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London, Ontario N5X 3Y2

GE-00085
January 16, 2023

Attention: Dave Traher, Vice President, Planning and Development
dtraher@westdellcorp.com

**Re: Geotechnical Assessment
Retaining Wall Design
952 Southdale Road, London**

Introduction

This report has been prepared by LDS Consultants Inc. (LDS) to provide geotechnical comments and recommendations for the construction of the proposed retaining wall structure which will be located along the easterly side of the development, adjacent to the Button Bush Wetland feature which borders the site.

The subject lands are located at the north-east junction of Colonel Talbot Road and Southdale Road in West London, Municipal Number (MN 952) Southdale Road East. The Button Bush wetland feature which is located on the east side of the site has been identified as a Provincially Significant Wetland. A key plan showing the site location is provided below as Figure 1, for reference.

Figure 1: Key Plan



LDS has had extensive involvement at the site, carrying out geotechnical and hydrogeological background studies in support of the mixed use redevelopment for the site. As part of the conceptual development plans, the proposed commercial development through the bulk of the site will require significant site grading activities. Upwards of 3 m of fill are anticipated through portions of the site. To accommodate the fill placement, and to minimize disturbance to the natural features which border the east side of the site, a retaining wall structure is being planned. This letter report has been prepared to provide geotechnical comments and recommendations as it pertains to the proposed retaining wall at the subject site.

Background Studies

As noted previously, LDS is familiar with the soil conditions at the subject site, having been involved with site characterization work at this property since 2017. LDS prepared the Geotechnical Report (dated October, 2020) outlining geotechnical comments and recommendations related to the proposed site development. Additionally, LDS prepared the Preliminary Hydrogeological Assessment (dated April 6, 2022) for the purposes of examining hydrogeologic (groundwater) and hydrologic (surface water) characteristics of the site; and to determine if the proposed commercial site development could result in adverse / negative impacts to natural features in the area.

Based on the existing soils and groundwater data which is available from the existing geotechnical and hydrogeological reports, it is anticipated that no further boreholes or monitoring well installations will be required at the site to complete this geotechnical review.

Summarized Conditions

A series of ten boreholes (denoted as BH1 through BH10), and six shallow auger holes (denoted as AP101 through AP106) were advanced throughout the site on September 25, 2017. Four of the boreholes were equipped with monitoring wells including a second well at MW5 (one shallow and one deep). A series of shallow piezometers (PZ 201 and PZ 202) were installed at the site on October 20, 2017 in the wetland area. On February 10 and 11, 2021, an additional set of boreholes (denoted as BH301 through BH305) were advanced at the site. Each of the boreholes being equipped with monitoring wells, a second well was installed at MW303 and MW304 (one shallow and one deep). Damaged well casings at BH5 (deep) and BH6 were decommissioned, new wells were installed at each location, within 1 m of the original well.

A plan showing all of the borehole, monitoring well, and piezometer locations is included on Drawing 1, and the borehole logs are appended, for reference. Geotechnical lab testing on collected soil samples includes five (5) gradation analysis and routine moisture content determinations, with estimated hydraulic conductivity values ranging between 10^{-5} and 10^{-6} m/s.

Soil Conditions

Subgrade soils within the tableland area were generally described as surficial topsoil, underlain by natural sandy silt/silty and silt till soils. The soils encountered near ground surface are described as being mottled in colour, and in a weathered condition in the upper 1.2 to 1.5 m. The silt and silt till soils are described as containing discontinuous sand layers, and/or intermittent fine sand layering. Below the weathered zone, the soils are predominantly brown in colour, becoming grey at variable depths below 3.0 m.

In the wetland area, the surficial deposits encountered within the wetland piezometers are comprised of topsoil and organics (typically in the range of 0.3 to 1.0 m thick), overlying alluvial (unconsolidated) deposits of sandy silt which contain organic inclusions. The deep piezometers were terminated in compact silt till soils, similar to that observed within the tableland areas of the site.

The manual and continuous groundwater measurements recorded in the monitoring wells installed across the tableland confirm a local groundwater flow direction in an easterly direction, towards the wetland. This is demonstrated on the Groundwater Contour Plans for Spring 2021, provided on Drawings 2 and 3, appended.

Geotechnical Comments and Recommendations

The following geotechnical comments are provided to assist with the design and construction of retaining wall structures at the site, which are being considered along the eastern limits of the subject property, proximal to the wetland area.

At present, the specific retaining wall design is unknown. However, it is anticipated that a gravity-based structure using natural armourstone blocks or manufactured segmental blocks will be utilized to accommodate the grade separation between the tableland area where fill will be placed to accommodate the proposed development, and the lower grades which exist along the edge of the wetland feature. Consideration may also be given to utilizing a manufactured wall system (such as Envirolok) which can provide a more naturalized transition by incorporating plantings to the face of the wall.

Erosion and Sediment Control

It is acknowledged that for work in proximity to any sensitive feature, that it is important to establish a comprehensive ESC strategy which addresses the various stages of construction, and the activities planned onsite. The strategy must consider construction staging and sequencing, as well as seasonal conditions which are anticipated, and materials being used, particularly when imported soils and/or soil stockpiling is anticipated.

Rigorous inspection and a robust maintenance and repair plans are required to ensure that ESC measures perform, as intended. Mitigation measures and best management practices are outlined in the Geotechnical Report previously prepared by LDS.

When construction activities are complete, it is important to ensure that a plan to re-establish vegetative cover is implemented to help stabilize disturbed soils. In this regard, the use of hydroseed and bonded-fibre mix, and the possible use of erosion control blankets in proximity to the wall are recommended.

Subgrade Preparation

Due to the limited height of the wall, extensive tie-backs are not anticipated, and the working area required to install this wall is expected to be localized to the footprint of the wall and the landward backfilling zone. Further, construction of the retaining wall can be conducted on the tableland side of the wall, limiting disturbance to the wetland feature or the associated buffer area.

Timing of the subgrade preparation and wall construction should have regard for potential flooding conditions. In this regard, the work is best coordinated for drier periods (i.e. summer and fall months) when flooding conditions within the wetland are less likely to occur.

Prior to the placement of retaining wall structures, the subgrade soils should be examined by a geotechnical inspector. Any buried topsoil, or otherwise unsuitable or unstable subgrade soils should be removed, and restored with compacted granular material. In this regard, a Granular B (consistent with OPSS 1010 Granular B aggregate) is recommended. The granular material should be within 3 percent of optimum moisture content, and uniformly compacted to a minimum 100 percent Standard Proctor maximum dry density (SPMDD). The use of heavy vibratory equipment may be limited by space constraints, and proximity of the existing wetland area. As such, in areas where fill is required, the granular material should be placed in maximum 200 mm thick lifts.

Additional precautions, effort, and measures may be required, when and where construction is undertaken when the temperature and climatic conditions have an adverse influence on the standard construction practices or during periods of inclement weather. Imported materials that contain ice, snow, or any frozen material should not be used. It may be necessary to suspend the placement of engineered fill during periods of cold, where ambient temperatures are -5°C or less, exist. Overnight frost penetration may occur, even in granular fill materials, where precipitation and ground surface runoff pools and accumulates, and freezing temperatures exist. Any frozen materials should be removed prior to placing subsequent lifts of engineered fill. Breaking the frost in-situ is not considered acceptable.

If seasonal weather conditions limit the ability to prepare the subgrade in dry conditions, the use of a mud-mat below the base of the retaining wall may be used as an alternative, to ensure that the wall is constructed on a stable base, less susceptible to disturbance from the construction activities.

Excavated materials and construction materials must be stockpiled on the landward side of the wall, and not in proximity to the wetland feature.

Soil Design Parameters

The proposed retaining wall structures should be founded on natural undisturbed subgrade soils, or approved structural fill material. Based on the soil conditions observed onsite, a design pressure of 150 kPa is considered appropriate for the sandy subgrade soils which are in a compact state. Site inspection by a geotechnical inspector is recommended during construction to verify the suitability of the subgrade soils.

For the purposes of designing the proposed retaining walls, the following soil parameters are suggested, based on our review of the soil conditions onsite, and our experience with similar soils in the area. Parameters are also provided for imported granular backfill material, as noted.

Soil	ϕ	γ (kN/m ³)	c (kPa)
Compacted Granular Fill (OPSS 1010 Granular B or approved equivalent)	34.0	21.0	0
Weathered Silt/Silt Till	27.0	18.0	5
Compact to Dense Silt Till	28.0	19.0	5
Compact to Dense Sand	33.0	19.5	0

Where: γ = total unit weight (kN/m³), ϕ = soil friction angle (°), c = cohesion (kPa)

In the event that during construction, that soils appear to vary materially from the above soils, the geotechnical consultant should review the soil conditions to confirm the design parameters.

The design of the retaining wall will need to be checked with a global stability analysis, to assess the potential risk for sliding (translational movement) or rotational (overturning) failures. The analysis should include any loading associated with traffic, buildings or structures located in proximity to the retaining wall structure.

Prior to construction, a detailed engineering design (shop drawings) of the retaining wall incorporating final proposed grades and selected retaining wall block products should be provided by the contractor selected to construct the retaining wall, for review and approval by the developer and their consulting engineers.

Backfilling and Lateral Support

The manufacturer's instructions should be followed for the installation of drainage and backfilling material behind the wall. However, the following geotechnical recommendations are provided from a geotechnical standpoint.

