Two boreholes were completed on November 21 and 22, 2016, consisting of Borehole 101 drilled to 24.5 m depth, and Borehole 102 drilled to 18.0 m depth, both from the top of the slope.

Co-ordination of clearances of underground utilities was provided by PML.

The boreholes were advanced using continuous flight solid stem augers, powered by a rubber tire mounted CME-75 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 PML's engineering staff.

Representative samples of the overburden 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. A standpipe comprising 19 mm diameter PVC pipe was installed in Borehole 102 to permit monitoring of the ground water table. Ground water conditions in the boreholes were closely monitored during the course of the field work.

The borehole without a standpipe was backfilled in accordance with O.Reg. 903. As per O.Reg. 903, the standpipe becomes the property of the Owner and will have to be decommissioned when no longer required. PML would be pleased to assist in this regard.

Borehole surface elevations were estimated based on the topographic information provided.

All recovered soil samples were returned to our laboratory for moisture content determinations and detailed examination to confirm field classification. Four samples of major soil units from the boreholes were submitted for grain size analysis, with accompanying Atterberg limits testing on one sample. The results are presented on Figures 1 to 4, appended.

SITE DESCRIPTION AND SUMMARIZED SUBSURFACE CONDITIONS

The Niagara Escarpment, which is about 15 to 20 m in height, intersects the site creating an elevated southern terrane and a low lying northern terrane. The focus of this study is the section of the escarpment identified in Drawing 3-1, where it is understood that housing will be constructed at the top of the escarpment, as well as in the lower terrane at the base of the escarpment.

Based on topographic information provided by the Client, the escarpment in the study area is about 15 m height, rising from about elevation 194 at the base of the slope, to elevation 209 at the top of the slope. The slope has an existing inclination of about 1.6H:1V to 2H:1V (Horizontal: Vertical).

During our site visit and visual review, it was observed that the slope was covered with mature trees with only sparse grass or shrubs covering the ground. There was no obvious evidence of ground water seepage in the slope or no evidence of any erosion or movement in the slope.

Reference is made to the appended Log of Borehole sheet for details of the subsurface conditions, including soil classifications, inferred stratigraphy, Standard Penetration test N values, standpipe installation details, ground water observations and the results of laboratory moisture content determinations, grain size analyses, 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 determining geologic boundaries in the field during construction, if required.

The stratigraphy encountered in the boreholes consisted of topsoil, over granular soils, comprising sand, silty sand, silt and sand, silt and silty sand till. The silt locally graded to a clayey silt.

Topsoil

The topsoil at the surface of the boreholes was 80 to 110 mm thick.

Sand

Underlying the topsoil, a sand layer was encountered in both boreholes, extending to 1.4 m depth (elevation 207.1 to 207.6). The sand was loose and contained trace to some silt and gravel. Trace organics were noted in Borehole 102. The material was moist with moisture contents of 3 to 7%.

Silty Sand

A compact to dense silty sand layer was beneath the sand extending to 2.9 to 4.0 m depth (elevation 205.0 to 205.6). A sample of the material from Borehole 101 was submitted for grainsize analysis and the results are presented on Figure 3-1, appended. The silty sand was moist with moisture contents of 2 to 11%.

Silt and Sand

Below the silty sand and extending to 4.5 to 7.0 m depth (elevation 202.0 to 204.0), a silt and sand unit was encountered. A sample of the unit from Borehole 101 was submitted for grainsize analysis and the results are presented on Figure 3-2, attached. The silt and sand was compact to very dense and moist with moisture contents of 16%, locally 2 %.

Upper Silt

Both boreholes encountered an upper silt unit below the silt and sand that continued to 10.0 to 13.0 m depth (elevation 196.0 to 198.5). The material comprised silt, with some sand and trace gravel, with a local layer of clayey silt in Borehole 101 between 10.0 and 11.5 m depth (elevation 197.5 to 199.0). The results of the grain size analysis on select samples are shown on Figures 3-3 and 3-4, appended. The material was very dense, and moist with moisture contents between 10 and 21%.

Silty Sand Till

A silty sand till deposit was beneath the upper silt in both boreholes. The till extended to 19.0 m depth (elevation 190.0) in Borehole 101 and to the 18.0 m depth of investigation in Borehole 102. The material comprised silty sand with gravel; cobbles and boulders were noted. The till was very dense and moist with moisture contents of 6 to 10%.

Lower Silt

Underlying the till in Borehole 101, a very dense silt deposit was revealed. The silt continued to the 24.5 m depth of exploration. The material was moist with moisture contents of 2 to 9%.

Ground Water

Upon completion of augering, Borehole 1 was dry, with water observed in Borehole 102 at 13.7 m depth. The water level in the standpipe in Borehole 102 about three weeks after installation was at 13.1 m depth, elevation 195.4.

