Project No.: SP17-212-30

August 28, 2019

Tropical Land Development Limited
c/o David Goodman
1500-439 University Avenue
Toronto, ON M5G 1Y8

Attention: Mr. Mark Jacobs

Re: TEST PITTING PROGRAM – LID MEASURES-PROPOSED ROADSIDE BIOSWALES – 0 Mt. PLEASANT ROAD, CALEDON-LETTER REPORT

Dear Mr. Jacobs,

1. INTRODUCTION

Sirati & Partners Consultants Ltd. (SIRATI) was retained by Tropical Land Development, c/o David Goodman (the "Client"), to conduct a test pitting program at the Subject Property located at 0 Mt. Pleasant Road, Town of Caledon, Ontario.

As part of the permitting process for the Subject Property proposed development application, the Town of Caledon has requested a test pitting program in order to assess the effectiveness of the proposed Low Impact Development measures (LIDs) at the Subject Property.

The Client is proposing roadside bioretention swales (Figure 1-1), as per the Town's standard detail, to capture and convey road run-off. The water will flow along the length of the bioretention swale and filter through a 0.50 m deep filtration media to a 1.2 m wide by 1.2 m deep stone trench below for infiltration.

A Hydrogeological Impact Study (HIS) was previously carried out by SIRATI, [1] Hydrogeological Impact Study, dated May 17, 2018 prepared by SIRATI, on be-half of Tropical Land Development, c/o David Goodman.

As part of the above HIS, eight (8) boreholes were drilled to depths ranging between 8.2 and 11.2 metres below ground surface (mbgs). All the wells, except borehole BH8, have encountered fill materials consisting of sand and gravel of varying proportions up to 1.5 mbgs, followed by fine to medium sand from ground surface to a maximum depth of 4.6 mbgs.

Borehole BH8, however, encountered clayey silt to silty clay from 1.8 m to 3.0 mbgs and as such verification of the presence or otherwise of clayey silt to silty clay layer along the proposed LIDs across the site was considered necessary.

As part of the permitting process and to verify the local stratigraphy along the proposed LIDs, a test pitting program was conducted by SIRATI during August 16, 2019.

This report is provided based on terms of reference above, and on the assumption that the design will be in accordance with the applicable codes and standards. If there are any changes in the design features relevant to the hydrogeological analysis, or any questions concerning the hydrogeological aspects, this office should be contacted to review the design.

This report has been prepared for Tropical Land Development and its designers. Third party use of this report without SIRATI's consent is prohibited. The limitations presented in Appendix B form an integral part of the report. This report should be read in conjunction with the Hydrogeological Impact Study report prepared by SIRATI.

Outlined below are the results of the test pitting program and recommendations on the implementation of LID measures at the Subject Property.

1.1 TEST PITTING PROGRAM

A test pitting program was conducted at nine (9) locations along the proposed roadside bioswale LIDs, as shown in Figure 1-1. Test pitting was conducted on August 16, 2019 at nine (9) test pit locations as shown on Figure 1-1.

Test pits with dimensions of 1.5 m width x 1.5 m length x 2.0 m depth were dug using a back-hoe excavator supplied by Nexxgen Environmental Ltd. Prior to the intrusive testing, the excavation area was cleared for any buried utilities. Following excavation, lithology of the test pit was logged by qualified person from SIRATI. Soil samples were collected from 1.0 mbgs and from the bottom of the test pit at about 2 .0 m depth.

Upon completion of each test pit, the excavations were back-filled and compacted immediately using the excavated materials to the existing ground level.

2. RESULTS OF TEST PITTING

A detailed record of the test pitting program was documented and the logs of all the nine (9) test pits are presented in Appendix A.

As per the lithological descriptions in the logs, the site is characterized at the test pit locations by brown sand and gravel with trace cobbles to a depth of 1.0 mbgs and mostly by sand with trace silt and gravel from 1.0 to 2.0 mbgs. All test pits were dry to moist and no standing water was encountered in any of the test pits excavated.

No test hole encountered any trace of clay or silty clay materials to the excavated depth of 2.0 mbgs.

3. CONCLUSIONS

Based on the results of the test pitting program, the soils at the test pit locations are predominantly sand and gravel with trace silt and cobbles. The bottom of the test holes has not encountered any clay or silty clay

materials, indicating the suitability of the proposed LID locations for the installation of roadside bioswales to divert the road runoff in order to increase the groundwater recharge at the Subject Property.