- The use of granular backfill, such as OPSS 1010 Granular B or approved sand fill is recommended behind the wall, to facilitate drainage. As a minimum requirement, the granular backfill should be placed in the wedge-shaped zone defined by a 45 degree line extending up and back from the bottom of the rear face of the bottom of the retaining wall footing.
- The backfill zone should be placed and compacted to a minimum 98% Standard Proctor Maximum Dry Density (SPMDD). The granular backfill should be placed and compacted in conjunction with the placement of any tie-backs, ensuring that the lateral reinforcement is installed in accordance with the design recommendations and meeting the minimum embedment depth requirements.
- Depending on the final design of the wall, the use of geogrid tie-backs may be required to provide lateral support to the wall. In this regard, a biaxial geogrid product is expected to be used. The geogrid layer should be pulled tight and secured in place at the design heights and checked for overall length. The placement of the geogrid tie-backs is expected to be coordinated with the backfilling of soil on the

development-side of the wall. Care shall be taken to not operate equipment directly on the reinforcing to minimize potential for damage.

- Where the backfill interfaces the natural subgrade soils, it is recommended that the fill be benched into the natural subgrade, to prevent the creation of preferential rotational failure planes within the backfill zone.

Field review to check subgrade soils, verify compaction of the backfill zone, and installation of geogrid tie-backs is recommended.

Drainage

Manual and continuous groundwater measurements were recorded in the monitoring wells and piezometers installed across the site from 2017 to 2021, and are summarized in the Hydrogeological Report. The retaining walls should be provided with a subdrain system equipped with a positive outlet for any infiltrated surface water which accumulates behind the wall, throughout the retaining wall system.

Subdrains placed within the backfill zone should be comprised of minimum 100 mm diameter perforated pipe, wrapped with a sock to help minimize movement of fines into the drainage system. The drain should be sloped (minimum 1% fall, where possible) and drain to a positive frost-free controlled outlet.

The positioning of the outlet will be located on the downgradient / wetland-side of the wall, and suitable measures will need to be incorporated into the design to prevent scouring at the outlet, or blockage from icing of the surface water in the wetland. The use of geotextile and rip-rap stone placement may be helpful in this regard.

Under flooding conditions within the wetland, it is important to ensure that flooding does not create a backwater effect in the retaining wall subdrainage system. This will need to be reviewed as part of the retaining wall design.

It is recommended that drainage swales or site grading on the tableland-side of the wall have regard for the need to intercept and redirect stormwater run-off to prevent overtopping of the retaining wall. It is important to note that subdrainage systems associated with the site pavements and driveways for the site should not be tied into the drainage system for the retaining wall.

Establishing Vegetation in Disturbed Areas

Once the wall construction is complete, the area can be vegetated by means of broadcast or hydroseeding. Complete coverage is recommended. The seed mixture should contain a grass variety which is easily germinated, and robust enough to handle intermittent flooding conditions.

If live planting or live staking is planned, the plants should be positioned in such a way that the structural integrity of the wall is not compromised.

Closing

The geotechnical recommendations provided in this report are applicable to the project described in the text. LDS would be pleased to provide a review of design drawings and specifications to ensure that the geotechnical comments and recommendations provided in this report have been accurately and appropriately interpreted.

The comments given in this report are intended to provide guidance for design engineers.

The conclusions and recommendations presented in this report reflect site conditions existing at the time of the investigation and a review of available information which has been presented in the report. Should subsurface conditions be encountered which vary materially from those observed in the boreholes, we recommend that LDS be consulted to review the additional information and verify if there are any changes to the geotechnical recommendations.

No portion of this report may be used as a separate entity. It is intended to be read in its entirety.

Contractors making use of this report are responsible for their construction methods and practices, and should seek confirmation or additional information if required, to ensure that they understand how subsurface soil and groundwater conditions may affect their work.

We trust this satisfies your present requirements. If you have any questions or require anything further, please feel free to contact our office.

Respectfully Submitted,

LDS CONSULTANTS INC.

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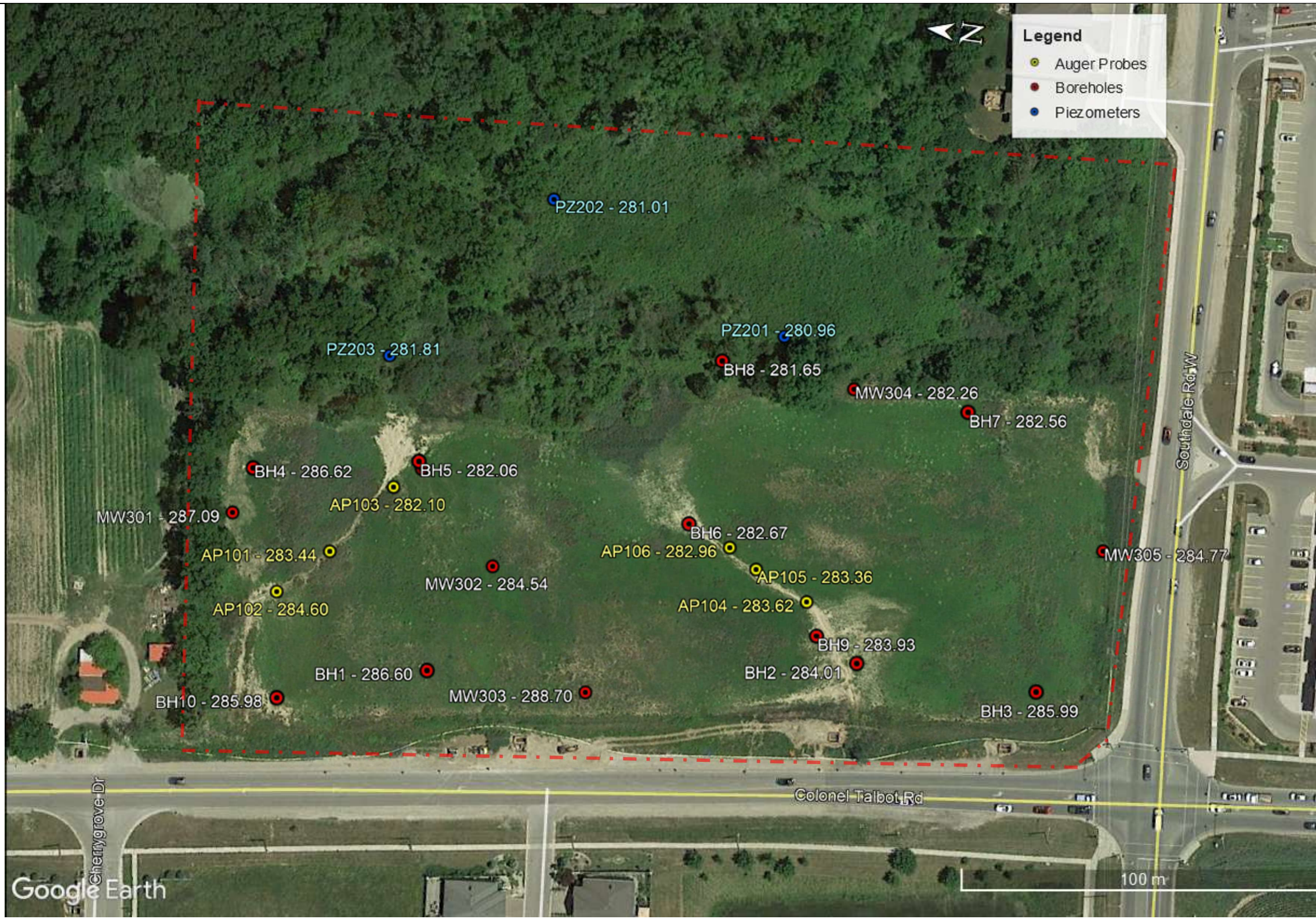
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Attachments:

Appendix A - Drawings
Appendix B - Borehole Logs

APPENDIX A

Drawings



Google Earth

Legend

- Auger Probes
- Boreholes
- Piezometers



SOURCE
 Google Earth Pro, Version 7.3.2.5491,
 17T, 474190.38 m E, 4753946.39 m N,
 Imagery Date 7/2/2018

NOTES
 Borehole locations surveyed by LDS.



PROJECT NAME	
Proposed Residential & Commercial Development	
PROJECT LOCATION	
952 Southdale Road London, Ontario	
DRAWING NAME	
Borehole Location Plan	
SCALE As Shown	PROJECT NO. GE-00085
DATE March 2022	DRAWING NO. 1



Legend

- Monitoring Wells
- Piezometers



LEGEND

- Groundwater Piezometric Contour, m
- Inferred Groundwater Flow Direction

SOURCE
 Google Earth Pro, Version 7.3.2.5491,
 17T, 474190.38 m E, 4753946.39 m N,
 Imagery Date 7/2/2018

NOTES
 Borehole locations surveyed by LDS. Water
 levels measured March 25, 2021.



