PATERSON GROUP

Geotechnical Investigation

Proposed Residential Development

Cedar Lake Subdivision - Part of Lot 8, Concession 3
Phase 3 & 4, Greely, Ontario

Prepared for 6980848 Canada Inc.

Report PG6871-1 Revision 2 dated June 20, 2024

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Appendices

1.0 Introduction

Paterson Group (Paterson) was commissioned by 6980848 Canada Inc. to prepare a Geotechnical Investigation Report for the proposed residential development located to be located at Cedar Lakes Subdivision in Greely, Ontario (reference should be made to Figure 1 - Key Plan in Appendix 2 of this report for the general site location).

The objectives of the Geotechnical Investigation Report are to:

- Determine the subsoil and groundwater conditions at this site by means of existing test holes.
- Provide geotechnical recommendations pertaining to the design of the proposed development including construction considerations which may affect the design.

The following report has been prepared specifically and solely for the aforementioned project which is described herein. It contains our findings and includes geotechnical recommendations pertaining to the design and construction of the subject development as they are understood at the time of writing this report.

2.0 Proposed Development

Based on the available drawings, it is understood that the proposed development will consist of a series of single-family residential dwellings with attached garages and associated driveways and landscaped areas. It is also understood that the residential dwellings will be serviced with a private well and septic system for each home.

3.0 Method of Investigation

3.1 Field Investigation

Field Program

The current field investigation was carried out on October 4, 2023, which consisted of a total of 7 test pits (TP 1-23 through TP 7-23) and were put down within Phase 3 and 4 of the subject site and were advanced to a maximum depth of 5.2 m below the existing ground surface, using an hydraulic excavator.

The initial field investigation was carried out on November 24, 2009, which consisted of a total of 12 test pits (TP 1 through TP 12) were put down within Phase 1 and 2 and were advanced to a maximum depth of 5.25 m below the existing grade, using a rubber-tired backhoe. The test pit locations were distributed in a manner to provide general coverage of the subject site, taking into consideration underground services and available access.

In August and September 2010, a total of 8 additional test pits (MW 1 through MW 8) were excavated on the subject property. The intent of these subsequent investigations was to accurately delineate the direction of groundwater flow within the overburden and to establish the in-situ surficial soil infiltration rates. An additional 4 hand auger holes (AH 1 through AH 4) were completed during the same investigation date.

In January 2011, 17 additional test pits (TP 13 through TP 29) and two (2) hand auger holes (AH 5 - AH 6) were put down within Phase 3 and 4 of the subject site and were advanced to a maximum depth of 4.8 m below the existing ground.

The subsurface conditions observed at the test pit and auger hole locations are provided on the Soil Profile and Test Data sheets, in Appendix 1 of this report. The approximate locations of the test pits and hand auger holes are shown on Drawing PG6871- 1 - Test Hole Location Plan included in Appendix 2.

All fieldwork was conducted under the full-time supervision of Paterson personnel under the direction of a senior engineer. The test pitting procedure consisted of excavating to the required depths at the selected locations and sampling the overburden.

Sampling and In Situ Testing

Soil samples from the test pits from the current investigation were recovered from the side walls of the open excavation and all soil samples were initially classified on-site. All samples were transported to our laboratory for further examination and classification.

The depths at which the grab samples were recovered from the test pits are shown as G on the Soil Profile and Test Data sheets in Appendix 1.

Groundwater

The open hole groundwater infiltration levels were observed at the time of excavation at each test pit and hand auger hole location. Our observations are presented in the Soil Profile and Test Data sheets in Appendix 1.

3.2 Field Survey

The locations of the test pit and hand auger hole locations are presented on Drawing PG6871 - 1 - Test Hole Location Plan in Appendix 2.

3.3 Laboratory Review

The soil samples recovered from the test holes were returned to our laboratory and visually examined to review the results of the field logging.

3.4 Analytical Testing

One (1) soil sample was submitted for analytical testing to assess the corrosion potential for exposed ferrous metals and the potential of sulphate attacks against subsurface concrete structures. The sample was submitted to determine the concentration of sulphate and chloride, the resistivity and the pH of the sample. The results are presented in Appendix 1 and are discussed further in Subsection 6.7.

4.0 Observations

4.1 Surface Conditions

The subject site is currently undeveloped and mostly vegetated with shrubs and mature trees. It should be noted that Cedar Lake borders the northwest portion of the site.

The site is bordered by Stagecoach Road to the east, undeveloped land to the south, and by residential dwellings to the north and west. The existing ground surface across the site has an undulating profile, with elevations ranging from approximate geodetic elevations of 98 to 100.90 m.

4.2 Subsurface Profile

Overburden

Generally, the subsurface profile at the subject site consists of an approximate 0.1 to 0.3 m thick layer of topsoil or peat underlain by a deposit of silty sand to sandy silt. At the southwest portion of the site, the silty sand to sandy silt was observed to be underlain by a stiff to firm grey silty clay deposit below approximate depths of 0.6 to 3.9 m.

A glacial till deposit was encountered underlying the silty sand to sandy silt and/or silty clay across the majority of the site at approximate depths ranging from 0.5 to 3.7 m below the existing ground surface.

Reference should be made to the Soil Profile and Test Data Sheets in Appendix 1 for details of the soil and bedrock profile encountered at each borehole location.

Bedrock

Based on available geological mapping, the bedrock in the subject area consists of dolomite of the Oxford Formation with an overburden drift thickness of 3 to 10 m.

4.3 Groundwater

Groundwater was observed within the open test pits and hand auger holes during the geotechnical investigations. Based on these observations, the groundwater level generally varies from approximate depths of 1 to 2 m below the existing ground surface. It should be noted that surface water was observed to be near the existing ground surface due to the presence of a peat layer overlying silty sand to silty clay. The pooled water is present as a result of poor surface drainage and the presence of an impermeable silty clay deposit. although groundwater was present at the ground surface in the southeast portion of the site, where surficial peat was encountered.

Furthermore, it should be noted that groundwater levels are subject to seasonal fluctuations, therefore, the groundwater levels could vary at the time of construction.

5.0 Discussion

5.1 Geotechnical Assessment

From a geotechnical perspective, the subject site is considered suitable for the proposed development. It is recommended that the proposed buildings be founded on conventional spread footings bearing on an undisturbed, loose to compact silty sand to sandy silt, firm to stiff silty clay or compact glacial till.

Depending on the founding depths of the proposed buildings, boulder removal may be required to complete the basement levels. All contractors should be prepared for oversized boulder and/or bedrock removal.

Due to the presence of a silty clay deposit within the southwestern portion of the site, a permissible grade raise restriction has been provided for these areas. This is discussed further in Section 5.3.

The above and other considerations are further discussed in the following sections.

5.2 Site Grading and Preparation

Stripping Depth

Topsoil and deleterious fill, such as those containing organic materials, should be stripped from under any buildings, paved areas, pipe bedding and other settlement sensitive structures.

Fill Placement

Fill placed for grading beneath the building areas should consist, unless otherwise specified, of clean imported granular fill, such as Ontario Provincial Standard Specifications (OPSS) Granular A or Granular B Type II. The imported fill material should be tested and approved prior to delivery.

The fill should be placed in a maximum 300 mm thick loose lifts and compacted by suitable compaction equipment. Fill placed beneath the building should be compacted to a minimum of 98% of the standard Proctor maximum dry density (SPMDD).

Non-specified existing fill along with site-excavated soil could be placed as general landscaping fill where settlement of the ground surface is of minor concern.

These materials should be spread in lifts with a maximum thickness of 300 mm and compacted by the tracks of the spreading equipment to minimize voids.

Non- specified existing fill and site-excavated soils are not suitable for placement as backfill against foundation walls, unless used in conjunction with a geocomposite drainage membrane, such as Miradrain G100N or Delta Drain 6000.

5.3 Foundation Design

Bearing Resistance Values (Conventional Spread Footings)

Using continuously applied loads, isolated footings, placed over an undisturbed firm to stiff grey silty clay, loose to compact brown silty sand or compact glacial till bearing surface can be designed using the bearing resistance values presented in Table 1 below.

Table 1 - Recommended Bearing Resistance Values – Conventional Shallow Foundations

Bearing Surface	SLS (kPa)	ULS (kPa)
Grey Firm Silty Clay	75	125
Grey Stiff Silty Clay	125	175
Compact to dense Silty Sand to Sandy Silty	120	180
Compact to dense Glacial Till	150	225

Note: A geotechnical resistance factor of 0.5 was applied to the above noted bearing resistance values at ULS.

** For footings to be placed over silty clay, Pad footing up to 5 m wide and strip footings up to 3 m wide should be used.

Where the silty sand subgrade is observed to be in a loose state of compaction, proof-rolling under dry conditions and above freezing temperatures should be completed by an adequately sized roller making several passes to achieve optimum compaction levels.

The compaction program should be reviewed and approved by Paterson. Soft or poor performing areas should be sub-excavated and replaced with an approved engineered fill such as OPSS Granular A or Granular B Type II compacted to a minimum of 98% of the material's SPMDD.

An undisturbed soil bearing surface consists of one from which all topsoil and deleterious materials, such as loose, frozen, or disturbed soil, have been removed, in the dry, prior to the placement of concrete footings.

Permissible Grade Raise Recommendation

A preliminary permissible grade raise restrictions has been provided for the southwest portion of the site where a silty clay deposit was encountered. Footings bearing upon a sand/silty sand, glacial till or bedrock bearing medium will not be subject to permissible grade raise restrictions. This is shown on Drawing PG6871-2 - Permissible Grade Raise Plan included in Appendix 2.

If higher than permissible grade raises are required, preloading with or without a surcharge, lightweight fill, and/or other solutions may be recommended by the geotechnical consultant, if required, to mitigate the risks of unacceptable long-term post-construction total and differential settlements.

5.4 Design for Earthquakes

The site class for seismic site response can be taken as **Class D**. If a higher seismic site class is required (Class C), a site-specific shear wave velocity test may be completed to accurately determine the applicable seismic site classification for foundation design of the proposed buildings, as presented in Table 4.1.8.4.A of the Ontario Building Code (OBC) 2012.

Soils underlying the subject site are not susceptible to liquefaction. Reference should be made to the latest revision of the Ontario Building Code 2012 for a full discussion of the earthquake design requirements.

5.5 Basement Slab Construction

With the removal of all topsoil, peat, and deleterious fill having significant amounts of organic material, within the footprints of the proposed residential buildings, the existing soil subgrade, reviewed and approved by Paterson personnel at the time of construction, will be considered an acceptable subgrade surface on which to commence backfilling for floor-slab construction.

Any soft or poor performing areas should be removed and backfilled with appropriate backfill material prior to placing any fill.