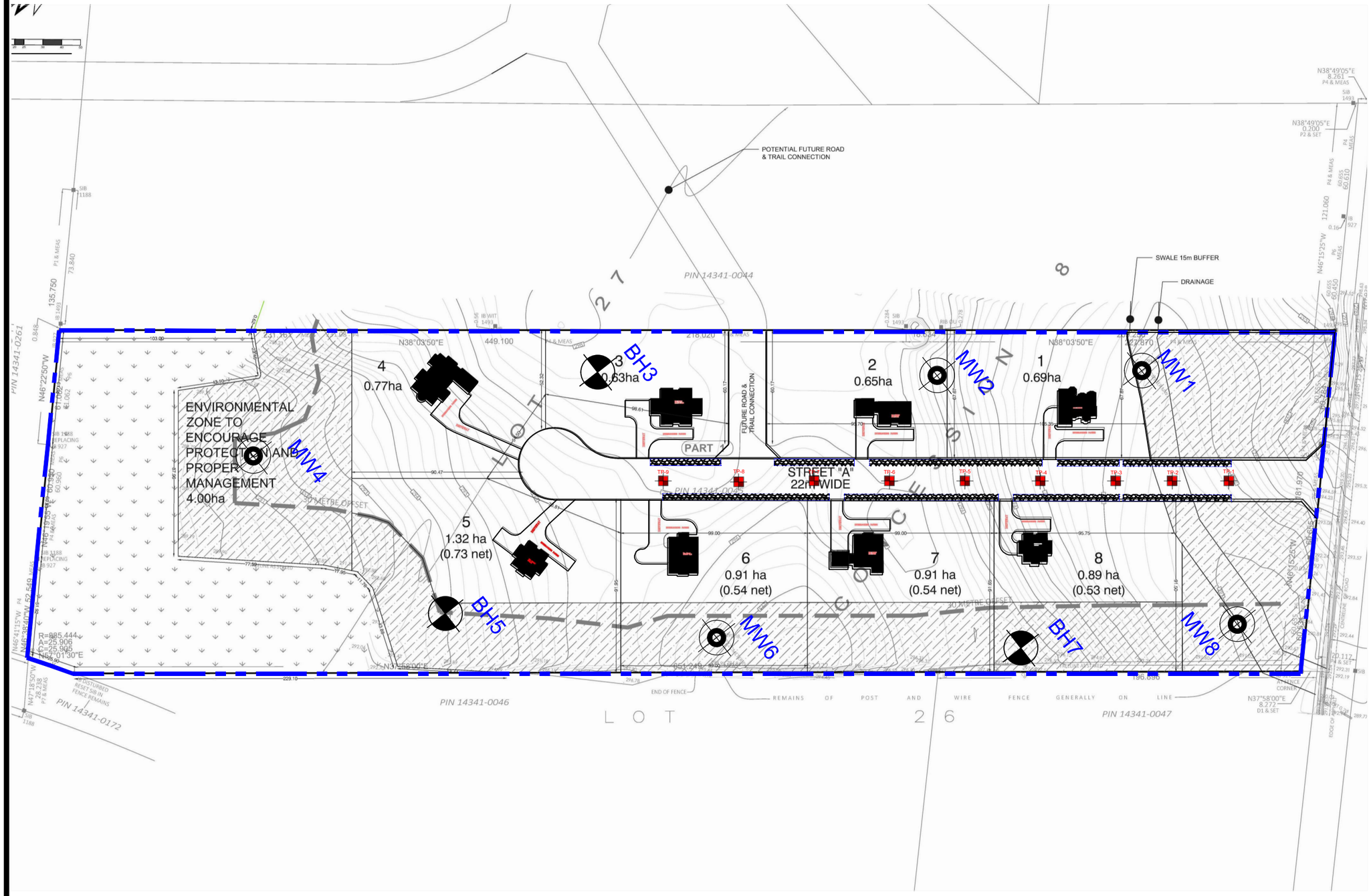
Should you have any questions in regard to this report, please contact the undersigned.

Best Regards,

Sirati & Partners Consultants Ltd.