Ground water levels will fluctuate seasonally, and in response to variations in precipitation.

GEOTECHNICAL ENGINEERING CONSIDERATIONS

Parkbridge is planning an approximate 200 lot residential subdivision for the approximate 25 Ha parcel of land at 161 Lakeshore Road East. The site is terraced comprising low lying ground, with frontage on Lakeshore Drive East, rising some 15 to 20 m up the Niagara Escarpment in the west and south parts of the site.

Houses are planned at the top of the slope along a section of the escarpment as shown on Drawing 3-1. A study is being carried out by others to determine the required set back for houses at the top of the slope. As part of that study, PML has been requested to assess the stability of the existing slope, and if required, provide a recommendation for the safe slope inclination.

Based on our September 28, 2016 site review and the appended Slope Stability Rating Chart, (MNR Technical Guide – River and Stream Systems: Erosion Hazard Limit, dated 2002) is appended. The existing slope is classified as having a slight potential for slope stability issues, where a detailed report is recommended. This Report 3 provides the geotechnical model developed for the site and assessment of the existing slope stability.

The two boreholes completed at the top of the slope were drilled to 24.5 m and 18.0 m, and revealed granular soils below the topsoil comprising units of sand, silty sand, silt and sand, silt and silty sand till to the depth of boreholes. The soils were loose in the upper 1.5 m, becoming compact to dense between 1.5 to 5.0 m depth and very dense below 5.0 m depth. About three weeks after installation the water level in the standpipe installed in one of the boreholes was measured at 13.1 m depth.

A detailed analysis was carried out based on the geotechnical model development from the boreholes and visual findings, and utilizing Slide V7.0 software. Based on the MNR Technical Guide the land use at the top of the slope is considered ACTIVE - habitable or occupied residential or commercial structures will be near the top of the slope, where the recommended design minimum slope stability Factor of Safety (FS) is 1.3.

The Slide V7.0 software computes the factor of safety for a near infinite number of trial slides at varying depths in the slope. The results of the analysis are provided graphically on the appended Drawing 3-2, which shows the existing slope is stable (FS of 1.3 or greater), against an overall deep seated slope failure.

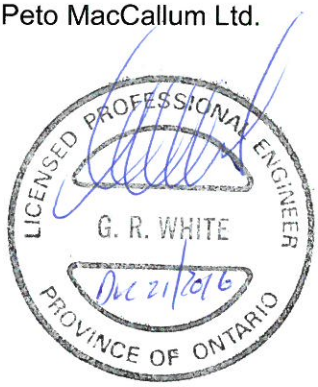
The analysis does show the potential for local shallow slides at the surface of the slope. However, we do note that there was no obvious evidence of any surface movement during our site visit, and this may be the result of the stabilizing effect of surface vegetation and root mat.

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.



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

GRW/TLB:jlb

Enclosure(s):
Slope Stability Rating Chart
Figures 3-1 to 3-4 – Particle Size Distribution Charts
List of Abbreviations
Log of Borehole Nos. 101 and 102
Drawing No. 3-1 - Borehole Location Plan
Drawing 3-2 – Slope Output

SLOPE STABILITY RATING CHART [1]

Site Location: 161 Lakeshore Road East, Town of The Blue Mountains, **PML Ref:** 15BF041

Inspection Date: September 28, 2016

Inspected By: Geoffrey White, P.Eng. **Weather:** Cloudy, 15 C

1.	**OVERALL SLOPE INCLINATION**		
	Degrees	**horiz : vert.**	
	a) 18 or less	3 : 1 or flatter	0
	b) 18 – 26	2 : 1 to more than 3 : 1	6
	c) more than 26	steeper than 2 : 1	**16**
2.	**SOIL STRATIGRAPHY**		
	a) Shale, Limestone, Granite (Bedrock)		0
	b) Sand, Gravel		6
	c) Glacial Till		**9**
	d) Clay, Silt		12
	e) Fill		16
	f) Leda Clay		24
3.	**SEEPAGE FROM SLOPE FACE**		
	a) None or Near bottom only		**0**
	b) Near mid-slope only		6
	c) Near crest only, or From several levels		12
4.	**SLOPE HEIGHT**		
	a) 2 m or less		0
	b) 2.1 to 5 m		2
	c) 5.1 to 10 m		4
	d) more than 10 m		**8**
5.	**VEGETATION COVER ON SLOPE FACE**		
	a) Well vegetated; heavy shrubs or forested with mature trees		**0**
	b) Light vegetation; Mostly grass, weeds, occasional trees, shrubs		4
	c) No vegetation, bare		8
6.	**TABLE LAND DRAINAGE**		
	a) Table land flat, no apparent drainage over slope		**0**
	b) Minor drainage over slope, no active erosion		2
	c) Drainage over slope, active erosion, gullies		4
7.	**PROXIMITY OF WATERCOURSE TO SLOPE TOE**		
	a) 15 metres or more from slope toe		**0**
	b) Less than 15 meters from slope toe		6
8.	**PREVIOUS LANDSLIDE ACTIVITY**		
	a) No		**0**
	b) Yes		6