It is recommended that the upper 200 mm of sub-floor fill consists of OPSS Granular A crushed stone, placed in 300 mm thick loose lifts and compacted to 98% of the material's SPMDD.

5.6 Pavement Design

Roadways and driveways are understood to be included as part of the proposed development at the subject site. The proposed pavement structures are presented in Tables 2 and 3 below.

Table 2 – Recommended Pavement Structure – Driveways

Thickness (mm)	Material Description
50	**Wear Course –** HL-3 or Superpave 12.5 Asphaltic Concrete
150	**BASE –** OPSS Granular A Crushed Stone
300	**SUBBASE –** OPSS Granular B Type II
Subgrade – Either fill, in-situ soil, or OPSS Granular B Type I or II material placed over in-situ soil, bedrock or concrete fill.	

Table 3 - Recommended Pavement Structure – Local Roadways

Thickness (mm)	Material Description
40	**Wear Course** - Superpave 12.5 Asphaltic Concrete
50	**Binder Course** - Superpave 19.0 Asphaltic Concrete
150	**BASE** - OPSS Granular A Crushed Stone
400	**SUBBASE** - OPSS Granular B Type II
SUBGRADE - Either fill, in situ soil, bedrock or OPSS Granular B Type I or II material placed over fill, in situ soil or bedrock.	

If soft spots develop in the subgrade during compaction or due to construction traffic, the affected areas should be excavated and replaced with OPSS Granular B Type I or II material. Minimum Performance Graded (PG) 64-28 asphalt cement should be used for the roadway, while minimum PG 58-34 asphalt cement should be used for the driveways. The pavement granular base and subbase should be placed in maximum 300 mm thick lifts and compacted to a minimum of 99% of the material's SPMDD using suitable compaction equipment.

6.0 Design and Construction Precautions

6.1 Foundation Drainage and Backfill

Foundation Drainage and Waterproofing

It is recommended that a perimeter foundation drainage system be provided for each of the proposed buildings. The system should consist of a 150 mm diameter perforated and corrugated plastic pipe, wrapped in a geosock, surrounded on all sides by 150 mm of 19 mm clear crushed stone, which is placed at the footing level around the exterior perimeter of the structure. The clear crushed stone should be wrapped in a non-woven geotextile. The pipe should have a positive outlet, such as a gravity connection to the storm sewer or sump pump pit.

Due to the presence of a shallow groundwater table, once excavation is completed and the groundwater table is better assessed, Paterson may recommend a waterproofing membrane to be installed directly against the foundation walls. The membrane should consist of a spray-on or torch n' stick membrane to prevent water from infiltrating through the foundation walls. This should be assessed on a lot-by-lot basis prior to backfilling the proposed dwellings.

Foundation Backfill

Backfill against the exterior sides of the foundation walls should consist of free-draining, non-frost susceptible granular materials. The greater part of the site excavated materials will be frost susceptible and, as such, are not recommended for re-use as backfill against the foundation walls, unless used in conjunction with a drainage geocomposite, such as Delta Drain 6000, connected to the perimeter foundation drainage system. Imported granular materials, such as clean sand or OPSS Granular B Type I granular material, should otherwise be used for this purpose.

6.2 Protection of Footings Against Frost Action

Perimeter footings of heated structures are required to be insulated against the deleterious effects of frost action. A minimum 1.5 m thick soil cover, or an equivalent thickness of soil cover and insulation) should be provided in this regard.

Other exterior unheated footings, such as those for isolated exterior piers and retaining walls, are more prone to deleterious movement associated with frost action. These should be provided with a minimum 2.1 m thick soil cover, or an equivalent thickness of soil cover and foundation insulation.

6.3 Excavation Side Slopes

The side slopes of excavations in the soil and fill overburden materials should either be cut back at acceptable slopes or should be retained by shoring systems from the start of the excavation until the structure is backfilled. It is expected that sufficient room will be available for the greater part of the excavation to be undertaken by open-cut methods (i.e. unsupported excavations).

The excavation side slopes above the groundwater level extending to a maximum depth of 3 m should be excavated at 1H:1V or shallower. The shallower slope is required for excavation below groundwater level. The subsurface soils are considered to be a Type 2 and 3 soil according to the Occupational Health and Safety Act and Regulations for Construction Projects.

Excavated soil should not be stockpiled directly at the top of excavations and heavy equipment should be kept away from the excavation sides.

Slopes in excess of 3 m in height should be periodically inspected by the geotechnical consultant in order to detect if the slopes are exhibiting signs of distress.

It is recommended that a trench box be used at all times to protect personnel working in trenches with steep or vertical sides. It is expected that services will be installed by “cut and cover” methods and excavations will not be left open for extended periods of time.

6.4 Pipe Bedding and Backfill

Bedding and backfill materials should be in accordance with the most recent Material Specifications and Standard Detail Drawings from the Department of Public Works and Services, Infrastructure Services Branch of the City of Ottawa.

At least 150 mm of OPSS Granular A should be used for pipe bedding for sewer and water pipes. The bedding should extend to the spring line of the pipe. Cover material, from the spring line to at least 300 mm above the obvert of the pipe, should consist of OPSS Granular A or Granular B Type II with a maximum size of 25 mm. The bedding and cover materials should be placed in maximum 225 mm thick lifts compacted to 95% of the material's standard Proctor maximum dry density.

It should generally be possible to re-use the native soil above the cover material if the excavation and filling operations are carried out in dry weather conditions. Any stones greater than 200 mm in their longest dimension should be removed from these materials prior to placement.

The backfill material within the frost zone (about 1.8 m below finished grade) should match the soils exposed at the trench walls to reduce potential differential frost heaving. The backfill should be placed in maximum 225 mm thick loose lifts and compacted to a minimum of 95% of the material's SPMDD.

6.5 Groundwater Control

Based on our observations, it is anticipated that groundwater infiltration into the excavations should be low to moderate and controllable using open sumps. The contractor should be prepared to direct water away from all bearing surfaces and subgrades, regardless of the source, to prevent disturbance to the founding medium.

Permit to Take Water

A temporary Ministry of the Environment, Conservation and Parks (MECP) permit to take water (PTTW) may be required for this project if more than 400,000 L/day of ground and/or surface water is to be pumped during the construction phase. A minimum of 4 to 5 months should be allowed for completion of the PTTW application package and issuance of the permit by the MECP.

For typical ground or surface water volumes being pumped during the construction phase, typically between 50,000 to 400,000 L/day, it is required to register on the Environmental Activity and Sector Registry (EASR). A minimum of two to four weeks should be allotted for completion of the EASR registration and the Water Taking and Discharge Plan to be prepared by a Qualified Person as stipulated under O.Reg. 63/16.

If a project qualifies for a PTTW based upon anticipated conditions, an EASR will not be allowed as a temporary dewatering measure while awaiting the MECP review of the PTTW application.

6.6 Winter Construction

Precautions must be taken if winter construction is considered for this project.

The subsoil conditions at this site consist of frost susceptible materials. In the presence of water and freezing conditions, ice could form within the soil mass. Heaving and settlement upon thawing could occur.

In the event of construction during below zero temperatures, the founding stratum should be protected from freezing temperatures by the use of straw, propane heaters and tarpaulins or other suitable means. In this regard, the base of the excavations should be insulated from sub-zero temperatures immediately upon exposure and until such time as heat is adequately supplied to the building and the footings are protected with sufficient soil cover to prevent freezing at founding level.

Trench excavations and pavement construction are also difficult activities to complete during freezing conditions without introducing frost in the subgrade or in the excavation walls and bottoms. Precautions should be taken if such activities are to be carried out during freezing conditions. Additional information could be provided, if required.

6.7 Corrosion Potential and Sulphate

One (1) sample from TP 6-23 was submitted for testing. The analytical test results of the soil sample indicate that the sulphate content is less than 0.1%. These results along with the chloride and pH value are indicative that Type 10 Portland cement (Type GU) would be appropriate for this site. The chloride content and the pH of the sample indicate they are not significant factors in creating a corrosive environment for exposed ferrous metals at this site, whereas the resistivity is indicative of a moderate to aggressive environment.

6.8 Landscaping Considerations

Tree Planting Restrictions

Due to the absence of silty clay within the majority of the subject site, no tree planting and setback restrictions are applicable at the subject site. However, where clay is encountered, it is recommended that a minimum of 4.5 m tree planting setback is ensured from the proposed dwellings for small trees (mature height up to 7.5 m) and medium-sized trees (mature tree height 7.5 to 14 m) be used for areas of the site where a silty clay deposit was encountered.

Large trees (mature height over 14 m) can be planted provided a tree to foundation setback equal to the full mature height of the tree can be provided (e.g., in a park or other green space). These tree planting setbacks also require that the following conditions are met.

- The underside of footing (USF) is 1.8 m or greater below the lowest finished grade must be satisfied for footings within 10 m from the tree, as measured from the center of the tree trunk and verified by means of the Grading Plan as indicated procedural changes below.

- A small tree must be provided with a minimum of 25 m^3 of available soil volume while a medium tree must be provided with a minimum of 30 m^3 of available soil volume, as determined by the Landscape Architect. The developer is to ensure that the soil is generally un-compacted when backfilling in street tree planting locations.

- The tree species must be small (mature tree height up to 7.5 m) to medium size (mature tree height 7.5 m to 14 m) as confirmed by the Landscape Architect.

- The foundation walls are to be reinforced at least nominally (minimum of two upper and two lower 15M bars in the foundation wall).

- Grading surrounding the tree must promote drainage to the tree root zone (in such a manner as not to be detrimental to the tree).

Reference should be made to Drawing PG6871-3 - Tree Planting Restriction Areas attached to Appendix 2.

Swimming Pools, Hot Tubs, Decks and Additions

The in-situ soils are considered to be acceptable for in-ground and above-ground swimming pools. Pool construction is considered routine and can be constructed in accordance with the manufacturer's requirements and specifications.

Hot tub construction is considered routine and can be constructed in accordance with the manufacturer's requirements and specifications. Standard construction practices are considered acceptable for decks and additions.

7.0 Recommendations

It is recommended that the following be carried out by Paterson once preliminary and future details of the proposed development have been prepared:

- ❑ Review preliminary and detailed grading, servicing, landscaping and structural plan(s) from a geotechnical perspective.

It is a requirement for the foundation design data provided herein to be applicable that a material testing and observation program be performed by the geotechnical consultant. The following aspects of the program should be performed by Paterson:

- ❑ Review and inspection of the installation of the foundation drainage systems.
- ❑ Observation of all bearing surfaces prior to the placement of concrete.
- ❑ Sampling and testing of the concrete and fill materials.
- ❑ Periodic observation of the condition of unsupported excavation side slopes in excess of 3 m in height, if applicable.
- ❑ Observation of all subgrades prior to backfilling and follow-up field density tests to determine the level of compaction achieved.
- ❑ Field density tests to determine the level of compaction achieved.
- ❑ Sampling and testing of the bituminous concrete including mix design reviews.

