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Groundwater Impact Assessment

Proposed Residential Development Mahogany Community Development Ottawa (Manotick), Ontario

Prepared For

Minto Communities Inc.

Paterson Group Inc.

Consulting Engineers 154 Colonnade Road South Ottawa (Nepean), Ontario Canada K2E 7J5

Tel: (613) 226-7381 Fax: (613) 226-6344 www.patersongroup.ca June 9, 2017

Report: PG4045-1



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1.0 INTRODUCTION

1.1 Background

Paterson Group (Paterson) was retained by Minto Communities Inc. to complete a groundwater impact assessment to support a development application for the subject property located in Lots 4 and 5 of Concession A in the Village of Manotick, Ontario (hereinafter referred to as the "subject site"). See Paterson Drawing PG4045-1 – Site Plan for site location.

The purpose of this report is to characterize the hydrogeological setting, identify potential impacts to the groundwater and assess the relative degree of risk associated with the identified potential impacts at the subject site.

1.2 Proposed Development

It is Paterson's understanding that the subject site has a portion of Stage 1 complete and will continue the development of the residential subdivision in future stages. It is expected that the mixture will consist of single family homes, semi-detached homes, townhomes and institutional lands. The subject site consists of multiple municipal lots and has been described by the lots and concession location. The future development is expected to extend from Manotick Main Street to First Line Road and from Century Road to the northern extend of Lot 4 and Concession A. However, the timeframe to complete all stages are anticipated to be 10 to 20 years. This assessment will review stages 2 to 4.

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2.0 SITE DESCRIPTION

The subject site has a portion of Stage 1 complete that is located west of Manotick Main Street. The area proposed for development is approximately 195 hectares. The site is bordered by vacant agricultural lands and/or residential dwellings to the north, Manotick Main Street to the east, Century Road to the south, and First Line Road to the west. The Mud Creek Drain and the Thomas Baxter Drain cross the western limits of the proposed stages at the subject site. The Wilson Cowan Drain crosses through the center of the site with Mahogany Creek passing through the eastern portion. See Paterson Drawing PG4045-1 – Site Plan for development limits related to Stages 2 to 4.

2.1 Surrounding Land Use

The surrounding land uses are as described below:

North

 Residential land with single family homes. Typically on private wells and sewer systems. Limited area to the northeast with municipal servicing.

East

- Residential land with single family homes. Some private and municipal services.
- Manotick Main Street Right-of-way.
- Rideau River.

West

- Residential land with single family homes. Typically on private wells and sewer systems.
- Agricultural crop land.

South

- Residential land with single family homes. Typically on private wells and sewer systems.
- Agricultural crop land.

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2.2 Potential Sources of Contamination

A Phase I Environmental Site Assessment was conducted by Paterson in January 2017. The assessment indicated that the historical property usage was agricultural. No sources of potentially contaminating activity were identified with respect to the historical land use of the subject site.

Potential off-site contamination sources were identified as a former retail fuel outlet at 5646 Manotick Main Street and road salt application along Manotick Main Street. The retail fuel outlet is not considered to be an area of potential environmental concern due to the distance from the subject site (approximately 200m) and the application of road salt on Manotick Main Street is expected to be localized and confined to the overburden unit.



3.0 METHOD OF INVESTIGATION

3.1 Field Program

There were five geotechnical field programs carried out in relation to this site by Paterson. The first program was conducted in July 2000, where 18 test pits were completed to a maximum depth of 3.8 m below ground surface (bgs). The second was conducted in May 2004, where 12 boreholes were completed to a maximum depth of 8.9 m bgs. The third program was conducted in July 2004, where 6 boreholes were completed to a maximum depth of 12.7 m bgs. The fourth was conducted in June 2006, where 6 boreholes were completed to a maximum depth of 17.4 m bgs. The final program was conducted in July 2007 and January of 2008, where 49 boreholes were completed to a maximum depth of 9.8 m bgs. The test hole locations are shown on Drawing PG0675-6 - Test Hole Location Plan included in Appendix 1.

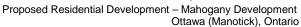
The subsurface conditions observed in the test holes were recorded in detail in the field. The soil profiles are presented on the Soil Profile and Test Data sheets in Appendix 1 of this report.

The boreholes were advanced using a track-mounted auger drill rig operated by a two-person crew while the test pits were advanced using a track mounted excavator. Both drilling and excavating occurred under full-time supervision of Paterson personnel.

Soil samples were obtained from the boreholes by means of split spoon sampling and the sampling of shallow soils directly from auger flights. Split spoon samples were taken at approximate 0.76 m intervals. The depths at which grab, split spoon and auger flight samples were obtained from the test holes are shown as "G", "SS" and "AU" respectively on the Soil Profile and Test Data Sheets, appended to this report.

The Standard Penetration Test (SPT) was conducted in conjunction with the recovery of the split-spoon samples. The SPT results are recorded as "N" values on the Soil Profile and Test Data sheets. The "N" value is the number of blows required to drive the split-spoon sampler 300 mm into the ground after a 150 mm initial penetration using a 63.5 kg hammer falling from a height of 760 mm. This test was done in accordance with ASTM D1586-11 - Standard Method for Penetration Test and Split-Barrel Sampling of Soils.

All soil samples were classified on site, placed in sealed plastic bags and were transported to our laboratory for further review and testing. Transportation of the





samples was completed in accordance with ASTM D4220-95 (2007) - Standard Practice for Preserving and Transporting Soil Samples.

Subsurface conditions observed in the test holes were recorded in detail in the field. Reference should be made to the Soil Profile and Test Data sheets presented in Appendix 1 for specific details of the soil profile encountered at the test hole locations.

3.2 Overburden Groundwater Level Monitoring

Flexible polyethylene standpipes were installed in select boreholes to permit the monitoring of groundwater levels subsequent to the completion of the field program.

Following the geotechnical program, groundwater levels were measured at the piezometer installations using an electronic water level meter. Groundwater levels were measured relative to the ground surface elevation at each monitoring installation. Groundwater levels at all locations are summarized in Table 1, appended to this report.

Groundwater levels may vary due to seasonal fluctuations and may be different at the time of construction. Areas consisting of cohesive soils may have elevated groundwater level readings due to perched conditions.

3.3 Water Well Records Database

A search of the Ministry of the Environment and Climate Change (MOECC) Water Well Record database returns numerous water wells within the vicinity of the subject site. The development to the north of the subject site, within a 100 m buffer, also contains a number of wells that were not registered with the MOECC at the time of construction. There are approximately 34 potential well locations along the northern property boundary that are expected to be located at each residence in the front yard (adjacent to Potter Drive). Typical MOECC practice is to assume the well location at the centre of the front yard if the well is buried and are unable to locate the installation. The wells are expected to be approximately 150 m away, horizontally, from the nearest servicing excavations.

The MOECC water well records within the database show the wells encountering water bearing fractures within the bedrock and are depicted on Paterson drawing PG4045-2 – MOECC Water Well Location Plan.

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Two monitoring wells are mapped on site adjacent to the existing sewer pumping station. The MOECC Well ID for the wells are 7181759 and 7181760. These wells extend to depths of 11.6 to 14.5 m below ground surface (bgs). Field reconnaissance was unable to locate the wells.

Existing water supply well records indicate that, in the area surrounding the subject site, the wells are generally completed at significant depths within the Oxford Formation and potentially extending into the March Formation bedrock aquifers. All of these wells were reported as encountering water-bearing zones below the proposed servicing depths at the subject site. As such, these wells are considered to have a relatively low potential to be impacted by construction dewatering activities at the subject site.

3.4 Permit to Take Water Database

The nearest existing PTTW is 7850-ABSPNZ for Meyknecht-Lischer Contractors Ltd. The MOECC PTTW mapping tool indicates that the purpose is construction dewatering taking surface and ground water. The site is located approximately 900 m north of the subject site. It is not expected that there will be any negative effects related to the combined water takings due to the distance and strata separating the sites.

With regards to the Environmental Activity and Sector Registry (EASR), no active registries were found within greater than 1 km of the subject site on the MOECC EASR database.

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4.0 GEOLOGY

4.1 Overburden Geology

The available surficial geology mapping from OGS Earth indicate that the site mainly consists of offshore marine sediments consisting of clay and silt at surface. There are localized areas with plain to drumlinized till consisting of stone-poor, sandy silt to silty sand. The mapped information is generally consistent with the geotechnical investigations at the subject site. Overburden soils mapping is shown on Paterson Drawing PG4045-4 – Overburden Geology.

The general stratigraphy identified during the geotechnical investigation generally consisted of a thin layer of topsoil overlying a silty clay strata followed by a till (silty sand matrix).

The overburden thickness is estimated to range from 2 to 25 m based upon available geological mapping. The geotechnical investigations encountered bedrock at a maximum depth of 17.4 m.

4.2 Bedrock Geology

The available geological mapping information from OGS Earth shows that the subject site is located in an area where the upper bedrock consists of Lower Ordovician dolomite of the Oxford formation. The Oxford formation is considered to be an aquifer unit typically providing good water quality and quantity. Bedrock geology mapping is shown on Paterson Drawing PG4045-3 – Bedrock Geology.

4.3 Hydrogeology

The area consists of a shallow unconfined overburden aquifer and an underlying bedrock aquifer. The depth to groundwater in the overburden piezometers typically ranged from 1 to 2 m below ground surface. Groundwater flow direction in the overburden unit is interpreted to be eastwards toward the Rideau River.

The overburden unit forms a confining layer over the till and bedrock units due to the thickness of the marine sediments consisting of clay and silt. The confining layer contributes protection to the underlying bedrock aquifer from potential impacts. The overburden aquifer is not used as a source of potable water due to the low hydraulic conductivities of the material.

The bedrock aquifer consists of water bearing fracture zones that occur between relatively unfractured layers of massive bedrock. It is expected the horizontal

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bedding plane fracture zones are the water bearing zones with the upper bedrock layer forming a confining layer. The groundwater flow within the bedrock unit is interpreted to flow north to northeast based upon bedrock elevations and the location of the Rideau River.

There are no significant groundwater discharge zones in the vicinity of the subject site and no significant groundwater recharge zones within the subject site due to the thickness and low hydraulic conductivity of the overburden unit. This reduces the potential recharge from the overburden to the bedrock unit. Recharge to the bedrock unit occurs over a regional scale with portions occurring to the west to northwest of the site within the Kars Esker (west of First Line Road) and surrounding areas labeled as an area of significant groundwater recharge area (SGRA) in the Mud Creek Subwatershed Study (2015).

The site evaluation indicates that the subject site is not hydrogeologically sensitive. The rate of infiltration from the overburden unit to the bedrock unit is considered to be very low due to low hydraulic conductivity of the overburden and the massive nature of the upper bedrock strata.

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5.0 GROUNDWATER IMPACT ASSESSMENT

The potential groundwater impacts were identified for the subject site as follows:

- Construction Dewatering
- Stormwater Runoff
- Road salting
- Ongoing Residential Usage
- Construction activities
- Neighboring residential sewage treatment systems

5.1 Construction Dewatering

In areas where ground or surface water is encountered during construction activities, dewatering will be required to ensure a dry excavation is maintained for safety and quality of installation. It is expected that the shallowest excavations will be within the roadways adjacent to the northern subject site boundary and are expected to be in the range of 4 to 5 m bgs. The maximum depth of excavation is expected to be approximately 6.5 to 7 m through the central east-west portion of the site for the deepest sewer collectors. A permit to take water (MOECC Reference Number – 3181-AJ5PKS) is in place for construction dewatering where required.

It is not expected that construction dewatering within the overburden unit will negatively impact the bedrock aquifer due to the vertical separation distance and confining nature of the overburden unit and the transient nature of construction dewatering.

5.2 Stormwater Runoff

Stormwater runoff on construction sites may contain high concentrations of total suspended solids (TSS) if left uncontrolled. Various control measures implemented during construction will mitigate the associated potential impacts. However, the potential impacts to the bedrock aquifer are considered to be negligible due to the vertical separation distance and confining nature of the overburden unit.

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Erosion and sediment control plans will be used during construction to minimize the potential impacts related to stormwater runoff into excavations and on site watercourses.

5.3 Road Salting

The City of Ottawa road maintenance plan generally does not provide salt application processes to residential classed roadways. The potential road salt impacts would be expected to occur along Manotick Main Street and Century Road right-of-ways. It is expected that the potential for impacts will be confined to the overburden unit with negligible impacts on the bedrock aquifer due to the vertical separation distance and the confining nature of the overburden unit. Future usage of road salt within the development is, also, not expected to have a negative effect on the bedrock aquifer in the vicinity of the subject site.

5.4 Ongoing Residential Usage

Potential impacts from ongoing residential usage (i.e. garden fertilizer application, pesticide application etc.) to the bedrock aquifer are expected to be negligible. The potential for impacts to the bedrock aquifer in the vicinity of the subject site are considered to be negligible due to the vertical separation distance and confining nature of the overburden unit.

5.5 Construction Activities

The following construction related activities have the potential to impact groundwater at the subject site:

- Storage and handling of liquid fuels (i.e. Refueling of large and small construction equipment).
- Handling and disposal of construction related chemicals (i.e. adhesives, sealants, paints, etc.) and associated waste material.

The potential for impacts to the bedrock aquifer in the vicinity of the subject site are considered to be negligible due to the vertical separation distance and confining nature of the overburden unit.

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5.6 Neighbouring Residential Sewage Treatment Systems

Potential impacts associated with neighbouring sewage treatment systems may be assessed by sampling offsite water supply wells.

The ongoing use of sewage treatment systems on neighbouring properties is not expected to have any significant impact on the bedrock aquifer in the vicinity of the subject site.

5.7 Risk Assessment Summary

The relative degree of risk to the bedrock aquifer, associated with the aforementioned potential impacts, have been identified as negligible. The potential impacts, as discussed in the previous sections, have been identified as having an extremely low relative degree of risk to the bedrock aquifer.

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6.0 GROUNDWATER MONITORING PLAN

A comprehensive groundwater monitoring plan is not considered to be necessary, because the construction water takings will be of a short term nature and there will be negligible impact to the bedrock aquifer.

Due to the shallow excavations anticipated for the development, the radius of influence is expected to have a significant buffer between the assumed water well locations at the centre of the front yards along Potter Drive and the proposed servicing excavations. The buffer includes the residential lots within the development adjacent to the northern development boundary.

As a precautionary measure, the two monitoring wells adjacent to the existing sanitary pumping station, with locations based upon MOECC mapping, will be monitored periodically. The monitoring will be contingent upon locating the wells and condition of the monitoring well installations.

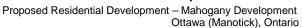
6.1 Impact of Proposed Development on Surrounding Wells

As a component of this investigation, a review of water well records in the vicinity of the subject site was conducted, using the Ministry of the Environment and Climate Change's (MOECC) online water well record search tool. The majority of water well records in the vicinity of the site are non-existent. Reports that were available have been appended to this report, and the locations of the water wells provided by MOECC's mapping tool are shown on attached Drawing PG4045-2 – MOECC Water Well Location Plan.

A field survey would be required to confirm the location and well depths during the baseline testing program for residences that do not show a well location on the MOECC mapping or are believed to be mapped at inaccurate locations. Typically, wells accessing deeper aquifers are at lower risk of impacts by construction dewatering activities due to the greater vertical separation between the dewatering zone and the zone(s) at which water was encountered in these wells.

It is noted that the wells selected are considered to be a representative sampling of the wells closest to the northern development boundary. As there are no expected impacts to the existing water wells, any well testing would be a precautionary measure to protect the homeowner, Minto Communities and the City of Ottawa interests.

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The baseline monitoring program will consist of the following:

- A letter will be provided to homeowners, within the 100 m buffer, outlining the proposed monitoring program and that a target of 10 to 20% of residences within 100 m of the property buffer will be approached as a representative sample.
- An interview will be conducted with co-operative homeowners to determine qualitative water quality and a request for a copy of the well record will be issued as there are none registered with the MOECC within the proposed monitoring area.
- A visual inspection of the well exterior will be completed for wells that are accessible. The details of the well (location, casing type, address, well tag number) will be verified with the published well record, if possible. Any discrepancies will be noted.
- The approximate location of the well will be referenced relative to the residence. If wells cannot be located, the centre of the front yard will be used as the well location.
- A water sample will be obtained from a suitable tap prior to any treatment process (disinfection, softening, etc.) where possible. The water sample will be submitted for analytical testing for the City of Ottawa "subdivision package" suite of parameters.

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7.0 STATEMENT OF LIMITATIONS

The client should be aware that any information pertaining to soils and all test hole logs are furnished as a matter of general information only, and test hole descriptions or logs are not to be interpreted as descriptive of conditions at locations other than those of the test holes.

The conclusions presented are based upon information from a limited historical review and field inspection. The findings of this investigation are based on a review of readily available geological, historical and regulatory information. The historical research relies on information supplied by municipal and provincial agencies and was limited within the scope of work, time and budget of the project herein.

This report has been prepared for Minto Communities Inc. in support of the Mahogany Community development. Any use of this report for purposes other than those described herein or by person(s) other than Minto Communities Inc. or their agent(s) is not authorized without review by Paterson Group for the applicability of our recommendations to the altered usage of the report.

Paterson Group Inc.

Michael S. Killam, P.Eng.

Report Distribution:

- Minto Communities Inc.
- Paterson Group Inc.

M. S. KILLAM 100221103



8.0 REFERENCES

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Paterson Group Inc. "Final Geotechnical Investigation – Mahogany Community – First Line Road, Ottawa, Ontario", November 21, 2007.

Paterson Group Inc. "Supplemental Geotechnical Investigation – Mahogany Community – First Line Road, Ottawa, Ontario", November 21, 2007.

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APPENDIX 1

Drawing PG0675-1 – Test Hole Location Plan

PG0675-1 - Soil Profile and Test Data Sheets

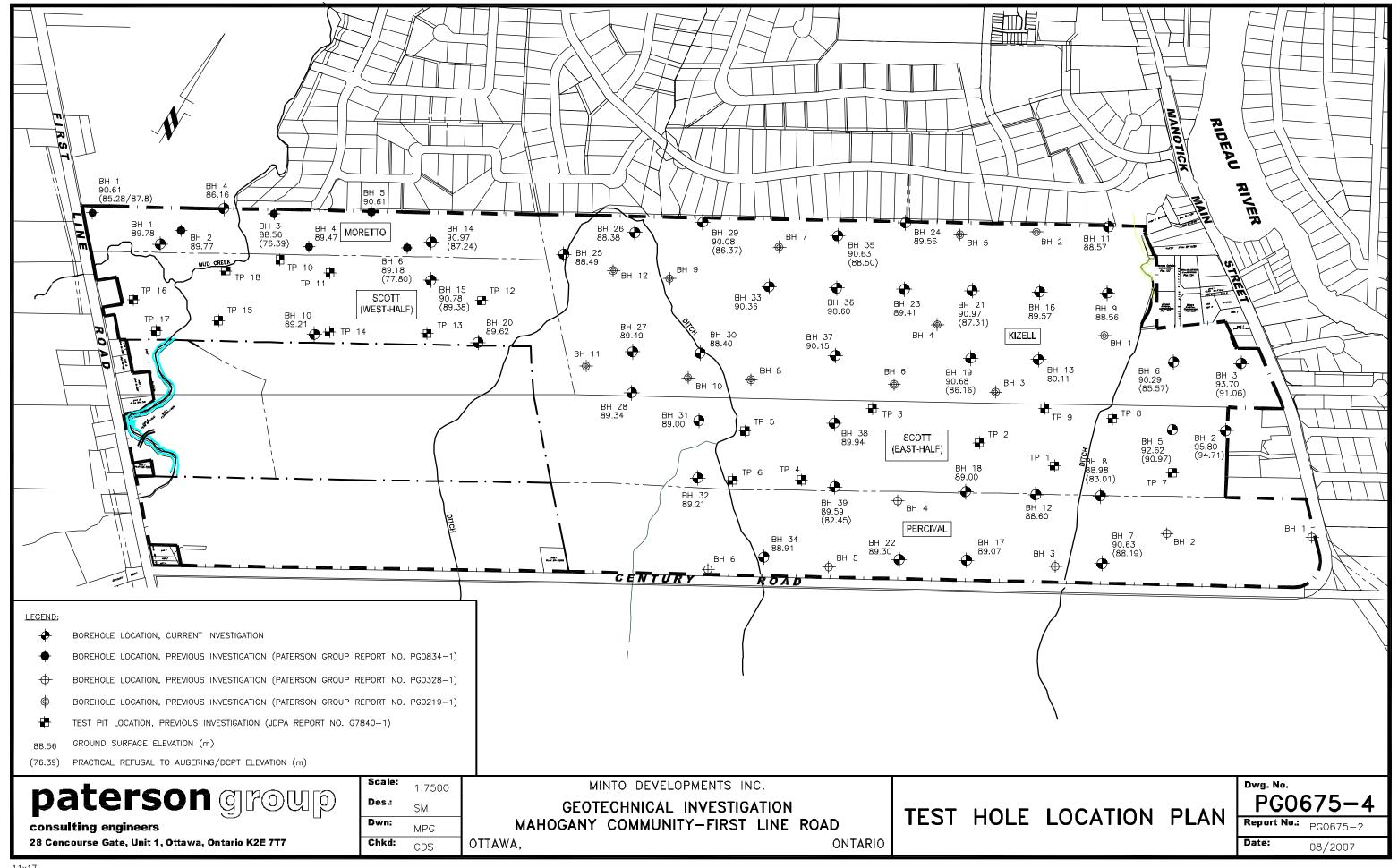
PG0834-1 - Soil Profile and Test Data Sheets

PG0328-1 - Soil Profile and Test Data Sheets

PG0219-1 - Soil Profile and Test Data Sheets

G7840-1 – Soil Profile and Test Data Sheets

Symbols and Terms



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SOIL PROFILE AND TEST DATA

Geotechnical Investigation Mahogany Community - First Line Road

28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7

Ottawa, Ontario Ground surface elevations provided by Annis, O'Sullivan, Vollebekk Ltd.

FILE NO.

PG0675

HOLE NO.

REMARKS

DATUM

BORINGS BY CME 45 Power Auge	er			0	ATE	16 Jul 07		BH 1
SOIL DESCRIPTION	PLOT		SAN	IPLE		DEPTH	ELEV.	Pen. Resist. Blows/0.3m ■ 50 mm Dia. Cone
	STRATA F		O Water Content %					
GROUND SURFACE TOPSOIL	0.20					0-	-89.78	20 40 60 80
Loose, brown SILTY SAND , trace clay	1.07	ss	1	100	5	1-	-88.78	
Stiff, brown SILTY CLAY , some sand seams		ss	2	100	3	2-	-87.78	
- very stiff and grey by 2.7m depth						3-	-86.78	
		- ss	3	100	2	4-	-85.78	
End of Borehole (GWL @ 3.82m-July 23/07)	5.18							
								20 40 60 80 100 Shear Strength (kPa) ▲ Undisturbed △ Remoulded

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SOIL PROFILE AND TEST DATA

Geotechnical Investigation Mahogany Community - First Line Road Ottawa, Ontario

28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7

Ground surface elevations provided by Annis, O'Sullivan, Vollebekk Ltd.

FILE NO.

PG0675

DATUM

REMARKS										HOLE NO)	
BORINGS BY CME 45 Power Aug	jer				D	ATE	11 Jul 07				BH 2	1
SOIL DESCRIPTION		PLOT		SAN	/IPLE	Ι	DEPTH	ELEV.		esist. Blo 0 mm Dia	ows/0.3m . Cone	eter
		STRATA E	TYPE	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)		later Con		Piezometer Construction
GROUND SURFACE		S	H	N N	REC	NO			20		60 80	L C
TOPSOIL	0.15	^^^	S				0-	-95.80				
GLACIAL TILL : Brown sand with gravel and cobbles	<u>1.09</u>		AU AU	1 2				-94.80				
End of Borehole	_ 1.03	^.^.^	.82				-	-94.00				
Practical refusal to augering @ 1.09m depth												
(GWL @ 0.87m-July 23/07)												
									20	40 6	60 80 1	- 1 00
									Shea ▲ Undistu	ar Streng	th (kPa) Remoulded	
									_ 01000		· · · · · · · · · · · · · · · · · · · ·	

28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7

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SOIL PROFILE AND TEST DATA

Geotechnical Investigation Mahogany Community - First Line Road Ottawa, Ontario

Ground surface elevations provided by Annis, O'Sullivan, Vollebekk Ltd. **DATUM**

FILE NO.

PG0675

REMARKS								HOLE NO.
BORINGS BY CME 45 Power Auger	1	1		D	ATE	11 Jul 07		BH 3
SOIL DESCRIPTION	PLOT		SAN	/IPLE	1	DEPTH	ELEV.	Pen. Resist. Blows/0.3m ■ 50 mm Dia. Cone
	STRATA E	TYPE	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)	Pen. Resist. Blows/0.3m ■ 50 mm Dia. Cone □ Water Content %
GROUND SURFACE	מ		¥	REC	z ö	_		20 40 60 80
TOPSOIL 0.12	3	AU	1			0-	-93.70	
GLACIAL TILL: Brown silty sand with gravel and cobbles		X				1-	-92.70	
sand with graver and cobbles		} ∑ss	2	67	50+			
2.64	\^^^^ \^^^^ !\^^^^					2-	-91.70	
2. <u>0</u> 4 End of Borehole	1^^^^	1						
Practical refusal to augering @ 2.64m depth								
GWL @ 1.51m-July 23/07)								
								20 40 60 80 100 Shear Strength (kPa)
								▲ Undisturbed △ Remoulded

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Ground surface elevations provided by Annis, O'Sullivan, Vollebekk Ltd.