SLOPE INSTABILITY RATING	**RATING VALUES INVESTIGATION TOTAL**	**REQUIREMENTS**	**TOTAL 33**
1. Low potential	**< 24**	**Site inspection only, confirmation, report letter.**	
2. Slight potential	**25-35**	**Site inspection and surveying, preliminary study, detailed report. ☑**	
3. Moderate potential	**> 35**	**Boreholes, piezometers, lab tests, surveying, detailed report.**	

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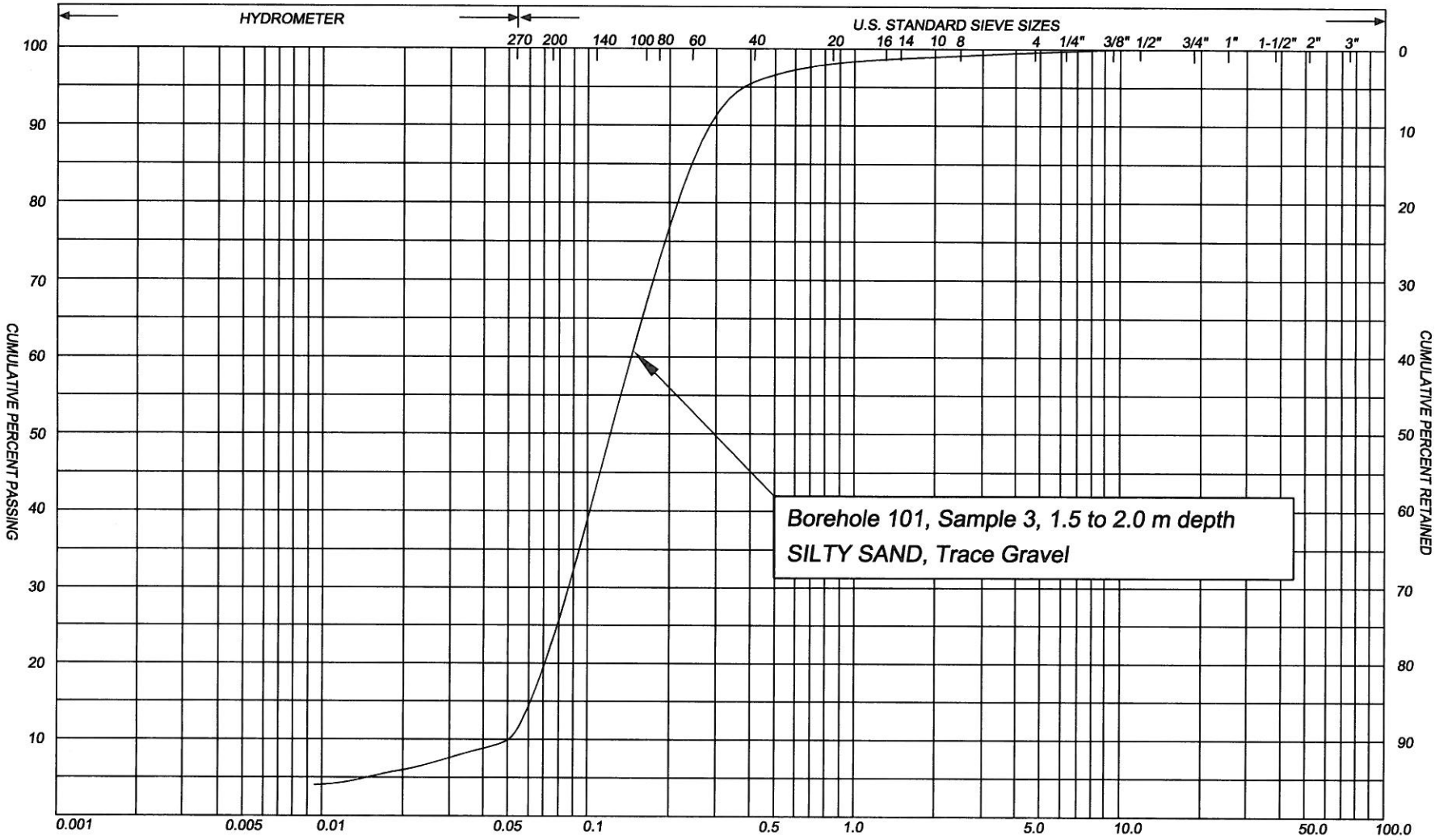
PARTICLE SIZE DISTRIBUTION CHART