Archie Sirati (Ph.D., P.Eng.)
CEO/President

Sudhakar Kurli, P.Geo.
Hydrogeologist/Project Manager



SIRATI & PARTNERS

Geotechnical Hydrogeological & Environmental Solutions

12700- Keele Street
King City, ON. L7B 1H5
Phone# 905 833 1582, Fax# 905 833 5360

North:

Legend:

- Property Boundary
- Test Pit Location
- Monitoring Well
- Borehole
- Proposed Bioswale

Project Title:

Hydrogeological Investigation

Site Location:

0 Mt. Pleasant Road, Caledon, ON.

Figure Title:

Test Pit Location Plan

Scale:	Project Number:
As Shown	SP17-212-30
Date:	**Figure Number:**
April 2018	1-1

APPENDIX A

SIRATI & PARTNERS

Geotechnical Hydrogeological & Environmental Solutions

LOG OF TEST PIT TP 1

PROJECT: Geotechnical, Environmental and Hydrogeological Services
CLIENT: 1029629 Ontario Inc., c/o Carriage House Realty Corporation
PROJECT LOCATION: Mt Pleasent Road, Caledon, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 0 E

DRILLING DATA
Method: Open Excavation
Diameter: N/A
Date: Aug/16/2019

REF. NO.: SP17-212-10
ENCL NO.: 2

SOIL PROFILE (m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	TYPE	"N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE × LAB VANE 20 40 60 80 100	PLASTIC LIMIT w_P — NATURAL MOISTURE CONTENT w — LIQUID LIMIT w_L / WATER CONTENT (%) 10 20 30	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
0.0	**TOPSOIL:** 150 mm										
0.2	**SAND AND GRAVEL:** brown, dry		1	GRAB							
1.0	**SAND:** some gravel, brown, dry		2	GRAB							
2.0	**END OF TESTPIT**										

Notes:
Testpit Open and Dry Upon Completion of Excavation

GRAPH NOTES: $+^3$, $\times^3$: Numbers refer to Sensitivity; ε_f=3% Strain at Failure

LOG OF TEST PIT TP 2

PROJECT: Geotechnical, Environmental and Hydrogeological Services
CLIENT: 1029629 Ontario Inc., c/o Carriage House Realty Corporation
PROJECT LOCATION: Mt Pleasent Road, Caledon, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 0 E

DRILLING DATA
Method: Open Excavation
Diameter: N/A
Date: Aug/16/2019

REF. NO.: SP17-212-10
ENCL NO.: 3

SOIL PROFILE (m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	TYPE	"N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE × LAB VANE 20 40 60 80 100	PLASTIC LIMIT w_P — NATURAL MOISTURE CONTENT w — LIQUID LIMIT w_L / WATER CONTENT (%) 10 20 30	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
0.0 / 0.1	**TOPSOIL:** 75 mm										
	SAND: some gravel, some silt, trace cobbles, brown, dry		1	GRAB							
1	- becoming trace to some gravel, trace silt, brown, moist		2	GRAB							
2											
2.0	**END OF TESTPIT**										

Notes:
Testpit Open and Dry Upon Completion of Excavation

GRAPH NOTES: $+^3$, $\times^3$: Numbers refer to Sensitivity; ε_f=3% Strain at Failure

LOG OF TEST PIT TP 3

PROJECT: Geotechnical, Environmental and Hydrogeological Services
CLIENT: 1029629 Ontario Inc., c/o Carriage House Realty Corporation
PROJECT LOCATION: Mt Pleasent Road, Caledon, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 0 E

DRILLING DATA
Method: Open Excavation
Diameter: N/A
Date: Aug/16/2019

REF. NO.: SP17-212-10
ENCL NO.: 4

SOIL PROFILE (m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	TYPE	"N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE × LAB VANE 20 40 60 80 100	PLASTIC LIMIT w_P — NATURAL MOISTURE CONTENT w — LIQUID LIMIT w_L / WATER CONTENT (%) 10 20 30	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
0.0	**TOPSOIL:** 250 mm										
0.3	**SAND:** some gravel, trace silt, trace cobbles, brown, moist		1	GRAB							
1	- becoming trace gravel, trace silt, brown, moist		2	GRAB							
2	**END OF TESTPIT**										

Notes:
Testpit Open and Dry Upon Completion of Excavation

GRAPH NOTES: $+^3$, $\times^3$: Numbers refer to Sensitivity; $\circ^{\varepsilon}$ ε=3% Strain at Failure

LOG OF TEST PIT TP 4

PROJECT: Geotechnical, Environmental and Hydrogeological Services
CLIENT: 1029629 Ontario Inc., c/o Carriage House Realty Corporation
PROJECT LOCATION: Mt Pleasent Road, Caledon, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 0 E

DRILLING DATA
Method: Open Excavation
Diameter: N/A
Date: Aug/16/2019

REF. NO.: SP17-212-10
ENCL NO.: 5

SOIL PROFILE (m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	TYPE	"N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE × LAB VANE 20 40 60 80 100	PLASTIC LIMIT w_P — NATURAL MOISTURE CONTENT w — LIQUID LIMIT w_L / WATER CONTENT (%) 10 20 30	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
0.0 / 0.1	**TOPSOIL:** 75 mm										
1	**SILTY SAND TO SAND:** some gravel, trace cobbles, brown, moist		1	GRAB							
1.0	**SAND:** trace to some gravel, brown, dry		2	GRAB							
2 2.0	**END OF TESTPIT** Notes: Testpit Open and Dry Upon Completion of Excavation										