SOIL PROFILE AND TEST DATA

Geotechnical Investigation Mahogany Community - First Line Road

28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7

Ottawa, Ontario

REMARKS

DATUM

FILE NO. **PG0675**

HOLE NO.

BORINGS BY CME 45 Power Auger				0	ATE	16 Jul 07		HOLE	NO. BH 4	
SOIL DESCRIPTION	PLOT		SAN	IPLE		DEPTH	ELEV.	Pen. Resist. B • 50 mm D		eter ction
	STRATA	TYPE	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)	O Water Co	entent %	Piezometer Construction
GROUND SURFACE			~	2	z o		-86.16	20 40	60 80	
TOPSOIL 0.20)] 0-	-00.10			
Loose, brown SAND	7	ss	1	50	5	1-	-85.16			
		ss	2	100	1	2-	-84.16			
Stiff, grey SILTY CLAY , some sand						3-	-83.16			V
							-82.16			
5.18	3 <i>[1/X]</i>	1				5-	-81.16			
End of Borehole (GWL @ 3.38m-July 23/07)								20 40	60 80 10	00
								Shear Stren	gth (kPa) △ Remoulded	.•

28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7

Consulting Engineers

SOIL PROFILE AND TEST DATA

Geotechnical Investigation Mahogany Community - First Line Road Ottawa, Ontario

Ground surface elevations provided by Annis, O'Sullivan, Vollebekk Ltd. **DATUM**

FILE NO.

PG0675

REMARKS									HOLE NO	rauor.	,
BORINGS BY CME 45 Power Auge	er				ATE	11 Jul 07				BH 5	
SOIL DESCRIPTION	PLOT		SAI	MPLE	1	DEPTH	ELEV.		esist. Blo 0 mm Dia		eter
	STRATA 1	TYPE	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)		later Con		Piezometer Construction
GROUND SURFACE	ខ	F	F	REC	N	_		20	40 6	0 80	П.О
TOPSOIL	0.15	^'\\ \\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \				0-	-92.62				
GLACIAL TILL: Dense to very dense, brown silty sand with gravel and cobbles		Â∰ AU Â∰ AU				4	01.60				¥
gravel and cobbles	\^^^ \^^^	^ / &					-91.62				
End of Borehole	_ <u>1</u> .65\^^^	SS	3		50+						
Practical refusal to augering @ 1.65m depth											
(GWL @ 0.62m-July 23/07)											
								20 Shea	40 6 ar Strengt	0 80 1 h (kPa)	00
								▲ Undist		Remoulded	
							<u> </u>				

Consulting Engineers

SOIL PROFILE AND TEST DATA

Geotechnical Investigation **Mahogany Community - First Line Road** Ottawa, Ontario

28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7

Ground surface elevations provided by Annis, O'Sullivan, Vollebekk Ltd.

FILE NO.

HOLE NO.

REMARKS

DATUM

PG0675

BORINGS BY CME 45 Power Aug	er			0	ATE	11 Jul 07		BH 6
SOIL DESCRIPTION	PLOT		SAN	IPLE	ı	DEPTH	ELEV.	Pen. Resist. Blows/0.3m • 50 mm Dia. Cone
	STRATA P	TYPE	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)	Pen. Resist. Blows/0.3m
GROUND SURFACE TOPSOIL	0.23					0-	-90.29	20 40 00 00
Compact, brown SANDY SILT, some clay Stiff, brown SILTY CLAY with	- 0.23 0.46	1 17					00.00	
sand seams Compact to loose, brown SANDY SILT with clay	_ 1.22	SS 7	1	100	11	1-	-89.29	
SANDY SILT with clay	_ 2.13 \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	ss 7	2	100	6	2-	-88.29	
	\^^^^ \^^^^ \^^^^	SS T	3	25	12	3-	-87.29	
GLACIAL TILL: Loose to compact, brown silty sand with gravel and cobbles		ss	4	75	22		-86.29	
	4.72 \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\	≥ SS	5	100	50+	4-	-86.29	
End of Borehole Practical refusal to augering @ 4.72m depth								
(GWL @ 2.11m-July 23/07)								
								20 40 60 80 100 Shear Strength (kPa)
								▲ Undisturbed △ Remoulded

Consulting Engineers

SOIL PROFILE AND TEST DATA

Geotechnical Investigation Mahogany Community - First Line Road Ottawa, Ontario

28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7

Ground surface elevations provided by Annis, O'Sullivan, Vollebekk Ltd.

PG0675

REMARKS

DATUM

HOLE NO.

FILE NO.

BORINGS BY CME 45 Power Auger				C	ATE	11 Jul 07			HOLE NO.	BH 7	
SOIL DESCRIPTION	PLOT		SAN	IPLE		DEPTH	ELEV.		esist. Blow 0 mm Dia. (eter tion
	STRATA F	TYPE	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)		Vater Conte		Piezometer Construction
GROUND SURFACE	01		z	퓚	z °			20	40 60	80	
TOPSOIL 0.20						0-	90.63				
GLACIAL TILL: Loose, brown silty sand with gravel and cobbles		ss	1	75	7	1-	-89.63				
		∭ SS	2	75	4	2-	-88.63				
End of Borehole	\^ _\ ^ _\ ^.	4									
Practical refusal to augering @ 2.44m depth											
(GWL @ 1.76m-July 23/07)								20	40 60	80 10	00
								20 She	40 60 ar Strength	80 10 (kPa)	00
								▲ Undist		(KPa) demoulded	
I .	1	1	ı	1	i	1	i .	1			

Consulting Engineers

SOIL PROFILE AND TEST DATA

Geotechnical Investigation **Mahogany Community - First Line Road**

28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7

Ottawa, Ontario

DATUM Ground surface elevations provided by Annis, O'Sullivan, Vollebekk Ltd. FILE NO. **PG0675 REMARKS** HOLE NO. **BH8** POPINGS BY CME 45 Power Auger DATE 11 Iul 07

BORINGS BY CME 45 Power Auge	r			D	ATE	11 Jul 07		BH 8
SOIL DESCRIPTION	PLOT		SAN	/IPLE		DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ■ 50 mm Dia. Cone
	STRATA	TYPE	NUMBER	% RECOVERY	N VALUE or RQD	(111)	(111)	Pen. Resist. Blows/0.3m ■ 50 mm Dia. Cone ○ Water Content %
GROUND SURFACE				2	zö		-88.98	20 40 60 80
TOPSOIL Loose, brown SILTY SAND, some clay	0.60	AU	1				00.90	
		ss	2	100	10	1-	-87.98	
Stiff, brown SILTY CLAY , some sand seams		ss	3	100	7	2-	-86.98	
	2.74					3-	-85.98	<u> </u>
		ss 2	4	100	20			
GLACIAL TILL: Compact to dense, brown silty sand with gravel and cobbles			_	F0	40	4-	-84.98	
		ss S	5	50	48	5-	-83.98	
End of Borehole	5.97					6-	-82.98	
Practical refusal to augering @ 5.97m depth								
(GWL @ 1.56m-July 23/07)								
								20 40 60 80 100 Shear Strength (kPa) ▲ Undisturbed △ Remoulded

Consulting Engineers

SOIL PROFILE AND TEST DATA

Geotechnical Investigation Mahogany Community - First Line Road Ottawa, Ontario

28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7

Ground surface elevations provided by Annis, O'Sullivan, Vollebekk Ltd.

FILE NO.

PG0675

DATUM

REMARKS							HOLE NO.
BORINGS BY CME 45 Power Auger				D	ATE	11 Jul 07	BH 9
SOIL DESCRIPTION	PLOT		SAN	IPLE	Ι	DEPTH ELEV.	Pen. Resist. Blows/0.3m ■ 50 mm Dia. Cone
	STRATA E	TYPE	NUMBER	% RECOVERY	N VALUE or RQD	(m) (m)	Pen. Resist. Blows/0.3m ■ 50 mm Dia. Cone O Water Content %
GROUND SURFACE	מַ	-	¥	REC	z ő		20 40 60 80
TOPSOIL 0.25		AU	1			0+88.56	
Compact, brown SILTY 0.46 SAND, trace clay		- Π					
		ss	2	100	10	1+87.56	
Very stiff, brown SILTY CLAY , some sand seams		ss	3	100	9	2-86.56	
		_					
		_				3-85.56	110
- very stiff to stiff and grey by 3.4m depth		_				4-84.56	
4.00		_					
	YXZV.	_					
(GWL @ 0.63m-July 23/07)							
							20 40 60 80 100 Shear Strength (kPa) ▲ Undisturbed △ Remoulded

28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7

Consulting Engineers

SOIL PROFILE AND TEST DATA

Geotechnical Investigation Mahogany Community - First Line Road Ottawa, Ontario

Ground surface elevations provided by Annis, O'Sullivan, Vollebekk Ltd. **DATUM**

FILE NO.

PG0675

REMARKS								HOLE NO. BH10
BORINGS BY CME 45 Power Auger			CAL	D IPLE	ATE	16 Jul 07		
SOIL DESCRIPTION	PLOT		JAN			DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ■ 50 mm Dia. Cone Use The Content %
	STRATA	TYPE	NUMBER	% RECOVERY	N VALUE or RQD			O Water Content %
GROUND SURFACE	ST	H	N	REC	NO		00.04	20 40 60 80
TOPSOIL 0.20	:,-], -					0-	-89.21	
Loose to very loose, brown SILTY SAND, some clay and seashells		ss	1	100	6	1-	-88.21	
2.13		ss	2	100	3	2-	-87.21	
Firm, brown SILTY CLAY		ss	3	100	4	3-	-86.21	
		_						
- soft to firm and grey by 3.7m depth		_				4-	-85.21	
		TW	4	88		5-	-84.21	
End of Borehole 5.74		_						
(GWL @ 1.08m-July 23/07)								
								20 40 60 80 100 Shear Strength (kPa) ▲ Undisturbed △ Remoulded

Consulting Engineers

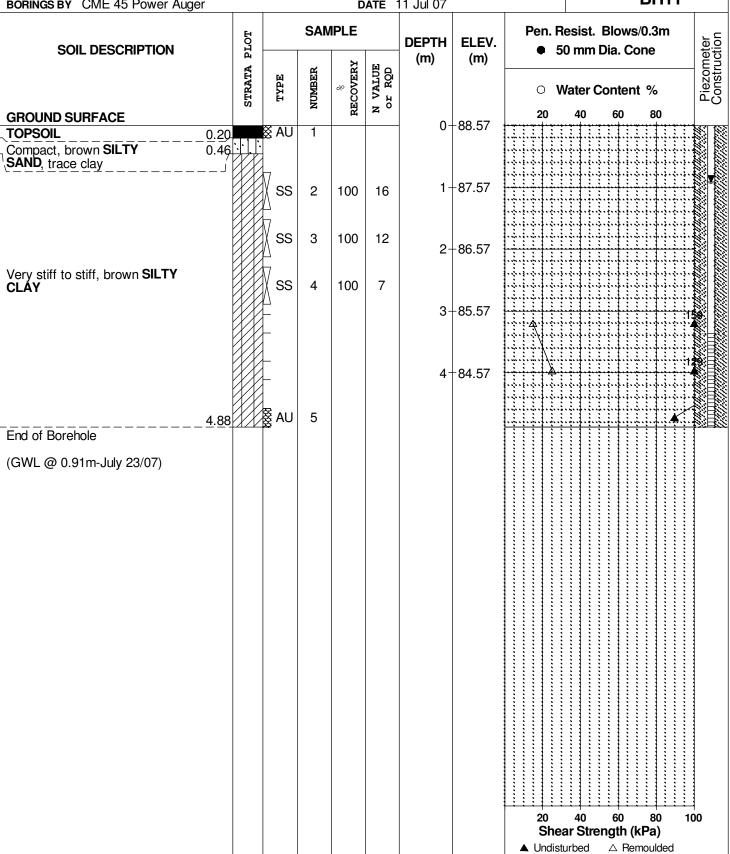
SOIL PROFILE AND TEST DATA

Geotechnical Investigation

28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7

Mahogany Community - First Line Road Ottawa, Ontario

Ground surface elevations provided by Annis, O'Sullivan, Vollebekk Ltd. **DATUM** FILE NO. **PG0675 REMARKS** HOLE NO. **BH11 BORINGS BY** CME 45 Power Auger **DATE** 11 Jul 07



Consulting Engineers

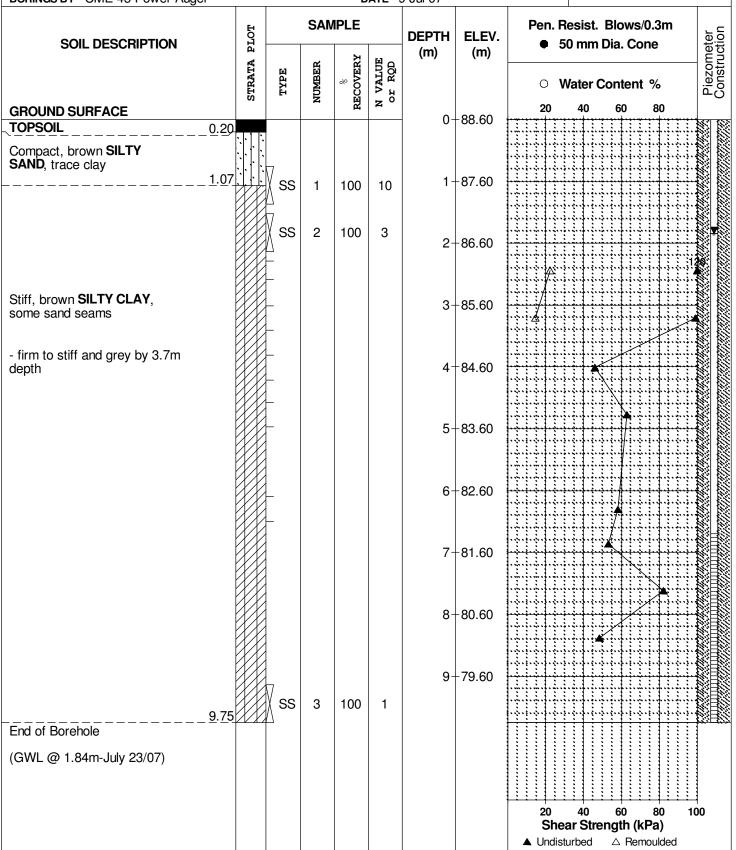
SOIL PROFILE AND TEST DATA

Geotechnical Investigation **Mahogany Community - First Line Road**

28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7

Ottawa, Ontario

Ground surface elevations provided by Annis, O'Sullivan, Vollebekk Ltd. **DATUM** FILE NO. **PG0675 REMARKS** HOLE NO. **BH12 BORINGS BY** CME 45 Power Auger DATE 9 Jul 07 **SAMPLE** Pen. Resist. Blows/0.3m ELEV.



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SOIL PROFILE AND TEST DATA

Geotechnical Investigation Mahogany Community - First Line Road Ottawa, Ontario

28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7

Ground surface elevations provided by Annis, O'Sullivan, Vollebekk Ltd.

REMARKS

DATUM

FILE NO. **PG0675**

HOLE NO.

BORINGS BY CME 45 Power Auger					DATE	10 Jul 07			HOLE NO.	3H13
SOIL DESCRIPTION	PLOT		SAN	/IPLE		DEPTH	ELEV.		esist. Blows/0 mm Dia. Cor).3m
	STRATA F	TYPE	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)		ater Content	Zome
GROUND SURFACE	02		4	R	z °		00.11	20	40 60	80
TOPSOIL 0.2	.5					1 0-	-89.11			
Compact to loose, brown SILTY SAND, trace clay	7	ss	1	100	8	1-	-88.11			
		ss	2	100	8	2-	-87.11			190
Very stiff, brown SILTY CLAY , some sand seams						3-	-86.11	### ##################################		
- stiff and grey by 4.3m depth	18					4-	-85.11			120
End of Borehole (GWL @ 0.52m-July 23/07)										
								20 Shea ▲ Undistu	40 60 ar Strength (kF arbed △ Remo	

28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7

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SOIL PROFILE AND TEST DATA

Geotechnical Investigation Mahogany Community - First Line Road Ottawa, Ontario

DATUM Ground surface elevations provided by Annis, O'Sullivan, Vollebekk Ltd.

FILE NO.

PG0675

REMARKS

REMARKS BORINGS BY CME 45 Power Auger				Б	ATE 1	16 Jul 07		HOLE NO. BH14			
	PLOT				AIL	DEPTH ELEV.			Construction		
SOIL DESCRIPTION	STRATA PL	TYPE	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)	50 mm Dia. Cone Water Content %			
GROUND SURFACE	ST	H	Į į	REC	NON			20 40 60 80	-ပ		
TOPSOIL 0.15		⊠ AU	1			0+	-90.97				
		ss	2	75	90+	1-	-89.97				
GLACIAL TILL: Dense, brown silty sand with gravel and cobbles		ss	3	67	53	2-	-88.97				
3.73		ss	4	50	54	3-	-87.97				
End of Borehole Practical refusal to augering @ 3.73m depth											
(BH dry-July 23/07)								20 40 60 80 100			
								20 40 60 80 100 Shear Strength (kPa) ▲ Undisturbed △ Remoulded			

28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7

Consulting Engineers

SOIL PROFILE AND TEST DATA

Geotechnical Investigation Mahogany Community - First Line Road Ottawa, Ontario

DATUM Ground surface elevations provided by Annis, O'Sullivan, Vollebekk Ltd.

FILE NO.

PG0675

REMARKS

and surrace dievations provided by Annie, & Camvari, Volicocia Eta

HOLE NO.

REIVIARNO

BORINGS BY CME 45 Power Auger				D	ATE	16 Jul 07			НО	LE NO). 	BH1	5	
SOIL DESCRIPTION	PLOT	SAMPLE				DEPTH (m)	Pen. Resist. Blows/0.3m • 50 mm Dia. Cone				neter ction			
	STRATA	TYPE	NUMBER	% RECOVERY	N VALUE or RQD	()	(m)	Pen. Resist. Blows/0.3m • 50 mm Dia. Cone O Water Content %						
GROUND SURFACE				24	4	0-	-90.78	20	40	6	60 +	80		keer ex
TOPSOIL 0.18	`^^^^)					55.75							
GLACIAL TILL: Very dense, brown silty sand with gravel and cobbles	\^\^\^\ \^\^\^\ \^\^\^\ \^\^\\^\	∑ ss	1	67	50+	1-	-89.78							
End of Borehole														
Practical refusal to augering @ 1.40m depth (GWL @ 1.16m-July 23/07)														
								20 Shea	40 ar St	reng	60 th (k	80 Pa)	10	00

28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7

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SOIL PROFILE AND TEST DATA

Geotechnical Investigation Mahogany Community - First Line Road Ottawa, Ontario

Ground surface elevations provided by Annis, O'Sullivan, Vollebekk Ltd. **DATUM**

FILE NO.

PG0675

REMARKS								HOLE NO.			
BORINGS BY CME 45 Power Auger				D	ATE	11 Jul 07		BH16			
SOIL DESCRIPTION	PLOT	SAMPLE				DEPTH	ELEV.	Pen. Resist. Blows/0.3m • 50 mm Dia. Cone O Water Content %			
	STRATA 1	TYPE	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)	O Water Content %			
GROUND SURFACE	SI	H	ğ	REC	N or			20 40 60 80			
	0.23					0-	-89.57				
Loose, brown SILTY SAND , trace clay		· .17						· · · · · · · · · · · · · · · · · · ·			
	1.22	. SS	1	100	4	1-	-88.57				
		ss	2	100	4	2-	-87.57				
Very stiff to stiff, brown SILTY CLAY											
- grey by 3.4m depth						3-	-86.57				
		-				4-	85.57				
End of Borehole	4.88										
(GWL @ 0.63m-July 23/07)											
								20 40 60 80 100 Shear Strength (kPa) ▲ Undisturbed △ Remoulded			

28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7

Consulting Engineers

SOIL PROFILE AND TEST DATA

Geotechnical Investigation Mahogany Community - First Line Road Ottawa, Ontario

DATUM Ground surface elevations provided by Annis, O'Sullivan, Vollebekk Ltd.

FILE NO.

PG0675

REMARKS

HOLE NO.

SOIL DESCRIPTION									
SOIL DESCRIPTION	PLOT		SAN	IPLE	ı	DEPTH	ELEV.	Pen. Resist. Blows/0.3m • 50 mm Dia. Cone	
	STRATA E	TYPE	NUMBER	* RECOVERY	N VALUE or RQD	(m)	(m)		Piezometer Construction
GROUND SURFACE				- Щ		0-	-89.07	20 40 60 80	লে ক
D OII TV OI AV	0.20	⊗ ,							
Brown SILTY CLAY	0.60	Ã AU	1						
Loose, grey-brown SANDY SILT , trace clay	1.22.:::	ss 🛚	2	100	7	1-	-88.07		
		70	_		_				
Stiff, brown SILTY CLAY , some sand seams		SS	3	100	5	2-	-87.07		
- firm and grey by 2.7m depth									
a.d g.o, a, a copu.		ss	4	100	1	3-	-86.07		
						1	-85.07		
						4	03.07		
		TW	5	100		5-	-84.07		
									Y
						6-	-83.07		
		TW	6	100					
						7-	-82.07		
							a		
						8-	-81.07		
GLACIAL TILL: Stiff, grey silty	8.84	SS	7	100	11	9-	-80.07		
clay with gravel and cobbles	\^,^,^ 9.75\^,^,^	§∭ ss	8	75	16		-		
 End of borehole	<u>5.75 \^^</u>	7							©⊞8
(GWL @ 5.27m-July 23/07)									
								20 40 60 80 100 Shear Strength (kPa))
								Shear Strength (kPa) ▲ Undisturbed △ Remoulded	

Consulting Engineers

SOIL PROFILE AND TEST DATA

Geotechnical Investigation Mahogany Community - First Line Road Ottawa, Ontario

28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7 DATUM

Ground surface elevations provided by Annis, O'Sullivan, Vollebekk Ltd.

FILE NO.

HOLE NO.

PG0675

BORINGS BY CME 45 Power Auger				D	ATE S	9 Jul 07		BH18
SOIL DESCRIPTION	PLOT		SAN	IPLE	1	DEPTH	ELEV.	Pen. Resist. Blows/0.3m ■ 50 mm Dia. Cone
	STRATA E	TYPE	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)	Pen. Resist. Blows/0.3m ■ 50 mm Dia. Cone ○ Water Content % 20 40 60 80
GROUND SURFACE TOPSOIL 0.20						0-	-89.00	
Compact, brown SILTY SAND, some clay 1.06		ss	1	100	10	1-	-88.00	
Stiff, brown SILTY CLAY ,		ss ss	2	100	7	2-	-87.00	
some sand seams			, J	100	7	3-	-86.00	
- firm and grey by 3.7m depth						4-	-85.00	
End of Borehole (GWL @ 1.38m-July 23/07)						5-	-84.00	20 40 60 80 100
								20 40 60 80 100 Shear Strength (kPa) ▲ Undisturbed △ Remoulded

28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7

Consulting Engineers

SOIL PROFILE AND TEST DATA

Geotechnical Investigation Mahogany Community - First Line Road Ottawa, Ontario

DATUM Ground surface elevations provided by Annis, O'Sullivan, Vollebekk Ltd.

FILE NO.

PG0675

REMARKS

HOLE NO.

BORINGS BY CME 55 Power Auger		DATE 10 Jul 07					BH19	
SOIL DESCRIPTION	PLOT		SAN	IPLE	1	DEPTH	ELEV.	Pen. Resist. Blows/0.3m ■ 50 mm Dia. Cone
	STRATA P	TYPE	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)	Pen. Resist. Blows/0.3m ■ 50 mm Dia. Cone ○ Water Content % 20 40 60 80
GROUND SURFACE TOPSOIL (0.20					0-	90.68	20 -0 30 30
Loose, brown SILTY SAND , trace clay	1.37	ss	1	100	9	1-	-89.68	
GLACIAL TILL: Compact to		ss ss	2	50	22	2-	-88.68	
very dense, brown silty sand with clay, gravel and cobbles		ss ss	4	50	25	3-	-87.68	
End of Borehole	4. <u>52 ^^^</u>					4-	86.68	
End of Borenole Practical refusal to augering @ 4.52m depth								
(GWL @ 0.62m-July 23/07)								
								20 40 60 80 100 Shear Strength (kPa) ▲ Undisturbed △ Remoulded

Consulting Engineers

SOIL PROFILE AND TEST DATA

Geotechnical Investigation Mahogany Community - First Line Road Ottawa, Ontario

28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7

Ground surface elevations provided by Annis, O'Sullivan, Vollebekk Ltd.

REMARKS

DATUM

FILE NO. **PG0675**

HOLE NO.