A report confirming that these works have been conducted in general accordance with our recommendations could be issued upon the completion of a satisfactory inspection program by the geotechnical consultant.

All excess soil must be handled as per *Ontario Regulation 406/19: On-Site and Excess Soil Management*.

8.0 Statement of Limitations

The recommendations provided are in accordance with the present understanding of the project. Paterson requests permission to review the recommendations when the drawings and specifications are completed.

A soils investigation is a limited sampling of a site. Should any conditions at the site be encountered which differ from those at the test locations, Paterson requests immediate notification to permit reassessment of our recommendations.

The recommendations provided herein should only be used by the design professionals associated with this project. They are not intended for contractors bidding on or undertaking the work. The latter should evaluate the factual information provided in this report and determine the suitability and completeness for their intended construction schedule and methods. Additional testing may be required for their purposes.

The present report applies only to the project described in this document. Use of this report for purposes other than those described herein or by person(s) other than 6980848 Canada Inc., or their agents, is not authorized without review by Paterson for the applicability of our recommendations to the alternative use of the report.

Paterson Group Inc.

Puneet Bandi, M.Eng

Faisal I. Abou-Seido, P.Eng.

Report Distribution:

- ❑ 6980848 Canada Inc. (e-mail copy)
- ❑ Paterson Group (1 copy)

APPENDIX 1

SOIL PROFILE AND TEST DATA SHEETS

SYMBOLS AND TERMS

ANALYTICAL TESTING RESULTS

SOIL PROFILE AND TEST DATA

GEOTECHNICAL INVESTIGATION

Part of Lot 8, Concession 3, Greely, Ontario

DATUM: Geodetic **EASTING:** 375729.06 **NORTHING:** 5011207.383 **ELEVATION:** 98.39

PROJECT: Proposed Residential Dev. - Cedar Lakes Subdivision

BORINGS BY: Excavator

REMARKS:

DATE: October 4, 2023

FILE NO. PG6871

HOLE NO. TP 1-23

SAMPLE DESCRIPTION	STRATA PLOT	SAMPLE No.	SAMPLE Type	SAMPLE % RECOVERY	N VALUE or RQD	WATER CONTENT %	DEPTH (m)	Remoulded Shear Strength (kPa) 0 25 50 75 100	Peak Shear Strength (kPa) 0 25 50 75 100	Pen. Resist. Blows/0.3m (50 mm Dia. Cone) 0 25 50 75 100	Piezometer Construction
Ground Surface EL 98.39 m											
TOPSOIL 0.16 m EL 98.23 m		G1	#				0				
Loose, brown SILTY SAND		G2	#				1				
1.4 m EL 96.99 m		G3	#				2				
Loose, grey SILTY SAND with gravel and seashells							3				
3.7 m EL 94.69 m		G4	#				4				
GLACIAL TILL: Loose, grey silty sand with gravel, cobbles, occasional boulders, trace clay							5				
4.5 m EL 93.89 m							6				
End of Test Pit							7				
(Groundwater infiltration at 1.5m depth)											

SOIL PROFILE AND TEST DATA

GEOTECHNICAL INVESTIGATION

Part of Lot 8, Concession 3, Greely, Ontario

DATUM: Geodetic **EASTING:** 375856.031 **NORTHING:** 5011075.963 **ELEVATION:** 97.53

PROJECT: Proposed Residential Dev. - Cedar Lakes Subdivision

BORINGS BY: Excavator

REMARKS:

DATE: October 4, 2023

FILE NO. PG6871

HOLE NO. TP 2-23

SAMPLE DESCRIPTION	STRATA PLOT	SAMPLE No.	SAMPLE Type	SAMPLE % RECOVERY	N VALUE or RQD	WATER CONTENT %	DEPTH (m)	Remoulded Shear Strength (kPa)	Peak Shear Strength (kPa)	Pen. Resist. Blows/0.3m (50 mm Dia. Cone)	Piezometer Construction
								0 25 50 75 100	0 25 50 75 100	0 25 50 75 100	
Ground Surface EL 97.53 m											
TOPSOIL 0.16 m EL 97.37 m		G1	#				0				
Loose, brown SILTY SAND		G2	#								
- grey by 0.9m depth		G3	#				1				
							2				
							3				
3.9 m EL 93.63 m							4		35		
Firm, grey SILTY CLAY		G4	#								
4.4 m EL 93.13 m							5				
End of Test Pit											
(Groundwater infiltration at 1.0m depth)							6				
							7				

SOIL PROFILE AND TEST DATA

GEOTECHNICAL INVESTIGATION

Part of Lot 8, Concession 3, Greely, Ontario

DATUM: Geodetic **EASTING:** 375824.699 **NORTHING:** 5011274.313 **ELEVATION:** 98.14

PROJECT: Proposed Residential Dev. - Cedar Lakes Subdivision

BORINGS BY: Excavator

REMARKS:

DATE: October 4, 2023

FILE NO. PG6871

HOLE NO. TP 3-23

SAMPLE DESCRIPTION	STRATA PLOT	SAMPLE No.	SAMPLE Type	SAMPLE % RECOVERY	N VALUE or RQD	WATER CONTENT %	DEPTH (m)	Remoulded Shear Strength (kPa) 0 25 50 75 100	Peak Shear Strength (kPa) 0 25 50 75 100	Pen. Resist. Blows/0.3m (50 mm Dia. Cone) 0 25 50 75 100	Piezometer Construction
Ground Surface EL 98.14 m											
TOPSOIL 0.03 m EL 98.11 m		G1	#				0				
Loose, brown SILTY SAND 0.4 m EL 97.74 m		G2	#								
Loose, grey SILTY SAND with gravel 0.6 m EL 97.54 m		G3	#				1		79 82		
Stiff, grey SILTY CLAY 1.1 m EL 97.04 m		G4	#								
GLACIAL TILL: Grey silty clay with sand, gravel, cobbles and seashells 2.3 m EL 95.84 m							2				
End of Test Pit											
(Groundwater infiltration at 0.7m depth)							3				
							4				
							5				
							6				
							7				

SOIL PROFILE AND TEST DATA

GEOTECHNICAL INVESTIGATION

Part of Lot 8, Concession 3, Greely, Ontario

DATUM: Geodetic **EASTING:** 375919.947 **NORTHING:** 5011167.493 **ELEVATION:** 103.36

PROJECT: Proposed Residential Dev. - Cedar Lakes Subdivision

BORINGS BY: Excavator

REMARKS:

DATE: October 4, 2023

FILE NO. PG6871

HOLE NO. TP 4-23

SAMPLE DESCRIPTION	STRATA PLOT	SAMPLE No.	SAMPLE Type	SAMPLE % RECOVERY	N VALUE or RQD	WATER CONTENT %	DEPTH (m)	Remoulded Shear Strength (kPa) 0 25 50 75 100	Peak Shear Strength (kPa) 0 25 50 75 100	Pen. Resist. Blows/0.3m (50 mm Dia. Cone) 0 25 50 75 100	Piezometer Construction
Ground Surface EL 103.36 m											
TOPSOIL 0.3 m EL 103.06 m		G1	#				0				
		G2	#								
Loose, brown SAND (pit-run) with gravel, cobbles and boulders							1				
							2				
							3				
		G3	#				4				
5 m EL 98.36 m		G4	#				5				
GLACIAL TILL: Grey silty clay with gravel and cobbles 5.2 m EL 98.16 m											
End of Test Pit							6				
(TP dry upon completion)							7				

SOIL PROFILE AND TEST DATA

GEOTECHNICAL INVESTIGATION

Part of Lot 8, Concession 3, Greely, Ontario

DATUM: Geodetic **EASTING:** 375912.061 **NORTHING:** 5010978.983 **ELEVATION:** 98.72

PROJECT: Proposed Residential Dev. - Cedar Lakes Subdivision

BORINGS BY: Excavator

REMARKS:

DATE: October 4, 2023

FILE NO. PG6871

HOLE NO. TP 5-23

SAMPLE DESCRIPTION	STRATA PLOT	SAMPLE No.	SAMPLE Type	SAMPLE % RECOVERY	N VALUE or RQD	WATER CONTENT %	DEPTH (m)	Remoulded Shear Strength (kPa) 0 25 50 75 100	Peak Shear Strength (kPa) 0 25 50 75 100	Pen. Resist. Blows/0.3m (50 mm Dia. Cone) 0 25 50 75 100	Piezometer Construction
Ground Surface EL 98.72 m											
TOPSOIL 0.05 m EL 98.67 m		G1	#				0				
Loose, brown SILTY SAND		G2	#								
0.9 m EL 97.82 m		G3	#				1				
Loose, brown SAND with gravel											
2.3 m EL 96.42 m							2		26, 51, 55		
Firm to stiff, grey SILTY CLAY		G4	#				3				
5.3 m EL 93.42 m							4				
End of Test Pit							5				
(Groundwater infiltration at 1.0m depth)							6				
							7				

SOIL PROFILE AND TEST DATA

GEOTECHNICAL INVESTIGATION

Part of Lot 8, Concession 3, Greely, Ontario

DATUM: Geodetic **EASTING:** 376232.883 **NORTHING:** 5011443.557 **ELEVATION:** 98.57

PROJECT: Proposed Residential Dev. - Cedar Lakes Subdivision

BORINGS BY: Excavator

REMARKS:

DATE: October 4, 2023

FILE NO. PG6871

HOLE NO. TP 6-23

SAMPLE DESCRIPTION	STRATA PLOT	SAMPLE No.	SAMPLE Type	SAMPLE % RECOVERY	N VALUE or RQD	WATER CONTENT %	DEPTH (m)	Remoulded Shear Strength (kPa) 0 25 50 75 100	Peak Shear Strength (kPa) 0 25 50 75 100	Pen. Resist. Blows/0.3m (50 mm Dia. Cone) 0 25 50 75 100	Piezometer Construction
Ground Surface EL 98.57 m											
PEAT 0.3 m EL 98.27 m		G1	[#]				0				
		G2	[#]								
Loose, grey SILTY SAND 0.6 m EL 97.97 m		G3	[#]				1				
GLACIAL TILL: Grey silty clay with sand, gravel, cobbles and boulders		G4	[#]				2				
							3				
3.8 m EL 94.77 m End of Test Pit (Groundwater infiltration at 1.0m depth)							4				
							5				
							6				
							7				