PROJECT NAME
 Proposed Residential &
 Commercial Development

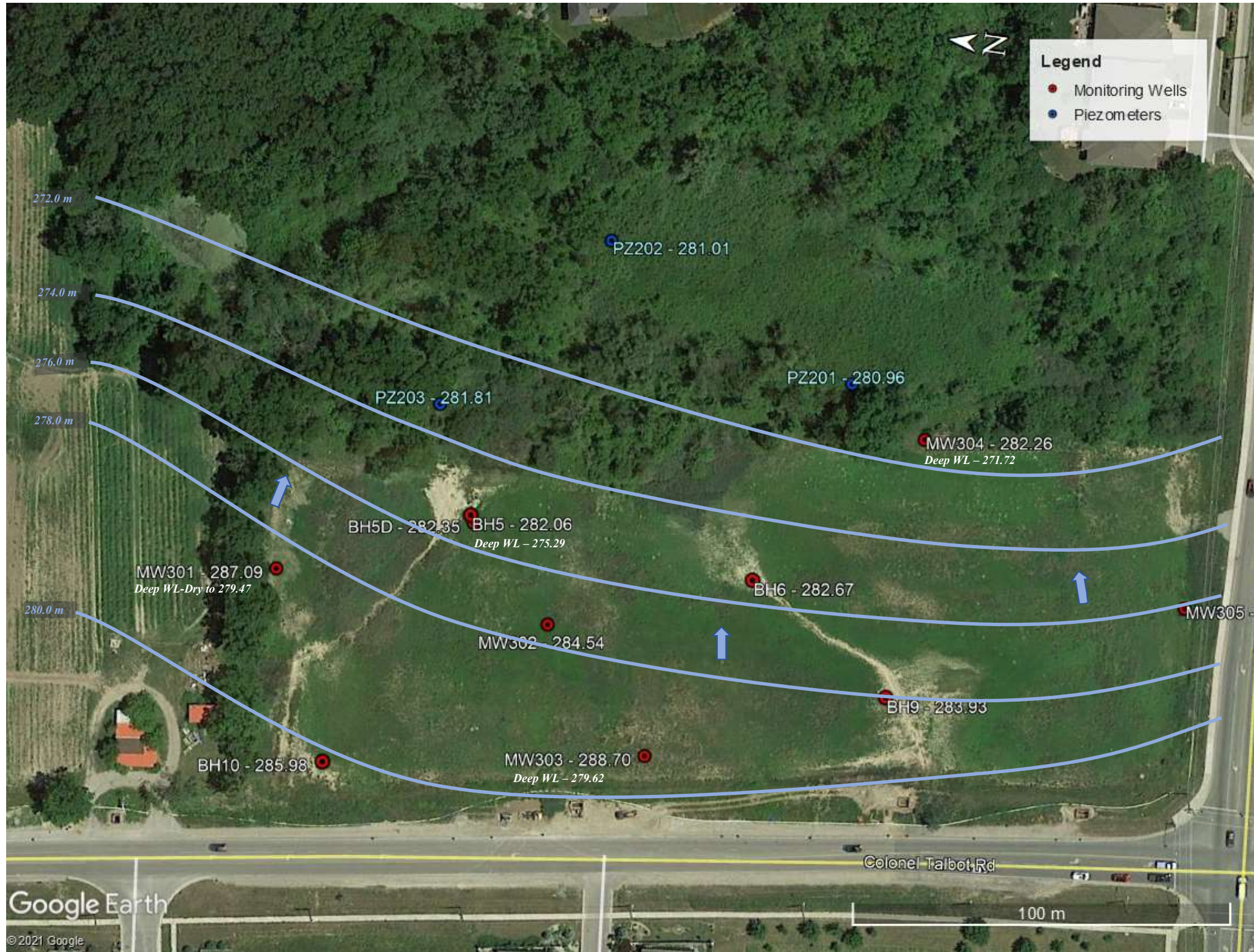
PROJECT LOCATION
 952 Southdale Road
 London, Ontario

DRAWING NAME
 Groundwater Contour Plan
 Spring 2021 – Shallow Wells

SCALE As Shown	PROJECT NO. GE-00085
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DATE March 2022	DRAWING NO. 2
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Google Earth
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Google Earth
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Legend

- Monitoring Wells
- Piezometers



LEGEND

- Groundwater Piezometric Contour, m
- ➔ Inferred Groundwater Flow Direction

SOURCE
Google Earth Pro, Version 7.3.2.5491,
17T, 474190.38 m E, 4753946.39 m N,
Imagery Date 7/2/2018

NOTES
Borehole locations surveyed by LDS. Water
levels measured March 25, 2021.



PROJECT NAME	
Proposed Residential & Commercial Development	
PROJECT LOCATION	
952 Southdale Road London, Ontario	
DRAWING NAME	
Groundwater Contour Plan Spring 2021 – Deep Wells	
SCALE As Shown	PROJECT NO. GE-00085
DATE March 2022	DRAWING NO. 3

APPENDIX B

Borehole Logs & Grain Size Analyses

NOTES ON SAMPLE DESCRIPTIONS

- All descriptions included in this report follow the Canadian Foundation Engineering Manual soil classification system, based on visual and tactile examination which are consistent with field identification procedures. Soil descriptions and classifications are based on Unified Soil Classification System (USCS), based on visual and tactile observations. Where grain size analyses have been specified, mechanical grain size distribution has been used to confirm soil classification.

Soil Classification	Terminology & Proportion
Clay: < 0.002 mm	Trace: < 10%
Silt: 0.002 – 0.075 mm	Some: 10-20%
Sand: 0.075 – 4.75 mm	Adjective, sandy, gravelly, etc.: 20-35%
Gravel: 4.75 mm – 75 mm	And, and gravel, and silt, etc.: > 35%
Cobbles: 75 – 200 mm	Noun, Sand, Gravel, Silt, etc.: > 35% and main fraction
Boulders: > 200 mm	

- The compactness of cohesionless soils is based on excavator / drilling resistance, and Standard Penetration Test (SPT) N-values where available. The Canadian Foundation Engineering Manual provides the following summary for reference.

Compactness of Cohesionless Soils	SPT N-Value (# blows per 0.3 m penetration of split-spoon sampler)
Very Loose	0 – 4
Loose	4 – 10
Compact	10 – 30
Dense	30 – 50
Very Dense	50+

- Topsoil Thickness - It should be noted that topsoil quantities should not be established from information provided at test hole locations only. If required, a more detailed analysis with additional test holes may be recommended to accurately quantify the amount of topsoil to be removed for construction purposes.
- Fill material is heterogeneous in nature, and may vary significantly in composition, density and overall condition. Where uncontrolled fill is contacted, it is possible that large obstructions or pockets of otherwise unsuitable or unstable soils may be present beyond test hole locations.
- Where glacial till is referenced, this is indicative of material which originates from a geological process associated with glaciation. Because of this geological process, till must be considered heterogeneous in composition and as such, may contain pockets and / or seams of material such as sand, gravel, silt or clay. Till often contains cobbles or boulders and therefore, contractors may encounter them during excavation, even if they are not indicated on the logs. Where soil samples have been collected using borehole sampling equipment, it should be understood that normal sampling equipment can not differentiate size or type of obstruction. Horizontal and vertical variability occurs in till, therefore the sample description may be applicable to a very limited area.
- Consistency of cohesive soils is based on tactile examination and undrained shear strength where available. The Canadian Foundation Engineering Manual provides the following summary for field identification methods and classification by corresponding undrained shear strength.

Consistency of Cohesive Soils	Field Identification	Undrained Shear Strength (kPa)
Very Soft	Easily penetrated several cm by the fist	0 – 12
Soft	Easily penetrated several cm by the thumb	12 – 25
Firm	Can be penetrated several cm by the thumb with moderate effort	25 – 50
Stiff	Readily indented by the thumb, but penetrated only with great effort	50 – 100
Very Stiff	Readily indented by the thumb nail	100 – 200
Hard	Indented with difficulty by the thumbnail	200+



Project **Hydrogeological Assessment**
 Project Location **952 Southdale Road West, London**
 Project Number **GE-00085**

Borehole ID
1
 Sheet 1 of 1

Date Drilled	September 25, 2017	Ground Surface Elevation	286.60 m
Drill Rig	LST - Track	Groundwater Level at Completion	None observed
Drilling Method	Hollow Stem Augers	Technician	Nick Houlton
Drilling Contractor	London Soil Test Ltd	Checked By	R. Walker, P.Eng.

Depth (m)	Sample Type	Sample Number	Recovery (%)	SPT N-value (blows/0.3 m)	Graphic Log	Material Description	Remarks and Other Tests
0.0 - 0.5						TOPSOIL - brown sandy loam (75 mm)	
0.5 - 1.0	▲	1	70	17		SILT TILL - brown, some clay, trace sand and fine gravel, very stiff, damp	MC = 16.8
1.0 - 1.5							
1.5 - 2.0	▲	2	60	16			
2.0 - 2.5							
2.5 - 3.0	▲	3	90	18		- some fine sand layering (~50 mm) at 2.5 m depth	MC = 19.1
3.0 - 3.5							
3.5 - 4.0	▲	4	80	16			
4.0 - 4.5							
4.5 - 5.0	▲	5	80	12			
5.0 - 5.5							
5.5 - 6.0							
6.0 - 6.5	▲	6	80	79		SANDY SILT TILL - brown, trace fine gravel, trace clay, very dense, moist	MC = 21.2
6.5 - 7.0							
7.0 - 7.5							
7.5 - 8.0	▲	7	70	87			
8.0 - 8.08							
						BH Terminated at 8.08 m depth Open and dry upon completion	

<p>Legend</p> <ul style="list-style-type: none"> SPT Sample Bulk Sample Shelby Tube Stabilized Groundwater Inferred Groundwater 	<p>Well Construction Details</p> <p>Pipe Diameter No well installation</p> <p>Installation Depth --</p> <p>Screen Length --</p> <p>Depth of Bentonite Seal --</p>	<p>Additional Notes</p> <p>MC denotes moisture content</p>
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Project **Hydrogeological Assessment**
 Project Location **952 Southdale Road West, London**
 Project Number **GE-00085**

Borehole ID

2

Sheet 1 of 1

Date Drilled	September 25, 2017	Ground Surface Elevation	284.01 m
Drill Rig	LST - Track	Groundwater Level at Completion	None observed
Drilling Method	Hollow Stem Augers	Technician	Nick Houlton
Drilling Contractor	London Soil Test Ltd	Checked By	R. Walker, P.Eng.