BORINGS BY CME 45 Power Auger					ATE	16 Jul 07		BH20
SOIL DESCRIPTION	PLOT		SAN	/IPLE	1	DEPTH ELEV		Pen. Resist. Blows/0.3m ■ 50 mm Dia. Cone
	STRATA 1	TYPE	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)	Pen. Resist. Blows/0.3m ■ 50 mm Dia. Cone ○ Water Content % 20 40 60 80
GROUND SURFACE TOPSOIL 0	.20					0-	-89.62	20 40 60 80
Loose, brown SILTY SAND, trace clay	.07	ss	1	100	7	1-	-88.62	
		ss	2	100	4	2-	-87.62	
Very stiff, brown SILTY CLAY , some sand seams						3-	-86.62	
- stiff to very stiff and grey by 3.7m depth						4-	-85.62	
End of Borehole	.18					5-	-84.62	
(GWL @ 2.17m-July 23/07)								
								20 40 60 80 100 Shear Strength (kPa) ▲ Undisturbed △ Remoulded

28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7

Consulting Engineers

SOIL PROFILE AND TEST DATA

Geotechnical Investigation **Mahogany Community - First Line Road** Ottawa, Ontario

DATUM Ground surface elevations provided by Annis, O'Sullivan, Vollebekk Ltd.

FILE NO. **PG0675**

REMARKS

HOLE NO.

RH21

BORINGS BY CME 45 Power Aug	ger				D	ATE	10 Jul 07		_	В	3H21
SOIL DESCRIPTION		PLOT		SAN	IPLE	1	DEPTH	ELEV.		esist. Blows/0 0 mm Dia. Con	.3m e
23.2.2.23 No.1		STRATA P	TYPE	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)		/ater Content	
GROUND SURFACE				-	22	z °		-90.97	20	40 60	80
TOPSOIL	_0.20							30.37			
Very stiff, brown SILTY CLAY	k										
some gravel by 0.5m depth			V		75	10	1-	-89.97	1.3.1.3.1.3.1		
	4 50		SS	1	75	12		00.07			
	_ 1.52		⊠ SS	2	100	50+					
	[:	^^^^^					2-	-88.97			
N ACIAL TILL. Commont	(^^^^					_	00.07			
LACIAL TILL: Compact, rown silty sand with clay, ravel and cobbles		^^^^^									
ravel and cobbles		^^^^					3-	-87.97			
);	^^^^	√ ss	3	50	15					
	<u>3</u> .66	^^^^				10					
nd of Borehole											
ractical refusal to augering @ 66m depth											
GWL @ 0.42m-July 23/07)											
									20	40 60	80 100
									Shea	ar Strength (kP	a)
									▲ Undistu	urbed △ Remo	uided

28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7

Consulting Engineers

SOIL PROFILE AND TEST DATA

Geotechnical Investigation Mahogany Community - First Line Road Ottawa, Ontario

DATUM Ground surface elevations provided by Annis, O'Sullivan, Vollebekk Ltd.

FILE NO.

PG0675

REMARKS								HOLENO
BORINGS BY CME 45 Power Aug	er _			D	ATE S	9 Jul 07		HOLE NO. BH22
SOIL DESCRIPTION	PLOT		SAN	IPLE	1	DEPTH	ELEV.	Pen. Resist. Blows/0.3m ■ 50 mm Dia. Cone
	STRATA E	TYPE	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)	Pen. Resist. Blows/0.3m ■ 50 mm Dia. Cone ○ Water Content %
GROUND SURFACE	ι σ		🗷	Ä	z °		00.00	20 40 60 80
TOPSOIL	0.25					0-	-89.30	
Loose, brown SILTY SAND , trace clay	0.90 0.90							
		SS	1	100	7	1-	-88.30	
		ss	2	100	3	2-	-87.30	
Stiff, brown SILTY CLAY , trace sand								
Source de la Contraction		_				3-	-86.30 -z	
firm and grey by 3.4m depth						4-	-85.30	
	<u>5</u> .49	TW	3	100		5-	-84.30	
End of Borehole	_ <u> </u>							
(0.74m-July 23/07)								
								20 40 60 80 100 Shear Strength (kPa)
								▲ Undisturbed △ Remoulded

Consulting Engineers

Ground surface elevations provided by Annis, O'Sullivan, Vollebekk Ltd.

SOIL PROFILE AND TEST DATA

Geotechnical Investigation Mahogany Community - First Line Road

28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7

Ottawa, Ontario

DATUM REMARKS FILE NO.

PG0675

BORINGS BY CME 45 Power Auger				D	ATE	10 Jul 07		HOLE NO. BH23
SOIL DESCRIPTION	PLOT		SAMPLE			DEPTH	ELEV.	Pen. Resist. Blows/0.3m ■ 50 mm Dia. Cone
GOIL BEGOIM HOW	STRATA P	TYPE	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)	Pen. Resist. Blows/0.3m ■ 50 mm Dia. Cone □ Water Content %
GROUND SURFACE	מ	-	Ħ	REC	ZÖ			20 40 60 80
TOPSOIL 0.20		₩ AU	1			0-	-89.41	
		ss	2	100	6	1-	88.41	
		ss	3	100	6	2-	-87.41	
Very stiff to stiff, brown SILTY CLAY , trace sand		_				3-	-86.41	
stiff to firm and grey by 3.4m depth						4-	-85.41	
5.59		TW	4	98		5-	-84.41	
End of Borehole (GWL @ 0.94m-July 23/07)								
								20 40 60 80 100 Shear Strength (kPa) ▲ Undisturbed △ Remoulded

28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7

Consulting Engineers

SOIL PROFILE AND TEST DATA

Geotechnical Investigation Mahogany Community - First Line Road Ottawa, Ontario

DATUM Ground surface elevations provided by Annis, O'Sullivan, Vollebekk Ltd.

FILE NO.

PG0675

REMARKS								HOLE NO.
BORINGS BY CME 45 Power Auger				10 Jul 07		BH24		
SOIL DESCRIPTION	PLOT		SAN	IPLE		DEPTH	ELEV.	Pen. Resist. Blows/0.3m ■ 50 mm Dia. Cone
	STRATA 1	TYPE	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)	Pen. Resist. Blows/0.3m ■ 50 mm Dia. Cone □ Water Content %
GROUND SURFACE	SI	H	N N	REC	N or			20 40 60 80
TOPSOIL 0.25						0-	-89.56	
		ss	1	100	4	1-	-88.56	
Very stiff to stiff, brown SILTY CLAY, some sand seams		ss	2	100	6	2-	-87.56	
CEAT, some said scams		_				3-	-86.56	
- stiff and grey by 3.7m depth		_				4-	-85.56	
4.88		_						
End of Borehole (GWL @ 0.71m-July 23/07)								20 40 60 80 100 Shear Strength (kPa) ▲ Undisturbed △ Remoulded

28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7

Consulting Engineers

SOIL PROFILE AND TEST DATA

Geotechnical Investigation Mahogany Community - First Line Road Ottawa, Ontario

DATUM Ground surface elevations provided by Annis, O'Sullivan, Vollebekk Ltd.

FILE NO.

PG0675

REMARKS

HOLE NO.

BORINGS BY CME 45 Power Auger				DATE	12 Jul 07			HOLE NO.	BH25	
SOIL DESCRIPTION	PLOT	SAI	MPLE		DEPTH	ELEV.		esist. Blow		eter tion
	STRATA E	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)		Vater Conter		Piezometer Construction
GROUND SURFACE	02	4	E	z	_		20	40 60	80	
TOPSOIL 0.25					0-	88.49				
Very dense, brown SILTY SAND, trace clay and gravel 1.22		S 1	67	50+	1-	-87.49				
	S	8 2	0	1	2-	-86.49				
Stiff, brown SILTY CLAY	S	3	100	4	3-	-85.49				
- stiff to firm and grey by 3.0m depth								***************************************		
4.88	TV	V 4	100		4-	84.49				
End of Borehole										
(GWL @ 1.39m-July 23/07)							20	40 60	80 10	00
							She	40 60 ar Strength ((kPa)	. •
							▲ Undist	urbea △ Re	emoulded	

Consulting Engineers

SOIL PROFILE AND TEST DATA

Shear Strength (kPa)

△ Remoulded

▲ Undisturbed

Geotechnical Investigation

28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7

Mahogany Community - First Line Road Ottawa, Ontario

Ground surface elevations provided by Annis, O'Sullivan, Vollebekk Ltd. **DATUM** FILE NO. **PG0675 REMARKS** HOLE NO. **BH26** BORINGS BY CME 45 Power Auger **DATE** 12 Jul 07 SAMPLE Pen. Resist. Blows/0.3m STRATA PLOT **DEPTH** ELEV. **SOIL DESCRIPTION** 50 mm Dia. Cone (m) (m) RECOVERY N VALUE or RQD NUMBER Water Content % 80 **GROUND SURFACE** 0+88.38**TOPSOIL** 0.18 Very stiff, brown **SILTY CLAY**, some sand seams 1+87.38 SS 1 100 6 2 + 86.38Loose, brown SANDY SILT 2.59 SS 2 12 6 3+85.38SS 3 42 18 GLACIAL TILL: Compact, grey sandy silt with gravel and cobbles 84.38 SS 4 38 13 End of Borehole Practical refusal to augering @ 4.57m depth (GWL @ 1.55m-July 23/07) 40 60 80 100

Consulting Engineers

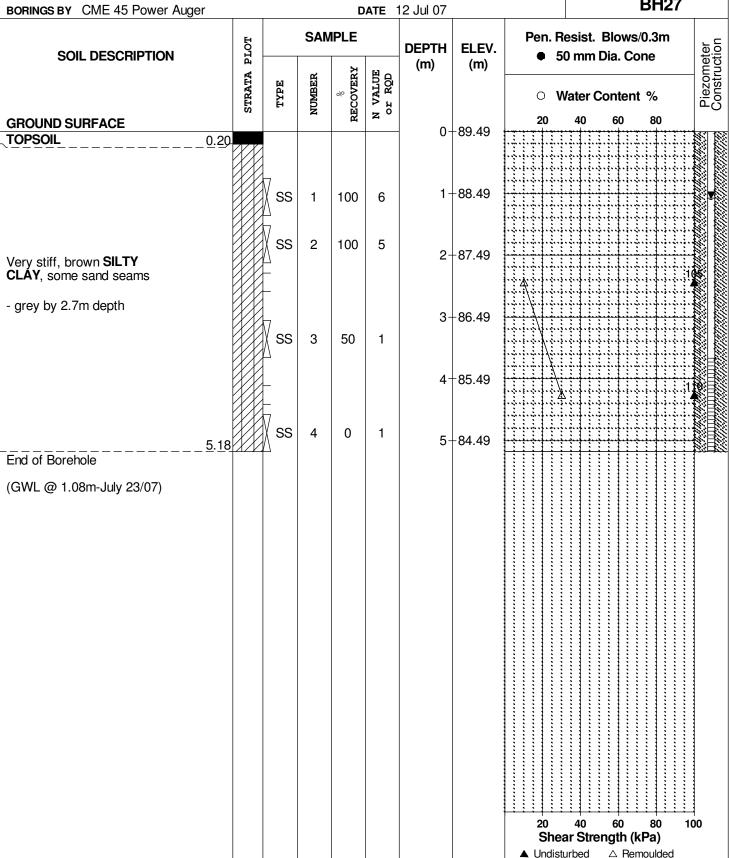
SOIL PROFILE AND TEST DATA

Geotechnical Investigation

28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7

Mahogany Community - First Line Road Ottawa, Ontario

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SOIL PROFILE AND TEST DATA

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28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7

Ground surface elevations provided by Annis, O'Sullivan, Vollebekk Ltd.

FILE NO.

HOLE NO.

PG0675

REMARKS

DATUM

BORINGS BY CME 45 Power Auger				D	ATE	12 Jul 07		BH28
SOIL DESCRIPTION	PLOT		SAN	IPLE	T	DEPTH	ELEV.	Pen. Resist. Blows/0.3m ■ 50 mm Dia. Cone
GROUND SURFACE	STRATA	TYPE	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)	Pen. Resist. Blows/0.3m
TOPSOIL 0.20	. 1					0-	89.34	
Compact, brown SILTY SAND , trace clay 0.90		∛ ss	1	50	10	1-	-88.34	
		Δ 7				·	30.01	
Very stiff to stiff, brown SILTY CLAY , some sand seams		SS - -	2	100	4	2-	87.34	12 2
		_ _				3-	-86.34	
- stiff to firm and grey by 3.4m depth		_				4-	-85.34	
<u>_5.18</u>		TW	3	96		5-	-84.34	
End of Borehole (GWL @ 1.02m-July 23/07)								
								20 40 60 80 100 Shear Strength (kPa)
								▲ Undisturbed △ Remoulded

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SOIL PROFILE AND TEST DATA

Geotechnical Investigation Mahogany Community - First Line Road Ottawa, Ontario

28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7

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FILE NO.

HOLE NO.

PG0675

REMARKS

DATUM

BH20

BORINGS BY CME 45 Power Auger				D	ATE	12 Jul 07		BH29
SOIL DESCRIPTION	PLOT		SAN	IPLE	T	DEPTH	ELEV.	Pen. Resist. Blows/0.3m ■ 50 mm Dia. Cone
	STRATA P	TYPE	NUMBER		(m)	O Water Content %		
GROUND SURFACE TOPSOIL 0.25		⊗ AU	1			0-	-90.08	20 40 60 80
Very stiff, brown SILTY CLAY , some sand		ss	2	100	7	1-	-89.08	
0.00		SS - -	3	100	6	2-	-88.08	
GLACIAL TILL: Very stiff, brown silty clay with sand, gravel and cobbles 3.71		ss	4	75	20	3-	-87.08	
End of Borehole Practical refusal to augering @ 3.71m depth								
(GWL @ 1.56m-July 23/07)								20 40 60 90 100
								20 40 60 80 100 Shear Strength (kPa) ▲ Undisturbed △ Remoulded

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SOIL PROFILE AND TEST DATA

Geotechnical Investigation Mahogany Community - First Line Road

28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7

Ottawa, Ontario

REMARKS

DATUM

FILE NO. **PG0675**

HOLE NO.

BORINGS BY CME 45 Power Auger				C	DATE	12 Jul 07		BH30
SOIL DESCRIPTION	PLOT	SAMPLE			DEPTH		Pen. Resist. Blows/0.3m • 50 mm Dia. Cone	
	STRATA E	TYPE	NUMBER	» RECOVERY	N VALUE or RQD	(m)	(m)	Pen. Resist. Blows/0.3m ■ 50 mm Dia. Cone ○ Water Content % 20 40 60 80
GROUND SURFACE FOPSOIL	0.20					0-	-88.40	
		ss	1	100	5	1-	-87.40	
ery stiff to stiff, brown SILTY LAY , some sand seams						2-	-86.40	
stiff and grey by 2.7m depth							-85.40	
							-84.40 -83.40	
<u>5</u> nd of Borehole	5.18	_					00.40	
GWL @ 0.57m-July 23/07)								
								20 40 60 80 100 Shear Strength (kPa)
								▲ Undisturbed △ Remoulded

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SOIL PROFILE AND TEST DATA

Geotechnical Investigation Mahogany Community - First Line Road Ottawa, Ontario

28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7

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FILE NO.

HOLE NO.

PG0675

REMARKS

DATUM

BORINGS BY CME 45 Power Auger				D	ATE	13 Jul 07		BH31
SOIL DESCRIPTION	PLOT		SAN	IPLE	1	DEPTH	ELEV.	Pen. Resist. Blows/0.3m • 50 mm Dia. Cone
	STRATA E	TYPE	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)	O Water Content %
GROUND SURFACE	0.00			-		0-	-89.00	20 40 60 80
Loose, brown SILTY SAND ,	0.20 0.90							
		ss	1	100	5	1-	-88.00	
Stiff, brown SILTY CLAY , some sand seams		ss	2	100	4	2-	-87.00	
						3-	-86.00	
firm and grey by 3.4m depth						4-	-85.00	
End of Borehole	4.88							
(GWL @ 0.71m-July 23/07)								
								20 40 60 80 100 Shear Strength (kPa) ▲ Undisturbed △ Remoulded

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SOIL PROFILE AND TEST DATA

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Ottawa, Ontario

REMARKS

DATUM

FILE NO. **PG0675**

HOLE NO. **BH32 BORINGS BY** CME 45 Power Auger **DATE** 13 Jul 07 **SAMPLE** Pen. Resist. Blows/0.3m STRATA PLOT **DEPTH** ELEV. **SOIL DESCRIPTION** 50 mm Dia. Cone (m) (m) RECOVERY N VALUE or RQD NUMBER TYPE Water Content % **GROUND SURFACE** 0 + 89.21**TOPSOIL** 0.23 Loose, brown SILTY SAND, 0.60 trace clay 1 + 88.21SS 1 4 100 Very stiff to firm, brown SILTY CLÁY, some sand seams 2 100 6 2 + 87.213+86.21- firm to stiff and grey by 3.4m depth 4+85.21 3 100 End of Borehole (GWL @ 0.96m-July 23/07) 40 60 80 100 Shear Strength (kPa) ▲ Undisturbed △ Remoulded

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SOIL PROFILE AND TEST DATA

Geotechnical Investigation Mahogany Community - First Line Road Ottawa, Ontario

28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7

Ground surface elevations provided by Annis, O'Sullivan, Vollebekk Ltd.

FILE NO.

PG0675

DATUM

REMARKS BORINGS BY CME 45 Power Auger				D	ATE	12 Jul 07		HOLE NO. BH33
SOIL DESCRIPTION	PLOT		SAN	IPLE		DEPTH	ELEV.	Pen. Resist. Blows/0.3m ■ 50 mm Dia. Cone
00.2 5 200.111 110.11	STRATA P	TYPE	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)	Pen. Resist. Blows/0.3m ■ 50 mm Dia. Cone O Water Content %
GROUND SURFACE	ß	•	E	RE	zö	0	-90.36	20 40 60 80
TOPSOIL 0.25		1				0-	-90.30	
		ss	1	100	11	1-	89.36	***************************************
Very stiff, brown SILTY CLAY , some sand seams		ss	2	100	6	2-	-88.36	
		_				3-	-87.36	
grey by 3.5m depth 4.37		_				4-	86.36	
End of Borehole								
(GWL @ 0.85m-July 23/07)								
								20

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SOIL PROFILE AND TEST DATA

Geotechnical Investigation Mahogany Community - First Line Road Ottawa, Ontario

DATUM Ground surface elevations provided by Annis, O'Sullivan, Vollebekk Ltd.

FILE NO.

REMARKS

PG0675

REWARKS

HOLE NO.

BORINGS BY CME 45 Power Auger				D	ATE	13 Jul 07			HOLE NO. BH34	
SOIL DESCRIPTION	PLOT		SAN	IPLE		DEPTH	ELEV.		esist. Blows/0.3m 0 mm Dia. Cone	eter ction
	STRATA 1	TYPE	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)	0 W	ater Content %	Piezometer Construction
GROUND SURFACE			~	2	z °		-88.91	20	40 60 80	
TOPSOIL 0.2	0] 0-	-00.91			
Loose, brown SILTY SAND , some clay1.0	7	ss	1	100	7	1-	-87.91			<u>*</u>
Stiff, brown SILTY CLAY , some sand seams		ss	2	100	5	2-	-86.91			
- firm to stiff and grey by 2.7m depth						3-	-85.91			
		TW	3	100			84.91			
5.1	8/1//	4				5-	-83.91	***		
End of Borehole (GWL @ 0.34m-July 23/07)										
								20 Shea ▲ Undistu	40 60 80 10 ar Strength (kPa) urbed △ Remoulded	00

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SOIL PROFILE AND TEST DATA

Geotechnical Investigation Mahogany Community - First Line Road

28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7

Ottawa, Ontario Ground surface elevations provided by Annis, O'Sullivan, Vollebekk Ltd.

REMARKS

DATUM

FILE NO. **PG0675**

HOLE NO.

BORINGS BY CME 45 Power Aug	er			[DATE	10 Jul 07		_	I TOLE IN	BH35	
SOIL DESCRIPTION	PLOT		SAN	MPLE	1	DEPTH	ELEV.		esist. Bl 0 mm Dia	lows/0.3m a. Cone	tion
0012 B2001 III 11011	STRATA P	TYPE	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)	0 V	Vater Cor	ntent %	Piezometer Construction
GROUND SURFACE				K	4		90.63	20	40	60 80	
TOPSOIL	0.25] 0-	90.63				
Verv stiff, brown SILTY											
Very stiff, brown SILTY CLAY , some sand seams	1 50	ss	1		14	1-	89.63				
GLACIAL TILL: Very stiff,	1.52	ss 🎘	2		18		-88.63				
brown silty clay with sand, gravel and cobbles End of Borehole	2.13 <u>\^^^</u>	.4\				2-	-88.63				
Practical refusal to augering @ 2.13m depth											
(BH dry-July 23/07)											
Entary sary 25/67/											
								20 Cha	40 (60 80	100
									ar Streng		
			1	1				▲ Undist	urbed Z	\ Remoulded	

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SOIL PROFILE AND TEST DATA

Geotechnical Investigation Mahogany Community - First Line Road Ottawa, Ontario

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FILE NO.

HOLE NO.

PG0675

BORINGS BY CME 45 Power Auger				D	ATE	10 Jul 07		BH36
SOIL DESCRIPTION	PLOT		SAN	IPLE		DEPTH (m)	ELEV.	Pen. Resist. Blows/0.3m ■ 50 mm Dia. Cone
GROUND SURFACE	STRATA	TYPE	NUMBER	% RECOVERY	N VALUE or RQD	(111)	(m)	Pen. Resist. Blows/0.3m ■ 50 mm Dia. Cone ○ Water Content % 20 40 60 80
TOPSOIL 0.25						0-	90.60	
Stiff, brown SILTY CLAY , some sand seams		ss	1	100	11	1-	-89.60	
1.98		∑ ss	2	100	23	2-	-88.60	
GLACIAL TILL: Very stiff, brown clayey silt with sand, gravel and cobbles		_				3-	-87.60	
		ss	3	50	22		-86.60 -85.60	
End of Borehole (GWL @ 2.50m-July 23/07)								20 40 60 80 100
								20 40 60 80 100 Shear Strength (kPa) ▲ Undisturbed △ Remoulded

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SOIL PROFILE AND TEST DATA

Geotechnical Investigation Mahogany Community - First Line Road Ottawa, Ontario

DATUM Ground surface elevations provided by Annis, O'Sullivan, Vollebekk Ltd.

FILE NO.

PG0675

REMARKS BORINGS BY CME 45 Power Auger				D	ATE -	10 Jul 07		HOLE NO. BH37
SOIL DESCRIPTION	PLOT		SAN	IPLE		DEPTH	ELEV.	Pen. Resist. Blows/0.3m ■ 50 mm Dia. Cone
	STRATA P	TYPE	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)	Pen. Resist. Blows/0.3m ■ 50 mm Dia. Cone □ Water Content %
GROUND SURFACE	Ŋ	-	Ħ	REC	z ö	_		20 40 60 80
TOPSOIL 0.20						0-	-90.15	
Vary stiff to firm brown SILTV		ss V as	1	100	8	1-	-89.15	
Very stiff to firm, brown SILTY CLAY , trace sand		SS - -	2	100	6	2-	-88.15	
		_				3-	-87.15	
- stiff and grey by 4.3m depth		_				4-	-86.15	
End of Borehole 4.98		_				5-	-85.15	·····
(GWL @ 1.92m-July 23/07)								20 40 60 80 100 Shear Strength (kPa) ▲ Undisturbed △ Remoulded

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SOIL PROFILE AND TEST DATA

Geotechnical Investigation Mahogany Community - First Line Road Ottawa, Ontario

28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7

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REMARKS

FILE NO.

PG0675

HOLE NO.

DATUM

BORINGS BY CME 45 Power Aug	ger				ATE	12 Jul 07			HOLE	NO. BH38	
SOIL DESCRIPTION		ьгот	SAI	MPLE		DEPTH (m)	ELEV.			Blows/0.3m Dia. Cone	eter
		STRATA	NUMBER	% RECOVERY	N VALUE or RQD	(11)	(11)	0 V	Vater Co	ontent %	Piezometer
GROUND SURFACE		·	4	R	Z		-89.94	20	40	60 80	
TOPSOIL	_ 0.25	.11;				- 0-	+89.94				
Loose, brown SILTY SAND , trace clay											
	_ 1.07	 S:	S 1	100	4	1-	88.94				
		S:	5 2	100	3	2-	87.94				
Varie at left to at left laware CII TV								***********			0
Very stiff to stiff, brown SILTY CLAY , some sand											
						3-	86.94				
stiff and grey by 3.5m depth											
						4-	85.94				
	4. <u>8</u> 8							<u> </u>		<u> </u>	
End of Borehole											
GWL @ 0.65m-July 23/07)											
								20	40	60 80 1	00
								She	ar Strer	ngth (kPa)	J J
								▲ Undist	urbed	△ Remoulded	

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SOIL PROFILE AND TEST DATA

Geotechnical Investigation Mahogany Community - First Line Road Ottawa, Ontario

28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7

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FILE NO.

HOLE NO.