SOIL PROFILE AND TEST DATA

GEOTECHNICAL INVESTIGATION

Part of Lot 8, Concession 3, Greely, Ontario

DATUM: Geodetic **EASTING:** 376276.215 **NORTHING:** 5011467.143 **ELEVATION:** 98.66

PROJECT: Proposed Residential Dev. - Cedar Lakes Subdivision

BORINGS BY: Excavator

REMARKS:

DATE: October 4, 2023

FILE NO. PG6871

HOLE NO. TP 6A-23

SAMPLE DESCRIPTION	STRATA PLOT	SAMPLE No.	SAMPLE Type	SAMPLE % RECOVERY	N VALUE or RQD	WATER CONTENT %	DEPTH (m)	Remoulded Shear Strength (kPa) 0 25 50 75 100	Peak Shear Strength (kPa) 0 25 50 75 100	Pen. Resist. Blows/0.3m (50 mm Dia. Cone) 0 25 50 75 100	Piezometer Construction
Ground Surface EL 98.66 m											
TOPSOIL 0.05 m EL 98.61 m		G1	#				0				
Compact, brown SILTY SAND 0.4 m EL 98.26 m		G2	#								
Compact, grey SILTY SAND with gravel, some clay, occasional cobbles, trace seashells 0.5 m EL 98.16 m		G3	#				1				
GLACIAL TILL: Dense, grey silty sand with gravel, cobbles and boulders							2				
		G4	#				3				
3.8 m EL 94.86 m							4				
End of Test Pit											
(Groundwater infiltration at 1.0m depth)							5				
							6				
							7				

SOIL PROFILE AND TEST DATA

GEOTECHNICAL INVESTIGATION

Part of Lot 8, Concession 3, Greely, Ontario

DATUM: Geodetic **EASTING:** 376351.584 **NORTHING:** 5011467.606 **ELEVATION:** 98.9

PROJECT: Proposed Residential Dev. - Cedar Lakes Subdivision

BORINGS BY: Excavator

REMARKS:

DATE: October 4, 2023

FILE NO. PG6871

HOLE NO. TP 7-23

SAMPLE DESCRIPTION	STRATA PLOT	SAMPLE No.	SAMPLE Type	SAMPLE % RECOVERY	N VALUE or RQD	WATER CONTENT %	DEPTH (m)	Remoulded Shear Strength (kPa) 0 25 50 75 100	Peak Shear Strength (kPa) 0 25 50 75 100	Pen. Resist. Blows/0.3m (50 mm Dia. Cone) 0 25 50 75 100	Piezometer Construction
Ground Surface EL 98.9 m											
TOPSOIL 0.2 m EL 98.7 m		G1	#				0				
Loose, brown SILTY SAND		G2	#								
- grey by 0.8m depth		G3	#				1				
1.6 m EL 97.3 m											
GLACIAL TILL: Dense, grey silty sand with gravel, cobbles and boulders		G4	#				2				
							3				
3.5 m EL 95.4 m											
End of Test Pit							4				
(Groundwater infiltration at 1.0m depth)							5				
							6				
							7				

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, %
LL	-	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

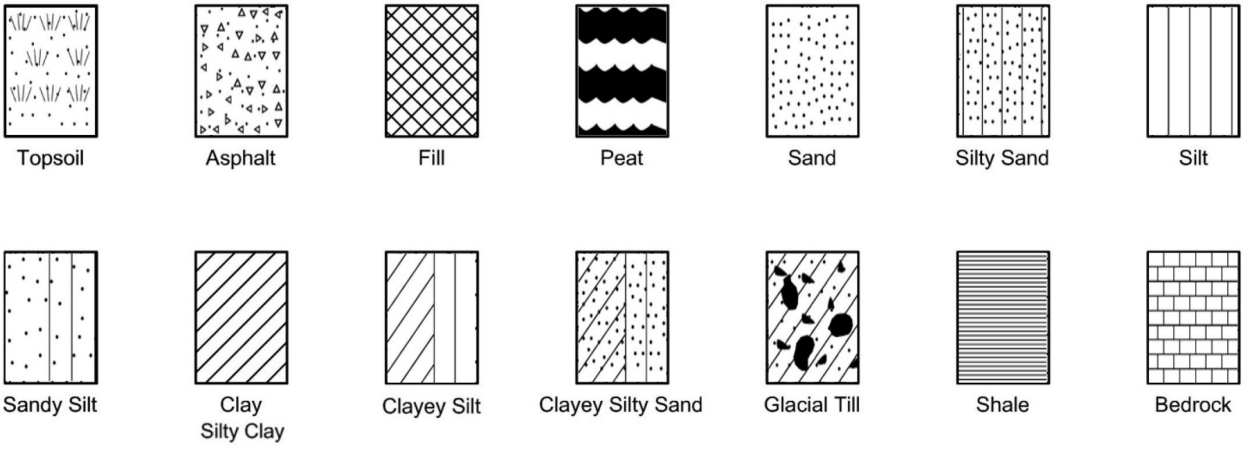
p'_o	-	Present effective overburden pressure at sample depth
p'_c	-	Preconsolidation pressure of (maximum past pressure on) sample
Ccr	-	Recompression index (in effect at pressures below p'_c)
Cc	-	Compression index (in effect at pressures above p'_c)
OC Ratio		Overconsolidaton ratio = p'_c / p'_o
Void Ratio		Initial sample void ratio = volume of voids / volume of solids
Wo	-	Initial water content (at start of consolidation test)

PERMEABILITY TEST

k	-	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.

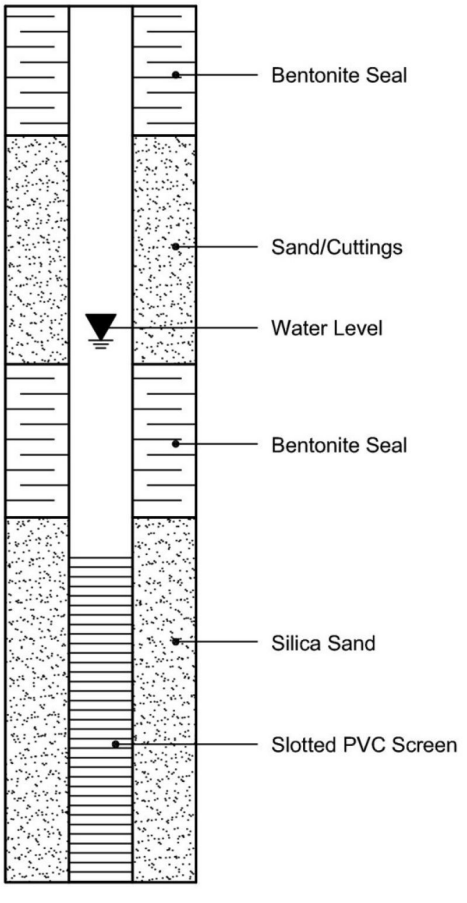
SYMBOLS AND TERMS (continued)

STRATA PLOT

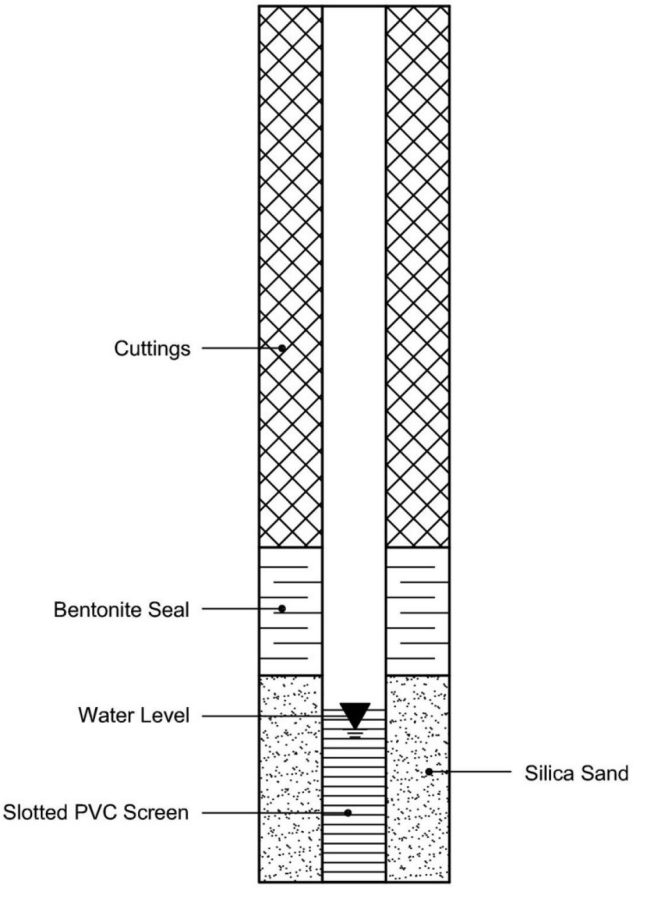


MONITORING WELL AND PIEZOMETER CONSTRUCTION

MONITORING WELL CONSTRUCTION



PIEZOMETER CONSTRUCTION



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

SOIL PROFILE AND TEST DATA

Terrain Analysis & Hydrogeological Study
Ripley Subdivision - Stagecoach Road
Ottawa (Greely), Ontario

DATUM Grades interpolated based on topographic information by others.

FILE NO. **PH1276**

REMARKS

HOLE NO. **TP 7**

BORINGS BY Backhoe DATE 24 November 2009

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone ○ Water Content %	Piezometer Construction
GROUND SURFACE						0	101.40		
TOPSOIL 0.40									
Red-brown to grey medium **SAND**		G	12			1	100.40		
		G	13			2	99.40		
						3	98.40		
End of Test Pit 3.40 (Water infiltration @ 1.1m depth)									

Pen. Resist. Blows/0.3m: ● 50 mm Dia. Cone; ○ Water Content %; scale 20 40 60 80

Shear Strength (kPa): 20 40 60 80 100

▲ Undisturbed △ Remoulded

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

SOIL PROFILE AND TEST DATA

Terrain Analysis & Hydrogeological Study
Ripley Subdivision - Stagecoach Road
Ottawa (Greely), Ontario

DATUM Grades interpolated based on topographic information by others.