PML Ref.: 15BF041
Figure No.: 3-1



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		U.S. BUREAU
				SAND						

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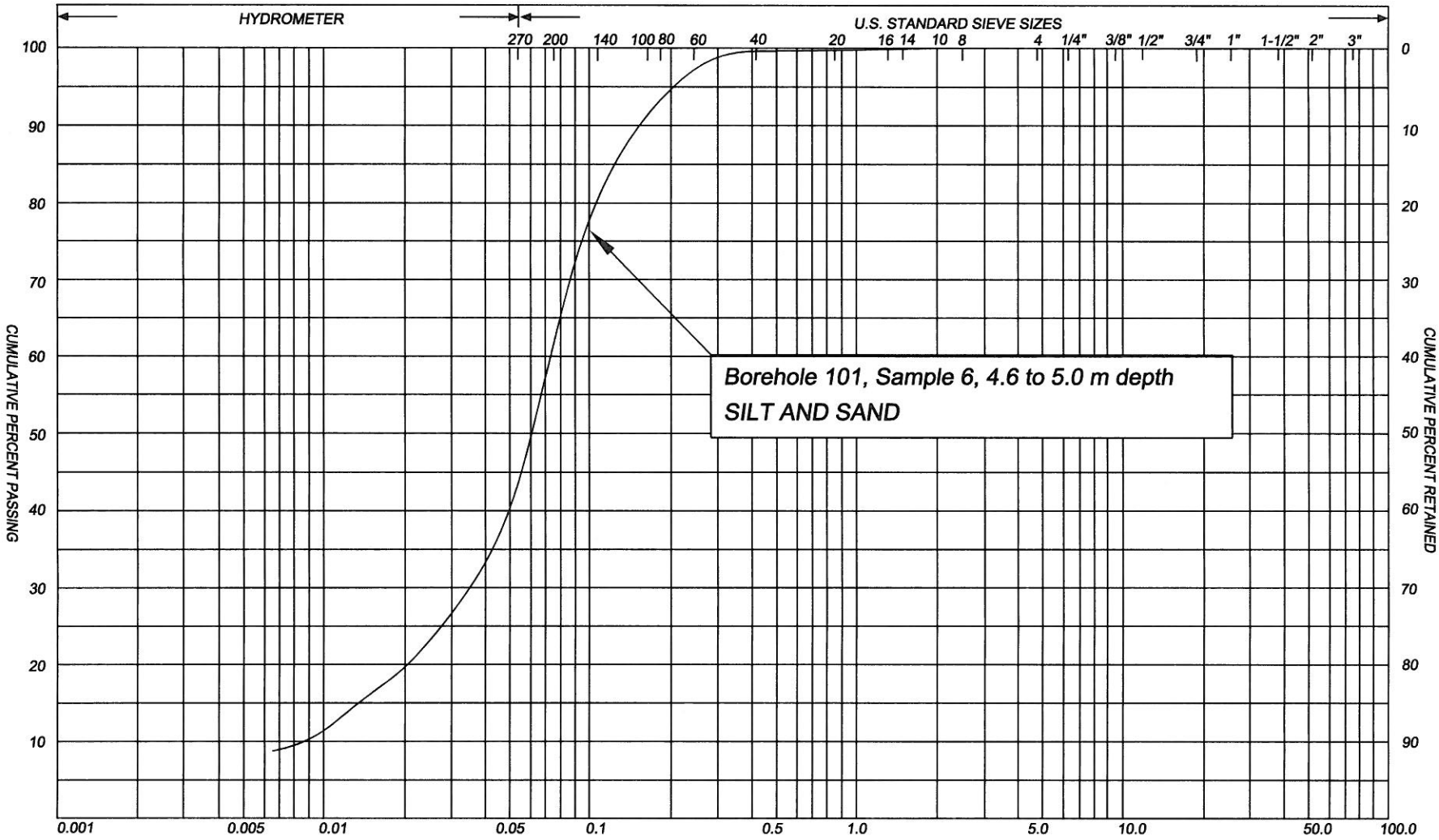
PARTICLE SIZE DISTRIBUTION CHART