Depth (m)	Sample Type	Sample Number	Recovery (%)	SPT N-value (blows/0.3 m)	Graphic Log	Material Description	Remarks and Other Tests
0.5						<u>TOPSOIL</u> - brown sandy loam (75 mm)	
1.0	▲	1	70	5	2.15m	<u>SANDY SILT</u> - brown, intermittent topsoil inclusions to 1.4 m depth, loose, moist	MC = 16.5
1.5	▲	2	80	4			
2.0					8.08m	<u>SILT TILL</u> - brown to grey, trace clay, trace gravel, very	MC = 18.9
2.5	▲	3	90	19			
3.0	▲	4	90	18		- becoming grey below 3.0 m depth	
3.5							
4.0							
4.5	▲	5	90	13			
5.0							
5.5							
6.0	▲	6	80	12			MC = 17.4
6.5							
7.0							
7.5	▲	7	70	15			
8.0						BH Terminated at 8.08 m depth Open and dry upon completion	

<p>Legend</p> <ul style="list-style-type: none"> ▲ SPT Sample ⊠ Bulk Sample ▨ Shelby Tube ▼ Stabilized Groundwater ▽ Inferred Groundwater 	<p>Well Construction Details</p> <p>Pipe Diameter No well installation</p> <p>Installation Depth --</p> <p>Screen Length --</p> <p>Depth of Bentonite Seal --</p>	<p>Additional Notes</p> <p>MC denotes moisture content</p>
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Project **Hydrogeological Assessment**
 Project Location **952 Southdale Road West, London**
 Project Number **GE-00085**

Borehole ID
3
 Sheet 1 of 1

Date Drilled	September 25, 2017	Ground Surface Elevation	285.99 m
Drill Rig	LST - Track	Groundwater Level at Completion	None observed
Drilling Method	Hollow Stem Augers	Technician	Nick Houlton
Drilling Contractor	London Soil Test Ltd	Checked By	R. Walker, P.Eng.

Depth (m)	Sample Type	Sample Number	Recovery (%)	SPT N-value (blows/0.3 m)	Graphic Log	Material Description	Remarks and Other Tests
0.5						TOPSOIL - brown sandy loam (100 mm)	
1.0	▲	1	60	40		SILT - brown, trace sand, dense, damp	MC = 11.5
1.5					1.42m		
2.0	▲	2	75	22		SILT TILL - brown, some clay, trace sand, trace fine gravel, very stiff, moist	MC = 22.4
2.5						- contains some fine sand layering at 2.3 m depth	
3.0	▲	3	70	18			
3.5							MC = 18.7
4.0							
4.5	▲	4	90	22			
5.0						- brown / grey mottled, and stiff below 4.5 m depth	
5.5							
6.0	▲	5	80	14			
6.5						- grey below 6.0 m depth	MC = 19.6
7.0							
7.5	▲	6	70	12			
8.0					8.08m		
						BH Terminated at 8.08 m depth Open and dry upon completion	

Legend SPT Sample Bulk Sample Shelby Tube Stabilized Groundwater Inferred Groundwater	Well Construction Details Pipe Diameter No well installation Installation Depth -- Screen Length -- Depth of Bentonite Seal --	Additional Notes MC denotes moisture content
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Project **Hydrogeological Assessment**
 Project Location **952 Southdale Road West, London**
 Project Number **GE-00085**

Borehole ID

4

Sheet 1 of 1

Date Drilled	October 2, 2017	Ground Surface Elevation	286.62 m
Drill Rig	LST - Track	Groundwater Level at Completion	None observed
Drilling Method	Solid Stem Augers	Technician	Nick Houlton
Drilling Contractor	London Soil Test Ltd	Checked By	R. Walker, P.Eng.

Depth (m)	Sample Type	Sample Number	Recovery (%)	SPT N-value (blows/0.3 m)	Graphic Log	Material Description	Remarks and Other Tests
0.5						<u>TOPSOIL</u> - brown sandy loam (50 mm)	
1.0						<u>SANDY SILT</u> - brown, trace to some gravel, loose, damp	
1.5	X	1					Sample 1 Gravel - 5.9% Sand - 31.6% Fines - 62.5% MC = 8.3
2.0							
2.42					2.42m		
2.5						<u>SILT TILL</u> - brown, some clay, trace sand and fine gravel, firm to stiff, moist	
3.0	X	2					
3.5							
4.0							
4.5	X	3					MC = 15.9
5.0							
5.5							
6.0	X	4				- some sand present below 6.0 m depth	
6.5							
7.0							
7.5	X	5				- becoming grey below 7.5 m depth	MC = 17.6
8.0					8.08m		
						BH Terminated at 8.08 m depth Open and dry upon completion	

Legend	Well Construction Details	Additional Notes
SPT Sample Bulk Sample Shelby Tube Stabilized Groundwater Inferred Groundwater	Pipe Diameter No well installation Installation Depth -- Screen Length -- Depth of Bentonite Seal --	MC denotes moisture content



Project **Hydrogeological Assessment**
 Project Location **952 Southdale Road West, London**
 Project Number **GE-00085**

Borehole ID
**5/MW
 Shallow**

Sheet 1 of 1

Date Drilled	September 25, 2017	Ground Surface Elevation	282.06 m
Drill Rig	LST - Track	Groundwater Level at Completion	DRY
Drilling Method	Hollow Stem Augers	Technician	Nick Houlton
Drilling Contractor	London Soil Test Ltd	Checked By	R. Walker, P.Eng.

Depth (m)	Sample Type	Sample Number	Recovery (%)	SPT N-value (blows/0.3 m)	Graphic Log	Material Description	Remarks and Other Tests
0.5						SANDY SILT - brown, trace gravel, loose, moist	
1.0		1	60	4			MC = 8.9
1.5							
2.0		2	70	4		- very moist to wet near 1.8 m depth	MC = 14.1
2.24					2.24m		
2.5		3	80	5		SILT TILL - grey, some clay, trace sand and gravel, firm, moist	
3.0		4	70	9		- stiff below 3.1 m depth	MC = 16.2
3.5							
4.0							
4.5							
5.0		5	90	17		- very stiff, and moist to very moist below 4.5 m depth	
5.5							
5.80					5.80m		
6.0		6	80	34		SAND - brown, fine to medium grained, trace gravel, trace silt, compact to dense, moist to very moist	
6.5						- wet at 6.4 m depth	MC = 14.9
7.0							
7.5							
7.6							
7.7							
7.8							
8.0		7	70	16		- contains some silt at 7.6 m bgs	MC = 12.9
						BH Terminated at 8.08 m depth Open and dry upon completion	

Legend SPT Sample Bulk Sample Shelby Tube Stabilized Groundwater Inferred Groundwater	Well 1 - Construction Details		Well 2 - Construction Details	
	Pipe Diameter	50 mm CPVC	Pipe Diameter	50 mm CPVC
	Installation Depth	2.44 m	Installation Depth	7.65 m
	Screen Length	1.52 m	Screen Length	3.05 m
	Depth of Bentonite Seal	0-0.6 m	Depth of Bentonite Seal	0-4.3m
	Well Equipped with lockable cap.		Well Equipped with lockable cap.	
	Screen length backfilled with Type 2 filter sand.		Screen backfilled with Type 2 filter sand.	

Note:
 Deep well reported as damaged in Jan 2021. Refer to reinstatement details (Feb 2021) noted on following page.



Project	Proposed Residential & Commercial Development	Borehole ID
Project Location	952 Southdale Road, London, ON	5/MW Deep
Project Number	GE-00085	Sheet 1 of 1

Date Drilled	February 10, 2021	Ground Surface Elevation	282.35 m asl
Drill Rig	GeoProbe	Groundwater Level at Completion	
Drilling Method	Hollow Stem Auger	Technician	Rob Walker
Drilling Contractor	London Soil Test	Checked By	S. Hadden, EIT

Depth (m)	Sample Type	Sample Number	Recovery (%)	SPT N-value (blows/0.3 m)	Graphic Log	Material Description	Remarks and Other Tests
0.0 - 0.5						TOPSOIL - brown, sandy loam, 152 mm	
0.5 - 1.0		1	-	-		SILTY SAND - brown, fine grained, wet	
1.0 - 1.5		2	-	-			
1.5 - 2.0		2	-	-			
2.0 - 2.5					2.24 m		
2.5 - 3.0		3	-	-		SILT TILL - brown, some clay, trace sand, trace fine gravel, moist	
3.0 - 3.5		4	-	-			
3.5 - 4.0							
4.0 - 4.5							
4.5 - 5.0		5	-	-			
5.0 - 5.5							
5.5 - 6.0					5.80 m		
6.0 - 6.5		6	-	-		SAND - brown, fine to medium grained, trace gravel, trace silt, very moist	▼ May 30/21 WL - 6.68 m
6.5 - 7.0						- some silt observed below 7.1 m depth	
7.0 - 7.5							
7.5 - 8.0		7	-	-		Gradation: 0% Gravel, 90% Sand, 20% Fines (Silt/Clay)	MC - 13.2%
8.0 - 8.08					8.08 m	BH Terminated at 8.08 m MW Installed at 7.62 m - refer to details below	

Legend

- SPT Sample
- Bulk Sample
- Shelby Tube
- Stabilized Groundwater
- Inferred Groundwater

Well Construction Details

Pipe Diameter	50 mm CPVC pipe
Installation Depth	7.62 m
Screen Length	3.05 m w/ No. 2 filter sand
Depth of Bentonite Seal	2.44 m

Well equipped with locking J-Plug cap.