FILE NO. **PH1276**

REMARKS

HOLE NO. **TP 9**

BORINGS BY Backhoe

DATE 24 November 2009

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone ○ Water Content %	Piezometer Construction
GROUND SURFACE						0	100.20	20 40 60 80	
TOPSOIL 0.25		G	16			1	99.20		
Red-brown to grey-brown medium **SAND** with gravel		G	17						
2.75		G	18			2	98.20		▽
Firm, grey-brown **SILTY CLAY**		G	19			3	97.20		
3.50									
End of Test Pit									
(Water infiltration @ 2.2m depth)									

20 40 60 80 100

Shear Strength (kPa)

▲ Undisturbed △ Remoulded

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

SOIL PROFILE AND TEST DATA

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FILE NO. **PH1276**

REMARKS

HOLE NO. **TP10**

BORINGS BY Backhoe DATE 24 November 2009

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone ○ Water Content %	Piezometer Construction
GROUND SURFACE						0	103.60		
TOPSOIL 0.10									
Dark brown **SILTY SAND**		G	20						
0.50									
Dense, light brown **SILTY SAND/SANDY SILT** with gravel		G	21			1	102.60		
						2	101.60		
2.80									
End of Test Pit									
(TP dry upon completion)									

Water Content % scale: 20 40 60 80

Shear Strength (kPa): 20 40 60 80 100

▲ Undisturbed △ Remoulded

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

SOIL PROFILE AND TEST DATA

Terrain Analysis & Hydrogeological Study
Ripley Subdivision - Stagecoach Road
Ottawa (Greely), Ontario

DATUM Grades interpolated based on topographic information by others.

FILE NO. **PH1276**

REMARKS

HOLE NO. **TP11**

BORINGS BY Backhoe DATE 24 November 2009

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone ○ Water Content %	Piezometer Construction
GROUND SURFACE						0	101.80	20 40 60 80	
TOPSOIL 0.30									
GLACIAL TILL: Light brown silty sand with gravel, cobbles and boulders		G	22			1	100.80		
						2	99.80		
2.70									
End of Test Pit									
(Water infiltration @ 0.35m depth)									

20 40 60 80 100
Shear Strength (kPa)
▲ Undisturbed △ Remoulded

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

SOIL PROFILE AND TEST DATA

Terrain Analysis & Hydrogeological Study
Ripley Subdivision - Stagecoach Road
Ottawa (Greely), Ontario

DATUM Grades interpolated based on topographic information by others.

FILE NO. PH1276

REMARKS

HOLE NO. TP12

BORINGS BY Backhoe **DATE** 24 November 2009

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	100.50
TOPSOIL 0.30							
		G	23			1	99.50
Brown to grey-brown medium **SAND**						2	98.50
		G	24				
						3	97.50
3.80							
End of Test Pit							
(Water infiltration @ 1.0m depth)							

Pen. Resist. Blows/0.3m
● 50 mm Dia. Cone
○ Water Content %

20 40 60 80

Piezometer Construction

20 40 60 80 100
Shear Strength (kPa)
▲ Undisturbed △ Remoulded

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

SOIL PROFILE AND TEST DATA

Terrain Analysis & Hydrogeological Study
Ripley Subdivision - Stagecoach Road
Ottawa (Greely), Ontario

DATUM Grades interpolated based on topographic information by others.

FILE NO. PH1276

REMARKS

HOLE NO. TP18

BORINGS BY Backhoe **DATE** 7 December 2010

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	102.00
TOPSOIL							
0.60							
SAND with cobbles and boulders						1	101.00
1.60							
GLACIAL TILL: Silty clay with sand, gravel, cobbles and boulders						2	100.00
3.10						3	99.00
End of Test Pit							
(TP dry upon completion)							

Pen. Resist. Blows/0.3m
● 50 mm Dia. Cone
○ Water Content %

20 40 60 80

Piezometer Construction

20 40 60 80 100
Shear Strength (kPa)
▲ Undisturbed △ Remoulded

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

SOIL PROFILE AND TEST DATA

Terrain Analysis & Hydrogeological Study
Ripley Subdivision - Stagecoach Road
Ottawa (Greely), Ontario

DATUM Grades interpolated based on topographic information by others.

FILE NO. **PH1276**

REMARKS

HOLE NO. **TP19**

BORINGS BY Backhoe

DATE 7 December 2010

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone ○ Water Content %	Piezometer Construction
GROUND SURFACE									
TOPSOIL						0	100.00		
0.30									
SAND									
0.70									
GLACIAL TILL: Silty clay with sand, gravel, cobbles and boulders						1	99.00		
						2	98.00		
2.60									
End of Test Pit Practical refusal on boulders @ 2.60m depth (TP dry upon completion)									

Pen. Resist. Blows/0.3m: ● 50 mm Dia. Cone; ○ Water Content %

20 40 60 80

20 40 60 80 100

Shear Strength (kPa)

▲ Undisturbed △ Remoulded

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

SOIL PROFILE AND TEST DATA

Terrain Analysis & Hydrogeological Study
Ripley Subdivision - Stagecoach Road
Ottawa (Greely), Ontario

DATUM Grades interpolated based on topographic information by others.

FILE NO. **PH1276**

REMARKS

HOLE NO. **TP20**

BORINGS BY Backhoe DATE 7 December 2010

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone ○ Water Content %	Piezometer Construction
GROUND SURFACE						0	98.50	20 40 60 80	
TOPSOIL 0.40									
SAND						1	97.50		▽
						2	96.50		
2.70									
End of Test Pit									
(GWL @ 0.7m depth)									

20 40 60 80 100
Shear Strength (kPa)
▲ Undisturbed △ Remoulded

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

SOIL PROFILE AND TEST DATA

Terrain Analysis & Hydrogeological Study
Ripley Subdivision - Stagecoach Road
Ottawa (Greely), Ontario

DATUM Grades interpolated based on topographic information by others.

FILE NO. **PH1276**

REMARKS

HOLE NO. **TP21**

BORINGS BY Backhoe

DATE 7 December 2010

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone ○ Water Content %	Piezometer Construction
GROUND SURFACE						0	99.20	20 40 60 80	
TOPSOIL 0.30									
SAND 1.60						1	98.20		▽
MARL 2.00									
SAND with boulders 2.70						2	97.20		
End of Test Pit (GWL @ 1.6m depth)									

20 40 60 80 100
Shear Strength (kPa)
▲ Undisturbed △ Remoulded

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

SOIL PROFILE AND TEST DATA

Terrain Analysis & Hydrogeological Study
Ripley Subdivision - Stagecoach Road
Ottawa (Greely), Ontario

DATUM Grades interpolated based on topographic information by others.

FILE NO. **PH1276**

REMARKS

HOLE NO. **TP22**

BORINGS BY Backhoe DATE 7 December 2010

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone ○ Water Content %	Piezometer Construction
GROUND SURFACE						0	99.40		
TOPSOIL 0.50									
SILTY CLAY with sand 1.30						1	98.40		
SILT with boulders 3.50						2	97.40		
						3	96.40		
End of Test Pit (GWL @ 1.0m depth)									

Pen. Resist. Blows/0.3m: ● 50 mm Dia. Cone; ○ Water Content %; scale 20 40 60 80

Shear Strength (kPa): 20 40 60 80 100

▲ Undisturbed △ Remoulded

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

SOIL PROFILE AND TEST DATA

Terrain Analysis & Hydrogeological Study
Ripley Subdivision - Stagecoach Road
Ottawa (Greely), Ontario

DATUM Grades interpolated based on topographic information by others.

FILE NO. **PH1276**

REMARKS

HOLE NO. **TP23**

BORINGS BY Backhoe

DATE 7 December 2010

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone ○ Water Content %	Piezometer Construction
GROUND SURFACE						0	99.00		
TOPSOIL 0.30									
SAND with marl 0.50						1	98.00		
GLACIAL TILL: Silty sand with cobbles and boulders						2	97.00		
						3	96.00		
End of Test Pit 3.50 (GWL @ 0.2m depth)									

Water Content % scale: 20 40 60 80

Shear Strength (kPa) scale: 20 40 60 80 100

▲ Undisturbed △ Remoulded

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

SOIL PROFILE AND TEST DATA

Terrain Analysis & Hydrogeological Study
Ripley Subdivision - Stagecoach Road
Ottawa (Greely), Ontario

DATUM Grades interpolated based on topographic information by others.

FILE NO. **PH1276**

REMARKS

HOLE NO. **TP24**

BORINGS BY Backhoe

DATE 7 December 2010

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	99.70
TOPSOIL 0.40							
SILTY SAND 0.80						1	98.70
GLACIAL TILL: Silty sand with cobbles and boulders						2	97.70
3.20						3	96.70
End of Test Pit							
(GWL @ 0.7m depth)							

Pen. Resist. Blows/0.3m
● 50 mm Dia. Cone
○ Water Content %

20 40 60 80

Piezometer Construction

20 40 60 80 100
Shear Strength (kPa)
▲ Undisturbed △ Remoulded

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

SOIL PROFILE AND TEST DATA

Terrain Analysis & Hydrogeological Study
Ripley Subdivision - Stagecoach Road
Ottawa (Greely), Ontario

DATUM Grades interpolated based on topographic information by others.

FILE NO. **PH1276**

REMARKS

HOLE NO. **TP25**

BORINGS BY Backhoe DATE 7 December 2010

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone ○ Water Content %	Piezometer Construction
GROUND SURFACE						0	101.20		
TOPSOIL 0.30									
SAND						1	100.20		
						2	99.20		
3.00						3	98.20		
End of Test Pit									
(GWL @ 0.5m depth)									

Water Content % scale: 20 40 60 80

Shear Strength (kPa) scale: 20 40 60 80 100

▲ Undisturbed △ Remoulded

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

SOIL PROFILE AND TEST DATA

Terrain Analysis & Hydrogeological Study
Ripley Subdivision - Stagecoach Road
Ottawa (Greely), Ontario

DATUM Grades interpolated based on topographic information by others.

FILE NO. **PH1276**

REMARKS

HOLE NO. **TP26**

BORINGS BY Backhoe DATE 17 December 2010

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	98.90
TOPSOIL							
0.35							
Brown **SAND**		G	1			1	97.90
0.80							
Light brown **SAND**		G	2			2	96.90
						3	95.90
3.80							
SILTY CLAY						4	94.90
4.00							
End of Test Pit							
(GWL @ 1.8m depth)							

Pen. Resist. Blows/0.3m
● 50 mm Dia. Cone
○ Water Content %

20 40 60 80

Piezometer Construction

20 40 60 80 100
Shear Strength (kPa)
▲ Undisturbed △ Remoulded

patersongroup Consulting Engineers

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

SOIL PROFILE AND TEST DATA

Terrain Analysis & Hydrogeological Study
Ripley Subdivision - Stagecoach Road
Ottawa (Greely), Ontario

DATUM Grades interpolated based on topographic information by others.

FILE NO. PH1276

REMARKS

HOLE NO. TP27

BORINGS BY Backhoe **DATE** 17 December 2010

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone ○ Water Content %	Piezometer Construction
GROUND SURFACE						0	102.80		
TOPSOIL 0.40									
Brown **SAND** 0.90		G	3			1	101.80		
Light brown **SAND** 4.00						2	100.80		
						3	99.80		
GLACIAL TILL: Brown silty sand with gravel, cobbles and boulders 4.20						4	98.80		
End of Test Pit									
(GWL @ 1.5m depth)									

Pen. Resist. Blows/0.3m: 20 40 60 80

Water Content %: 20 40 60 80

Shear Strength (kPa): 20 40 60 80 100

▲ Undisturbed △ Remoulded

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

SOIL PROFILE AND TEST DATA

Terrain Analysis & Hydrogeological Study
Ripley Subdivision - Stagecoach Road
Ottawa (Greely), Ontario

DATUM Grades interpolated based on topographic information by others.