PML Ref.: 15BF041
Figure No.: 3-2



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		U.S. BUREAU
				SAND						

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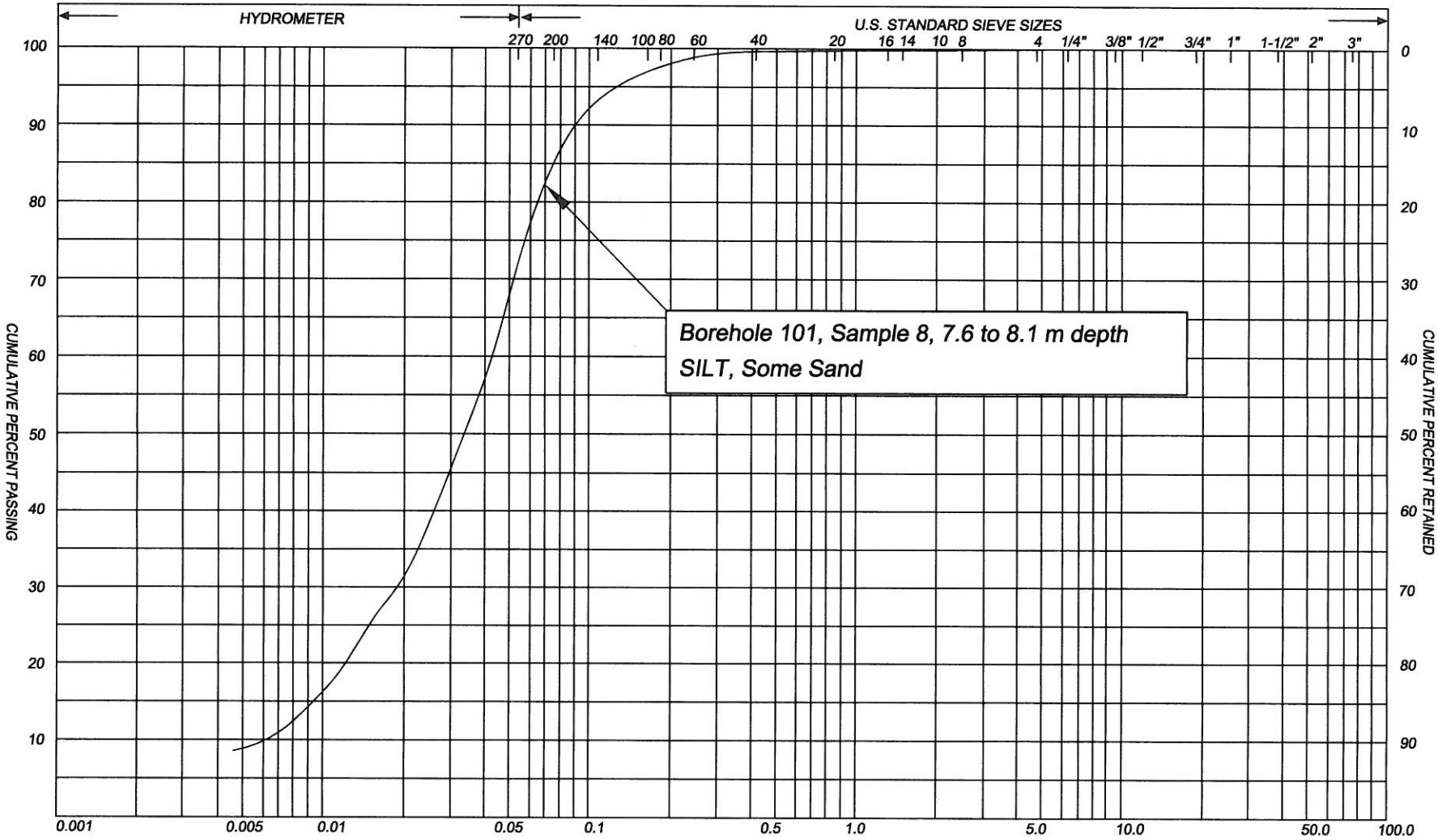
PARTICLE SIZE DISTRIBUTION CHART