Additional Notes

MC - denotes moisture content
 April 27, 2021 - WL, 5.38 m bgs
 May 30, 2021 - WL, 6.68 m bgs



Project **Hydrogeological Assessment**
 Project Location **952 Southdale Road West, London**
 Project Number **GE-00085**

Borehole ID
6 / MW
 Sheet 1 of 1

Date Drilled	September 25, 2017	Ground Surface Elevation	282.67 m
Drill Rig	LST - Track	Groundwater Level at Completion	8.0 m
Drilling Method	Hollow Stem Augers	Technician	Nick Houlton
Drilling Contractor	London Soil Test Ltd	Checked By	R. Walker, P.Eng.

Depth (m)	Sample Type	Sample Number	Recovery (%)	SPT N-value (blows/0.3 m)	Graphic Log	Material Description	Remarks and Other Tests
0.5						SANDY SILT - brown, trace gravel, loose, moist	
1.0		1	75	7			
1.5						- very moist to wet near 1.8 m depth	
2.0		2	70	5	2.13m		
2.5		3	60	20		SILT TILL - mottled brown to grey to 2.4 m depth, some clay, trace gravel, very stiff, moist	
3.0		4	60	22			
3.5							
4.0							
4.5		5	70	26			
5.0							
5.5							
6.0		6	80	15			
6.5						BH Terminated at 8.08 m depth Open with 50-75mm of water at base	
7.0							
7.5		7	70	19	8.08m		
8.0							

<p>Legend</p> <ul style="list-style-type: none"> SPT Sample Bulk Sample Shelby Tube Stabilized Groundwater Inferred Groundwater 	<p>Well Construction Details</p> <p>Pipe Diameter 50 mm CPVC</p> <p>Installation Depth 2.44 m</p> <p>Screen Length 1.52 m</p> <p>Depth of Bentonite Seal 0 to 0.6 m</p> <p>Well Equipped with lockable cap.</p> <p>Screen length backfilled with Type 2 filter sand.</p>	<p>Additional Notes</p> <p>MC denotes moisture content</p> <p>Note: Well reported as damaged in Jan 2021. Refer to reinstallation details (Feb 2021) noted on following page.</p>
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Project **Proposed Residential & Commercial Development**
 Project Location **952 Southdale Road, London, ON**
 Project Number **GE-00085**

Borehole ID
6/MW

Sheet 1 of 1

Date Drilled	February 11, 2021	Ground Surface Elevation	282.94 m asl
Drill Rig	D50 Turbo	Groundwater Level at Completion	
Drilling Method	Hollow Stem Auger	Technician	Rob Walker
Drilling Contractor	London Soil Test	Checked By	S. Hadden, EIT

Depth (m)	Sample Type	Sample Number	Recovery (%)	SPT N-value (blows/0.3 m)	Graphic Log	Material Description	Remarks and Other Tests
0.0 - 0.5						TOPSOIL - brown, sandy loam, 152 mm	
0.5 - 1.0		1	-	-		SILTY SAND - brown, fine grained, saturated	May 30/21 WL - 0.72 m MC - 27.8%
1.0 - 1.5		2	-	-			
1.5 - 2.0		3	-	-			
2.0 - 2.5		3	-	-		SILT TILL - brown, some clay, trace sand, trace fine gravel, moist	
2.5 - 3.0		4	-	-			
3.0 - 3.5		4	-	-			MC - 25.4%
3.5 - 8.0						BH Terminated at 3.51 m MW Installed at 3.05 m - refer to details below	

Legend

- SPT Sample
- Bulk Sample
- Shelby Tube
- Stabilized Groundwater
- Inferred Groundwater

Well Construction Details

Pipe Diameter 50 mm CPVC pipe
 Installation Depth 3.05 m
 Screen Length 1.52 m w/ No. 2 filter sand
 Depth of Bentonite Seal 1.53 m

Well equipped with locking J-Plug cap.

Additional Notes

MC - denotes moisture content
 April 27, 2021 - WL, 0.62 m bgs
 May 30, 2021 - WL, 0.72 m bgs



Project **Hydrogeological Assessment**
 Project Location **952 Southdale Road West, London**
 Project Number **GE-00085**

Borehole ID
7
 Sheet 1 of 1

Date Drilled	October 2, 2017	Ground Surface Elevation	282.56 m
Drill Rig	LST - Track	Groundwater Level at Completion	None observed
Drilling Method	Solid Stem Augers	Technician	Nick Houlton
Drilling Contractor	London Soil Test Ltd	Checked By	R. Walker, P.Eng.

Depth (m)	Sample Type	Sample Number	Recovery (%)	SPT N-value (blows/0.3 m)	Graphic Log	Material Description	Remarks and Other Tests
0.5						SANDY SILT - brown, trace clay, trace gravel, loose, moist	
1.0							
1.5	X	1			1.36m	SILT TILL - brown, some clay, trace sand and fine gravel, stiff, moist	MC = 16.8
2.0							
2.5							
3.0	X	2				- becoming grey below 3.5 m depth	
3.5							
4.0							
4.5	X	3				- stiff to very stiff below 4.5 m depth	MC = 18.4
5.0							
5.5							
6.0	X	4					
6.5							
7.0							
7.5	X	5					
8.0					8.08m		
						BH Terminated at 8.08 m depth Open and dry upon completion	

Legend SPT Sample Bulk Sample Shelby Tube Stabilized Groundwater Inferred Groundwater	Well Construction Details Pipe Diameter No well installation Installation Depth -- Screen Length -- Depth of Bentonite Seal --	Additional Notes MC denotes moisture content
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Project **Hydrogeological Assessment**
 Project Location **952 Southdale Road West, London**
 Project Number **GE-00085**

Borehole ID
8
 Sheet 1 of 2

Date Drilled	October 2, 2017	Ground Surface Elevation	281.65 m
Drill Rig	LST - Track	Groundwater Level at Completion	None observed
Drilling Method	Solid Stem Augers	Technician	Nick Houlton
Drilling Contractor	London Soil Test Ltd	Checked By	R. Walker, P.Eng.

Depth (m)	Sample Type	Sample Number	Recovery (%)	SPT N-value (blows/0.3 m)	Graphic Log	Material Description	Remarks and Other Tests
0.0 - 0.1						TOPSOIL - brown sandy loam (100 mm)	
0.1 - 0.2						SANDY SILT - brown, loose, moist (150 mm)	
0.2 - 0.5						SILT TILL - brown, some clay, trace fine gravel, trace sand, firm to stiff, moist	<i>MC = 20.1</i>
0.5 - 1.0	X	1					
1.0 - 1.5	X	2	90	21			
1.5 - 2.0	■						
2.0 - 2.5	X	3					
2.5 - 3.0	X	4	80	28		- becoming grey and stiff below 2.5 m depth	<i>MC = 18.7</i>
3.0 - 3.5	■						
3.5 - 4.0							
4.0 - 4.5							
4.5 - 5.0	■	5	80	24			
5.0 - 5.5							
5.5 - 6.0							
6.0 - 6.5	X	6					
6.5 - 7.0	X						
7.0 - 7.15							
7.15 - 7.5						SILTY SAND - brown, fine grained, trace gravel, compact, damp to moist	
7.5 - 8.0	X	7					<i>MC = 7.3</i>
8.0 - 8.15							

BH continued on following page

Legend	Well Construction Details	Additional Notes
SPT Sample Bulk Sample Shelby Tube Stabilized Groundwater Inferred Groundwater	Pipe Diameter No well installation Installation Depth -- Screen Length -- Depth of Bentonite Seal --	MC denotes moisture content



Project **Hydrogeological Assessment**
 Project Location **952 Southdale Road West, London**
 Project Number **GE-00085**

Borehole ID

8

Sheet 2 of 2

Date Drilled	October 2, 2017	Ground Surface Elevation	281.65 m
Drill Rig	LST - Track	Groundwater Level at Completion	None observed
Drilling Method	Solid Stem Augers	Technician	Nick Houlton
Drilling Contractor	London Soil Test Ltd	Checked By	R. Walker, P.Eng.

Depth (m)	Sample Type	Sample Number	Recovery (%)	SPT N-value (blows/0.3 m)	Graphic Log	Material Description	Remarks and Other Tests
8.5	X	8			8.52m	SILTY SAND - brown, trace gravel, trace clay, compact, damp to moist	
9.0					SILT TILL - grey, some clay, trace sand, very stiff, moist		
10.0	X	9			10.67m		
10.5							
11.0						BH Terminated at 10.67 m depth Open and dry upon completion	
11.5							
12.0							
12.5							
13.0							
13.5							
14.0							
14.5							
15.0							
15.5							
16.0							

<p>Legend</p> <ul style="list-style-type: none"> SPT Sample Bulk Sample Shelby Tube Stabilized Groundwater Inferred Groundwater 	<p>Well Construction Details</p> <p>Pipe Diameter --</p> <p>Installation Depth --</p> <p>Screen Length --</p> <p>Depth of Bentonite Seal --</p>	<p>Additional Notes</p> <p>MC denotes moisture content</p>
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Project **Hydrogeological Assessment**
 Project Location **952 Southdale Road West, London**
 Project Number **GE-00085**

Borehole ID
9 / MW
Sheet 1 of 2

Date Drilled	October 2, 2017	Ground Surface Elevation	283.93 m
Drill Rig	LST - Track	Groundwater Level at Completion	DRY
Drilling Method	Solid Stem Augers	Technician	Nick Houlton
Drilling Contractor	London Soil Test Ltd	Checked By	R. Walker, P.Eng.