FILE NO. PH1276

REMARKS

HOLE NO. AH 1

BORINGS BY Hand Auger **DATE** 4 October 2010

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone ○ Water Content %	Piezometer Construction
GROUND SURFACE						0	99.15	20 40 60 80	
TOPSOIL (high humic content) 0.25									
Brown medium **SAND**						1	98.15		
2.30						2	97.15		▽
End of Auger Hole (GWL @ 2.12m depth)								20 40 60 80 100 Shear Strength (kPa) ▲ Undisturbed △ Remoulded	

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SOIL PROFILE AND TEST DATA

Terrain Analysis & Hydrogeological Study
Ripley Subdivision - Stagecoach Road
Ottawa (Greely), Ontario

DATUM Grades interpolated based on topographic information by others.

FILE NO. PH1276

REMARKS

HOLE NO. AH 4

BORINGS BY Hand Auger **DATE** 7 December 2010

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone ○ Water Content %	Piezometer Construction
GROUND SURFACE						0	98.50	20 40 60 80	
TOPSOIL 0.25									
SAND						1	97.50		▽
1.60									
End of Auger Hole									
(GWL @ 0.8m depth)									

20 40 60 80 100
Shear Strength (kPa)
▲ Undisturbed △ Remoulded

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

SOIL PROFILE AND TEST DATA

Terrain Analysis & Hydrogeological Study
Ripley Subdivision - Stagecoach Road
Ottawa (Greely), Ontario

DATUM Grades interpolated based on topographic information by others.

FILE NO. **PH1276**

REMARKS

HOLE NO. **AH 5**

BORINGS BY Hand Auger

DATE 7 December 2010

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone ○ Water Content %	Piezometer Construction
GROUND SURFACE						0	98.00		
TOPSOIL 0.25									
SAND						1	97.00		
1.60									
End of Auger Hole									
(GWL @ 0.8m depth)									

20 40 60 80

20 40 60 80 100

Shear Strength (kPa)

▲ Undisturbed △ Remoulded

patersongroup Consulting Engineers

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

SOIL PROFILE AND TEST DATA

Terrain Analysis & Hydrogeological Study
Ripley Subdivision - Stagecoach Road
Ottawa (Greely), Ontario

DATUM Grades interpolated based on topographic information by others.

FILE NO. PH1276

REMARKS

HOLE NO. MW 1

BORINGS BY Backhoe **DATE** 28 August 2010

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone ○ Water Content %	Piezometer Construction
GROUND SURFACE						0	99.00		
TOPSOIL 0.15									
Medium **SAND,** trace silt						1	98.00		
1.20									
Brown **SAND**									
2.00						2	97.00		
End of Monitoring Well									
(GWL @ 1.4m-Sept. 22/10)									

Pen. Resist. Blows/0.3m: 20 40 60 80

Water Content %: 20 40 60 80

Shear Strength (kPa): 20 40 60 80 100

▲ Undisturbed △ Remoulded

patersongroup Consulting Engineers

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

SOIL PROFILE AND TEST DATA

Terrain Analysis & Hydrogeological Study
Ripley Subdivision - Stagecoach Road
Ottawa (Greely), Ontario

DATUM Grades interpolated based on topographic information by others.

FILE NO. **PH1276**

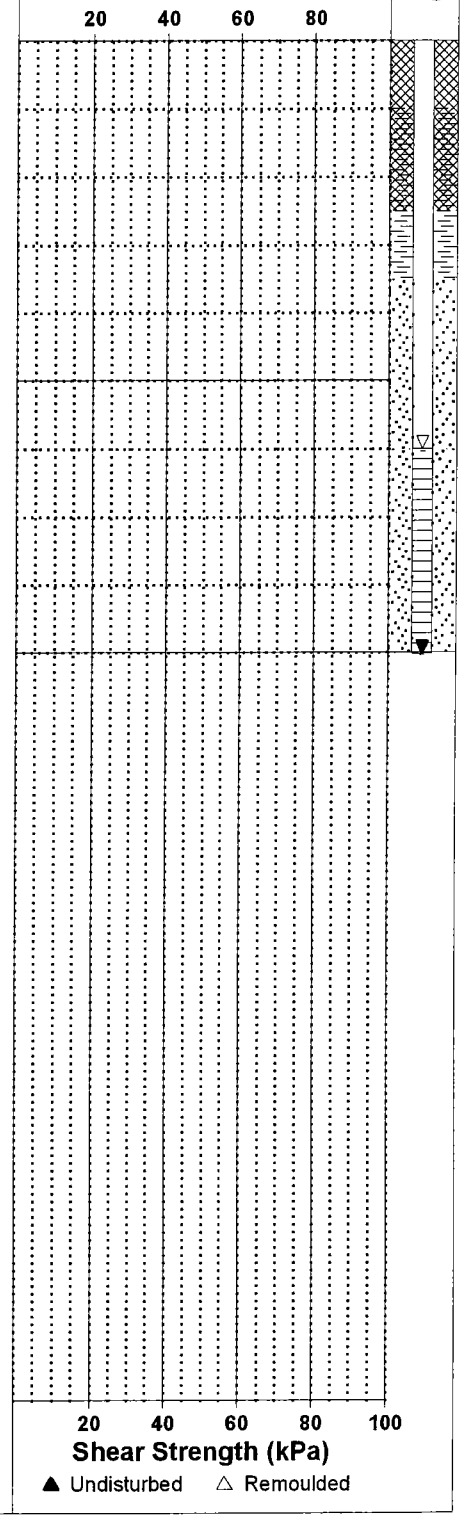
REMARKS

HOLE NO. **MW 3**

BORINGS BY Hand Auger

DATE 29 August 2010

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone ○ Water Content %	Piezometer Construction
GROUND SURFACE						0	99.20		
TOPSOIL 0.20									
Red-brown **SAND**, trace silt 0.50									
Brown **SAND**						1	98.20		
1.80									
End of Monitoring Well									
(GWL @ 1.2m-Sept. 22/10)									



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

SOIL PROFILE AND TEST DATA

Terrain Analysis & Hydrogeological Study
Ripley Subdivision - Stagecoach Road
Ottawa (Greely), Ontario

DATUM Grades interpolated based on topographic information by others.

FILE NO. PH1276

REMARKS

HOLE NO. MW 7

BORINGS BY Backhoe **DATE** 24 November 2009

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	100.90
TOPSOIL 0.20							
Red-brown **SAND,** trace silt 0.50						1	99.90
Brown **SAND**						2	98.90
3.00						3	97.90
End of Monitoring Well							
(GWL @ 1.4m-Sept. 22/10)							

Pen. Resist. Blows/0.3m
● 50 mm Dia. Cone

○ Water Content %

20 40 60 80

Piezometer Construction

20 40 60 80 100

Shear Strength (kPa)

▲ Undisturbed △ Remoulded

patersongroup Consulting Engineers

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

SOIL PROFILE AND TEST DATA

Terrain Analysis & Hydrogeological Study
Ripley Subdivision - Stagecoach Road
Ottawa (Greely), Ontario

DATUM Grades interpolated based on topographic information by others.

FILE NO. **PH1276**

REMARKS

HOLE NO. **MW 8**

BORINGS BY Backhoe DATE 24 November 2009

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone ○ Water Content %	Piezometer Construction
GROUND SURFACE						0	103.70	20 40 60 80	
TOPSOIL 0.20									
Red-brown **SAND,** trace silt 0.50						1	102.70		
Brown **SAND**						2	101.70		
3.00						3	100.70		
End of Monitoring Well (GWL @ 0.6m depth)									

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, %
LL	-	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 x 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

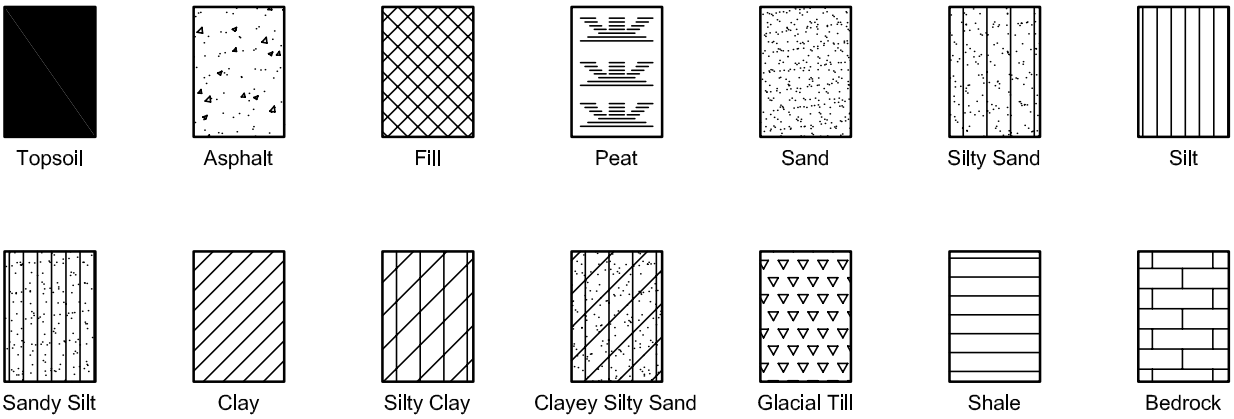
p'_o	-	Present effective overburden pressure at sample depth
p'_c	-	Preconsolidation pressure of (maximum past pressure on) sample
Ccr	-	Recompression index (in effect at pressures below p'_c)
Cc	-	Compression index (in effect at pressures above p'_c)
OC Ratio		Overconsolidaton ratio = p'_c / p'_o
Void Ratio		Initial sample void ratio = volume of voids / volume of solids
Wo	-	Initial water content (at start of consolidation test)

PERMEABILITY TEST

k	-	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.