PML Ref.: 15BF041
Figure No.: 3-3



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			U.S. BUREAU
				SAND							

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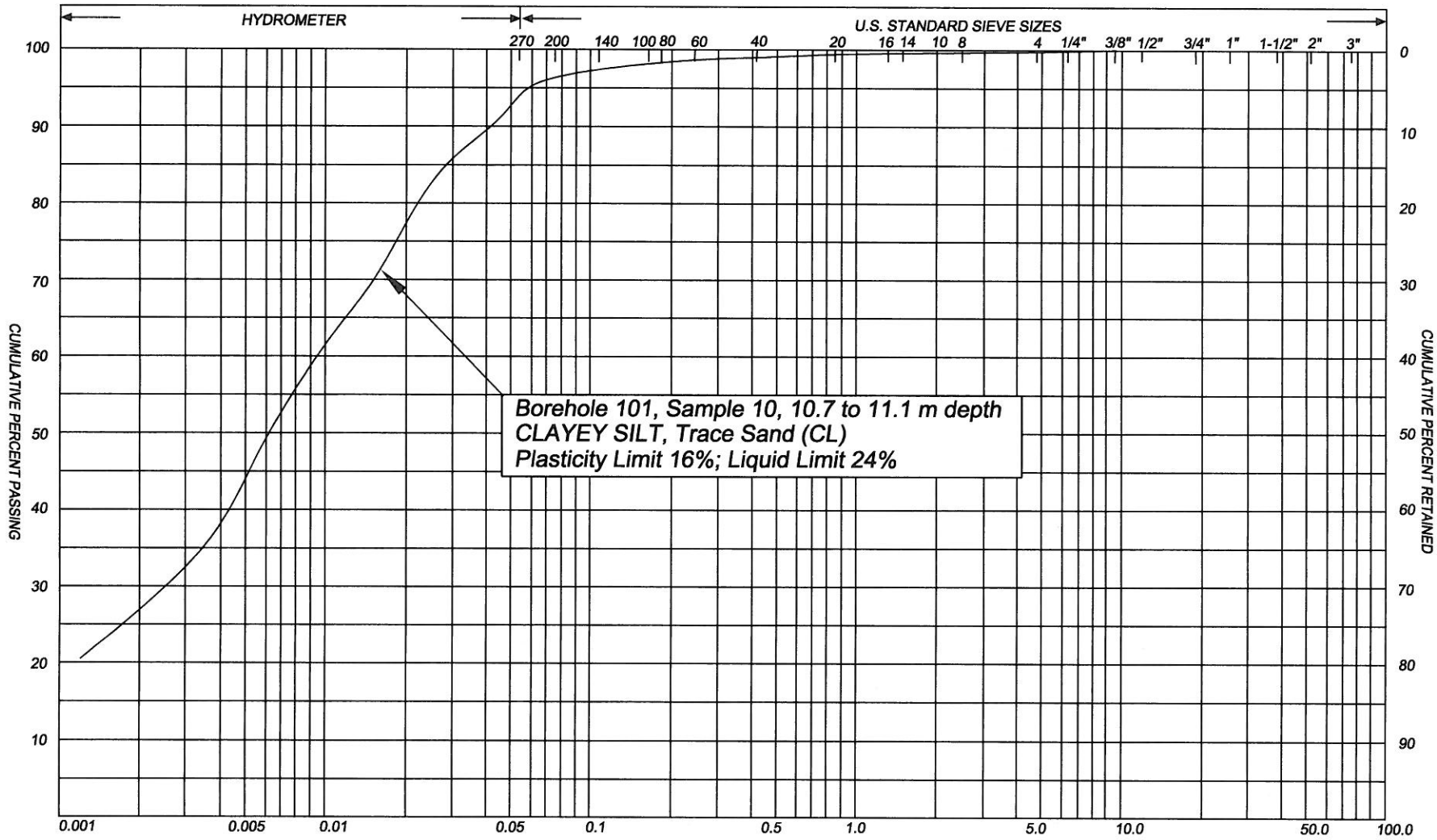
PARTICLE SIZE DISTRIBUTION CHART

PML Ref.: 15BF041
Figure No.: 3-4



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		U.S. BUREAU
				SAND						

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	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		

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LOG OF BOREHOLE NO. 101

17T 554087E 4929796N

PROJECT Slope Stability Assessment - Proposed Residential Subdivision — **PML REF.** 15BF041

LOCATION Town of the Blue Mountains, Ontario — **BORING DATE** November 22, 2016 — **ENGINEER** GW

BORING METHOD Continuous Flight Solid Stem Augers — **TECHNICIAN** AT

SURFACE ELEVATION 209.00

DEPTH (metres)	ELEV	DESCRIPTION	NUMBER	TYPE	"N" VALUES	GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
0.0	209.00	SURFACE ELEVATION 209.00				
0.05	208.95	TOPSOIL: Brown, sand, trace silt, moist				
		SAND: Loose, light brown to brown, sand, trace to some silt, trace gravel, moist	1	SS	4	
1.0			2	SS	8	
1.4	207.6	SILTY SAND: Compact, brown, silty sand, moist	3	SS	23	1 77 22 0
2.0			4	SS	17	
3.0			5	SS	25	
4.0	205.0	SILT AND SAND: Compact to very dense, brown, silt and sand, moist	6	SS	20	0 62 38 0
5.0						
6.0			7	SS	90/270 mm	
7.0	202.0	SILT: Very dense, brown to grey, silt, some sand, moist	8	SS	92/290 mm	0 15 85 0
8.0						
9.0			9	SS	82/270 mm	
10.0	199.0	Becoming hard, clayey silt, trace sand				
11.0			10	SS	44	0 4 (96)
11.5	197.5	Becoming silt, some sand, moist				
12.0			11	SS	50/8 mm	
13.0	196.0	SILTY SAND TILL: Very dense, grey, silty sand, trace gravel, cobbles and boulders, moist				
14.0			12	SS	50/140 mm	
15.0		CONTINUED				