Depth (m)	Sample Type	Sample Number	Recovery (%)	SPT N-value (blows/0.3 m)	Graphic Log	Material Description	Remarks and Other Tests
0.5					0.76m	SANDY SILT - brown, trace gravel, trace clay, loose, moist	
1.0						SILT TILL - grey, some clay, trace sand and gravel, firm, moist to very moist	
1.5		1					
2.0							
2.5						- moist, stiff below 2.5 m depth	
3.0		2					
3.5							
4.0							
4.5		3					
5.0							
5.5							
6.0		4				- very stiff below 6.0 m depth	
6.5							
7.0							
7.5		5					
8.0							

BH continued on following page

<p>Legend</p> <ul style="list-style-type: none"> SPT Sample Bulk Sample Shelby Tube Stabilized Groundwater Inferred Groundwater 	<p>Well Construction Details</p> <p>Pipe Diameter 50 mm CPVC</p> <p>Installation Depth 3.96 m</p> <p>Screen Length 3.05 m</p> <p>Depth of Bentonite Seal 0 to 0.6 m</p> <p>Well Equipped with lockable cap.</p> <p>Screen length backfilled with Type 2 filter sand.</p>	<p>Additional Notes</p> <p>MC denotes moisture content</p>
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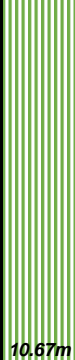
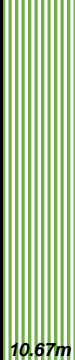
Project **Hydrogeological Assessment**
 Project Location **952 Southdale Road West, London**
 Project Number **GE-00085**






Borehole ID

9 / MW

Sheet 2 of 2

Date Drilled	October 2, 2017	Ground Surface Elevation	283.93 m
Drill Rig	LST - Track	Groundwater Level at Completion	DRY
Drilling Method	Solid Stem Augers	Technician	Nick Houlton
Drilling Contractor	London Soil Test Ltd	Checked By	R. Walker, P.Eng.

Depth (m)	Sample Type	Sample Number	Recovery (%)	SPT N-value (blows/0.3 m)	Graphic Log	Material Description	Remarks and Other Tests
8.5		8				SILT TILL - grey, some clay, trace sand and gravel, very stiff, moist	
9.0							
9.5		9					
10.0							
10.5					10.67m		
11.0						BH Terminated at 10.67 m depth Open and dry upon completion	
11.5							
12.0							
12.5							
13.0							
13.5							
14.0							
14.5							
15.0							
15.5							
16.0							

<p><u>Legend</u></p> <ul style="list-style-type: none">  SPT Sample  Bulk Sample  Shelby Tube  Stabilized Groundwater  Inferred Groundwater 	<p><u>Well Construction Details</u></p> <p>Pipe Diameter 50 mm CPVC Installation Depth 3.96 m Screen Length 3.05 m w/ Type 2 sand Depth of Bentonite Seal 0 to 0.6 m <i>Note: Well equipped with lockable cap</i></p>	<p><u>Additional Notes</u></p> <p>MC denotes moisture content</p>
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Project **Hydrogeological Assessment**
 Project Location **952 Southdale Road West, London**
 Project Number **GE-00085**

Borehole ID
10 / MW
 Sheet 1 of 1

Date Drilled	October 2, 2017	Ground Surface Elevation	285.98 m
Drill Rig	LST - Track	Groundwater Level at Completion	4.5 m
Drilling Method	Solid Stem Augers	Technician	Nick Houlton
Drilling Contractor	London Soil Test Ltd	Checked By	R. Walker, P.Eng.

Depth (m)	Sample Type	Sample Number	Recovery (%)	SPT N-value (blows/0.3 m)	Graphic Log	Material Description	Remarks and Other Tests
0.5						TOPSOIL - brown sandy loam (75 mm)	MC = 12.6
1.0		1				SANDY SILT - brown, trace gravel, trace clay, loose, moist	
1.5					1.42m		Sample 3 Gravel - 2.2% Sand - 57.9% Fines - 39.9% MC = 11.0
2.0		2			2.22m	SILT - brown / grey mottled, some clay, some sandy silt layering, moist, firm	
2.5		3				SILTY SAND - brown, fine to medium grained, trace clay, loose, moist	
3.0							MC = 20.3
3.5		4			3.51m		
4.0						SILT TILL - grey, some clay, trace sand, stiff to very stiff,	MC = 17.7
4.5		5					
5.0							
5.5							MC = 17.7
6.0		6					
6.5							MC = 17.7
7.0							
7.5							MC = 17.7
8.0		7			8.08m		
						BH Terminated at 8.08 m depth Open to 4.5 m, water at 4.5 m	


<p>Legend</p> <ul style="list-style-type: none"> SPT Sample Bulk Sample Shelby Tube Stabilized Groundwater Inferred Groundwater 	<p>Well Construction Details</p> <p>Pipe Diameter 50 mm CPVC</p> <p>Installation Depth 4.57 m</p> <p>Screen Length 3.05 m</p> <p>Depth of Bentonite Seal 0 to 1.2 m</p> <p>Well Equipped with lockable cap.</p> <p>Screen length backfilled with Type 2 filter sand.</p>	<p>Additional Notes</p> <p>MC denotes moisture content</p>
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	Project	Hydrogeological Assessment	Auger Probe
	Project Location	952 Southdale Road West, London	101
	Project Number	GE-00085	Sheet 1 of 1

Date Drilled	October 2, 2017	Drilling Contractor	London Soil Test Ltd
Drill Rig	LST - Track	Technician	Nick Houlton
Drilling Method	Solid Stem Augers	Checked By	R. Walker, P.Eng.

Depth (m)	Sample Type	Sample Number	Recovery (%)	SPT N-value (blows/0.3 m)	Graphic Log	Material Description	Remarks and Other Tests
0.25						SANDY SILT - brown, some topsoil and organic inclusions, wet	
0.50							
0.75	⊗	1			1.06m		
1.00	⊗						
1.25						SILT TILL - brown, some clay, moist	
1.50	⊗	2			1.52m		
1.75						Hole Terminated at 1.52 m bgs.	
2.00							


⊗ Bulk Sample

	Project	Hydrogeological Assessment	Auger Probe
	Project Location	952 Southdale Road West, London	102
	Project Number	GE-00085	Sheet 1 of 1



Date Drilled	October 2, 2017	Drilling Contractor	London Soil Test Ltd
Drill Rig	LST - Track	Technician	Nick Houlton
Drilling Method	Solid Stem Augers	Checked By	R. Walker, P.Eng.


Depth (m)	Sample Type	Sample Number	Recovery (%)	SPT N-value (blows/0.3 m)	Graphic Log	Material Description	Remarks and Other Tests
0.25						SANDY SILT - brown, some topsoil and organic inclusions, wet	
0.50							
0.75	⊗	1			1.52m		
1.00	⊗						
1.25						SILT TILL - mottled brown-grey, some clay, moist	
1.50							
1.75	⊗	2			1.82m		
2.00						Hole Terminated at 1.82 m bgs.	

⊗ Bulk Sample



	Project	Hydrogeological Assessment	Auger Probe
	Project Location	952 Southdale Road West, London	103
	Project Number	GE-00085	Sheet 1 of 1


Date Drilled	October 2, 2017	Drilling Contractor	London Soil Test Ltd
Drill Rig	LST - Track	Technician	Nick Houlton
Drilling Method	Solid Stem Augers	Checked By	R. Walker, P.Eng.

Depth (m)	Sample Type	Sample Number	Recovery (%)	SPT N-value (blows/0.3 m)	Graphic Log	Material Description	Remarks and Other Tests
0.25	<input checked="" type="checkbox"/>	1			 0.61m	SANDY SILT - brown, some topsoil and organic inclusions, wet	<input checked="" type="checkbox"/> Bulk Sample
0.50						SILT TILL - mottled brown-grey, some clay, moist	
0.75							
1.00							
1.25	<input checked="" type="checkbox"/>	2			 1.52m		
1.50							
1.75						Hole Terminated at 1.52 m bgs.	
2.00							



	Project	Hydrogeological Assessment	Auger Probe
	Project Location	952 Southdale Road West, London	104
	Project Number	GE-00085	Sheet 1 of 1


Date Drilled	October 2, 2017	Drilling Contractor	London Soil Test Ltd
Drill Rig	LST - Track	Technician	Nick Houlton
Drilling Method	Solid Stem Augers	Checked By	R. Walker, P.Eng.

Depth (m)	Sample Type	Sample Number	Recovery (%)	SPT N-value (blows/0.3 m)	Graphic Log	Material Description	Remarks and Other Tests
0.25	<input checked="" type="checkbox"/>	1			 0.91m	SANDY SILT - brown, some topsoil and organic inclusions, wet	<input checked="" type="checkbox"/> Bulk Sample
0.50						SILT TILL - mottled brown-grey, some clay, moist	
0.75							
1.00							
1.25	<input checked="" type="checkbox"/>	2			 1.52m		
1.50							
1.75						Hole Terminated at 1.52 m bgs.	
2.00							



	Project	Hydrogeological Assessment	Auger Probe
	Project Location	952 Southdale Road West, London	105
	Project Number	GE-00085	Sheet 1 of 1

Date Drilled	October 2, 2017	Drilling Contractor	London Soil Test Ltd
Drill Rig	LST - Track	Technician	Nick Houlton
Drilling Method	Solid Stem Augers	Checked By	R. Walker, P.Eng.