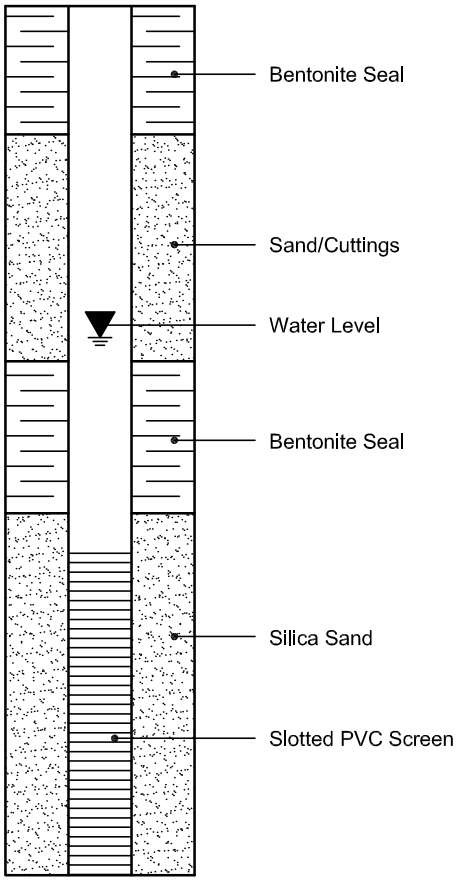
SYMBOLS AND TERMS (continued)

STRATA PLOT

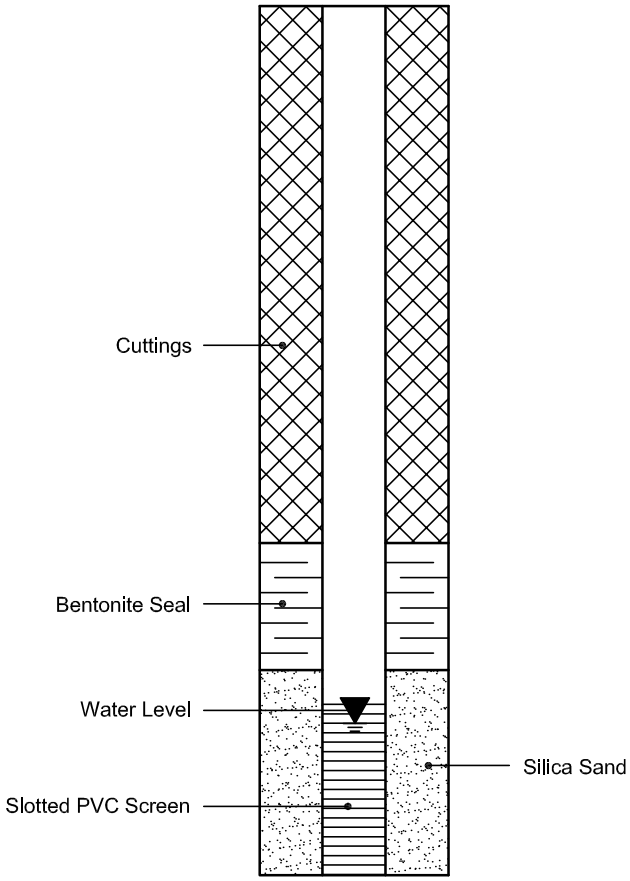


MONITORING WELL AND PIEZOMETER CONSTRUCTION

MONITORING WELL CONSTRUCTION



PIEZOMETER CONSTRUCTION



PARACEL LABORATORIES LTD.

Order #: 2340432

Certificate of Analysis

Report Date: 12-Oct-2023

Client: Paterson Group Consulting Engineers (Ottawa)

Order Date: 5-Oct-2023

Client PO: 58528

Project Description: PG6871

	Client ID:	TP6-23, G4	-	-	-		
	Sample Date:	05-Oct-23 09:00	-	-	-	-	-
	Sample ID:	2340432-01	-	-	-		
	Matrix:	Soil	-	-	-		
	MDL/Units						
Physical Characteristics							
% Solids	0.1 % by Wt.	81.7	-	-	-	-	-
General Inorganics							
pH	0.05 pH Units	7.49	-	-	-	-	-
Resistivity	0.1 Ohm.m	31.5	-	-	-	-	-
Anions							
Chloride	10 ug/g	12	-	-	-	-	-
Sulphate	10 ug/g	153	-	-	-	-	-

APPENDIX 2

FIGURE 1 – KEY PLAN

DRAWING PG6871-1 – TEST HOLE LOCATION PLAN

DRAWING PG6871-2 – PERMISSIBLE GRADE RAISE PLAN

DRAWING PG6871-3 – TREE PLANTING SETBACK PLAN

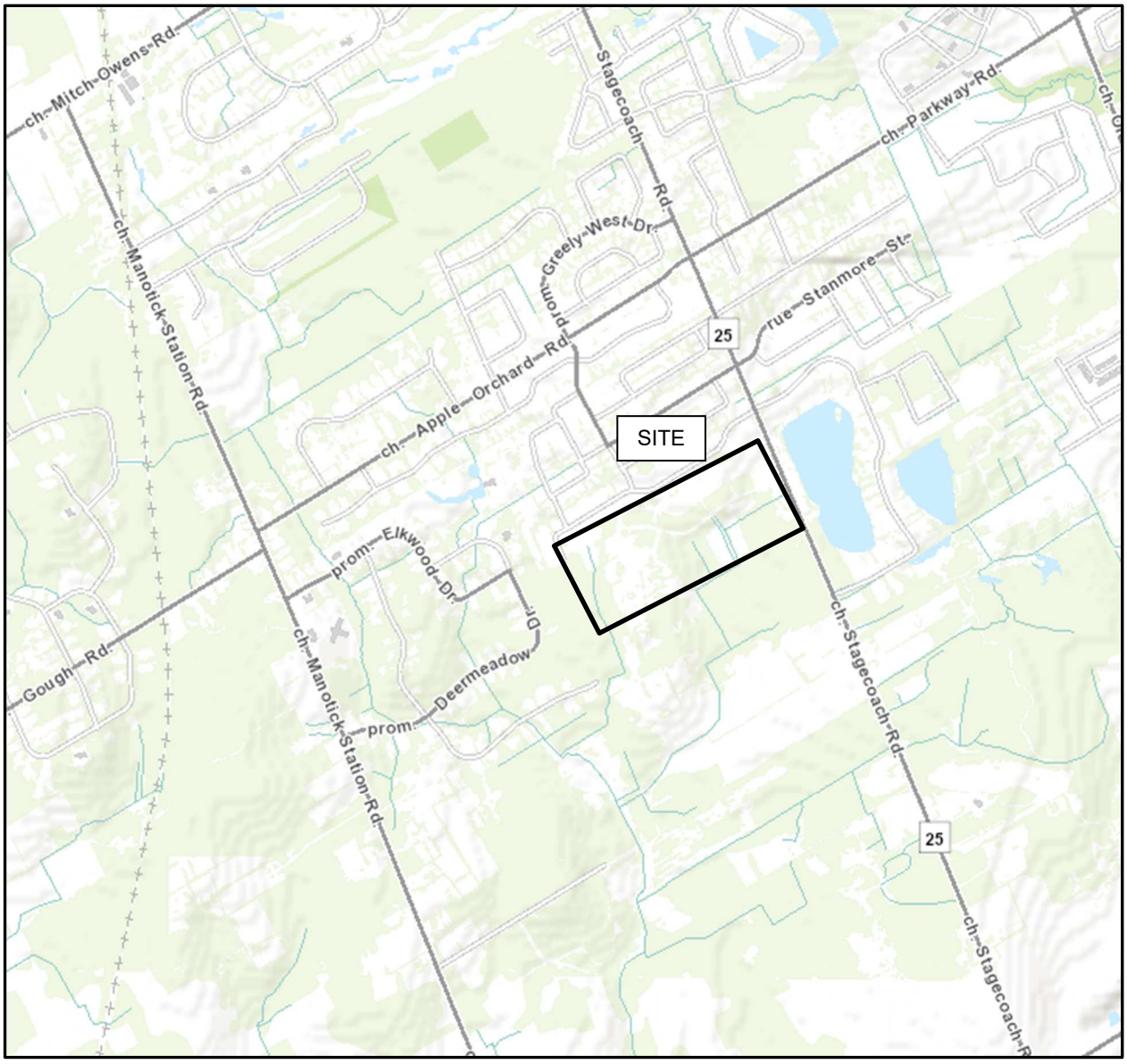
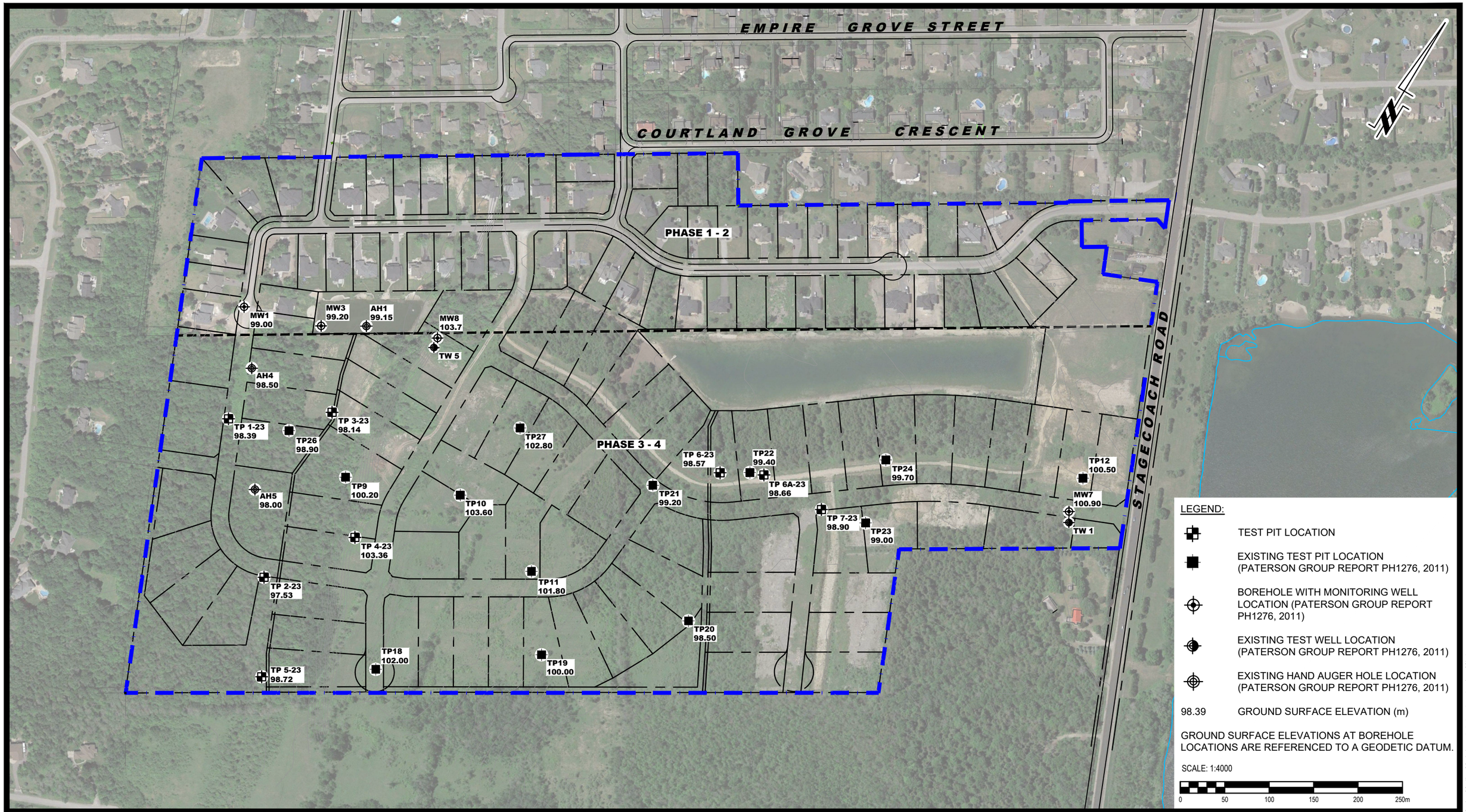