SHEAR STRENGTH (kPa): + FIELD VANE △ TORVANE ○ Qu ▲ POCKET PENETROMETER ○ Q; 50 100 150 200

DYNAMIC CONE PENETRATION ×
STANDARD PENETRATION TEST ●

ELEVATION SCALE: 208 207 206 205 204 203 202 201 200 199 198 197 196 195

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

NOTES

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LOG OF BOREHOLE NO. 101

17T 554087E 4929796N

PROJECT Slope Stability Assessment - Proposed Residential Subdivision — **PML REF.** 15BF041

LOCATION Town of the Blue Mountains, Ontario — **BORING DATE** November 22, 2016 — **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
15.0	CONTINUED FROM PREVIOUS PAGE									
194.0	SILTY SAND TILL (continued)		13	SS	98/290 mm					
16.0						193				
			14	SS	89/295 mm					
17.0						192				
18.0						191				
			15	SS	50/100 mm					
19.0	19.0									
190.0	SILT: Dense to very dense, grey, silt, trace sand to sandy, trace gravel, moist									
20.0			16	SS	82/270 mm	189				
21.0						188				
			17	SS	63/290 mm					
22.0						187				
23.0			18	SS	50/140 mm	186				
24.0						185				
24.5										
184.5	BOREHOLE TERMINATED AT 24.5 m		19	SS	50/100 mm					Upon completion of augering No water No cave
25.0										
26.0										
27.0										
28.0										
29.0										
30.0										

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

WATER CONTENT (%): 10 20 30 40

NOTES

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LOG OF BOREHOLE/MONITORING WELL NO. 102

17T 554025E 4929820N

PROJECT Slope Stability Assessment - Proposed Residential Subdivision
PML REF. 15BF041
LOCATION Town of the Blue Mountains, Ontario
BORING DATE November 21, 2016
ENGINEER GW
BORING METHOD Continuous Flight Solid Stem Augers
TECHNICIAN AT

DEPTH (metres)	ELEV	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES
		SURFACE ELEVATION 208.50				
0.0	0.11					
	208.39	TOPSOIL: Dark brown, sand, trace silt, trace gravel, moist		1	SS	4
1.0		SAND: Loose, light brown to light brown, sand, trace silt, trace gravel, trace organics, moist		2	SS	6
	1.4					
	207.1	SILTY SAND: Dense, brown, silty sand, moist		3	SS	34
2.0						
				4	SS	40
	2.9					
3.0	205.6	SILT AND SAND: Very dense, brown, silt and sand, moist		5	SS	50
4.0						
	4.5					
	204.0	SILT: Very dense, brown to grey, silt, some sand, trace gravel, moist		6	SS	65
5.0						
6.0				7	SS	81
7.0						
				8	SS	97/290 mm
8.0						
9.0				9	SS	90/290 mm
	10.0					
10.0	198.5	SILTY SAND TILL: Very dense, grey, silty sand, trace gravel, cobbles and boulders, moist				
11.0						
12.0				10	SS	57
13.0						
14.0						
15.0		CONTINUED				

ELEVATION SCALE: 208, 207, 206, 205, 204, 203, 202, 201, 200, 199, 198, 197, 196, 195, 194

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

Stick-up Cover Concrete

Bentonite Seal

NOTES

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LOG OF BOREHOLE/MONITORING WELL NO. 102

17T 554025E 4929820N

PROJECT Slope Stability Assessment - Proposed Residential Subdivision — **PML REF.** 15BF041

LOCATION Town of the Blue Mountains, Ontario — **BORING DATE** November 21, 2016 — **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) + 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
15.0	CONTINUED FROM PREVIOUS PAGE						50 100 150 200; 20 40 60 80	10 20 30 40		
193.5	SILTY SAND TILL (continued)		11	SS	76/290 mm	193	>>	○		
16.0						192				
17.0			12	SS	50/140 mm		>>	○		Slotted Pipe Filter Sand
18.0						191				
190.5	BOREHOLE TERMINATED AT 18.0 m									Upon completion of augering Water at 13.7 m No cave

Water Level Readings:

Date	Depth	Elev.
2016-12-14	13.1	195.4

NOTES

EXISTING POND

STUDY SLOPE

BH 101
EL. 209.00

BH 102
EL. 208.50

BT4 BT5 BT6 BT7 BT8 BT9 BT10 BT11 BT12 BT13

BUSH

KEY PLAN
TOWN OF BLUE MOUNTAINS, ONTARIO

LEGEND:

BH 101
EL. 209.00 — BOREHOLE 101 SURFACE ELEVATION

REFERENCE:
BASE PLAN PROVIDED BY CLIENT.