PG0675

REMARKS

DATUM

BH30

BORINGS BY CME 45 Power Aug	er			D	ATE	13 Jul 07		BH39
SOIL DESCRIPTION		PLOT	SAN	/IPLE	I	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ■ 50 mm Dia. Cone
		STRATA	NUMBER	% RECOVERY	N VALUE or RQD	(III)	(III)	Pen. Resist. Blows/0.3m ■ 50 mm Dia. Cone ○ Water Content % 20 40 60 80
GROUND SURFACE TOPSOIL	0.23	⊗ AU	1			0-	-89.59	
Loose, brown SILTY SAND, trace clay	0.90	SS	2	100	6	1-	-88.59	
		ss	3	100	5	2-	-87.59	¥
Very stiff to stiff, brown SILTY CLAY , some sand seams						3-	-86.59	
- firm to stiff and grey by 3.4m depth						4-	-85.59	
		тw	4	100		5-	-84.59	
							-83.59	
GLACIAL TILL: Very stiff, grey silty clay with gravel and cobbles	6.40 ^^ 7.14		5	33	50+		-82.59	
End of Borehole Practical refusal to augering @ 7.14m depth							02.00	\$35E
(GWL @ 1.71m-July 23/07)								
								20 40 60 80 100 Shear Strength (kPa) ▲ Undisturbed △ Remoulded

28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7

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SOIL PROFILE AND TEST DATA

Supplemental Geotechnical Investigation Mahogany Community - First Line Road Ottawa, Ontario

DATUM Ground surface elevations provided by Annis, O'Sullivan, Vollebekk Ltd.

FILE NO.

PG0675

REMARKS				n	ATE 1	14 Jan 08			HOLE NO. BH40	
SOIL DESCRIPTION	PLOT		SAN	IPLE	AIL	DEPTH	ELEV.			ter
SOIL DESCRIPTION	STRATA P	TYPE	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)		/ater Content %	Piezometer Construction
GROUND SURFACE	ัง		Ħ	REC	z ö		00.40	20	40 60 80	шО
TOPSOIL 0.20		≅ AU	1			0+	89.10			
Very stiff, brown SILTY CLAY , some sand		ss	2	100	4	1+	88.10			
- stiff by 1.5m depth		ss	3	100	3	2-	87.10	A : : : : : : : : : : : : : : : : : : :		
- stiff to firm and grey by 2.7m depth						3-	86.10			■
						4-	85.10			
End of Borehole						5-	84.10			
(GWL @ 3.21m-Jan. 25/08)								20 Shea	40 60 80 100 ar Strength (kPa))
								Shea ▲ Undistu	r Strength (kPa)	

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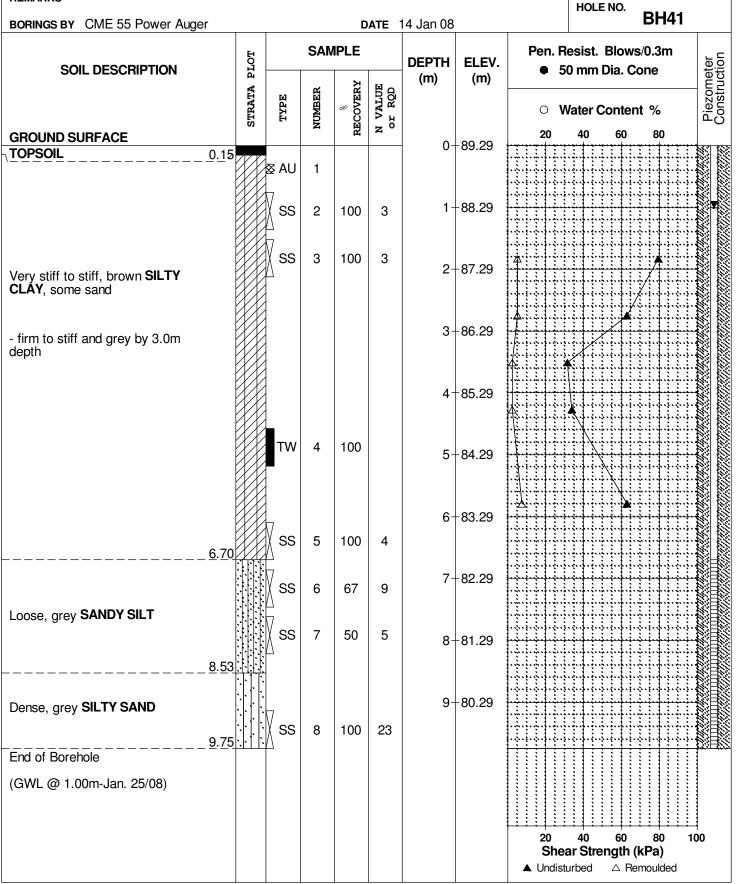
SOIL PROFILE AND TEST DATA

Supplemental Geotechnical Investigation Mahogany Community - First Line Road Ottawa, Ontario

28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7 Ground surface elevations provided by Annis, O'Sullivan, Vollebekk Ltd. **DATUM**

FILE NO.

PG0675



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SOIL PROFILE AND TEST DATA

Supplemental Geotechnical Investigation Mahogany Community - First Line Road Ottawa, Ontario

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FILE NO.

PG0675

REMARKS BORINGS BY CME 55 Power Auger				D	ATE 1	14 Jan 08		HOLE NO. BH42
SOIL DESCRIPTION	PLOT		SAN	/IPLE		DEPTH	ELEV.	Pen. Resist. Blows/0.3m ■ 50 mm Dia. Cone
SOIL DESCRIPTION	STRATA P	TYPE	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)	Pen. Resist. Blows/0.3m ■ 50 mm Dia. Cone ○ Water Content %
GROUND SURFACE	ß		E	RE	zö		00.40	20 40 60 80
TOPSOIL 0.18 Stiff, brown SILTY CLAY		⊗ AU	1			0+6	89.10	
- firm by 1.2m depth		ss	2	100	4	1 +8	88.10	
		ss	3	50	2	2-8	87.10	**************************************
- soft to firm and grey by 2.9m depth						3-	86.10	
		TW	4	100		4-8	85.10	
<u>5.03</u> End of Borehole	XXZ					5+8	84.10	
(GWL @ 2.77m-Jan. 25/08)								20 40 60 80 100
								Shear Strength (kPa) ▲ Undisturbed △ Remoulded

28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7

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SOIL PROFILE AND TEST DATA

Supplemental Geotechnical Investigation Mahogany Community - First Line Road Ottawa, Ontario

DATUM Ground surface elevations provided by Annis, O'Sullivan, Vollebekk Ltd.

FILE NO.

PG0675

REMARKS							HOLE NO.
BORINGS BY CME 55 Power Auger				D	ATE 1	14 Jan 08	BH43
SOIL DESCRIPTION	PLOT		SAN	IPLE		DEPTH ELEV.	Pen. Resist. Blows/0.3m ■ 50 mm Dia. Cone
	STRATA E	TYPE	NUMBER	% RECOVERY	N VALUE or RQD	(m) (m)	Pen. Resist. Blows/0.3m ■ 50 mm Dia. Cone □ Water Content %
GROUND SURFACE	ß		¥	REC	zö	0 00 50	20 40 60 80
↑TOPSOIL 0.15		⊗ AU	1			0+89.52	
Very stiff, brown SILTY CLAY , some sand		ss	2	100	4	1-88.52	
- stiff by 1.8m depth		ss	3	100	3	2-87.52	A 1
- firm and grey by 2.7m depth						3-86.52	
						4-85.52	
5.03 End of Borehole						5-84.52	
(GWL @ 3.41m-Jan. 25/08)							
							20 40 60 80 100 Shear Strength (kPa) ▲ Undisturbed △ Remoulded

28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7

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SOIL PROFILE AND TEST DATA

Supplemental Geotechnical Investigation Mahogany Community - First Line Road Ottawa, Ontario

Ground surface elevations provided by Annis, O'Sullivan, Vollebekk Ltd. **DATUM**

FILE NO.

PG0675

REMARKS								HOLE NO.
BORINGS BY CME 55 Power Auger				D	ATE	15 Jan 08		BH44
SOIL DESCRIPTION	PLOT		SAN	IPLE		DEPTH	ELEV.	Pen. Resist. Blows/0.3m ■ 50 mm Dia. Cone
	STRATA 1	TYPE	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)	Pen. Resist. Blows/0.3m ■ 50 mm Dia. Cone □ Water Content %
GROUND SURFACE	SI	H	N	REC	N O I			20 40 60 80
TOPSOIL 0.18						0+	-89.43	
		≩ AU	1					
Very stiff to stiff, brown SILTY		7	_			4	-88.43	
Very stiff to stiff, brown SILTY CLAY , some sand		SS	2	100	5		-00.43	
- firm by 1.5m depth		- 7						
·		SS	3	100	3	2-	-87.43	<u> </u>
- grey by 3.0m depth						3-	-86.43	
grey by c.om depth								
						4	85.43	
		_						
		TW	4	100		_	0.4.40	
			-			5-	-84.43	
5 70								
5.79 End of Borehole								
(GWL @ 3.81m-Jan. 25/08)								
(GWL @ 3.61111-3a11. 23/06)								
								20 40 60 80 100
								Shear Strength (kPa) ▲ Undisturbed △ Remoulded
								Official Decision 22 Refficultied

28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7

Consulting Engineers

SOIL PROFILE AND TEST DATA

Supplemental Geotechnical Investigation Mahogany Community - First Line Road Ottawa, Ontario

DATUM Ground surface elevations provided by Annis, O'Sullivan, Vollebekk Ltd.

FILE NO.

40

▲ Undisturbed

Shear Strength (kPa)

60

80

△ Remoulded

100

PG0675

BH45

REMARKS

HOLE NO.

TEWANKS

BORINGS BY CME 55 Power Auger

DATE 14 Jan 08

SAMPLE Pen. Resist. Blows/0.3m STRATA PLOT **DEPTH** ELEV. **SOIL DESCRIPTION** 50 mm Dia. Cone (m) (m) RECOVERY N VALUE or RQD NUMBER Water Content % 80 **GROUND SURFACE** 0 + 89.35**TOPSOIL** 0.15 Loose, brown SILTY SAND, trace clay 1 + 88.35SS 2 100 5 1.22 Stiff, brown SILTY CLAY 3 100 3 2 + 87.35- soft to firm and grey by 2.1m depth 3+86.354 100 4 + 85.35- stiff by 4.4m depth 5 + 84.35End of Borehole (GWL @ 1.46m-Jan. 25/08)

Consulting Engineers

Ground surface elevations provided by Annis, O'Sullivan, Vollebekk Ltd.

SOIL PROFILE AND TEST DATA

FILE NO.

PG0675

Supplemental Geotechnical Investigation

28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7

Mahogany Community - First Line Road Ottawa, Ontario

DEMARKS

DATUM

REMARKS								HOLENG		
BORINGS BY CME 55 Power Auger				D	ATE	15 Jan 08		HOLE NO. BH46		
SOIL DESCRIPTION		B DEPTH ELEV.					LEV.	Pen. Resist. Blows/0.3m ■ 50 mm Dia. Cone		
	STRATA E	TYPE	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)	Resist. Blows/0.3m 50 mm Dia. Cone Water Content %		
GROUND SURFACE	ß	_	Z	Ä	z o		20	40 60 80		
TOPSOIL 0.	.15	器 AU	1			0+89	0.03			
		ss	2	100	6	1-88	3.03	•		
Very stiff to stiff, brown SILTY CLAY , some sand		SS	3	100	3	2-87	7.03			
- stiff to firm and grey by 3.0m depth						3-86	5.03			
						4-85	5.03	*		
						5-84	1.03	<i>f</i>		
						6-83	3.03			
		ss	4	100	1	7-82	2.03			
8.	.53					8-81	1.03			
Loose, grey SILTY SAND , some gravel		ss	5	42	6	9-80	0.03			
End of Borehole	. <u>75 . </u>	·//\								
(GWL @ 1.52m-Jan. 25/08)										
							20	40 60 80 100		
							She ▲ Undis	ear Strength (kPa) turbed △ Remoulded		

28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7

Consulting Engineers

SOIL PROFILE AND TEST DATA

Supplemental Geotechnical Investigation Mahogany Community - First Line Road Ottawa, Ontario

DATUM Ground surface elevations provided by Annis, O'Sullivan, Vollebekk Ltd.

FILE NO.

HOLE NO.

PG0675

REMARKS

BH17

BORINGS BY CME 55 Power Auger				D	ATE	15 Jan 08	BH47		
SOIL DESCRIPTION	PLOT						ELEV.	Pen. Resist. Blows/0.3m ■ 50 mm Dia. Cone	
	STRATA F	TYPE	NUMBER	NUMBER RECOVERY OF ROD OF ROD (m)	O Water Content %				
GROUND SURFACE TOPSOIL 0.20				-		0	88.91	20 40 60 80	
	P P P P P P P P P P P P P P P P P P P	≩ AU │	1						
Stiff, brown SILTY CLAY , some sand		SS	2	50	6	1+	87.91		
stiff to firm by 1.5m depth		ss	3	100	3	2-	86.91		
grey by 2.9m depth						3-	85.91		
stiff by 4.4m depth						4-	84.91		
						5+	83.91		
GWL @ 1.90m-Jan. 25/08)									
								20 40 60 80 100 Shear Strength (kPa) ▲ Undisturbed △ Remoulded	

28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7

Consulting Engineers

SOIL PROFILE AND TEST DATA

Supplemental Geotechnical Investigation Mahogany Community - First Line Road Ottawa, Ontario

Ground surface elevations provided by Annis, O'Sullivan, Vollebekk Ltd. **DATUM**

FILE NO.

PG0675

REMARKS								HOLE NO.
BORINGS BY CME 55 Power Auger		1		D	ATE	14 Jan 08		BH48
SOIL DESCRIPTION		FOIA SAN				DEPTH	ELEV.	Pen. Resist. Blows/0.3m ■ 50 mm Dia. Cone
	STRATA 1	TYPE	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)	Pen. Resist. Blows/0.3m ■ 50 mm Dia. Cone O Water Content %
GROUND SURFACE	ß		E	RE	zö			20 40 60 80
TOPSOIL 0.1	8					0-	-88.95	
Loose, brown SILTY SAND , trace clay	´ . .	`	1					
		ss	2	100	5	1-	-87.95	
Very stiff to stiff, brown SILTY CLAY , some sand		ss	3	100	4	2-	-86.95	
- firm to stiff and grey by 2.7m depth						3-	-85.95	
		TW	4	100		4-	-84.95	
	3					5-	-83.95	
(GWL @ 1.92m-Jan. 25/08)								
								20 40 60 80 100 Shear Strength (kPa) ▲ Undisturbed △ Remoulded

Consulting Engineers

Ground surface elevations provided by Annis, O'Sullivan, Vollebekk Ltd.

SOIL PROFILE AND TEST DATA

Supplemental Geotechnical Investigation Mahogany Community - First Line Road Ottawa, Ontario

28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7

FILE NO.

PG0675

DATUM

REMARKS								HOLE NO.
BORINGS BY CME 55 Power Auger				D	ATE	15 Jan 08		BH49
SOIL DESCRIPTION	PLOT	SAMPLE			DEPTH		ELEV.	Pen. Resist. Blows/0.3m ■ 50 mm Dia. Cone
	STRATA E	TYPE	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)	Pen. Resist. Blows/0.3m ■ 50 mm Dia. Cone O Water Content %
GROUND SURFACE	ะ	F	N N	REC	N		00.50	20 40 60 80
TOPSOIL 0.20		& AU	1			0-	-89.59	
		ss	2	100	7	1-	-88.59	
Very stiff to stiff, brown SILTY CLAY , some sand		ss	3	100	2	2-	-87.59	
- stiff to firm and grey by 3.0m depth						3-	-86.59	
						4-	-85.59	
<u>5</u> .33		ss	4	100	4	5-	-84.59	
		ss	5	25	12	6-	-83.59	
Compact to dense, grey SILTY fine SAND		≍ SS	6	75	50+			
						7-	-82.59	
End of Borehole 7.62								
(GWL @ 4.40m-Jan. 25/08)								20 40 60 80 100 Shear Strength (kPa) ▲ Undisturbed △ Remoulded

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

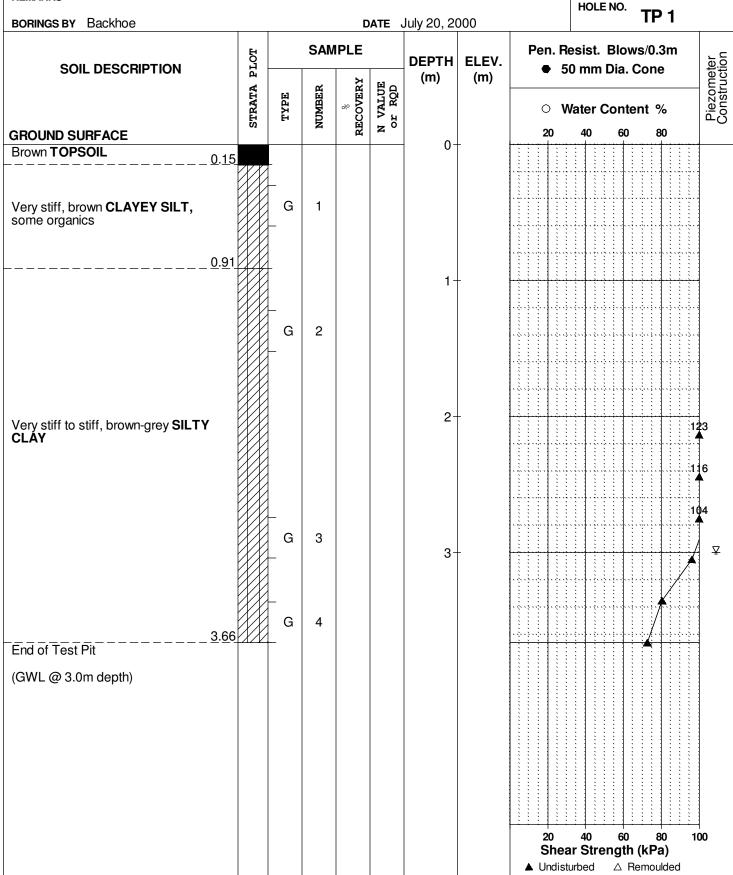
Consulting Engineers **SOIL PROFILE AND TEST DATA**

Geotechnical Investigation Parcels 2 and 9, Rideau Valley Drive Manotick, Ontario

DATUM
REMARKS
BORINGS BY Backhoe

DATE July 20, 2000

FILE NO. G7840
HOLE NO. TP 1



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SOIL PROFILE AND TEST DATA

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

Geotechnical Investigation Parcels 2 and 9, Rideau Valley Drive

,					M	anotick,	Ontario				
DATUM					•				FILE NO.	G7840	
REMARKS									HOLE NO.	TD 0	
BORINGS BY Backhoe				D	ATE	July 20, 20	000			TP 2	
SOIL DESCRIPTION	PLOT	SAMPLE				DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ◆ 50 mm Dia. Cone			Piezometer Construction
	STRATA	TYPE	NUMBER	» OVERY	N VALUE or RQD	(111)	(111)	· W	tont 9/	ezom	
GROUND SURFACE	STR	NUMBER \$\\\^{\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\			N V			20	Vater Cont 40 60	ිස්	
Brown TOPSOIL 0.20						0-	-				
Very stiff, brown CLAYEY SILT											
0.76		- G	5			1-				*	
		G	6			1				.11	28
		_								*	
Very stiff to stiff, brown-grey SILTY CLAY						2-	_			1	28
		– G	7							11	24
		_				3-	_			<u> </u>	
<u>3.81</u> End of Test Pit		G	8								
(GWL @ 2.9m depth)											
								20 Shea ▲ Undist	40 60 ar StrengtI) 80 1 h (kPa) Remoulded	⊣ 1 00

SOIL PROFILE AND TEST DATA

60

△ Remoulded

Shear Strength (kPa)

▲ Undisturbed

100

Geotechnical Investigation Parcels 2 and 9, Rideau Valley Drive

154 Colonnade Road South, Ottawa, Ontario K2E 7J5 Manotick, Ontario **DATUM** FILE NO. G7840 **REMARKS** HOLE NO. TP 3 **BORINGS BY** Backhoe **DATE** July 20, 2000 **SAMPLE** Pen. Resist. Blows/0.3m STRATA PLOT DEPTH ELEV. 50 mm Dia. Cone **SOIL DESCRIPTION** (m) (m) RECOVERY N VALUE or RQD NUMBER TYPE Water Content % 80 20 60 **GROUND SURFACE** 0 Brown TOPSOIL 0.20 Very stiff, brown CLAYEY SILT 0.71 9 10 Very stiff to stiff, brown-grey **SILTY CLAY** 2 3 11 12 Compact, blue grey SANDY SILT End of Test Pit

Consulting Engineers

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Geotechnical Investigation Parcels 2 and 9, Rideau Valley Drive Manotick, Ontario

DATUM FILE NO. G7840 **REMARKS** HOLE NO. TP 4 **BORINGS BY** Backhoe **DATE** July 20, 2000 **SAMPLE** Pen. Resist. Blows/0.3m STRATA PLOT Piezometer Construction DEPTH ELEV. 50 mm Dia. Cone **SOIL DESCRIPTION** (m) (m) RECOVERY N VALUE or RQD NUMBER TYPE Water Content % 80 20 60 **GROUND SURFACE** 0 Brown **TOPSOIL** <u>0</u>.<u>1</u>5 Very stiff, brown CLAYEY SILT 0.76 13 112 128 2 Very stiff, brown-grey SILTY CLAY ⊻ 128 14 110 3 15 End of Test Pit (GWL @ 2.1m depth) 60 100 Shear Strength (kPa) ▲ Undisturbed △ Remoulded

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Geotechnical Investigation Parcels 2 and 9, Rideau Valley Drive

					IVI	anouck, v	Ontario				
DATUM									FILE NO.	G7840	
REMARKS									HOLE NO	D. TP 5	
BORINGS BY Backhoe					ATE .	July 20, 20	000				
SOIL DESCRIPTION	PLOT			IPLE Ի	M -	DEPTH (m)	ELEV. (m)		esist. Bl 0 mm Dia	ows/0.3m a. Cone	Piezometer Construction
	STRATA	TYPE	NUMBER	* RECOVERY	N VALUE or RQD			0 W	ater Co	ntent %	Piezor Constr
GROUND SURFACE	01		4	M.	z ^o	0-	-	20	40 (60 80	
Brown TOPSOIL 0.20		_									
Very stiff, brown CLAYEY SILT , some organics		– - G	16								
		_				1-	-				28
								-0-3-0-1-0-3		12	8 ∑ 8
Very stiff to stiff, brown-grey SILTY CLAY		_ G _	17			2-				112	23
3.50		– G	18			3-	_			_	
End of Test Pit (GWL @ 1.5m depth)											
								20 Shea	r Streng	60 80 10 ith (kPa) A Remoulded	00

Consulting Engineers **SOIL PROFILE AND TEST DATA**

Geotechnical Investigation
Parcels 2 and 9, Rideau Valley Drive
Manotick Ontario

154 Colonnade Road South, Ottawa, Ontario K2E 7J5 Manotick, Ontario **DATUM** FILE NO. G7840 **REMARKS** HOLE NO. TP 6 **BORINGS BY** Backhoe **DATE** July 20, 2000 **SAMPLE** Pen. Resist. Blows/0.3m Piezometer Construction STRATA PLOT DEPTH ELEV. **SOIL DESCRIPTION** 50 mm Dia. Cone (m) (m) RECOVERY N VALUE or RQD NUMBER TYPE Water Content % 80 20 60 **GROUND SURFACE** 0 Brown **TOPSOIL** <u>0.18</u> Very stiff, brown CLAYEY SILT, some organics 0.60 19 116 Very stiff, brown to blue grey SILTY CLAY120 2 118 118 20 **GLACIAL TILL:** Compact silty 3 sand-gravel, some clay, cobblés and boulders G 21 3.50 End of Test Pit 60 100 Shear Strength (kPa) ▲ Undisturbed △ Remoulded

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Geotechnical Investigation Parcels 2 and 9, Rideau Valley Drive Manotick, Ontario

DATUM						<u> </u>			FILE NO.	G7840	
REMARKS									HOLE NO.	TP 7	
BORINGS BY Backhoe			CAN		ATE .	July 20, 20	000	Dom D	asiat Dlaw		
SOIL DESCRIPTION	PLOT		SAIV	IPLE		DEPTH (m)	ELEV. (m)		esist. Blov 0 mm Dia.		Piezometer Construction
	STRATA	田田	BER	VERY	ROD	(111)	(111)				zom
	STR	TYPE	NUMBER	RECOVERY	N VALUE or RQD			O V	Vater Conte	ent % 80	ig S
Brown TOPSOIL 0.20						0-	_	20			
Brown 1 0 PSOIL 0.20	^^^^	L									
	^^^^ ^^^^										
		G	22			1-					
GLACIAL TILL: Compact, brown	\^^^^										
GLACIAL TILL: Compact, brown silty sand-gravel, some cobbles and boulders											
	\^^^^										
						2-	_				
	\^^^^ \^^^^										
		G	23								
	^^^^	_									
(TP dry upon completion)											
								20	40 60	80 1	00
								Shea	ar Strength	(kPa) Remoulded	-

Consulting Engineers

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SOIL PROFILE AND TEST DATA

Geotechnical Investigation Parcels 2 and 9, Rideau Valley Drive Manotick, Ontario

154 Colonnade Road South, Ottawa, Ontario K2E 7J5 **DATUM** FILE NO. G7840 **REMARKS** HOLE NO. TP8 **BORINGS BY** Backhoe **DATE** July 20, 2000 **SAMPLE** Pen. Resist. Blows/0.3m Piezometer Construction STRATA PLOT DEPTH ELEV. **SOIL DESCRIPTION** 50 mm Dia. Cone (m) (m) RECOVERY N VALUE or RQD NUMBER TYPE Water Content % 80 20 60 **GROUND SURFACE** 0 Brown TOPSOIL 0.20 Very stiff, brown CLAYEY SILT, some organics 1 <u>0</u>.91 128 Very stiff, grey-brown SILTY CLAY G 2 2 GLACIALT ILL: Compact, brown silty sand-gravel, some cobbles and boulders 3 G 3 3.35 End of Test Pit (TP dry upon completion) 40 60 100 Shear Strength (kPa) ▲ Undisturbed △ Remoulded