GRAPH NOTES: $+^3$, $\times^3$: Numbers refer to Sensitivity; $\circ^{\varepsilon}$ ε=3% Strain at Failure

SPCL SOIL TEST PIT-2016 SP17-212-10 - MOUNT PLEASANT, CALEDON.GPJ SPCL.GDT 8/23/19

LOG OF TEST PIT TP 5

PROJECT: Geotechnical, Environmental and Hydrogeological Services
CLIENT: 1029629 Ontario Inc., c/o Carriage House Realty Corporation
PROJECT LOCATION: Mt Pleasent Road, Caledon, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 0 E

DRILLING DATA
Method: Open Excavation
Diameter: N/A
Date: Aug/16/2019

REF. NO.: SP17-212-10
ENCL NO.: 6

SOIL PROFILE (m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	TYPE	"N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE × LAB VANE 20 40 60 80 100	PLASTIC LIMIT w_P — NATURAL MOISTURE CONTENT w — LIQUID LIMIT w_L / WATER CONTENT (%) 10 20 30	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
0.0 / 0.1	**TOPSOIL:** 75 mm										
1	**SILTY SAND TO SAND:** trace gravel, trace organics, brown, moist -trace organics		1	GRAB							
1.0	**SAND:** trace gravel, brown, moist		2	GRAB							
2 / 2.0	**END OF TESTPIT**										

Notes:
Testpit Open and Dry Upon Completion of Excavation

GRAPH NOTES: $+^3$, $\times^3$: Numbers refer to Sensitivity; ε_f=3% Strain at Failure

SPCL SOIL TEST PIT-2016 SP17-212-10 - MOUNT PLEASANT, CALEDON.GPJ SPCL.GDT 8/23/19

LOG OF TEST PIT TP 6

PROJECT: Geotechnical, Environmental and Hydrogeological Services
CLIENT: 1029629 Ontario Inc., c/o Carriage House Realty Corporation
PROJECT LOCATION: Mt Pleasent Road, Caledon, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 0 E

DRILLING DATA
Method: Open Excavation
Diameter: N/A
Date: Aug/16/2019

REF. NO.: SP17-212-10
ENCL NO.: 7

SOIL PROFILE (m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	TYPE	"N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE × LAB VANE 20 40 60 80 100	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L WATER CONTENT (%) 10 20 30	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
0.0 / 0.1	**TOPSOIL:** 75 mm											
	SAND: some silt, trace organics, brown, moist -trace organics		1	GRAB								
1	-becoming, trace gravel, grey, moist		2	GRAB								
2.0	**END OF TESTPIT**											
	Notes: Testpit Open and Dry Upon Completion of Excavation											

GRAPH NOTES: $+^3$, $\times^3$: Numbers refer to Sensitivity; $\circ^{\varepsilon}$ ε=3% Strain at Failure

LOG OF TEST PIT TP 7

PROJECT: Geotechnical, Environmental and Hydrogeological Services
CLIENT: 1029629 Ontario Inc., c/o Carriage House Realty Corporation
PROJECT LOCATION: Mt Pleasent Road, Caledon, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 0 E

DRILLING DATA
Method: Open Excavation
Diameter: N/A
Date: Aug/16/2019

REF. NO.: SP17-212-10
ENCL NO.: 8

SOIL PROFILE (m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	TYPE	"N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE × LAB VANE 20 40 60 80 100	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L WATER CONTENT (%) 10 20 30	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
0.0 / 0.1	**TOPSOIL:** 75 mm										
	SAND: trace to some silt, some organics, brown, moist -some organics		1	GRAB							
1	-becoming trace silt		2	GRAB							
2.0	**END OF TESTPIT**										

Notes:
Testpit Open and Dry Upon Completion of Excavation

GRAPH NOTES: $+^3$, $\times^3$: Numbers refer to Sensitivity; ○ ε_f=3% Strain at Failure

SPCL SOIL TEST PIT-2016 SP17-212-10 - MOUNT PLEASANT, CALEDON.GPJ SPCL.GDT 8/23/19

LOG OF TEST PIT TP 8

PROJECT: Geotechnical, Environmental and Hydrogeological Services
CLIENT: 1029629 Ontario Inc., c/o Carriage House Realty Corporation
PROJECT LOCATION: Mt Pleasent Road, Caledon, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 0 E