0m 20 40 60 80 100
SCALE

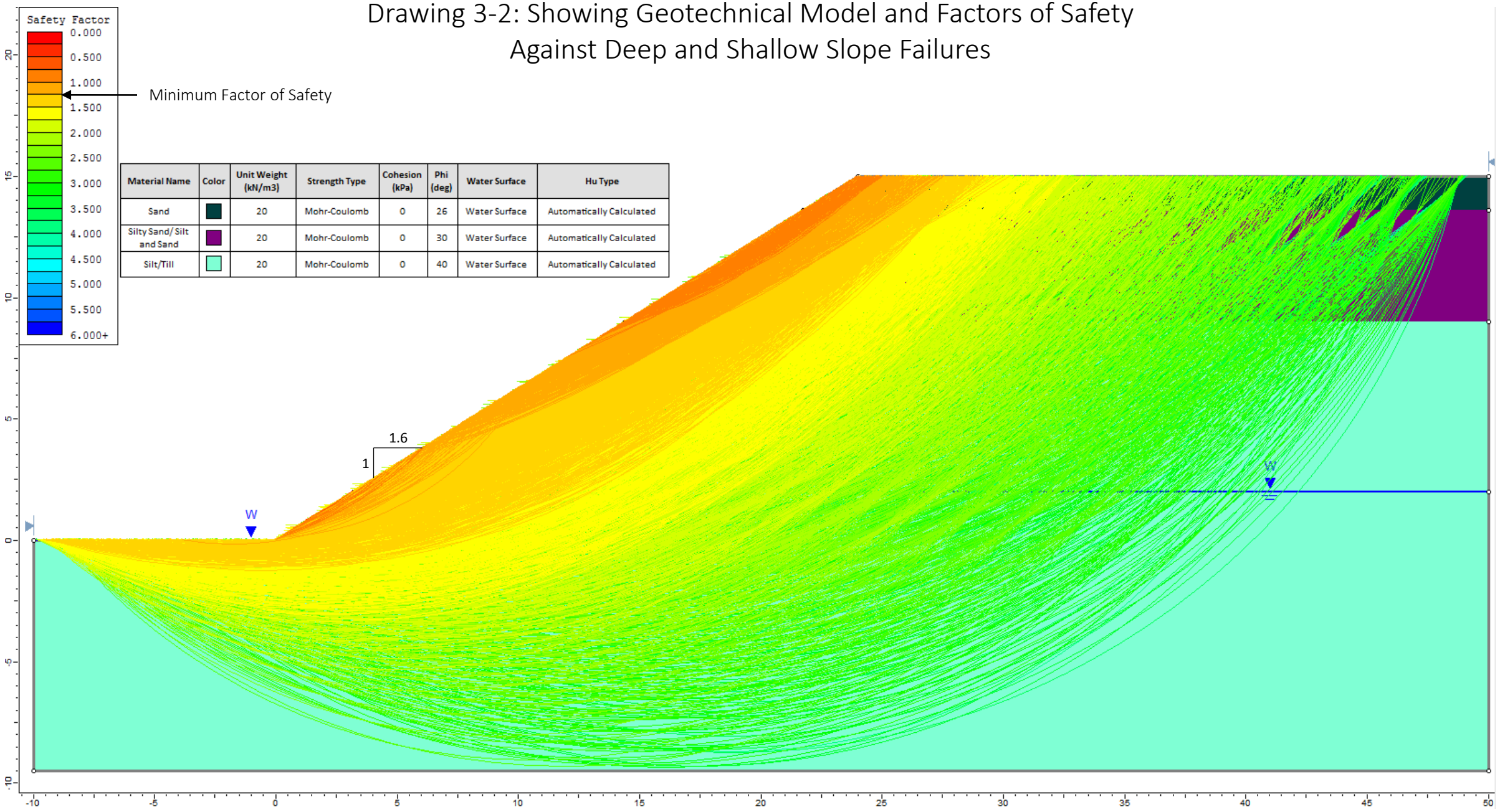
BOREHOLE LOCATION PLAN
SLOPE STABILITY ASSESSMENT

PROPOSED RESIDENTIAL SUBDIVISION
161 LAKESHORE ROAD EAST
TOWN OF BLUE MOUNTAINS, ONTARIO

Peto MacCallum Ltd.
CONSULTING ENGINEERS

		DATE	SCALE	PML REF.	DRAWING NO.
DRAWN	RM	DEC. 2016	AS SHOWN	15BF041	3–1
CHECKED	GRW				
APPROVED	GRW				

Slope Stability Assessment
161 Lakeshore Road Development
Drawing 3-2: Showing Geotechnical Model and Factors of Safety Against Deep and Shallow Slope Failures



Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	Water Surface	Hu Type
Sand		20	Mohr-Coulomb	0	26	Water Surface	Automatically Calculated
Silty Sand/ Silt and Sand		20	Mohr-Coulomb	0	30	Water Surface	Automatically Calculated
Silt/Till		20	Mohr-Coulomb	0	40	Water Surface	Automatically Calculated