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Geotechnical Investigation Parcels 2 and 9, Rideau Valley Drive Manotick, Ontario

DATUM						<u></u>			FILE N	o. G 7	'840	
REMARKS									HOLE	NO. TI	9	
BORINGS BY Backhoe SOIL DESCRIPTION	PLOT		SAM	IPLE	ATE	July 20, 20 DEPTH	ELEV.			Blows/0 Dia. Con	.3m	ion
SOIL DESCRIPTION	STRATA P	TYPE	NUMBER	* RECOVERY	N VALUE or RQD	(m)	(m)			ontent		Piezometer Construction
GROUND SURFACE	STI	£	NON	RECO	N O N			20	40		80 80	<u>=8</u>
Brown TOPSOIL 0.15	7/2 /2	_				0-	-					
Very stiff, brown CLAYEY SILT , some organics0.76		– G	27									
						1-	-					
											12	28
Very stiff, brown-grey SILTY CLAY												
very sun, brown grey die i i deat						2-	-				12	A
		– G	28								12	28
		– G	29			3-	-				12	2 6
<u>3.50</u> End of Test Pit		-	20									
(TP dry upon completion)												
								20 Shea ▲ Undistu		60 ngth (kP △ Remo	a)	00

Consulting Engineers

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Geotechnical Investigation Parcels 2 and 9, Rideau Valley Drive Manotick, Ontario

DATUM FILE NO. G7840 **REMARKS** HOLE NO. TP10 **BORINGS BY** Backhoe **DATE** July 27, 2000 **SAMPLE** Pen. Resist. Blows/0.3m Piezometer Construction STRATA PLOT DEPTH ELEV. • 50 mm Dia. Cone **SOIL DESCRIPTION** (m) (m) RECOVERY N VALUE or RQD NUMBER TYPE Water Content % 80 20 60 **GROUND SURFACE** 0 Brown **TOPSOIL** 0.13 Compact, light brown SANDY SILT G 30 0.60 G 31 110 G 32 2 Stiff to very stiff, brown-grey to grey SILTY CLÁY 3 ∇ G 33 End of Test Pit (GWL @ 3.5m depth) 60 100 Shear Strength (kPa) ▲ Undisturbed △ Remoulded

Consulting Engineers

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Geotechnical Investigation Parcels 2 and 9, Rideau Valley Drive Manotick, Ontario

DATUM FILE NO. G7840 **REMARKS** HOLE NO. **TP11 BORINGS BY** Backhoe **DATE** July 27, 2000 **SAMPLE** Pen. Resist. Blows/0.3m STRATA PLOT DEPTH ELEV. • 50 mm Dia. Cone **SOIL DESCRIPTION** (m) (m) RECOVERY N VALUE or RQD NUMBER TYPE Water Content % 80 20 60 **GROUND SURFACE** 0 **TOPSOIL** 0.15 Compact, brown SANDY SILT G 34 0.60 G 35 G 36 G 37 ∇ 2 Very stiff to stiff, grey-brown to grey **SILTY CLAY** 3 G 38 End of Test Pit (GWL @ 1.8m depth) 60 100 Shear Strength (kPa) ▲ Undisturbed △ Remoulded

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Geotechnical Investigation Parcels 2 and 9, Rideau Valley Drive Manotick, Ontario

DATUM									FILE NO. G7840	
REMARKS				_			000		HOLE NO. TP12	
BORINGS BY Backhoe			CAN	IPLE	ATE .	July 27, 20	000	Don Pr	esist. Blows/0.3m	
SOIL DESCRIPTION	PLOT					DEPTH (m)	ELEV. (m)		mm Dia. Cone	Piezometer Construction
	STRATA	TYPE	NUMBER	% RECOVERY	VALUE r RQD			0 W	ater Content %	iezon onstru
GROUND SURFACE	ST	H	N	REC	N O K			20	40 60 80	₽Ğ
TOPSOIL 0.15						0-	_			
		_ G _	39							
Very stiff to stiff, grey-brown SILTY CLAY		G –	40			1-				105
		_				2-				123 ▽
GLACIAL TILL: Compact, grey silt, some sand, gravel, cobbles and boulders		G = G	41							
End of Test Pit	\^^^^	_	72							
TP terminated on inferred bedrock at 2.74m depth										
(GWL @ 1.8m depth)								20	40 60 80 r Strength (kPa)	100

Consulting Engineers

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SOIL PROFILE AND TEST DATA

Geotechnical Investigation Parcels 2 and 9, Rideau Valley Drive Manotick, Ontario

154 Colonnade Road South, Ottawa, Ontario K2E 7J5 **DATUM** FILE NO. G7840 **REMARKS** HOLE NO. **TP13 BORINGS BY** Backhoe **DATE** July 27, 2000 **SAMPLE** Pen. Resist. Blows/0.3m Piezometer Construction STRATA PLOT DEPTH ELEV. **SOIL DESCRIPTION** 50 mm Dia. Cone (m) (m) RECOVERY N VALUE or RQD NUMBER TYPE Water Content % 20 80 **GROUND SURFACE** 0 TOPSOIL 0.08 G 43 Very stiff, dark brown CLAYEY SILT 109 109 Brown SANDY SILT 1.37 44 109 G 45 Very stiff to firm, brown-grey ⊻ 2 CLÁYEY SILT, occasional gravel 46 3 Firm, grey SILTY CLAY, some sand layers and pockets 47 G 3.66 End of Test Pit (GWL @ 2.0m depth) 20 40 60 100 Shear Strength (kPa) ▲ Undisturbed △ Remoulded

Consulting Engineers

SOIL PROFILE AND TEST DATA

Geotechnical Investigation Parcels 2 and 9, Rideau Valley Drive

154 Colonnade Road South, Ottawa, Ontario K2E 7J5 Manotick, Ontario **DATUM** FILE NO. G7840 **REMARKS** HOLE NO. **TP14 BORINGS BY** Backhoe **DATE** July 27, 2000 **SAMPLE** Pen. Resist. Blows/0.3m Piezometer Construction STRATA PLOT DEPTH ELEV. • 50 mm Dia. Cone **SOIL DESCRIPTION** (m) (m) RECOVERY N VALUE or RQD NUMBER TYPE Water Content % 80 20 60 **GROUND SURFACE** 0 TOPSOIL 0.05 Dark grey **CLAYEY SILT** 0.30 G 48 Brown SILTY SAND interbedded with sandy silt G 49 1.83 G 50 2

51

G

52

3

60

△ Remoulded

Shear Strength (kPa)

▲ Undisturbed

100

Very stiff to soft, grey-brown SILTY

(TP dry upon completion)

End of Test Pit

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Geotechnical Investigation Parcels 2 and 9, Rideau Valley Drive Manotick, Ontario

DATUM						<u></u>			FILE NO.	7840	
REMARKS				_					HOLE NO. T	P15	
BORINGS BY Backhoe	H		SAN	IPLE	ATE	July 27, 20		Pen. Re	esist. Blows/0		
SOIL DESCRIPTION	PLOT				₩ .	DEPTH (m)	ELEV. (m)		0 mm Dia. Co		Piezometer Construction
	STRATA	TYPE	NUMBER	» RECOVERY	VALUE r RQD			0 W	later Content	%	Piezor
GROUND SURFACE	เช		Ħ	REC	N C	0-		20	40 60	80	
TOPSOIL 0.13											
Compact, brown SILTY SAND/SANDY SILT		_ G _	53			1-	-				
		G	54								
Firm, grey to brown CLAYEY SILT interlayered with sandy silt		G	55			2-					ӯ
		_ G _	56						A		
<u>2</u> .90						3-	_				
Firm, grey SILTY CLAY		G	57								
End of Test Pit	1712	_									
(GWL @ 2.0m depth)								20 Shea ▲ Undistr	40 60 u r Strength (k l urbed △ Rem	Pa)	00

Consulting Engineers

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Geotechnical Investigation Parcels 2 and 9, Rideau Valley Drive Manotick, Ontario

DATUM FILE NO. G7840 **REMARKS** HOLE NO. **TP16 BORINGS BY** Backhoe **DATE** July 27, 2000 **SAMPLE** Pen. Resist. Blows/0.3m Piezometer Construction STRATA PLOT DEPTH ELEV. **SOIL DESCRIPTION** 50 mm Dia. Cone (m) (m) RECOVERY N VALUE or RQD NUMBER TYPE Water Content % 80 20 60 **GROUND SURFACE** 0 **TOPSOIL** <u>0</u>.15 Compact, brown SILTY SAND 58 0.91 59 Stiff to firm, grey-brown CLAYEY G 60 SILT, some sandy silt pockets 2 3 Compact, grey SILT G 61 3.66 End of Test Pit (TP dry upon completion) 40 60 100 Shear Strength (kPa) ▲ Undisturbed △ Remoulded

Consulting Engineers

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Geotechnical Investigation Parcels 2 and 9, Rideau Valley Drive Manotick, Ontario

DATUM FILE NO. G7840 **REMARKS** HOLE NO. **TP17 BORINGS BY** Backhoe **DATE** July 27, 2000 **SAMPLE** Pen. Resist. Blows/0.3m Piezometer Construction STRATA PLOT DEPTH ELEV. • 50 mm Dia. Cone **SOIL DESCRIPTION** (m) (m) RECOVERY N VALUE or RQD NUMBER TYPE Water Content % 80 20 60 **GROUND SURFACE** 0 **TOPSOIL** 0.25 Red-brown SILTY SAND 62 0.91 G 63 2 Very stiff to firm, grey-brown **CLÁYEY SILT** 3 G 64 End of Test Pit (TP dry upon completion) 60 100 Shear Strength (kPa) ▲ Undisturbed △ Remoulded

SOIL PROFILE AND TEST DATA

Geotechnical Investigation Parcels 2 and 9, Rideau Valley Drive

154 Colonnade Road South, Ottawa, Or	ntario	K2E 7	J5			anotick,		Jeau valle	y Drive		
DATUM					•				FILE NO.	G7840	
REMARKS									HOLE NO.	 TD40	
BORINGS BY Backhoe				D	ATE .	July 27, 20	000			TP18	
SOIL DESCRIPTION	PLOT		SAM	IPLE		DEPTH (m)	ELEV. (m)		esist. Blows 0 mm Dia. C		eter ction
	STRATA	TYPE	NUMBER	% RECOVERY	N VALUE or RQD	(111)	(111)	0 V	Vater Conten	it %	Piezometer Construction
GROUND SURFACE	ะ		Ħ	REC	z ö			20	40 60	80	40
TOPSOIL 0.20						0-					
Brown SILTY SAND 0.40		L -									
Firm, brown CLAYEY SILT		– G –	65			1-	_				
Compact, brown-grey SANDY SILT/SILTY SAND		– G –	66			2-	-				
<u>2.7</u> 4 End of Test Pit		– G –	67								
TP terminated on bedrock or large											
boulder at 2.74m depth											
(TP dry upon completion)								20	40 60	80 10	00
								Shea	ar Strength (k Pa) moulded	- -

154 Colonnade Road, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Geotechnical Investigation Kizzel Property, West of Manotick Main Street Ottawa, Ontario

BORINGS BY CME 55 Power Auger				D	ATE	May 7, 04		HOLE NO. BH 1
SOIL DESCRIPTION	PLOT		SAN	IPLE	1	DEPTH	ELEV.	Pen. Resist. Blows/0.3m ◆ 50 mm Dia. Cone
SOIL BLOOM HOW	STRATA P	TYPE	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)	Pen. Resist. Blows/0.3m
GROUND SURFACE	ญ		½	NE.	zö			20 40 60 80
Cultivated silty clay 0.1	15	AU	1			0-	-	
		ss	2	79	10	1-	-	
Very stiff to stiff, brown SILTY CLAY		ss	3	100	7	2-	-	
		ss	4	100	5	3-	_	
- grey by 3.0m depth		ss	5	100	3	4-	-	
		ss	4	100	1	5-	-	
			•	100	·	6-	-	A A
		ss	5	100	w	7-	-	
GLACIAL TILL: Compact, grey clayey silt with gravel, cobbles and boulders	92 / / / / / / / / / / / / / / / / / / /	ss	6	29	11	8-	-	
End of Borehole (GWL @ 0.78m-May 19/04)								F
								20 40 60 80 100 Shear Strength (kPa) ▲ Undisturbed △ Remoulded

SOIL PROFILE AND TEST DATA

▲ Undisturbed

△ Remoulded

Geotechnical Investigation Kizzel Property, West of Manotick Main Street

154 Colonnade Road, Ottawa, Ontario K2E 7J5 Ottawa, Ontario **DATUM** FILE NO. **PG0219 REMARKS** HOLE NO. **BH 2 BORINGS BY** CME 55 Power Auger **DATE** May 7, 04 **SAMPLE** Pen. Resist. Blows/0.3m Piezometer Construction STRATA PLOT DEPTH ELEV. **SOIL DESCRIPTION** 50 mm Dia. Cone (m) (m) RECOVERY N VALUE or RQD NUMBER TYPEWater Content % 80 20 **GROUND SURFACE** 0 Cultivated silty clay 0.20 1

1 SS 2 100 6 Very stiff to stiff, brown SILTY 100 3 SS 6 2-7 SS 4 100 - grey by 2.9m depth 3 5 5 SS 6 100 1 6 6.25 End of Borehole (GWL @ 0.88m-May 19/04) 20 40 60 100 Shear Strength (kPa)

CLÁY, trace sand seams

End of Borehole

(GWL @ 0.77m-May 19/04)

SOIL PROFILE AND TEST DATA

Geotechnical Investigation Kizzel Property, West of Manotick Main Street

154 Colonnade Road, Ottawa, Ontario K2E 7J5 Ottawa, Ontario **DATUM** FILE NO. **PG0219 REMARKS** HOLE NO. **BH 3 BORINGS BY** CME 55 Power Auger **DATE** May 7, 04 **SAMPLE** Pen. Resist. Blows/0.3m Piezometer Construction STRATA PLOT DEPTH ELEV. **SOIL DESCRIPTION** 50 mm Dia. Cone (m) (m) RECOVERY N VALUE or RQD NUMBER TYPE Water Content % 80 20 **GROUND SURFACE** 0 Cultivated silty clay 0.15 1 SS 1 100 6 Very stiff to stiff, brown SILTY

100

100

6

4

2-

2

3

SS

- grey by 2.9m depth 3

> 5 SS 4 100 2 6

60

△ Remoulded

Shear Strength (kPa)

▲ Undisturbed

100

154 Colonnade Road, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Geotechnical Investigation **Kizzel Property, West of Manotick Main Street** Ottawa, Ontario

FILE NO. **DATUM PG0219 REMARKS** HOLE NO.

ORINGS BY CME 55 Power Auger				D	ATE	May 10, 04	4		НО	LE NC	В	H 4	
SOIL DESCRIPTION	PLOT		SAN	IPLE		DEPTH	ELEV.	Pen. R			ows/0. a. Con		ater
	STRATA 1	TYPE	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)				ntent '		Piezometer
ROUND SURFACE	w		Z	H	z o			20	40	6	0	80	
cultivated silty clay 0.15						0-	-						
ery stiff, brown SILTY CLAY										: : : :			
<u> </u>		.,								: : : : : : : : : : : : : : : : : : :			
REACIAL TILL: Dense, 1.01 rev-brown clavey silt with	\^^^^	ss	1	42	23	1-	-	 				 	
rey-brown clayey silt with and, gravel and cobbles	1,2,2,2,2		•		-0								
	\^^^^	7						l					
	<u> </u> ^^^^	≬ ss∣	2	42	24								
	<u> </u>	<u>'</u>				2-							
LACIAL TILL: Compact to	[^^^^												
ery dense, grey-brown sandy ilt with gravel, cobbles and	[^^^^^												
oulders	[^^^^^	.				3-	_			: : :	: : :	1::::	
	[^^^^^	ss	3	75	59					(· · · · · · · · · · · · · · · · · · ·			
2.01													
3. <u>8</u> 1_ nd of Borehole	^^^							 					
GWL @ 0.82m-May 19/04)													
								<u> </u>	40	<u> </u>		90	100
								20 She	40 ar St	rena	0 th (kP	80 1 a)	100
								▲ Undis			Remo		

154 Colonnade Road, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Geotechnical Investigation Kizzel Property, West of Manotick Main Street Ottawa, Ontario

BORINGS BY CME 55 Power Auger				D	ATE	May 7, 04			HOLE NO.	H 5
SOIL DESCRIPTION	PLOT		SAN	IPLE		DEPTH	ELEV.		sist. Blows/0. mm Dia. Con	.3m e je
	STRATA 1	TYPE	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)	O Wa	iter Content	e Piezometer
GROUND SURFACE	Ω		E	RE	z ö			20	40 60 8	80
Cultivated silty clay 0.09 Stiff, brown SILTY CLAY,		AU	1			0-	-			
trace sand seams1.17	·	ss	2	83	13	1-	_			
GLACIAL TILL : Compact, brown sandy silt with gravel, cobbles and boulders		ss	3	17	9	2-	_			
3.05		ss	4	21	11	3-	_			
		ss	5	50	30	, and the second				
GLACIAL TILL: Dense, brown clayey silt with gravel, cobbles and boulders		ss	6	33	29	4-	_			
						5-	_			
<u>5</u> .94 End of Borehole	\^^^^ \^^^^ - \^^^^	ss	7	50	33					
(GWL @ 1.35m-May 19/04)										
								20 Shear ▲ Undisturi	Strength (kP	

154 Colonnade Road, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Geotechnical Investigation Kizzel Property, West of Manotick Main Street Ottawa, Ontario

BORINGS BY CME 55 Power Auger				D	OATE	May 10, 04	4		HOLE NO. BH 6	i
SOIL DESCRIPTION	PLOT		SAN	IPLE		DEPTH	ELEV.		sist. Blows/0.3m mm Dia. Cone	iter
	STRATA P	TYPE	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)		ter Content %	Piezometer
GROUND SURFACE	S	-	Ħ	REC	z ö			20	40 60 80	
Cultivated silty clay0.15		7				0-	-			
Very stiff to stiff, brown SILTY CLAY		ss	1	100	7	1-	-			¥
		ss 7	2	100	5	2-	-			
2.90		ss	3	100	16	3-	-			
GLACIAL TILL: Compact to very dense, grey sandy silt with gravel, cobbles and boulders		SS	4	58	28	4-	-			
5.18	\^,^,^,^ \^,^,^,^ \^,^,^,^	ss	5	62	44	5-	-			
GLACIAL TILL: Grey clayey silt with gravel, cobbles and 5.59 boulders End of Borehole	\^^^^^	∑ ss	6	100	65+					
(GWL @ 0.93m-May 19/04)										
								20	40 60 80	100
								Shear Mundisturk	Strength (kPa)	

154 Colonnade Road, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Geotechnical Investigation Kizzel Property, West of Manotick Main Street Ottawa, Ontario

REMARKS BORINGS BY CME 55 Power Auger				C	ATE	May 10, 0	4	HOLE NO. BH 7
SOIL DESCRIPTION	PLOT		SAN	IPLE	1	DEPTH	ELEV.	Pen. Resist. Blows/0.3m ■ 50 mm Dia. Cone
	STRATA F	TYPE	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)	Pen. Resist. Blows/0.3m
GROUND SURFACE	ß		\	RE	z ö			20 40 60 80
Cultivated silty clay0.20						0-		
Very stiff to stiff, brown SILTY CLAY		ss	1	42	5	1-	_	
2.44		ss	2	100	4	2-	-	
	\^^^^	ss 7	3	100	6	3-	-	
GLACIAL TILL: Compact, brown sandy silt with gravel, cobbles and boulders		ss	4	58	26	4-		
4.57		\mathbb{V}_{aa}	_	07		7		
GLACIAL TILL: Dense to compact, grey-brown clayey silt with gravel, cobbles and boulders		ss ss	5 6	67	37	5-	-	
End of Borehole 5.79	^^^^	Δ						
(GWL @ 1.51m-May 19/04)								
								20 40 60 80 100
								Shear Strength (kPa) ▲ Undisturbed △ Remoulded

154 Colonnade Road, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Geotechnical Investigation **Kizzel Property, West of Manotick Main Street** Ottawa, Ontario

BORINGS BY CME 55 Power Auger				D	ATE	May 11, 0	4	HOLE NO. BH 8
SOIL DESCRIPTION	PLOT		SAN	IPLE	ı	DEPTH	ELEV.	Pen. Resist. Blows/0.3m ■ 50 mm Dia. Cone
	STRATA P	TYPE	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)	Pen. Resist. Blows/0.3m ■ 50 mm Dia. Cone ○ Water Content %
GROUND SURFACE	ស	-	¥	REC	zö			20 40 60 80
Cultivated silty clay 0.20		8				0-	-	
Very stiff, brown SILTY CLAY		⊗ AU	1					
1.12		ss	2	83	21	1-	-	
GLACIAL TILL: Compact, brown sandy silt with gravel, cobbles and boulders		ss	3	100	18	2-	-	
- grey by 3.0m depth		ss	4	12	23	3-	-	
						4-	-	
- dense to very dense by 4.6m depth		ss	5	54	49	5-	_	
	\^^^^	ss	6	64	64+			
(GWL @ 1.31m-May 19/04)								
								20 40 60 80 100 Shear Strength (kPa) ▲ Undisturbed △ Remoulded

154 Colonnade Road, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Geotechnical Investigation Kizzel Property, West of Manotick Main Street Ottawa, Ontario

BORINGS BY CME 55 Power Auger				С	ATE	May 10, 04	4	HOLE NO. BH 9
SOIL DESCRIPTION	PLOT		SAN	IPLE		DEPTH	ELEV.	Pen. Resist. Blows/0.3m ◆ 50 mm Dia. Cone
	STRATA P	TYPE	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)	Pen. Resist. Blows/0.3m ■ 50 mm Dia. Cone ○ Water Content %
GROUND SURFACE	ß		Z	퓚	z °	0-		20 40 60 80
Cultivated silty clay0.20						0-		
		ss	1	100	11	1-	_	
Stiff, brown SILTY CLAY		ss	2	100	4	2-	-	
		ss	3	100	2			
grey by 3.0m depth						3-	-	1
<u>3.9</u> 6						4-	-	
GLACIAL TILL: Loose to compact, grey sandy silt with gravel, cobbles and boulders		ss	4	100	5	5-	-	
		ss	5	83	13	6-	-	
<u>6</u> .25 End of Borehole	^^^^							
(GWL @ 1.13m-May 19/04)								
								20 40 60 80 100 Shear Strength (kPa) ▲ Undisturbed △ Remoulded

Consulting Engineers

SOIL PROFILE AND TEST DATA

20

▲ Undisturbed

40

Shear Strength (kPa)

60

△ Remoulded

100

Geotechnical Investigation Kizzel Property, West of Manotick Main Street Ottawa, Ontario

154 Colonnade Road, Ottawa, Ontario K2E 7J5 Ottawa, Ontario **DATUM** FILE NO. **PG0219 REMARKS** HOLE NO. **BH10 BORINGS BY** CME 55 Power Auger **DATE** May 10, 04 **SAMPLE** Pen. Resist. Blows/0.3m Piezometer Construction STRATA PLOT DEPTH ELEV. 50 mm Dia. Cone **SOIL DESCRIPTION** (m) (m) RECOVERY N VALUE or RQD NUMBER TYPE Water Content % 80 20 **GROUND SURFACE** 0 Cultivated silty clay 0.15 1 1 SS 2 75 5 Stiff, brown SILTY CLAY 100 3 SS 4 2-- firm and grey by 2.3m depth SS 4 100 4 3 SS 5 100 1 5 6 End of Borehole (GWL @ 1.53m-May 19/04)

SOIL PROFILE AND TEST DATA

Geotechnical Investigation **Kizzel Property, West of Manotick Main Street** Ottawa, Ontario

154 Colonnade Road, Ottawa, Ontario K2E 7J5 **DATUM** FILE NO. **PG0219 REMARKS** HOLF NO.

BORINGS BY CME 55 Power Auger				D	ATE	May 10, 04	4		HOLE	NO.	BH11	
SOIL DESCRIPTION	PLOT		SAN	IPLE	1	DEPTH	ELEV.	Pen. Re	esist. 0 mm			ter tion
	STRATA F	TYPE	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)		/ater C			Piezometer
GROUND SURFACE	03		2	盟	Z			20	40	60	80	
Cultivated silty clay 0.2 Very stiff, brown SILTY CLAY	20	AU	1			0-	-					
1.5	52	ss	2	100	11	1 -	-					
		ss	3	62	21	2-	-					
GLACIAL TILL: Compact to very dense, brown sandy silt to silty sand with gravel, cobbles and boulders	\^^^^ \^^^^ \^^^^ \^^^^	ss	4		15	3-	-					
and boulders						4-	-					
	\^^^^ \^^^^ \^^^^	ss	5	83	28	5-	-					
<u>5.7</u> End of Borehole	79 \^^^^	∭ ss	6	50	76							
(GWL @ 2.20m-May 19/04)												
								20 Shea ▲ Undist	40 ar Stre		80 (kPa) emoulded	100