FIGURE 1

KEY PLAN

PATERSON GROUP



LEGEND:

- TEST PIT LOCATION
- EXISTING TEST PIT LOCATION (PATERSON GROUP REPORT PH1276, 2011)
- BOREHOLE WITH MONITORING WELL LOCATION (PATERSON GROUP REPORT PH1276, 2011)
- EXISTING TEST WELL LOCATION (PATERSON GROUP REPORT PH1276, 2011)
- EXISTING HAND AUGER HOLE LOCATION (PATERSON GROUP REPORT PH1276, 2011)

98.39 GROUND SURFACE ELEVATION (m)

GROUND SURFACE ELEVATIONS AT BOREHOLE LOCATIONS ARE REFERENCED TO A GEODETIC DATUM.

SCALE: 1:4000

0 50 100 150 200 250m

PATERSON GROUP
9 AURIGA DRIVE
OTTAWA, ON
K2E 7T9
TEL: (613) 226-7381

NO.	REVISIONS	DATE	INITIAL
2	REVISED AS PER CITY COMMENTS	20/06/2024	YZ
1	UPDATED CONCEPTUAL PLAN	05/12/2023	PB

6980848 CANADA CORPORATION
GEOTECHNICAL INVESTIGATION
PROPOSED RESIDENTIAL DEVELOPMENT
LOT 8, CONCESSION 3, PHASE 3 AND 4
GREELY, ONTARIO

Title:

TEST HOLE LOCATION PLAN

Scale: 1:4000	Date: 10/2023
Drawn by: GK	Report No.: PG6871-1
Checked by: PB	Dwg. No.: PG6871-1
Approved by: FA	Revision No.: 2

11x17

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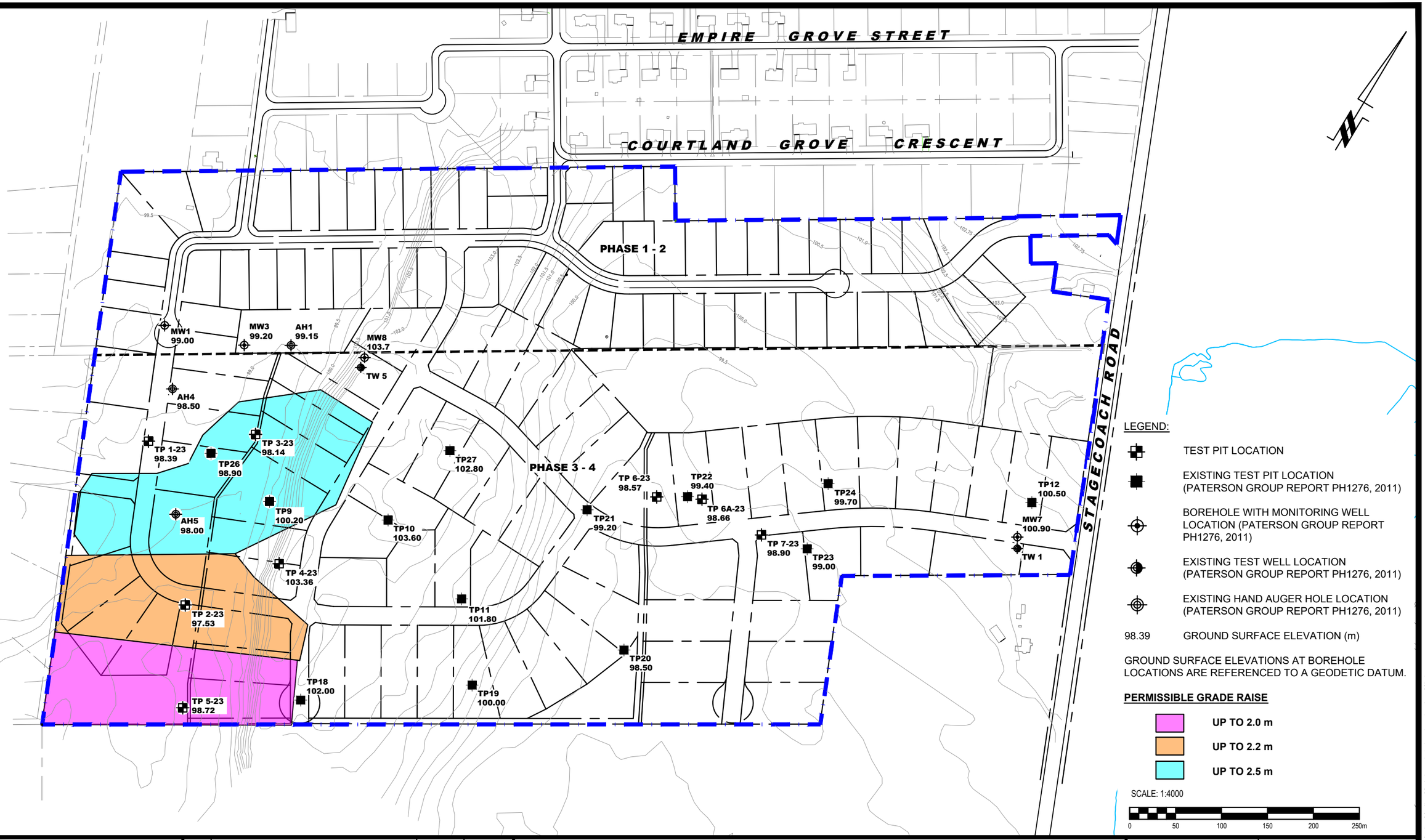

LEGEND:

- TEST PIT LOCATION
- EXISTING TEST PIT LOCATION (PATERSON GROUP REPORT PH1276, 2011)
- BOREHOLE WITH MONITORING WELL LOCATION (PATERSON GROUP REPORT PH1276, 2011)
- EXISTING TEST WELL LOCATION (PATERSON GROUP REPORT PH1276, 2011)
- EXISTING HAND AUGER HOLE LOCATION (PATERSON GROUP REPORT PH1276, 2011)

98.39 GROUND SURFACE ELEVATION (m)

GROUND SURFACE ELEVATIONS AT BOREHOLE LOCATIONS ARE REFERENCED TO A GEODETIC DATUM.

PERMISSIBLE GRADE RAISE

- **UP TO 2.0 m**
- **UP TO 2.2 m**
- **UP TO 2.5 m**

SCALE: 1:4000

0 50 100 150 200 250m

PATERSON GROUP
9 AURIGA DRIVE
OTTAWA, ON
K2E 7T9
TEL: (613) 226-7381

NO.	REVISIONS	DATE	INITIAL
2	REVISED AS PER CITY COMMENTS	20/06/2024	YZ
1	UPDATED CONCEPTUAL PLAN	05/12/2023	PB

6980848 CANADA CORPORATION
GEOTECHNICAL INVESTIGATION
PROPOSED RESIDENTIAL DEVELOPMENT
LOT 8, CONCESSION 3, PHASE 3 AND 4
GREELY, ONTARIO

Title:

PERMISSIBLE GRADE RAISE PLAN

Scale: 1:4000	Date: 10/2023
Drawn by: GK	Report No.: PG6871-1
Checked by: PB	Dwg. No.: **PG6871-2**
Approved by: FA	Revision No.: 2

11x17

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EMPIRE GROVE STREET

COURTLAND GROVE CRESCENT

STAGECOACH ROAD

PHASE 1 - 2

PHASE 3 - 4

MW1 99.00
MW3 99.20
AH1 99.15
MW8 103.7
TW 5
AH4 98.50
TP 1-23 98.39
TP 3-23 98.14
TP26 98.90
AH5 98.00
TP9 100.20
TP10 103.60
TP 4-23 103.36
TP 2-23 97.53
TP 5-23 98.72
TP18 102.00
TP11 101.80
TP19 100.00
TP27 102.80
TP 6-23 98.57
TP21 99.20
TP20 98.50
TP22 99.40
TP 6A-23 98.66
TP24 99.70
TP 7-23 98.90
TP23 99.00
TP12 100.50
MW7 100.90
TW 1

LEGEND:

- TEST PIT LOCATION
- EXISTING TEST PIT LOCATION (PATERSON GROUP REPORT PH1276, 2011)
- BOREHOLE WITH MONITORING WELL LOCATION (PATERSON GROUP REPORT PH1276, 2011)
- EXISTING TEST WELL LOCATION (PATERSON GROUP REPORT PH1276, 2011)
- EXISTING HAND AUGER HOLE LOCATION (PATERSON GROUP REPORT PH1276, 2011)

98.39 GROUND SURFACE ELEVATION (m)

GROUND SURFACE ELEVATIONS AT BOREHOLE LOCATIONS ARE REFERENCED TO A GEODETIC DATUM.

TREE PLANTING SETBACK

- **AREA 1 - LOW TO MEDIUM PLASTICITY SILTY CLAY AREA - 4.5 m SETBACKS FOR TREE PLANTING**
- **AREA 2 - NO TREE PANTING SETBACK**

SCALE: 1:4000

0 50 100 150 200 250m

PATERSON GROUP
9 AURIGA DRIVE
OTTAWA, ON
K2E 7T9
TEL: (613) 226-7381

NO.	REVISIONS	DATE	INITIAL
2	REVISED AS PER CITY COMMENTS	20/06/2024	YZ
1	UPDATED CONCEPTUAL PLAN	05/12/2023	PB

6980848 CANADA CORPORATION
GEOTECHNICAL INVESTIGATION
PROPOSED RESIDENTIAL DEVELOPMENT
LOT 8, CONCESSION 3, PHASE 3 AND 4
GREELY, ONTARIO

Title:

TREE PLANTING SETBACK PLAN

Scale: 1:4000	Date: 10/2023
Drawn by: GK	Report No.: PG6871-1
Checked by: PB	Dwg. No.: **PG6871-3**
Approved by: FA	Revision No.: 2

11x17

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