Depth (m)	Sample Type	Sample Number	Recovery (%)	SPT N-value (blows/0.3 m)	Graphic Log	Material Description	Remarks and Other Tests
0.25	<input checked="" type="checkbox"/>	1				SANDY SILT - brown, some topsoil and organic inclusions, wet	<input checked="" type="checkbox"/> Bulk Sample
0.50							
0.75							
1.00					1.07m		
1.25	<input checked="" type="checkbox"/>	2				SILT TILL - mottled brown-grey, some clay, moist	
1.50					1.52m		
1.75						Hole Terminated at 1.52 m bgs.	
2.00							

	Project	Hydrogeological Assessment	Auger Probe
	Project Location	952 Southdale Road West, London	106
	Project Number	GE-00085	Sheet 1 of 1

Date Drilled	October 2, 2017	Drilling Contractor	London Soil Test Ltd
Drill Rig	LST - Track	Technician	Nick Houlton
Drilling Method	Solid Stem Augers	Checked By	R. Walker, P.Eng.

Depth (m)	Sample Type	Sample Number	Recovery (%)	SPT N-value (blows/0.3 m)	Graphic Log	Material Description	Remarks and Other Tests
0.25						SANDY SILT - brown, some topsoil and organic inclusions, wet	<input checked="" type="checkbox"/> Bulk Sample
0.50	<input checked="" type="checkbox"/>	1					
0.75							
1.00							
1.25	<input checked="" type="checkbox"/>	2				SILT TILL - mottled brown-grey, some clay, moist	
1.50					1.52m		
1.75						Hole Terminated at 1.52 m bgs.	
2.00							



Project **Hydrogeological Assessment**
 Project Location **952 Southdale Road West, London**
 Project Number **GE-00085**

Piezometer
201
Shallow
Sheet 1 of 1

Date Drilled	October 20, 2017	Ground Surface Elevation	281.01 m
Drill Rig		Groundwater Level at Completion	0.05 m
Drilling Method	Hand-held Auger	Technician	Rob Walker
Drilling Contractor	LDS Consultants	Checked By	R. Walker, P.Eng.

Depth (m)	Sample Type	Sample Number	Recovery (%)	SPT N-value (blows/0.3 m)	Graphic Log	Material Description	Remarks and Other Tests
0.25		1				TOPSOIL & ORGANICS - (300 mm)	
0.50		2				SANDY SILT - brown, some topsoil and organic inclusions, saturated	
0.75						Hole Terminated at 0.55 m bgs.	
1.00							
1.25							
1.50							
1.75							
2.00							

<p>Legend</p> <ul style="list-style-type: none"> SPT Sample Bulk Sample Shelby Tube Stabilized Groundwater Inferred Groundwater 	<p>Well Construction Details</p> <p>Pipe Diameter 50 mm CPVC Installation Depth 0.55 m Screen Length 0.35 m Depth of Bentonite Seal none Piezometer equipped with lockable cap.</p>	<p>Additional Notes</p> <p>Water Levels Oct 20 2017 - 0.05 m depth Oct 23 2017 - 0.17 m depth Nov 08 2017 - 0.10 m above ground Dec 01 2017 - at ground surface Jan 10 2018 - frozen</p>
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Project **Hydrogeological Assessment**
 Project Location **952 Southdale Road West, London**
 Project Number **GE-00085**

Piezometer
201
Deep
Sheet 1 of 1

Date Drilled	February 18, 2021	Ground Surface Elevation	281.09 m
Drill Rig		Groundwater Level at Completion	frozen at surface
Drilling Method	Hand-held Auger	Technician	Rob Walker
Drilling Contractor	LDS Consultants	Checked By	R. Walker, P.Eng.

Depth (m)	Sample Type	Sample Number	Recovery (%)	SPT N-value (blows/0.3 m)	Graphic Log	Material Description	Remarks and Other Tests
0.25						TOPSOIL & ORGANICS - (300 mm), frozen	
0.50		1				SANDY SILT - brown, some topsoil and organic inclusions, wet	
0.75		2				SILT TILL - mottled, brown-grey, trace sand and fine gravel, wet	
1.00						Hole Terminated at 0.91 m bgs.	
1.25							
1.50							
1.75							
2.00							

Legend SPT Sample Bulk Sample Shelby Tube Stabilized Groundwater Inferred Groundwater	Well Construction Details Pipe Diameter 50 mm CPVC Installation Depth 0.76 m Screen Length 0.45 m Depth of Bentonite Seal none Piezometer equipped with lockable cap.	Additional Notes
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Project **Hydrogeological Assessment**
 Project Location **952 Southdale Road West, London**
 Project Number **GE-00085**

Piezometer
PZ202A

Sheet 1 of 1

Date Drilled	October 20, 2017	Ground Surface Elevation	280.96 m
Drill Rig		Groundwater Level at Completion	0.04 m
Drilling Method	Hand-held Auger	Technician	Rob Walker
Drilling Contractor	LDS Consultants	Checked By	R. Walker, P.Eng.

Depth (m)	Sample Type	Sample Number	Recovery (%)	SPT N-value (blows/0.3 m)	Graphic Log	Material Description	Remarks and Other Tests
0.25		1				TOPSOIL & ORGANICS - (1.0 m)	
0.75		2					
1.00		3				SANDY SILT - brown, some topsoil and organic inclusions, saturated	
1.25						Hole Terminated at 1.21 m bgs.	
1.50							
1.75							
2.00							

Legend	Well Construction Details
SPT Sample	Pipe Diameter 50 mm CPVC
Bulk Sample	Installation Depth 1.21 m
Shelby Tube	Screen Length 1.06 m
Stabilized Groundwater	Depth of Bentonite Seal none
Inferred Groundwater	Piezometer equipped with lockable cap.



Project **Hydrogeological Assessment**
 Project Location **952 Southdale Road West, London**
 Project Number **GE-00085**

Piezometer
PZ202B

Sheet 1 of 1

Date Drilled	October 20, 2017	Ground Surface Elevation	284.19 m
Drill Rig		Groundwater Level at Completion	frozen at surface
Drilling Method	Hand-held Auger	Technician	Rob Walker
Drilling Contractor	LDS Consultants	Checked By	R. Walker, P.Eng.

Depth (m)	Sample Type	Sample Number	Recovery (%)	SPT N-value (blows/0.3 m)	Graphic Log	Material Description	Remarks and Other Tests
0.25						TOPSOIL & ORGANICS - (0.28 m)	
0.50		1				SANDY SILT - brown, some topsoil and organic inclusions, saturated	
0.75							
1.00							
1.25		2				SILT - grey, some sand, damp, compact, wet	
1.50						Hole Terminated at 1.35 m bgs.	
1.75							
2.00							

Legend	Well Construction Details
SPT Sample	Pipe Diameter 50 mm CPVC
Bulk Sample	Installation Depth 1.35 m
Shelby Tube	Screen Length 1.06 m
Stabilized Groundwater	Depth of Bentonite Seal none
Inferred Groundwater	Piezometer equipped with lockable cap.



Project **Proposed Residential & Commercial Development**
 Project Location **952 Southdale Road, London, ON**
 Project Number **GE-00085**

Borehole ID
PZ203

Sheet 1 of 1

Date Drilled	February 10, 2021	Ground Surface Elevation	Shallow - 281.69 m asl
Drill Rig	GeoProbe		Deep - 281.66 m asl
Drilling Method	Hollow Stem Auger	Technician	Rob Walker
Drilling Contractor	London Soil Test	Checked By	S. Hadden, EIT

Depth (m)	Sample Type	Sample Number	Recovery (%)	SPT N-value (blows/0.3 m)	Graphic Log	Material Description	Remarks and Other Tests
0.5						TOPSOIL - brown, silty loam, 25 mm	
1.0						SILTY SAND - brown, fine grained, saturated	MC - 18.6%
1.5	▲	1	-	-			MC - 22.0%
2.0							
2.5					2.44 m		
3.0	▲	2	-	-		SILT TILL - grey, trace clay, trace sand, trace fine gravel, damp	
3.5					3.51 m		
4.0						BH Terminated at 3.51 m MW Installed at 3.05 m - refer to details below	
4.5						MC - denotes moisture content	
5.0							
5.5							
6.0							
6.5							
7.0							
7.5							
8.0							

Legend

- ▲ SPT Sample
- ⊠ Bulk Sample
- ▨ Shelby Tube
- ▼ Stabilized Groundwater
- ▽ Inferred Groundwater

Well Construction Details (Shallow)

Pipe Diameter 50 mm CPVC pipe
 Installation Depth 1.21 m
 Screen Length 0.45 m w/ No. 2 filter sand

Well equipped with locking J-Plug cap.

Well Construction Details (Deep)

Pipe Diameter 50 mm CPVC pipe
 Installation Depth 3.51 m
 Screen Length 1.52 m w/ sand
 Depth of Bentonite Seal 1.22 m

Well equipped with locking J-Plug cap.