154 Colonnade Road, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Geotechnical Investigation Kizzel Property, West of Manotick Main Street Ottawa, Ontario

DATUM FILE NO. **PG0219 REMARKS** HOLENO

BORINGS BY CME 55 Power Auger				D	ATE	May 10, 04	4		HOL	E NO.	В	H12	
SOIL DESCRIPTION	PLOT		SAN	IPLE		DEPTH (m)	ELEV. (m)	Pen. R ● 5			ws/0 . Con		eter
	STRATA	TYPE	NUMBER	% RECOVERY	N VALUE or RQD	()	(,	0 V	/ater	Con	tent	%	Piezometer Construction
GROUND SURFACE	01		4	R	Z	0-		20	40	60)	80	
Cultivated silty clay0.15							_			.;;			
Very stiff, brown SILTY CLAY		_											
Loose, brown SILTY SAND		ss	1	100	7	1 -	-						_
Very stiff to stiff SILTY CLAY with sand seams		ss	2	100	2								
2.29		7	•			2-							
		SS	3	58	34	3-	-				-1		
GLACIAL TILL: Dense to													
compact, brown to grey sandy silt with gravel, cobbles and boulders						4-	_						_
		ss	4	50	14								
		$\stackrel{()}{\rightarrow}$				5-	-						
End of Borehole 5.79		SS	5	67	13								
(GWL @ 2.11m-May 19/04)													
								20 Shea ▲ Undist			h (kP Remo	a)	100

154 Colonnade Road, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Geotechnical Investigation Percival Property, Main Street at Century Road Ottawa (Manotick), Ontario

BORINGS BY CME 55 Power Auger				С	DATE .	Jul 15, 04			HOLE NO	D. BH 1	
SOIL DESCRIPTION	PLOT		SAN	IPLE	1	DEPTH	ELEV.		esist. Bl	ows/0.3m a. Cone	ter
	STRATA P	TYPE	NUMBER	% RECOVERY	VALUE r RQD	(m)	(m)		Vater Co		Piezomețer
GROUND SURFACE	ST	H	N DN	REC	N o v			20		60 80	П.
TOPSOIL 0.20	,,,,,,					0-	-				
		√ ss	1	50	46	1-	_				
		$\stackrel{()}{\leftarrow}$	1	30	40	'					
GLACIAL TILL: Dense to very dense, brown silty sand with gravel, cobbles and boulders	^^^	∬ ss	2	46	52	2-	-				!
gravel, cobbles and boulders	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	∬ss	3	58	42						
		ss	4	58	44	3-	-				
	^^^^	$\stackrel{\leftarrow}{\triangleright}$				4-	_				
		χss Σ	5	54	46						
Compact, grey SANDY SILT , trace gravel		ss	6	58	24	5-	-				
5.49											
Dense, grey SILTY SAND		ss	7	75	49	6-	-				
6.71 End of Borehole	<u> </u>										SE
GWL @ 2.07-July 23/O4)											
								20 Shor	40 o	60 80 10	00
								■ Undist		Remoulded	

154 Colonnade Road, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Geotechnical Investigation Percival Property, Main Street at Century Road Ottawa (Manotick), Ontario

REMARKS BORINGS BY CME 55 Power Auger				С	ATE .	Jul 15, 04			HOL	E NO.	ВН	2	
SOIL DESCRIPTION	PLOT		SAN	IPLE	Г	DEPTH	ELEV.	Pen. R			ws/0.3 Cone	m	ter
	STRATA I	TYPE	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)	0 V	Vater	Cont	ent %		Piezometer
GROUND SURFACE	ស្ន	[Ħ	REC	zö			20	40	60	80		_
OPSOIL 0.15	5 ^ ^ ^					0-	=		.;	.;.;			
ELACIAL TILL: Dense to very ense, brown silty sand with ravel, cobbles and boulders		∑ ∑ss	1	54	43	1-	-						
1.93	3 \^^^^	∑ ss	2		62+								
nd of Borehole													
Practical refusal to augering @ 1.93m depth. Two probeholes drilled beside BH 2, refusal to augering @ 1.22m and 1.37m depth.													
BH dry upon completion)													
,													
										<u> </u>	::::	::::	_
								20 Shea	40 ar Stre	60 enath	80 (kPa)	100	J
								■ Undist			i (KPa) Remould		

154 Colonnade Road, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Geotechnical Investigation Percival Property, Main Street at Century Road Ottawa (Manotick), Ontario

REMARKS BORINGS BY CME 55 Power Auger	r <u> </u>			E	DATE .	Jul 15, 04			HOLE NO	D. BH 3	
SOIL DESCRIPTION		PLOT	SAN	/IPLE		DEPTH	ELEV.	1	esist. Bl 0 mm Di	ows/0.3m a. Cone	ţ.
		STRATA P	NUMBER	* RECOVERY	N VALUE or RQD	(m)	(m)		Vater Co		Diozomoter
GROUND SURFACE		rs r	N	REC	N or			20		60 80	-
TOPSOIL	0.18					0-	-	<u> </u>			
Firm, brown-grey SILTY CLAY		ss	1	100	2	1-	-				
		ss	2	100	1						
			-			2-	-		<u> </u>		
	3.04										
Grey SILT	3.10	ŜŜŜ SS	3	38	23	3-	-				
	\^^ \^^	^^^\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\				4-	_				
GLACIAL TILL: Compact, grey silty sand with gravel, cobbles and boulders		çîçîX ss îçîîX ss	4	29	12	4					
cobbles and boulders	\^^	^^^\\ ^^^\\ ss	5	29	15	5-	_				
		^^^^									
						6-	-				
 End of Borehole	6.35	<u>^^</u> ^X SS	6	40	50+						
GWL @ 0.86-July 23/04)											
avve @ 0.00 daly 20/04/											
								20	40	60 80 1	⊣ 100
								Shea ▲ Undist		ith (kPa) Remoulded	

154 Colonnade Road, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Geotechnical Investigation Percival Property, Main Street at Century Road Ottawa (Manotick), Ontario

FILE NO. DATUM **PG0328** REMARKS

BORINGS BY CME 55 Power Auger					ATE .	Jul 15, 04	I	1	HOL	E NO	E	3H 4	
SOIL DESCRIPTION	PLOT		SAN	/PLE		DEPTH	ELEV.	Pen. R	esist. 0 mm				ator.
	STRATA 1	TYPE	NUMBER	RECOVERY	N VALUE or RQD	(m)	(m)	○ V	Vater	Con	tent	%	Piezometer
GROUND SURFACE	<u>ν</u>		E	R	z ö			20	40	6	0	80	
OPSOIL 0.2	23					0-	_						
oose, brown SILTY SAND , ome clay	-	ss	1	100	4	1-	_						
1.5	<u> </u>	ss	2	100	6	2-	-						
ery stiff, brown SILTY CLAY , race fine sand		ss	3	100	2								
firm and grey by 3.5m depth						3-	_						110
		ss	4	100	W	4-							
		TW	1			5-	_				0		
						6-	_			\			
stiff by 6.7m depth		SS	5	100	W	7-	-			\			
		ss	6	100	w	8-	_						
				100	**	9-	_						
						10-	_						
Dynamic Cone Penetration10.8	30					11-	_	•					
est commenced @ 10.80m epth nferred SILTY CLAY						12-							
12.6	35					12		5					
Refusal to DCPT @ 12.65m													
epth GWL @ 2.01-July 23/04)													
									40			00	100
								20 Shea ▲ Undist		_	h (kl	80 Pa) oulded	100

154 Colonnade Road, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Geotechnical Investigation Percival Property, Main Street at Century Road Ottawa (Manotick), Ontario

DATUM FILE NO. **PG0328**

REMARKS											PG032	.0
BORINGS BY CME 55 Power Auger				D	DATE .	Jul 15, 04			HOLE N	10.	BH 5	
SOIL DESCRIPTION	PLOT		SAN	/IPLE		DEPTH	ELEV.	Pen. Re	sist. B			ter.
SOIL DESCRIPTION	STRATA P	TYPE	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)		ater Co			Piezometer
GROUND SURFACE	l w		z	X	z °			20	40	60	80	`
TOPSOIL 0.2	0					0-	-					
Very loose, brown SILTY SAND , some clay	2	ss	1	100	2	1 -	-					<u>_</u>
Very stiff, brown SILTY CLAY		ss	2	100	2	2-	_					
- firm and grey by 3.0m depth		SS	3	100	2	3-	_	4				115 4
		тw	1			4-	-				P	
		77				5-	-		*			
		SS	4	100	W	6-	-		4			
occasional silt layers		ss	5	100	1	7-	-					
- stiff by 8.0m depth		TW	2			8-	-					
8.8 Dynamic Cone Penetration Test commenced @ 8.84m depth	4/1//					9-	-					
10.0 Inferred GLACIAL TILL or SILT	6					10-	-					
End of Borehole												
(GWL @ 1.28-July 23/04)												
								20 Shear	40 Stren		80 k Pa) moulded	100

154 Colonnade Road, Ottawa, Ontario K2E 7J5

Consulting Engineers

SOIL PROFILE AND TEST DATA

40

▲ Undisturbed

Shear Strength (kPa)

60

△ Remoulded

100

Geotechnical Investigation Percival Property, Main Street at Century Road Ottawa (Manotick), Ontario

DATUM FILE NO. **PG0328 REMARKS** HOLE NO. **BH 6 DATE** Jul 16, 04 **BORINGS BY** CME 55 Power Auger **SAMPLE** Pen. Resist. Blows/0.3m Piezometer Construction STRATA PLOT **DEPTH** ELEV. **SOIL DESCRIPTION** 50 mm Dia. Cone (m) (m) RECOVERY N VALUE or RQD NUMBER TYPEWater Content % 80 20 **GROUND SURFACE** 0 **TOPSOIL** 0.30 Very loose, brown **SILTY** 1 SS 1 100 3 FINE SAND, some clay SS 2 100 2 Stiff, brown SILTY CLAY, 2 trace sand 3 SS 100 1 3-- grey by 3.0m depth SS 4 100 1 4 1 5 6 Start of DCPT @ 7.0m depth SS 5 79 5 GLACIAL TILL: Loose, grey 7.14 7 silty sand with gravel, cobbles and boulders Refusal to DCPT @ 7.14 m depth End of Borehole (GWL @ 1.52-July 23/04)

SOIL PROFILE AND TEST DATA

Preliminary Geotechnical Investigation

154 Colonnade Road, Ottawa, Ontario K2E 7J5

First Line Road Ottawa, Ontario

Ground surface elevations provided by Annis, O'Sullivan, Vollebekk Ltd. **DATUM** FILE NO. **PG0834 REMARKS** HOLE NO.

er				D	ATE .	Jun 15, 06	3		HOLE INC	BH ·	1
	PLOT		SAM			DEPTH (m)	ELEV.		Resist. Blows/0.3m 50 mm Dia. Cone		
	STRATA	TYPE	NUMBER	RECOVERY	N VALUE or RQD	(111)	(111)				Piezometer
0.25				-		0-	-90.61	20	:		3.3.38
- 0.29		_									
		∑ ss∣	1	75	11	1-	-89.61				
	. .	⊠ SS	2	80	50+	_	00.61				
0.74						2-	-88.61				
<u> </u>		_				3-	-87 61				
[^,	^^^	∑ ss ∣	3	75	85+		07.01				
\^ <u>`</u> ,	^^^ <u></u>					4-	-86.61				1.1.1
\^^	^^^ <u></u>										
5.33	<u>```</u>					5-	-85.61				\$1.51 \$1.51
<u></u>											
								20 Shea			100
	0.25 2.74	STRATA PLOT	STRATA PLOT	SAMARER PLOT	SAMPLE SLEATA PLOT LIVER SS 1 75 SS 2 80 2.74 SS 3 75	SAMPLE STRATA PLOT STRATA PLO	SAMPLE SAMPLE STRATA PLOT (m) SSINATA PLOT (m) SS 1 75 11 1- SS 2 80 50+ 2.74 SS 3 75 85+ 4- 4- 5 1 5 1 75 85+ 4- 5 1 75 85+	SAMPLE DEPTH (m) 0.25 0.25 SS 1 75 11 1 -89.61 SS 2 80 50+ 2.74 SS 3 75 85+ 3-87.61 4-86.61	Log Log	SAMPLE DEPTH ELEV. (m) Pen. Resist. Bl. Pe	SAMPLE DEPTH ELEV. (m) Pen. Resist. Blows/0.3m 50 mm Dia. Cone

SOIL PROFILE AND TEST DATA

Preliminary Geotechnical Investigation First Line Road Ottawa, Ontario

154 Colonnade Road, Ottawa, Ontario K2E 7J5

Ground surface elevations provided by Annis, O'Sullivan, Vollebekk Ltd.

FILE NO.

PG0834

REMARKS

DATUM

HOLE NO.

ORINGS BY CME 75 Power Auger				D	ATE .	Jun 16, 06	3				BH 2	2
SOIL DESCRIPTION	PLOT		SAN	IPLE		DEPTH	ELEV.	Pen. R	esist. 0 mm l			
	STRATA 1	TYPE	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)		Vater C			i
GROUND SURFACE OPSOIL	05			щ		0-	-89.77	20	40	60	80	
oose to very loose, brown	.25											
ANDVOLLT	.40	∦ ss	1	67	6	1-	-88.77					
rown interbedded CLAYEY	.13	ss	2	100	3	2-	-87.77					
		Ss	3	100	3	3-	-86.77					
irm, brown CLAYEY SILT to		ss	4	100	1	4-	-85.77					
ILTY CLAY, some sand		ss	5	100	1	5-	-84.77					
grey by 3.7m depth				100		6-	-83.77	A	\ <u>\</u>			
_		TW	6	100		7-	-82.77	Δ				
	.62	ss	7	83	7	8-	-81.77					
oose to compact, grey ANDY SILT with some clay 8.2m depth		∑ ss	8	67	14	9-	-80.77					
	.75	X ss	9	100	15	10-	-79.77					
epth						11-	-78.77					
ıferred SANDY SILT 12	.10	2				12-	-77.77					
						13-	-76.77		2	3		
	\^^^^					14-	-75.77					
ferred GLACIAL TILL	\ \^\^\^\ \^\^\^\					15-	-74.77					
	\\\^\^\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\					16-	-73.77					
	.37 \^^^	<u>,</u>				17-	-72.77					•
nd of Borehole												
GWL @ 1.55m-June 30/06)												

SOIL PROFILE AND TEST DATA

Preliminary Geotechnical Investigation First Line Road Ottawa, Ontario

154 Colonnade Road, Ottawa, Ontario K2E 7J5

Ground surface elevations provided by Annis, O'Sullivan, Vollebekk Ltd.

FILE NO.

PG0834

REMARKS

DATUM

HOLE NO.

Shear Strength (kPa)	BORINGS BY CME 55 Power Auger		_		[DATE	Jun 19, 06	3		HOLE	E NO.	3H 3
GROUND SURFACE TOPSOIL Very loose, brown SANDY Very stiff, brown SILTY CLAY - 1.37 Very stiff, brown SILT	SOIL DESCRIPTION	LOT		SAN	/IPLE		-).3m ne
TOPSOIL Very loose, brown SANDY SIT Very stiff, brown SILTY CLAY SS 2 100 2 2 86.56 - stiff and grey by 2.9m depth SS 3 100 1 SS 4 100 1 4 84.56 - sand pockets from 6.1 to 6.7m depth SS 5 100 1 - sand pockets from 6.1 to 6.7m depth SS 6 50 6 8 80.56 GLACIAL TILL: Compact, grey SILTY SAND GLACIAL TILL: Compact, grey silt synd with gravel, cobbles and boulders Dynamic Cone Penetration Test commenced @ 9.75m depth Interred GLACIAL TILL End of Borehole DCPT refusal @ 12.17m depth Interred GLACIAL TILL End of Borehole DCPT refusal @ 12.17m depth Interred GLACIAL TILL End of Borehole DCPT refusal @ 12.17m depth Interred GLACIAL TILL End of Borehole DCPT refusal @ 12.17m depth Interred GLACIAL TILL End of Borehole DCPT refusal @ 12.17m depth Interred GLACIAL TILL End of Borehole DCPT refusal @ 12.17m depth Interred GLACIAL TILL End of Borehole DCPT refusal @ 12.17m depth Interred GLACIAL TILL End of Borehole DCPT refusal @ 12.17m depth Interred GLACIAL TILL End of Borehole DCPT refusal @ 12.17m depth Interred GLACIAL TILL End of Borehole DCPT refusal @ 12.17m depth Interred GLACIAL TILL End of Borehole DCPT refusal @ 12.17m depth Interred GLACIAL TILL End of Borehole			TYPE	NUMBER	* ECOVERY	N VALUE or RQD	(m)	(m)	0 N	Vater (Content	% ;
Servy loose, brown SANDY SILT 1.37					<u> </u>		0-	-88.56	20	40 	60 	80
Silt 100 2		0.25	:					00.00				
SS 2 100 2 2 2 86.56	\II *	1 37	≅ ss	1	100	2	1-	87.56				
stiff and grey by 2.9m depth SS 3 100 1 SS 4 100 1 4 84.56 5 83.56 5 83.56 5 83.56 5 84.50 Coose to very loose, grey ILTY SAND SS 6 50 6 8 80.56 SACIAL TILL: Compact, rey silty sand with gravel, obbles and boulders Pynamic Cone Penetration est commenced @ 9.75m lepth Inferred GLACIAL TILL 12.17 Ind of Borehole CCPT refusal @ 12.17m lepth GWL @ 0.87m-June 30/06)	/ery stiff, brown SILTY CLAY	1.5/	#		100							
SS 3 100 1 4 84.56 5 83.56 5 8			<u> </u>	2	100	2	2-	86.56				
SS 3 100 1 SS 4 100 1 4 84.56 5 83.56 5 83.56 6 82.56 7 81.56 coose to very loose, grey ILTY SAND ILACIAL TILL: Compact, rey silty sand with gravel, obbles and boulders Pynamic Cone Penetration est commenced @ 9.75m epith iferred GLACIAL TILL ind of Borehole ICPT refusal @ 12.17m epith GWL @ 0.87m-June 30/06) SS 3 100 1 4 84.56 5 83.56 6 82.56 8 8 80.56 8 100 21 9 79.56 10 78.56 11 77.56 12 76.56			1					05.50	J	7		4
sand pockets from 6.1 to .7m depth SS 5 100 1 7.46 coose to very loose, grey ILTY SAND ILACIAL TILL: Compact, rey silty sand with gravel, obbles and boulders Pynamic Cone Penetration est commenced @ 9.75m epth Inferred GLACIAL TILL Ind of Borehole ICPT refusal @ 12.17m GWL @ 0.87m-June 30/06) SS 4 100 1 4 84.56 5 83.56 6 82.56 8 80.56 8 80.56 10 1 9 79.56 11 -77.56 12 -76.56 SS 8 100 21 12 -76.56	stiff and grey by 2.9m depth		∜ ss	3	100	1	3-	85.56	/			
sand pockets from 6.1 to .7					100		4-	-84 56				
sand pockets from 6.1 to .7m depth			<u> </u>	4	100	'		01.00				
7.46							5-	83.56	4			
7.46			1									
7.46 Coose to very loose, grey SS 6 50 6 8 80.56 8 80.56 8 80.56 8 80.56 8 80.56 8 8 8 8 8 8 8 8 8	sand pockets from 6.1 to		\(\frac{1}{2}\)	_	100		6-	82.56				
1. 1. 1. 1. 1. 1. 1. 1.	./m depin			5	100	1						
ILTY SAND LACIAL TILL: Compact, rey silty sand with gravel, obbles and boulders ynamic Cone Penetration est commenced @ 9.75m epth 11 - 77.56 12 - 76.56 12 - 76.56 12 - 76.56 12 - 76.56 13 - 76.56 14 - 76.56 15 - 76.56		7.46	1				7-	-81.56	<u> </u>		*	
### SAND 8.68	oose to very loose, grev		ss	6	50	6	Ω_	- 80 56				
LACIAL TILL: Compact, rey silty sand with gravel, obbles and boulders 9.75 SS 8 100 21 9-79.56 pobles and boulders 9.75 pobles are commenced @ 9.75 pobles and boulders 9.75 pobles are commenced @ 9.75 pobles ar	II TV CAND	8 68	<u>:</u>				0	60.56				
rey silty sand with gravel, obbles and boulders 9.75	iLACIAL TILL: Compact.	0.00 .	-X ss	7	100	1	9-	79.56				
lynamic Cone Penetration est commenced @ 9.75m epth	rey silty sand with gravel,	9.75	∑∏ ss	8	100	21		. 0.00				
est commenced @ 9.75m epth	Dynamic Cone Penetration	1,^,^,^	7				10-	78.56				
nferred GLACIAL TILL 12.17 \(\) \(est commenced @ 9.75m	\^^^^ \^^^^	3									
12-76.56	•	\^^^^	3				11-	77.56				
End of Borehole DCPT refusal @ 12.17m lepth GWL @ 0.87m-June 30/06) 20 40 60 80 1 Shear Strength (kPa)		(^^^^					40	70.50		\sim		
OCPT refusal @ 12.17m epth GWL @ 0.87m-June 30/06) 20 40 60 80 1 Shear Strength (kPa)	! ind of Borehole	2.1/[^^^	4				12-	76.56				
gWL @ 0.87m-June 30/06) 20 40 60 80 1 Shear Strength (kPa)												
GWL @ 0.87m-June 30/06) 20 40 60 80 1 Shear Strength (kPa)	epth											
20 40 60 80 1 Shear Strength (kPa)												
Shear Strength (kPa)	30/06)											
Shear Strength (kPa)												
Shear Strength (kPa)												
Shear Strength (kPa)												
Shear Strength (kPa)												
Shear Strength (kPa)												
Shear Strength (kPa)												
Shear Strength (kPa)												
Shear Strength (kPa)									20	40	60	00 100
												80 100 Pa)
▲ Undisturbed △ Remoulded												

patersongroup Consulting Engineers

SOIL PROFILE AND TEST DATA

Preliminary Geotechnical Investigation First Line Road Ottawa, Ontario

154 Colonnade Road, Ottawa, Ontario K2E 7J5

Ground surface elevations provided by Annis, O'Sullivan, Vollebekk Ltd.

FILE NO.

PG0834

DATUM

REMARKS BORINGS BY CME 55 Power Auger				D	ATE .	Jun 19, 06	3	HOLE NO. BH 4
SOIL DESCRIPTION	PLOT	SAMPLE		DEPTH	ELEV.	Pen. Resist. Blows/0.3m ■ 50 mm Dia. Cone		
SOIL DESCRIPTION	STRATA P	TYPE	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)	Pen. Resist. Blows/0.3m ■ 50 mm Dia. Cone □ Water Content %
GROUND SURFACE	្ត	-	¥	REC	ZÖ		00.47	20 40 60 80
	.25					0-	89.47	
Very loose, brown SANDY SILT		SS	1	100	1	1-	88.47	
2	.13	SS	2	100	1	2-	87.47	
Stiff, brown SILTY CLAY , some sand seams		X SS	3	100	1	3-	86.47	♠
grey by 3.7m depth		ss	4	100	1	4-	-85.47	
		TW	5	92			84.47	
<u>6</u>	.70						83.47	A
Very loose to loose, grey SILTY SAND with clay seams		∑ss ∑ss	6 7	100 75	1 12		-82.47 -81.47	
and gravel		ss.	8	12	9		01.47	
	.75	ss.	9	75	7	9-	80.47	
End of Borehole (GWL @ 1.73m-June 30/06)								
								20 40 60 80 100 Shear Strength (kPa) ▲ Undisturbed △ Remoulded

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SOIL PROFILE AND TEST DATA

Preliminary Geotechnical Investigation First Line Road Ottawa, Ontario

154 Colonnade Road, Ottawa, Ontario K2E 7J5

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FILE NO.

PG0834

DATUM

REMARKS BORINGS BY CME 55 Power Auge	r			Б	ATE .	Jun 19, 06	6		HOLE	NO.	BH	15	
SOIL DESCRIPTION	PLOT		SAN	/IPLE	ı	DEPTH	ELEV.	Pen. Re	esist. O mm				ter
	STRATA P		NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)		ater C				Piezometer
GROUND SURFACE	ν. Ι	-	E	RE	zö			20	40	60	80)	(
TOPSOIL	0.25					0-	89.77						
Very loose, brown SILTY S AND with clay	1.37	ss	1	100	3	1-	88.77						
Stiff, brown SILTY CLAY with sand seams and sea shells		SS	2	100	2	2-	87.77						¥
grey by 2.9m depth		ss	3	100	1	3-	86.77	 					
						4-	85.77	4					
		TW	4	88		5-	84.77						
		ss	5	100	3		83.77				\		
	7.92			100			82.77	<u> </u>			\		
Variable and array CIL TV CAND		SS SS	6	100	1	8-	81.77		*****			• • • • • • • • • • • • • • • • • • • •	
/ery loose, grey SILTY SAND vith clay seams	0.75	∷∑ss :∑ss	7 8	100	1	9-	-80.77						
 End of Borehole	9.75									: : :			1860 -
(GWL @ 1.81m-June 30/06)													
								20 Shea ▲ Undistu	40 r Stre		80 (kPa demould)	00

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SOIL PROFILE AND TEST DATA

Preliminary Geotechnical Investigation First Line Road Ottawa, Ontario

154 Colonnade Road, Ottawa, Ontario K2E 7J5

Ground surface elevations provided by Annis, O'Sullivan, Vollebekk Ltd.