DRILLING DATA
Method: Open Excavation
Diameter: N/A
Date: Aug/16/2019

REF. NO.: SP17-212-10
ENCL NO.: 9

SOIL PROFILE (m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	TYPE	"N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE × LAB VANE 20 40 60 80 100	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L WATER CONTENT (%) 10 20 30	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
0.0 / 0.1	**TOPSOIL:** 75 mm										
	SAND: trace gravel, trace organics, brown, moist -trace organics		1	GRAB							
1	-becoming some gravel, trace silt, brown to grey, moist		2	GRAB							
2 / 2.0	**END OF TESTPIT**										

Notes:
Testpit Open and Dry Upon Completion of Excavation

GRAPH NOTES: $+^3$, $\times^3$: Numbers refer to Sensitivity; ε_f=3% Strain at Failure

SPCL SOIL TEST PIT-2016 SP17-212-10 - MOUNT PLEASANT, CALEDON.GPJ SPCL.GDT 8/23/19

LOG OF TEST PIT TP 9

PROJECT: Geotechnical, Environmental and Hydrogeological Services
CLIENT: 1029629 Ontario Inc., c/o Carriage House Realty Corporation
PROJECT LOCATION: Mt Pleasent Road, Caledon, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 0 E

DRILLING DATA
Method: Open Excavation
Diameter: N/A
Date: Aug/16/2019

REF. NO.: SP17-212-10
ENCL NO.: 10

SOIL PROFILE (m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	TYPE	"N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE × LAB VANE 20 40 60 80 100	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L WATER CONTENT (%) 10 20 30	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
0.0 / 0.1	**TOPSOIL:** 75 mm										
	SAND: trace gravel, trace organics, brown, dry to moist -trace organics		1	GRAB							
1	-becoming some silt, trace gravel, brown, moist		2	GRAB							
2 / 2.0	**END OF TESTPIT**										

Notes:
Testpit Open and Dry Upon Completion of Excavation

GRAPH NOTES: $+^3$, $\times^3$: Numbers refer to Sensitivity; $\circ^{\varepsilon}$ ε=3% Strain at Failure

SPCL SOIL TEST PIT-2016 SP17-212-10 - MOUNT PLEASANT, CALEDON.GPJ SPCL.GDT 8/23/19

APPENDIX B

SIRATI & PARTNERS

Geotechnical Hydrogeological & Environmental Solutions

LIMITATIONS AND USE OF THE REPORT

This report was produced for the sole use of Tropical Land Development, c/o David Goodman (the "Client") for the property located at 0 Mt. Pleasant Road, Town of Caledon, Ontario and may not be relied upon by any other person or entity without the written authorization of Sirati & Partners Consultants Limited (SIRATI).The conclusions presented in this report are professional opinions based on the historical and current records search, visual observations and limited information provided by persons knowledgeable about past and current activities on this site. As such, SIRATI cannot be held responsible for environmental conditions at the Property that was not apparent from the available information. No investigation method can completely eliminate the possibility of obtaining partially imprecise or incomplete information; it can only reduce the possibility to an acceptable level.

Professional judgement was exercised in gathering and analyzing data and formulation of recommendations using current industry guidelines and standards. Similar to all professional persons rendering advice, SIRATI cannot act as absolute insurer of the conclusion we have reached. No additional warranty or representation, expressed or implied, is included or intended in this report other than stated herein the report.

The assessment should not be considered a comprehensive audit that eliminates all risks of encountering environmental problems. The information presented herein this report is primarily based on information collected during the hydrogeological study based on the condition of the Property at the time of site inspection/drilling followed by a review of historical data, as appended to this report.

In assessing the environmental setting of the Property, SIRATI has solely relied upon information supplied by others in good faith and has therefore assumed that the information supplied is factual and accurate. We accept no responsibility for any inaccurate information, misrepresentation or for any deficiency of the information supplied by any third party.

The scope of services performed in the execution of this investigation may not be appropriate to satisfy third parties. SPCL accepts no responsibility for damages if any, suffered by any third party as a result of decisions made or action taken based on this report. Any use, copying or distribution of the report in whole or in part is not permitted without the express written permission of SIRATI and use of findings, conclusions and recommendations represented in this report, is at the sole risk of third parties.

In the event that during future work new information regarding the environmental condition of the Property is encountered, or in the event that the outstanding responses from the regulatory agencies indicate outstanding issues on file with respect to the Property, SIRATI should be notified in order that we may re-evaluate the findings of this assessment and provide amendments, as required.

Should you have any questions regarding the information presented or limitation set in this report, please do not hesitate to contact our office.