FILE NO.

PG0834

DATUM

REMARKS								HOLE NO.
BORINGS BY CME 55 Power Auger				D	ATE .	Jun 20, 06	5	BH 6
SOIL DESCRIPTION	PLOT		SAN	IPLE		DEPTH	ELEV.	Pen. Resist. Blows/0.3m ■ 50 mm Dia. Cone
	STRATA 1	TYPE	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)	Pen. Resist. Blows/0.3m ■ 50 mm Dia. Cone ○ Water Content %
GROUND SURFACE	S.		Ħ	REC	z ö		00.40	20 40 60 80
TOPSOIL 0.2	8					0-	89.18	
Very loose, brown SILTY SAND with clay	7	sa	1	75	3	1-	88.18	
Stiff to very stiff, brown SILTY CLAY with occasional sand		ss	2	100	4	2-	-87.18	
seams - grey by 2.9m depth		x ss	3	100	1	3-	-86.18	<u> </u>
- grey by 2.5m depth						4-	85.18	
		ss	4	100	1	5-	84.18	
		ss	5	100	1	6-	83.18	
- firm by 7.0m depth						7-	-82.18	
GLACIAL TILL: Loose to very	3	TW	6	100		8-	81.18	
loose, grey silty sand with gravel, cobbles and boulders	\^^^^ \^^^^	% ss % ss	7 8	75 75	7	9-	80.18	
Dynamia Cana Banatratian	6	<u> </u>				10-	79.18	
Dynamic Cone Penetration Test commenced @ 10.06m depth 11.3						11-	78.18	
Inferred GLACIAL TILL End of Borehole								
DCPT refusal @ 11.38m depth								
(GWL @ 1.22m-June 30/06)								
								20 40 60 80 100 Shear Strength (kPa)
								▲ Undisturbed △ Remoulded

SYMBOLS AND TERMS

SOIL DESCRIPTION

Behavioural properties, such as structure and strength, take precedence over particle gradation in describing soils. Terminology describing soil structure are as follows:

Desiccated	-	having visible signs of weathering by oxidation of clay minerals, shrinkage cracks, etc.
Fissured	-	having cracks, and hence a blocky structure.
Varved	-	composed of regular alternating layers of silt and clay.
Stratified	-	composed of alternating layers of different soil types, e.g. silt and sand or silt and clay.
Well-Graded	-	Having wide range in grain sizes and substantial amounts of all intermediate particle sizes (see Grain Size Distribution).
Uniformly-Graded	-	Predominantly of one grain size (see Grain Size Distribution).

The standard terminology to describe the strength of cohesionless soils is the relative density, usually inferred from the results of the Standard Penetration Test (SPT) 'N' value. The SPT N value is the number of blows of a 63.5 kg hammer, falling 760 mm, required to drive a 51 mm O.D. split spoon sampler 300 mm into the soil after an initial penetration of 150 mm.

Relative Density	'N' Value	Relative Density %
Very Loose	<4	<15
Loose	4-10	15-35
Compact	10-30	35-65
Dense	30-50	65-85
Very Dense	>50	>85

The standard terminology to describe the strength of cohesive soils is the consistency, which is based on the undisturbed undrained shear strength as measured by the in situ or laboratory vane tests, penetrometer tests, unconfined compression tests, or occasionally by Standard Penetration Tests.

Consistency	Undrained Shear Strength (kPa)	'N' Value
Very Soft	<12	<2
Soft	12-25	2-4
Firm	25-50	4-8
Stiff	50-100	8-15
Very Stiff	100-200	15-30
Hard	>200	>30

SYMBOLS AND TERMS (continued)

SOIL DESCRIPTION (continued)

Cohesive soils can also be classified according to their "sensitivity". The sensitivity is the ratio between the undisturbed undrained shear strength and the remoulded undrained shear strength of the soil.

Terminology used for describing soil strata based upon texture, or the proportion of individual particle sizes present is provided on the Textural Soil Classification Chart at the end of this information package.

ROCK DESCRIPTION

The structural description of the bedrock mass is based on the Rock Quality Designation (RQD).

The RQD classification is based on a modified core recovery percentage in which all pieces of sound core over 100 mm long are counted as recovery. The smaller pieces are considered to be a result of closely-spaced discontinuities (resulting from shearing, jointing, faulting, or weathering) in the rock mass and are not counted. RQD is ideally determined from NXL size core. However, it can be used on smaller core sizes, such as BX, if the bulk of the fractures caused by drilling stresses (called "mechanical breaks") are easily distinguishable from the normal in situ fractures.

RQD %	ROCK QUALITY
90-100	Excellent, intact, very sound
75-90	Good, massive, moderately jointed or sound
50-75	Fair, blocky and seamy, fractured
25-50	Poor, shattered and very seamy or blocky, severely fractured
0-25	Very poor, crushed, very severely fractured

SAMPLE TYPES

SS	-	Split spoon sample (obtained in conjunction with the performing of the Standard Penetration Test (SPT))
TW	-	Thin wall tube or Shelby tube
PS	-	Piston sample
AU	-	Auger sample or bulk sample
WS	-	Wash sample
RC	-	Rock core sample (Core bit size AXT, BXL, etc.). Rock core samples are obtained with the use of standard diamond drilling bits.

SYMBOLS AND TERMS (continued)

GRAIN SIZE DISTRIBUTION

MC% - Natural moisture content or water content of sample, %

Liquid Limit, % (water content above which soil behaves as a liquid)
 PL - Plastic limit, % (water content above which soil behaves plastically)

PI - Plasticity index, % (difference between LL and PL)

Dxx - Grain size which xx% of the soil, by weight, is of finer grain sizes

These grain size descriptions are not used below 0.075 mm grain size

D10 - Grain size at which 10% of the soil is finer (effective grain size)

D60 - Grain size at which 60% of the soil is finer

Cc - Concavity coefficient = $(D30)^2 / (D10 \times D60)$

Cu - Uniformity coefficient = D60 / D10

Cc and Cu are used to assess the grading of sands and gravels:

Well-graded gravels have: 1 < Cc < 3 and Cu > 4 Well-graded sands have: 1 < Cc < 3 and Cu > 6

Sands and gravels not meeting the above requirements are poorly-graded or uniformly-graded.

Cc and Cu are not applicable for the description of soils with more than 10% silt and clay

(more than 10% finer than 0.075 mm or the #200 sieve)

CONSOLIDATION TEST

p'_o - Present effective overburden pressure at sample depth

p'c - Preconsolidation pressure of (maximum past pressure on) sample

Ccr - Recompression index (in effect at pressures below p'c)
Cc - Compression index (in effect at pressures above p'c)

OC Ratio Overconsolidaton ratio = p'_c/p'_o

Void Ratio Initial sample void ratio = volume of voids / volume of solids

Wo - Initial water content (at start of consolidation test)

PERMEABILITY TEST

Coefficient of permeability or hydraulic conductivity is a measure of the ability of water to flow through the sample. The value of k is measured at a specified unit weight for (remoulded) cohesionless soil samples, because its value will vary with the unit weight or density of the sample during the test.

SYMBOLS AND TERMS (continued)

STRATA PLOT



MONITORING WELL AND PIEZOMETER CONSTRUCTION



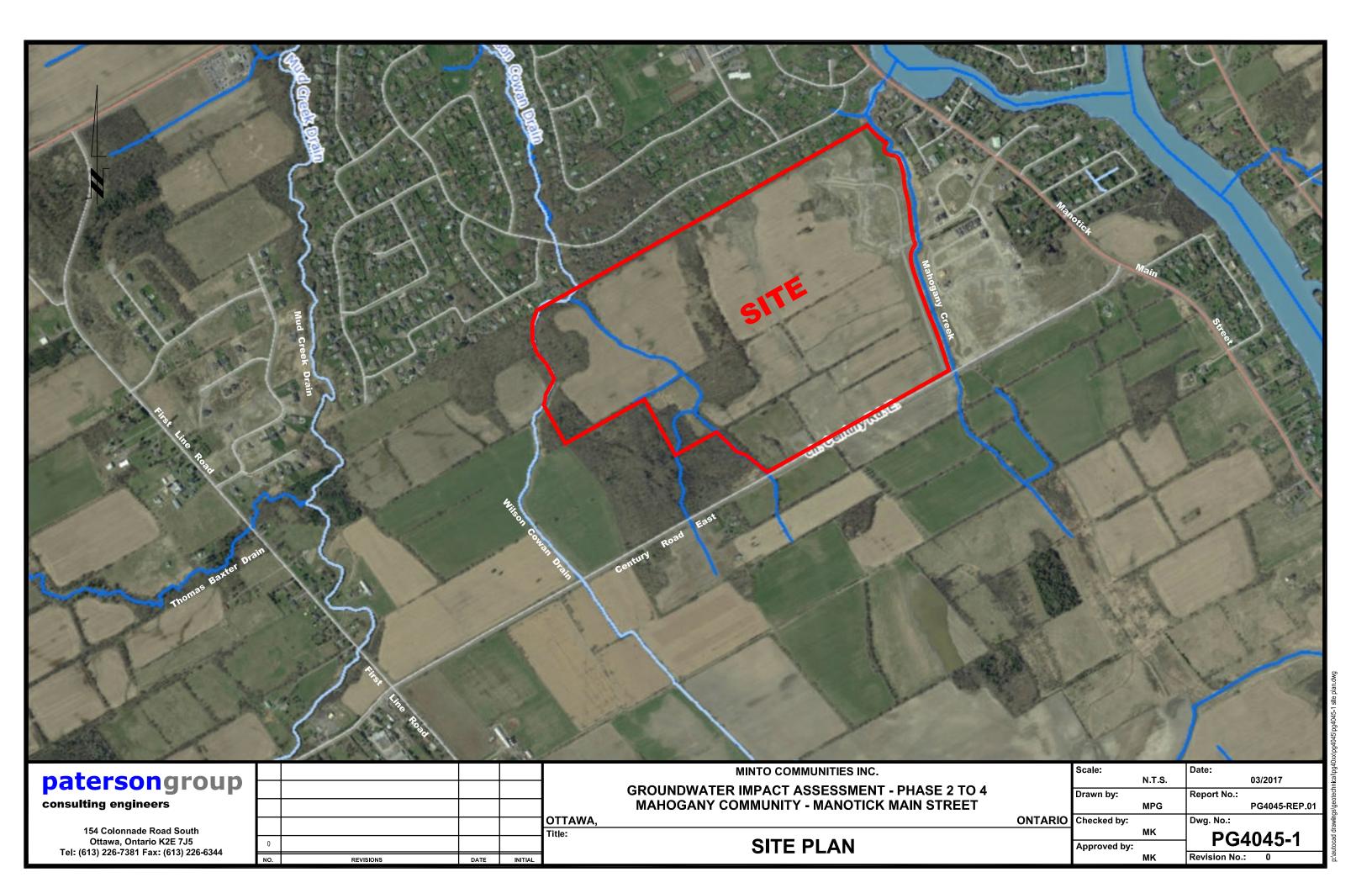
APPENDIX 2

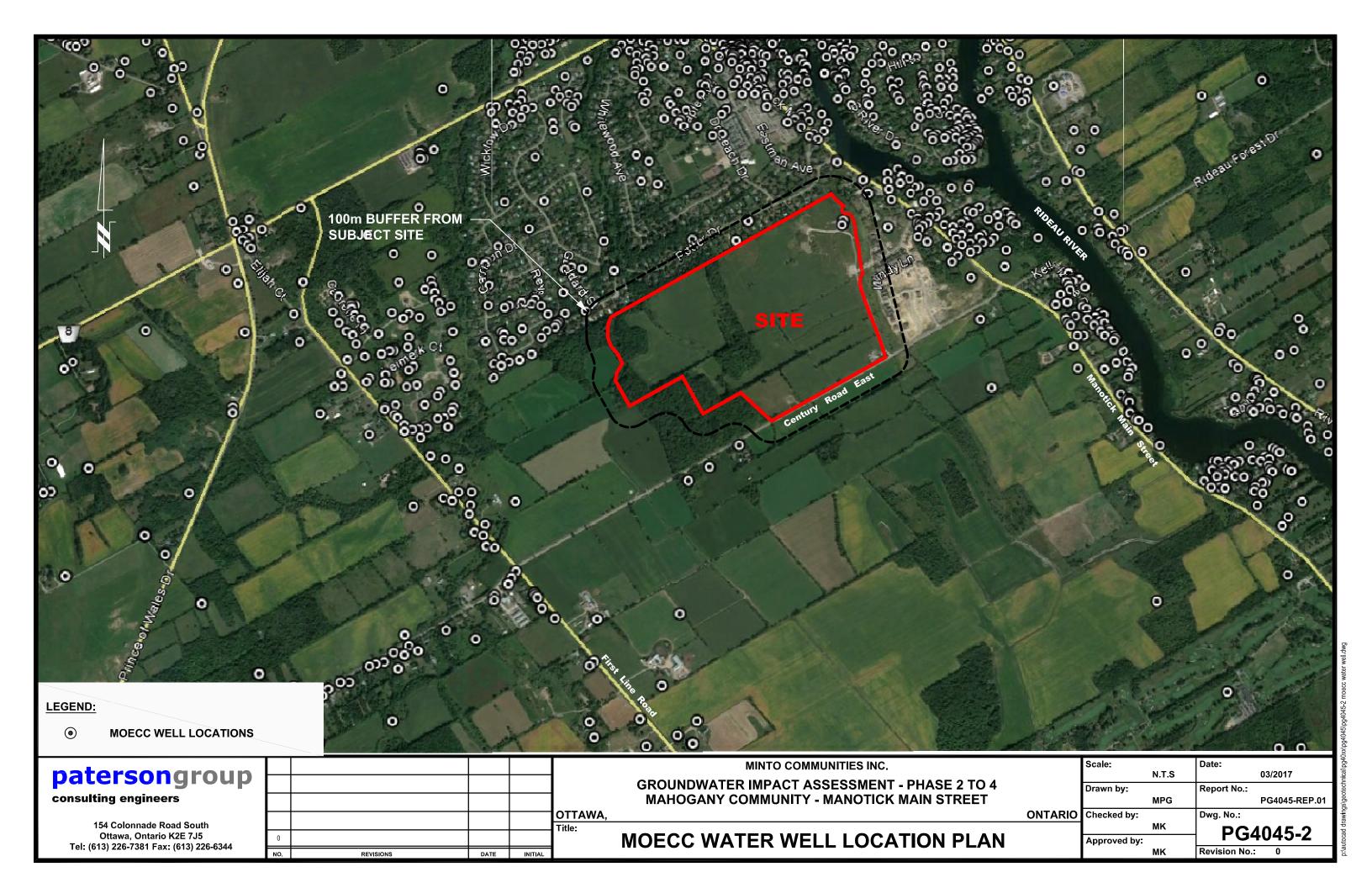
Drawing PG4045-1 – Site Plan

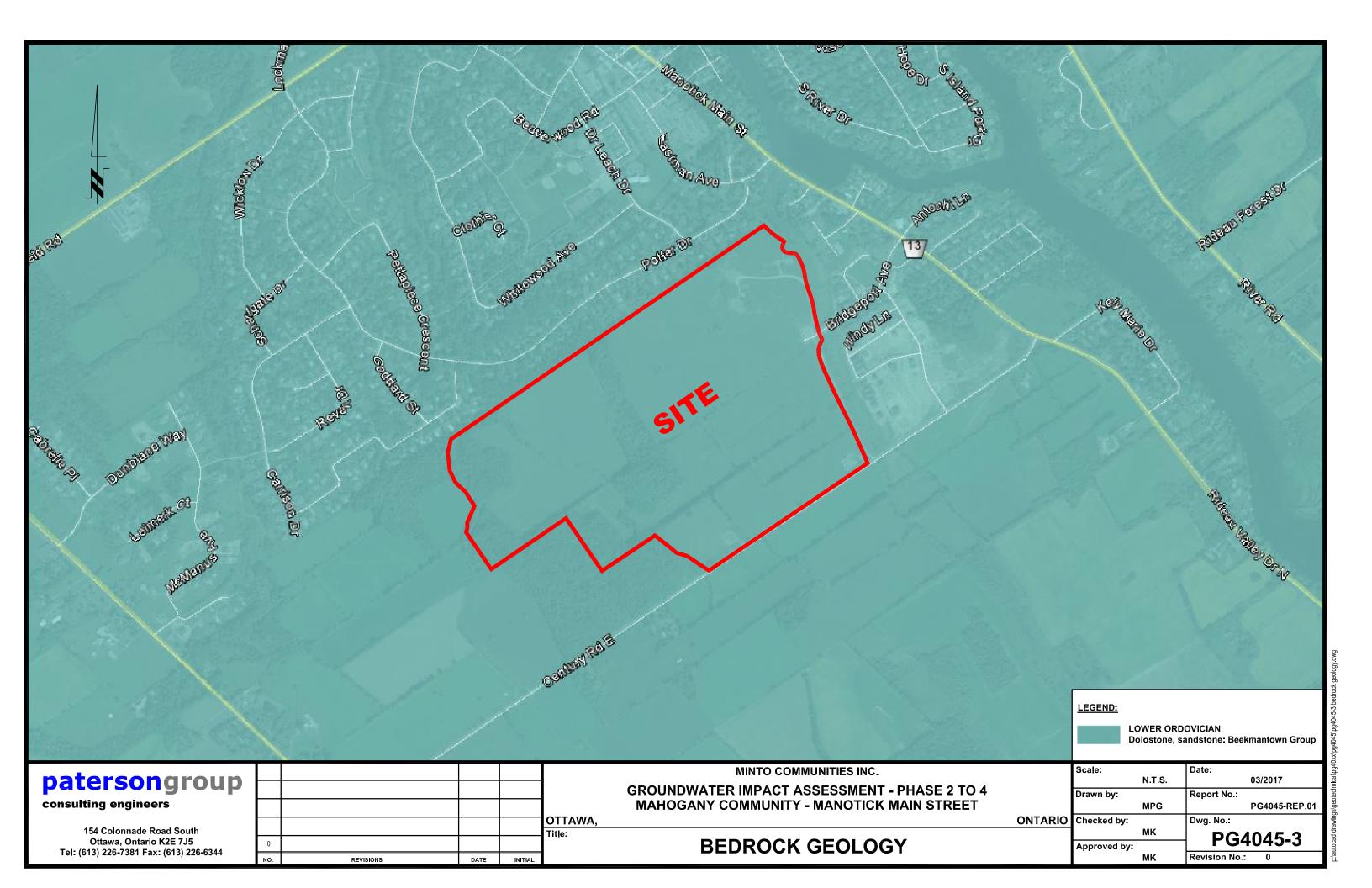
Drawing PG4045-2 – MOECC Water Well Location Plan

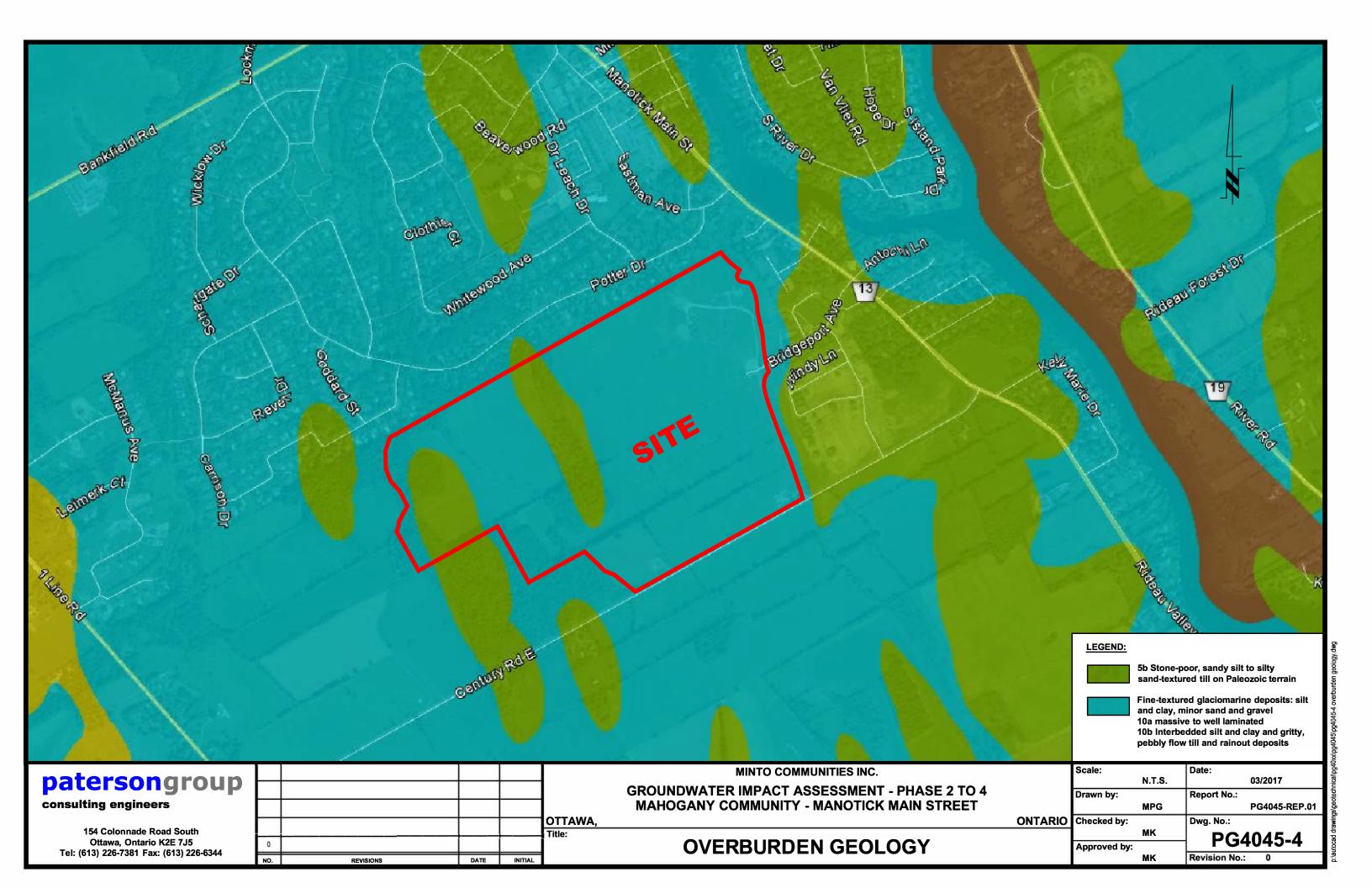
Drawing PG4045-3 – Bedrock Geology

Drawing PG4045-4 – Overburden Geology









APPENDIX 3

Table 1 – PG0675 – Summary of Groundwater Levels

Table 1 - PG067	75 - Summary of	Groundwater Lo	evels	
Borehole	Ground	Groundwat	er Level (m)	
Number	Surface Elevation (m)	Depth	Elevation	Recording Date
BH 1	89.78	3.82	85.96	July 23, 2007
BH 2	95.80	0.87	94.93	July 23, 2007
BH 3	93.70	1.51	92.19	July 23, 2007
BH 4	86.16	3.38	82.78	July 23, 2007
BH 5	92.62	0.62	92.00	July 23, 2007
BH 6	90.29	2.11	88.18	July 23, 2007
BH 7	90.63	1.76	88.87	July 23, 2007
BH 8	88.98	1.56	87.42	July 23, 2007
BH 9	88.56	0.63	87.93	July 23, 2007
BH 10	89.21	1.08	88.13	July 23, 2007
BH 11	88.57	0.91	87.66	July 23, 2007
BH 12	88.60	1.84	86.76	July 23, 2007
BH 13	89.11	0.52	88.59	July 23, 2007
BH 14	90.97	Dry at 3.7 m		July 23, 2007
BH 15	90.78	1.16	89.62	July 23, 2007
BH 16	89.57	0.63	88.94	July 23, 2007
BH 17	89.07	5.27	83.80	July 23, 2007
BH 18	89.00	1.38	87.62	July 23, 2007
BH 19	90.68	0.62	90.06	July 23, 2007
BH 20	89.62	2.17	87.45	July 23, 2007
BH 21	90.97	0.42	90.55	July 23, 2007
BH 22	89.30	0.74	88.56	July 23, 2007
BH 23	89.41	0.94	88.47	July 23, 2007
BH 24	89.56	0.71	88.85	July 23, 2007

Borehole Number	Ground Surface		undwater Level m)	Recording Date
	Elevation (m)	Depth	Elevation	
BH 25	88.49	1.39	87.10	July 23, 2007
BH 26	88.38	1.55	86.83	July 23, 2007
BH 27	89.49	1.08	88.41	July 23, 2007
BH 28	89.34	1.02	88.32	July 23, 2007
BH 29	90.08	1.56	88.52	July 23, 2007
BH 30	88.40	0.57	87.83	July 23, 2007
BH 31	89.00	0.71	88.29	July 23, 2007
BH 32	89.21	0.96	88.25	July 23, 2007
BH 33	90.36	0.85	89.51	July 23, 2007
BH 34	88.91	0.34	88.57	July 23, 2007
BH 35	90.63	Dry at 2.5		July 23, 2007
BH 36	90.60	2.50	88.10	July 23, 2007
BH 37	90.15	1.92	88.23	July 23, 2007
BH 38	89.94	0.65	89.29	July 23, 2007
BH 39	89.59	1.71	87.88	July 23, 2007
BH 40	89.10	3.21	85.89	January 25, 2008
BH 41	89.29	1.00	88.29	January 25, 2008
BH 42	89.10	2.77	86.33	January 25, 2008
BH 43	89.52	3.41	86.11	January 25, 2008
BH 44	89.43	3.81	85.62	January 25, 2008
BH 45	89.35	1.46	87.89	January 25, 2008
BH 46	89.03	1.52	87.51	January 25, 2008
BH 47	88.91	1.90	87.01	January 25, 2008
BH 48	89.00	1.92	87.08	January 25, 2008
BH 49	89.59	4.40	85.19	January 25, 2008

APPENDIX 4

MOECC Individual Water Well Records

Ontal	corded in:	nvironment Metric	Imperial		4			Regulation	n 903 Oı	ntario W Pago		of Z
Vell Owner's I irst Name	ntormation	Last Name /		ition	EUCTOS SIN	B-mail Add	Iress					Constructed
ailing Address (S	Street Number(N	ame)	121		Municipality OTT/TWA	Province	,	Postal Code	200	elephone		'ell Owner area code)
ろ/ピティ ell Location	92BiW	KOOTE)			SIMM	- OV		KI448	13(6	45)	54-	PAPP
dress of Well Lo	ocation (Street N	umber/Name))		Township	Wanton	الم 1	Lot >	C	Concessi	Commence of the Party of the Pa	
ounty/District/Mu	WANDING Inicipality	CAMIN	Of,	A	City/Town/Village	expersion	00	ਤੋ	Provinc		Posta	l Code
M Coordinates	unicipality	WITCH	KUCT.	2U,	Municipal Plan and Sul	boot Number			Onta	rio		
NAD 8 3	18 369	269 3	100	1077	• Mullicipal Flatt and Gui	SIOT NUMBER			7	WZ	3	
verburden and eneral Colour		rials/Abando mon Material			cord (see instructions on t Other Materials	he back of this form)		al Description	 			oth (<i>m/ft</i>)
213/1011	CLAY	/	•		A CONTRACTOR OF THE PROPERTY O			-	·		Prom (763
RET	TILL	A Probability & marie we were the marie to the control of the cont	k	Spall, C	RAVEZ, BOUL	125					763	11.H
REY	DOONIT	<u> </u>									II.P	11060
		***		.w.b.				***************************************				
				ATAN TANK V V der HILLIAM AND								
		Annular	r Snace				P	esults of W	ell Yielr	Testin	a / 573	200
Depth Set at (m/ From To		Type of Sea (Material ar	alant Use	ed	Volume Placed (m³/ft³)	After test of wel	l yield, w	ater was:	Dra	w Down	F	Recovery Water Leve
D 1102	B Bents	it.	,,,,,,,,,		0.35	Other, spe	ecify		(min)	(m/ft)	(min)	(m/ft)
28 110E	O Buten	te (ta	Colg	·)*	OH	If pumping disc	ontinued A	l, give reason:		291		2 17
1, -	17.	-01							11 1 1			
	auce	læben	dire	<u> (</u> *)		Pump intake s	ej at (m	/ft), (\	1	3,05 3,07		215
	B Wee	lægen	elire	<u> </u>		130	Zn.	(44)	2	3:00 3:07 3:08	2 (3,15 3,15
	Construction	læber	ublic	Well I		Pumping rate (Zin (1/min / G	(44)	1	3:00 3:07 3:08 3:10		3,15 3,13 3,17
Cable Tool Rotary (Consent	☐ Dïamo Žonal) ☐ Jetting		omestic	☐ Comr	mercial	Pumping rate of Duration of pur	(I/min / G mping	(44) (7/10)	3	3:00 3:07 3:08 3:10 3:11	3	3,15 3,15 3,13 3,12
Cable Tool Rotary (Consey Rotary (Reverse Boring	☐ Dïamo Žonal) ☐ Jetting	Do Liv	omestic vestock igation	☐ Comr ☐ Munic M Test I	mercial	Pumping rate of Duration of pur	(I/min / G N / U mping O m	(44) 19 ₁ (11) in	2 3 4 5	3:00 3:07 3:08 3:10 3:11 3:15	3 4	3,15 3,15 3,13 3,12 3,11 3,07
Cable Tool Rotary (Coryan) Rotary (Reverse Boring Air percussion Other, specify	□ Diamo Anal) □ Jetting) □ Driving □ Diggin	Do Liv J Irri	omestic vestock igation dustrial ther, spec	Comr Munic Test I	mercial Not used Dewaterin Monitoring Monitoring Not Conditioning	Pumping rate ((I/min / G mping mel end of	(44) <i>Gym</i>) in pumping (<i>m/ñ</i>)	2 3 4 5 10	3:07 3:07 3:10 3:11 3:15 3:17	3 4	3,15 3,15 3,13 3,12 3,17 3,07 3,04
Cable Tool Rotary (Coryegy Rotary (Reverse Boring Air percussion Other, specify Inside Oper	Diamo	Do Livi	omestic vestock igation dustrial ther, spec	Comr Munic Test I	mercial Not used bipal Dewatering Monitoring Monitoring as Air Conditioning Status of Well Water Supply	Pumping rate of the pumpin	(I/min / G mping mel end of rate (I/m	(44) Gypin) in pumping (avit) FP(1)	2 3 4 5 10 15 20	3.07 3.08 3.10 3.11 3.15	2 3 4 5 10	3,15 3,15 3,12 3,17 3,07 3,07 3,02
Cable Tool Rotary (Copyling) Rotary (Reverse Boring Air percussion Other, specify Inside Oper Diameter (Galv	□ Diamo nal) □ Jetting Diggin Construction	Do Liv	omestic vestock igation dustrial ther, spec	Comr	mercial	Pumping rate of the pumpin	(l/min / G mping mping m el end of cate (l/m	in pumping (avii) A PM) PMPIN (avii) PPM) depth (m/fi)	2 3 4 5 10 15 20	3.07 3.08 3.10 3.11 3.15	2 (3 4 5 10 15 20 25	3,15 3,15 3,12 3,17 3,07 3,07 3,00 3,00
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Cable Tool Rotary (Copyly) Rotary (Reverse Boring Air percussion Other, specify Inside Oper Diameter (Galv	Diamo Construction Hole OR Material	Do Liv	omestic vestock igation dustrial ther, spec	Common Munic	mercial	Pumping rate (Duration of purching the high second secon	(I/min / G mping male end of rate (I/m d pump d pump	in pumping (avit) A PM) PMP (avit) A PM) depth (m/ft) rate	2 3 4 5 10 15 20 25 30 40	3.07 3.08 3.10 3.11 3.15	2 3 4 5 10 15 20 25 30 40	3,15 3,15 3,13 3,17 3,07 3,07 3,07 3,00 3,00 2,96 2,96
Cable Tool Rotary (Copyly) Rotary (Reverse Boring Air percussion Other, specify Inside Oper Diameter (Galv	Diamo Construction Hole OR Material	Do Liv	omestic vestock igation dustrial ther, spec	Common Munic	mercial	Pumping rate of the production of puration	(I/min / G mping mel end of rate (I/m d pump d pump d pump	in pumping (avit) A PM) PMP (avit) A PM) depth (m/ft) rate	2 3 4 5 0 10 15 30 30 40 50 6	3.07 3.08 3.10 3.11 3.15	2 (3 , 4 , 5 , 10 , 20 , 25 , 30 , 40 , 50 ,	3,15 3,15 3,13 3,17 3,07 3,07 3,07 3,00 2,96 2,96 2,95
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	Ministry of	Well Tag No. (Place	e Sticker and/or	Print Below)	-		· Well R	ecord
Measurements recorded in:	the Environment Metric Imperial				Regulation	n 903 Ontario Pi	Water Reseage	
Well Owner's Informati					4			
First Name	Last Name / Organization	CENSTRUCTO	en) un	E-mail Address				Constructed
Mailing Address (Street Num		Municipality		Province	Postal Code	Telepho	one No. (inc.	
ンとファイアルと Well Location	weeks	SIMA	<i>7</i> +	200	RIVE	DOUT	2)421/1	stery
	eet Number/Name) UNWOTICK MAIN	Township	Sem (1	venuir.	1 3	, Conce	ssion	_
County/District/Municipality	- WEAR		age /		رو) ح	Province	Postal	Code
JTM Coordinates Zonen, Eas	TING THUETON		age SOTTCIC n and Sublot Nur			Ontario		
NAD 8 3 B 3	49415009	098	1 and Subject Nur	nber		Other 70	0-/	
	Materials/Abandonment Se		ctions on the back			T.	l Dept	th (<i>m/ft</i>)
General Colour Mos	t Common Material	Other Materials		Gene	eral Description		From	To
GRY TILL	55	AND, CRALET.	RACLEAN	*			1/3	1102
Re Inc	WITE	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	277000	<u></u>			11.07	45
							11000	1000
							1	
AWAWAAAA AAAA								
	Annular Space				Results of W	W Viold Too	ing /	
Depth Set at (m/ff)	Type of Sealant Used	Volume		r test of well yield,	water was:	Draw Dov	vn Re	ecovery
Prom To	(Material and Type)	(m²/		Clear and sand to Other, specify	NA.	Time Water (min) (m	ft) (min)	Water Level (m/ft)
1.27-11.50 20	tanto literalu	0.2	If pu	imping discontinue	ed, gîve reason:	Static Level	80	3.H
100 TIER EL	ellabantisal	1	N/C	DERVIT	W	1	1	
42	concern rec	X	Pun	np intake set at (3 2	2 -	_ 2	1m
Method of Construc	ition	Well Use		nping rate (//mip/	GPM)	3 -	3	
	Diamond Public Jetting Domestic	Commercial 1	Not used Dun Dewatering	etion of pumping		4 -	- 4	
Rotary (Reverse)	Driving Livestock	Test Hole	Monitoring	<u>CUAREUN</u>	4-133110	5	- 5	
Air percussion	Digging	Cooling & Air Condition	ning i=ina	il water level end o	ot pumping (<i>m/tt</i>)	10	10	
Other, specify	tion Record - Casing	Status		wing give rate	mín / GPM)	PF 3.0	5 17	297
Inside Open Hole OR M	aterial Wall Dept	h (<i>m/ft</i>) ☐ Water Si	upply Rec	ommended gum	p depth (m/ft)	20	_ 20	*****
Diameter (Galvanized, Fibre (cm/in) Concrete, Plastic,		To Replace	ــــــا ـــــ	A//Y commended pum	n rate	25 —	25	******
DIE Stell ASE	1 0.48 + .46	### Recharg	e Well (//mi	in / GPM)	p rate	32 36	$9 \mid 30 \mid$	wittenstature.
, , , , , , , , , , , , , , , , , , ,		Observat Monitorin	ion and/or Wel	l production (I/mii	n/GPM)	16 301	9 40	
:		☐ Alteration (Constru	n	nfected?	(/-)	50 -	- 50	001
UVŠUVIEDO DESCRIÇÃO VIZADA MARKA DESCRIÇÃO ZO PARTI HAVILLON		Abandor Insufficie	ned, ent Supply	Yes No		OKO ell) 60	1,000
Outside Material	ction Record - Screen //// Dept	Mandor h (<i>m/ft</i>) ☐ Abandor h (<i>m/ft</i>) ☐ Water Q	uality PN	es å provide a map	below following	ell Location instructions on	the back.	
Diameter (Plastic, Galvanized	I, Steel) Slot No. From	To Abandor specify	1:	W W	anorek t	uezin Si		
THE CONTROL OF THE CO		\lambda	11		7/	ずつ	A	
					/	Propo	12 S S S S S S S S S S S S S S S S S S S	Well
	ter Details of Water:	Hole Diamete	Diameter	12//	ŧ	TUI	ارداد	
M/ft) ☐ Gas ☐ Otl	ner, specify	From To	(cm/in)	20. X			> -	*
Vater found at Depth Kind o (m/ft)	of Water:	1143 (130)	200		31	_3		
Vater found at Depth Kind o	of Water: Fresh Untested	Coll Nots A	46 K	1/10/1			ててノ	
(m/ft) Gas Ott	ner, <i>specify</i> ntractor and Well Technicia	Information		NOT I	11		\mathcal{T}	
Well Collings Name of Well Contra	Stor A Well rectificia		icence No.	(A			1	
Business Address (Street Num	nber/Name)	Municipality :		Wifesti ares	TRUATIUN	1. 15-46 12		uni?
Business Address (Street Nur	_	PARENI	THU Z		TWELL		2-123	n/
Provfince Postal C	Business E-mail Ad			l owner's Date F	Package Delivere		ار کے اس linistry Use	Only .
Bys Telephone No. (inc. erea co		Last Name, First Name)	Infor	mation	- 	Audit I	- A 16-20-A O O A 10-20-A 26-A	
マスス ススペーングイン・コード かんしんしん		7621118	110687	_,		■ 503 453 933 6	- 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1	19 3 1 50 3 1 50 3 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1



Ministry of the Environment

Well Tag No. (Place Sticker and/or Print Below)

Well Record Regulation 903 Ontario Water Resources Act

шоп	303	Ontano	a a cr c i	1103041	000	,,,,
		Pa	ane	of		

Measurements recorded in: Metric Imperial	ag#: A13369	32 Regulation		of
Address of Well Location (Street Number/Name)	ownship	Lot	Concession	on
12/2 PATTER DRIVE	MANOTICK ty/Town/Village		Province	Postal Code
	unicipal Plan and Sublo	st Number	Ontario Other	K4M1B3
NAD 8 3 1 8 4 4 6 2 4 9 5 0 0 7 4 9 3			Tanah da manana kata sa	
Overburden and Bedrock Materials/Abandonment Sealing Recor	' d (see instructions on the er Materials	back of this form) General Description		Depth (<i>m/ft)</i> From To
		5		
Raised Well Casing requirements, and instal	above a	round, as per	code	
requirements, and instal	I NEIWOU	broof Mell Cab		
	900-00-00-00-00-00-00-00-00-00-00-00-00-			
	Address of the second of the s			
Annular Space			ell Yield Testing	g Recovery
Depth Set at (m/ft) Type of Sealant Used From To (Material and Type)	Volume Placed (m³/ft³)	After test of well yield, water was: Clear and sand free		vel Time Water Level (min) (m/ft)
		Other, specify If pumping discontinued, give reason:	Static Level	
\sim \sim \sim \sim	Addition to the second		1	1
7. V / 1 1		Pump intake set at (m/ft)	2	2
Method of Construction Well Us	e	Pumping rate (I/min / GPM)	3	3
☐ Cable Tool ☐ Diamond ☐ Public ☐ Commer ☐ Rotagy (Conventional) ☐ Jetting ☐ Domestic ☐ Municipal	process	Duration of pumping	5	5
Royary (Reverse) Driving Livestock Test Hol	e	hrs + min Final water level end of pumping (m/ft)		10
☐ Air percussion ☐ Industrial ☐ Other, specify ☐ Other, specify ☐		If flowing give rate (I/min / GPM)	15	15
Construction Record - Casing	Status of Well Water Supply	Recommended pump depth (m/ft)	20	20
Inside Open Hole OR Material Wall Depth (m/n) Diameter (Galvanized, Fibreglass, Thickness (cm/in) Concrete, Plastic, Steel) (cm/in) From To	Replacement Well Test Hole	Recommended pump rate	25	25
1//	Recharge Well Dewatering Well	(l/min / GPM)	30	40
	Observation and/or Monitoring Hole	Well production (I/min / GPM)	50	50
	Alteration (Construction)	Disinfected?	60	60
Construction Record - Screen	☐ Abandoned, Insufficient Supply ☐ Abandoned, Poor	Map of W	ell Location	
Outside Material Diameter (Plastic Galvanized, Steet) Slot No. From To	Water Quality Abandoned, other,	Please provide a map below following	instructions on the	e back.
(cm/in)	specify		228F	
	Other, specify		27. Of . C	کا ہے۔
Water Detaile	Iole Diameter th (m/ft) Diameter	\[\frac{1}{5} \rightarrow 3	of well	46.
(m/ft) Gas Other, specify	To (cm/in)		1	1 7
Water found at Depth Kind of Water: Fresh Untested (m/ft) Gas Other, specify	f/Ω	ا ا ا	V	12
Water found at Depth Kind of Water: Fresh Untested (m/ft) Gas Other, specify			81 _{bt}	<u> </u>
Well Contractor and Well Technician Informa	tion ell Contractor's Licence No.			
C+N Electric Ltd.	13 6 4	Potter dr		
Business Address (Street Number/Name)	unicipality) Howa	Comments:		
Province Postal Code Business E-mail Address Address		Well owner's Date Package Deliver	1000 (A 1000 (A))(A 1000 (A 1000 (A 1000 (A))(A 1000 (A 1000 (A))(A 1000 (A 10	nistry Use Only
Bus. Telephone No. (inc. area code) Name of Well Technician (Last Name,	First Name)	information package delivered	Audit No	109064
Well Technician's Licence No. Signature of Technician and/or Contractor Da		Yes Date Work Completed	II IAN	9043
T 6 3 7 D	6 2 1 2 0 7 Ministry's Cop			l en's Printer for Ontario, 2007

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Ministry of

V.	Ontario	t	he Environr	ment
Meası	rements recorded	in:	☐ Metric	Imperial

Well Tag No. (Place Sticker and/or Print Below)
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Wel		Re	co	rd
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	vveii	Record	
Regulation 903 (Ontario Water I	Resources Act	
	Page	of	

Address of Well Location (Street Number/Name)		ownship Manotick	Lot	Concessi	on
County/District/Municipality	C C	ity/Town/Village		Province	Postal Code
UTM Coordinates Zone , Easting , North) ナナム	ot Number	Ontario Other	KUM11C18
NAD 8 3 1 8 4 4 6 24 9 50	07493				
Overburden and Bedrock Materials/Abandonm General Colour Most Common Material		rd (see instructions on the er Materials	back of this form) General Description	n	Depth (<i>m/ft</i>) From To
Raised we	.11 casin	a above	ground as pe	er code	3
requirments, an	d install	ed vermon	ground as per proof well ca	۴	
Annular Sp				ell Yield Testin	g Recovery
Depth Set at (m/ft) Type of Sealan From To (Material and T		Volume Placed (m³/ft³)	After test of well yield, water was: Clear and sand free	Time Water Let	
			Other, specify If pumping discontinued, give reason:	Static 12 G	(min) (min)
			, p. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.	1 13 84	1 15
	AAWWATATA		Pump intake set at (m/ft)	2 13, 1,	2 14.9
			SOF+ Pumping rate (I/min / GPM)	3 13, 40	1// 7
Method of Construction Cable Tool Diamond Public	Well Us		20 apm	4 13.5	
Rotary (Conventional) Jetting Domes	stic Municipa	al Dewatering	Duration of pumping hrs + O min	5 14 ft	
Rotary (Reverse) Driving Livesto	on Cooling	& Air Conditioning	Final water level end of pumping (m/ft		
Air percussion Industr			If flowing give rate (I/min / GPM)	15 14.64	+ 15
Construction Record - Casing	g Depth (<i>m/ft</i>)	Status of Well Water Supply	Recommended pump depth (m/ft)	20 14,86	
Inside Open Hole OR Material Wall Diameter (Galvanized, Fibreglass, Thickness (cm/in) Concrete, Plastic, Steel) (cm/in)	From To	Replacement Well	SO 6+	25 14.8¢	25
		☐ Test Hole ☐ Recharge Well	Recommended pump rate (I/min / GPM)	30 14.96	+ 30
NIA		Dewatering Well Observation and/or	Well production (I/min / GPM)	40 15 Ft	40
///		Monitoring Hole Alteration	Disinfected?	50 IS PL	50
		(Construction) Abandoned,	Yes No	60 15.1 61	60
Construction Record - Screen Outside Material	CONTRACTOR OF PROPERTY OF THE	Insufficient Supply Abandoned, Poor Water Quality	Map of W Please provide a map below following	/ell Location instructions on the	e back.
Diameter (cm/in) Material Slot No. (Plastic, Galvanized, Steel)	Depth (<i>m/ft</i>) From To	Abandoned, other, specify	House	,	
N/A	The state of the s		Annual of the contract of the	ekazonenne megyende protesty gang parcy iv an dankkaj kij (Alisaya)	a historia de grante de constitución de la constitu
		Other, specify	Medical Company of the Company of th	42	
Water Details Water found at Depth Kind of Water: Fresh	The state of the s	ole Diameter	A service of the serv		
(m/ft) Gas Other, specify	From	To (cm/in)	8	Assited	Control of the Assessment of t
Water found at Depth Kind of Water: ☐ Fresh ✓ (m/ft) ☐ Gas ☐ Other, specify	Intested				2
Water found at Depth Kind of Water: Fresh	Intested	/H		2	
(m/ft) Gas Other, specify Well Contractor and Well Te	chnician Informat	lon		reliable down rep	1, 2
Business Name of Well Contractor	Wel	Contractor's Licence No.	Potter	ee halla aa takka ka	e territorio seculi il con interesso della proposita di approprimo di montra di accoministra di accoministra d
Ct N Electric Ltd. Business Address (Street Number/Name)	(<u>(</u> Mui	6 3 6 4 nicipality	Comments:	rive	
5640 Manotic Mai	<u> </u>	-	1		
Dut KHMIBB	mail Address		Well owner's Date Package Delivered	2-11-12-12-12-12-12-12-12-12-12-12-12-12	istry Use Only
Bus.Telephone No. (inc. area code) Name of Well Tech	D	First Name)	information package delivered		109062
Well Technician's Licence No. Signature of Technician a			Yes Date Work Completed	II IANI	1 7 2013
T 16 13 17	2	01/30103	PNO 201212	O F Received	F 13 7 18

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Map: Well records

This map allows you to search and view well record information from reported wells in Ontario.

Full dataset is available in the Open Data catalogue.

Recommended for you

How to use a Ministry of the Environment map

Technical documentation: Metadata record

Well ID Number: 7246075 Well Audit Number: *Z208992* Well Tag Number: *A178606*

This table contains information from the original well record and any subsequent updates.

Well Location

Address of Well Location	5521 MANOTICK MAIN STREET
Township	NORTH GOWER TOWNSHIP
Lot	
Concession	
County/District/Municipality	OTTAWA-CARLETON
City/Town/Village	MANOTICK
Province	ON
Postal Code	n/a
UTM Coordinates	NAD83 — Zone 18 Easting: 446191.00 Northing: 5007397.00
Municipal Plan and Sublot Number	
Other	

Overburden and Bedrock Materials Interval

General Colour	Most Common Material	Other Materials	General Description	Depth From	Depth To
BLCK	GRVL		DNSE	0 m	.31 m
BRWN	SAND	GRVL	SOFT	.31 m	2.44 m
GREY	BLDR	SAND	HARD	2.44 m	4.88 m
BRWN	CLAY	SILT	SOFT	4.88 m	5.79 m
GREY	SILT	SAND	SOFT	5.79 m	7.31 m

Annular Space/Abandonment Sealing Record

Depth From	Depth To	Type of Sealant Used (Material and Type)	Volume Placed
0 m	.31 m	FLUSHMOUNT/ CONCRETE	,
.31 m	3.96 m	BENTONITE	
3.96 m	7.31 m	FILTER SAND	

Method of Construction & Well Use

Method of Construction	Well Use
Air Percussion	Monitoring
	Test Hole

Status of Well

Construction Record - Casing

Inside	Open Hole or material	Depth	Depth
Diameter		From	To
5.2 cm	PLASTIC	0 m	4.27 m

Construction Record - Screen

Outside Material Depth From To
6.03 cm PLASTIC 4.27 m 7.31 m

Well Contractor and Well Technician Information

Well Contractor's Licence Number: 7241

Results of Well Yield Testing

fter test of well yield, water was
f pumping discontinued, give reaso
ump intake set at
umping Rate
uration of Pumping
inal water level
f flowing give rate
ecommended pump depth
ecommended pump rate
Vell Production
visinfected?

Draw Down & Recovery

3 3 4 4 5 5 10 10 15 15 20 20 25 25 30 30 40 40 45 45 50 50	Down Time(min) D	raw Down Water level	Recovery Time(min)	Recovery Water level
2 2 3 3 4 4 5 5 5 10 10 10 15 15 20 20 20 25 30 30 40 40 40 45 50 50				
3 3 4 4 5 5 10 10 15 15 20 20 25 25 30 30 40 40 45 45 50 50			1	
4 4 5 5 10 10 15 15 20 20 25 25 30 30 40 40 45 45 50 50			2	
5 5 10 10 15 15 20 20 25 25 30 30 40 40 45 45 50 50			3	
10 10 15 15 20 20 25 25 30 30 40 40 45 45 50 50			4	
15 15 20 20 25 25 30 30 40 40 45 45 50 50			5	
20 20 25 25 30 30 40 40 45 45 50 50			10	
25 25 30 30 40 40 45 45 50 50			15	
30 30 40 40 45 45 50 50			20	
40 40 45 45 50 50			25	
45 45 50 50			30	
50 50			40	
			45	
60			50	
60			60	

Water Details

Water Found at Depth Kind

Hole Diameter

Depth From	Depth To	Diameter
0 m	7.31 m	11.43 cm

Audit Number: Z208992

Date Well Completed: July 02, 2015

Date Well Record Received by MOE: August 05, 2015

Updated: March 20, 2017 Rate Rate

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Glen Murray

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