Project **Proposed Residential & Commercial Development**
 Project Location **952 Southdale Road, London, ON**
 Project Number **GE-00085**

Borehole ID
301/MW
Sheet 1 of 1

Date Drilled	February 10, 2021	Ground Surface Elevation	287.09 m asl
Drill Rig	GeoProbe	Groundwater Level at Completion	
Drilling Method	Hollow Stem Auger	Technician	Rob Walker
Drilling Contractor	London Soil Test	Checked By	S. Hadden, EIT

Depth (m)	Sample Type	Sample Number	Recovery (%)	SPT N-value (blows/0.3 m)	Graphic Log	Material Description	Remarks and Other Tests
0.0 - 0.152						TOPSOIL - brown, sandy loam, 152 mm	
0.152 - 1.5						SILT TILL - brown, some clay, trace sand, trace fine gravel, moist	
1.5	▲	1	-	-			MC - 15.0%
2.5	▲	2	-	-			MC - 15.5%
3.0	▲	3	-	-			MC - 17.4%
4.5	▲	4	-	-			MC - 18.4%
5.48							
5.48 - 6.0						SAND - brown, fine grained, trace to some gravel, trace silt, damp	
6.0 - 6.6	▲	5	-	-		- damp gravelly sand seam encountered at 6.6 m depth	MC - 2.9%
6.6 - 6.8	▲	6	-	-		Gradation: 24% Gravel, 65% Sand, 11% Fines (Silt/Clay)	MC - 1.9%
6.8 - 8.0	▲	7	-	-		- some silt observed below 8.0 m depth	MC - 19.3%
8.0						BH Terminated at 8.08 m MW Installed at 7.62 m - refer to details below	

Legend

- ▲ SPT Sample
- ⊠ Bulk Sample
- ▨ Shelby Tube
- ▬ Stabilized Groundwater
- ▭ Inferred Groundwater

Well Construction Details

Pipe Diameter 50 mm CPVC pipe
 Installation Depth 7.62 m
 Screen Length 1.52 m w/ No. 2 filter sand
 Depth of Bentonite Seal 4.88 m

Well equipped with locking J-Plug cap.

Additional Notes

MC - denotes moisture content
 April 27, 2021 - WL, Dry
 May 30, 2021 - WL, Dry



Project **Proposed Residential & Commercial Development**
 Project Location **952 Southdale Road, London, ON**
 Project Number **GE-00085**

Borehole ID
302/MW
Sheet 1 of 1

Date Drilled	February 10, 2021	Ground Surface Elevation	284.54 m asl
Drill Rig	GeoProbe	Groundwater Level at Completion	Seepage at 4.3 m depth
Drilling Method	Hollow Stem Auger	Technician	Rob Walker
Drilling Contractor	London Soil Test	Checked By	S. Hadden, EIT

Depth (m)	Sample Type	Sample Number	Recovery (%)	SPT N-value (blows/0.3 m)	Graphic Log	Material Description	Remarks and Other Tests
0.0 - 0.5						TOPSOIL - brown, sandy loam, 203 mm	
0.5 - 1.0	SPT	1	-	-		SILT TILL - brown/grey, mottled, weathered, trace sand, trace fine gravel, moist	MC - 19.7%
1.0 - 1.5						- becoming brown and less weathered below 1.4 m depth	MC - 16.1%
1.5 - 2.0	SPT	2	-	-			
2.0 - 2.5							
2.5 - 3.0	SPT	3	-	-		- silt with trace to some fine sand below 2.4 m depth	MC - 18.6%
3.0 - 3.5							May 30/21 WL - 2.87 m
3.5 - 4.0	SPT	4	-	-			MC - 18.9%
4.0 - 4.5							
4.5 - 5.0	SPT	5	-	-		- becoming grey, contains some fine wet sand layering below 4.0 m depth	MC - 19.0%
5.0 - 5.5						BH Terminated at 5.03 m MW Installed at 4.57 m - refer to details below	
5.5 - 6.0							
6.0 - 6.5							
6.5 - 7.0							
7.0 - 7.5							
7.5 - 8.0							

Legend

- SPT Sample
- Bulk Sample
- Shelby Tube
- Stabilized Groundwater
- Inferred Groundwater

Well Construction Details

Pipe Diameter 50 mm CPVC pipe
 Installation Depth 4.57 m
 Screen Length 1.52 m w/ No. 2 filter sand
 Depth of Bentonite Seal 2.44 m

Well equipped with locking J-Plug cap.

Additional Notes

MC - denotes moisture content
 April 27, 2021 - WL, 1.30 m bgs
 May 30, 2021 - WL, 2.87 m bgs



Project	Proposed Residential & Commercial Development	Borehole ID
Project Location	952 Southdale Road, London, ON	303/MW - Shallow
Project Number	GE-00085	<i>Sheet 1 of 1</i>

Date Drilled	February 11, 2021	Ground Surface Elevation	288.70 m asl
Drill Rig	D50 Turbo	Groundwater Level at Completion	Seepage at 3.2 m depth
Drilling Method	Hollow Stem Auger	Technician	Rob Walker
Drilling Contractor	London Soil Test	Checked By	S. Hadden, EIT

Depth (m)	Sample Type	Sample Number	Recovery (%)	SPT N-value (blows/0.3 m)	Graphic Log	Material Description	Remarks and Other Tests
0.0 - 0.5						TOPSOIL - brown, sandy loam, 152 mm	
0.5 - 1.0		1	-	-		SILT TILL - brown/grey, mottled, weathered, some clay, trace sand, trace fine gravel, moist	MC - 17.9%
1.0 - 1.5		2	-	-			MC - 19.5%
1.5 - 2.0							
2.0 - 2.5		3	-	-			▼ May 30/21 WL - 2.63 m
2.5 - 3.0							
3.0 - 3.5		4	-	-		- becoming brown and less weathered below 2.9 m depth, with intermittent fine wet sand seams throughout	
3.5 - 4.0							
4.0 - 4.5		5	-	-			MC - 20.3%
4.5 - 8.0						BH Terminated at 4.27 m MW Installed at 3.81 m - refer to details below	

Legend SPT Sample Bulk Sample Shelby Tube Stabilized Groundwater Inferred Groundwater	Well Construction Details Pipe Diameter 50 mm CPVC pipe Installation Depth 3.81 m Screen Length 1.52 m w/ No. 2 filter sand Depth of Bentonite Seal 1.98 m <i>Well equipped with locking J-Plug cap.</i>	Additional Notes MC - denotes moisture content April 27, 2021 - WL, 1.95 m bgs May 30, 2021 - WL, 2.63 m bgs
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Project	Proposed Residential & Commercial Development	Borehole ID
Project Location	952 Southdale Road, London, ON	303/MW - Deep
Project Number	GE-00085	Sheet 1 of 2

Date Drilled	February 11, 2021	Ground Surface Elevation	288.70 m asl
Drill Rig	D50 Turbo	Groundwater Level at Completion	8.65 m depth at completion
Drilling Method	Hollow Stem Auger	Technician	Rob Walker
Drilling Contractor	London Soil Test	Checked By	S. Hadden, EIT

Depth (m)	Sample Type	Sample Number	Recovery (%)	SPT N-value (blows/0.3 m)	Graphic Log	Material Description	Remarks and Other Tests
0.0 - 0.5						TOPSOIL - brown, sandy loam, 152 mm	
0.5 - 1.0		1	-	-		SILT TILL - brown/grey, mottled, weathered, some clay, trace sand, trace fine gravel, moist - becoming brown and less weathered below 2.9 m depth, with intermittent fine wet sand seams throughout	MC - 17.9%
1.0 - 1.5		2	-	-			MC - 19.5%
1.5 - 2.0		3	-	-			MC - 18.0%
2.0 - 2.5		4	-	-			
2.5 - 3.0		5	-	-			
3.0 - 3.5		6	-	-			
3.5 - 4.0		7	-	-			MC - 20.3%
4.0 - 4.5		8	-	-			
4.5 - 5.0							
5.0 - 5.5							
5.5 - 6.0							
6.0 - 6.5		7	-	-			
6.5 - 7.0							
7.0 - 7.5							
7.5 - 8.0		8	-	-		SAND - brown, fine grained, trace gravel, trace silt, very moist	MC - 4.2%
8.0 - 8.65							

continued on the following page

Legend

- SPT Sample
- Bulk Sample
- Shelby Tube
- Stabilized Groundwater
- Inferred Groundwater

Well Construction Details

Pipe Diameter	50 mm CPVC pipe
Installation Depth	9.14 m
Screen Length	1.52 m w/ No. 2 filter sand
Depth of Bentonite Seal	7.32 m

Well equipped with locking J-Plug cap.

Additional Notes

MC - denotes moisture content
 April 27, 2021 - WL, 9.03 m bgs
 May 30, 2021 - WL, 9.10 m bgs



Project	Proposed Residential & Commercial Development	Borehole ID
Project Location	952 Southdale Road, London, ON	303/MW - Deep
Project Number	GE-00085	Sheet 2 of 2

Date Drilled	February 11, 2021	Ground Surface Elevation	288.70 m asl
Drill Rig	D50 Turbo	Groundwater Level at Completion	
Drilling Method	Hollow Stem Auger	Technician	Rob Walker
Drilling Contractor	London Soil Test	Checked By	S. Hadden, EIT

Depth (m)	Sample Type	Sample Number	Recovery (%)	SPT N-value (blows/0.3 m)	Graphic Log	Material Description	Remarks and Other Tests
8.5					▽ 8.65m	<i>continued from previous page</i> - becoming saturated, silty sand below 8.6 m depth	
9.0							▽ May 30/21 WL - 9.10 m
9.5	■	9	-	-	9.60 m	Gradation: 0% Gravel, 64% Sand, 36% Fines (Silt/Clay)	
10.0						BH Terminated at 9.60 m MW Installed at 9.14 m - refer to details below	
10.5							
11.0							
11.5							
12.0							
12.5							
13.0							
13.5							
14.0							
14.5							
15.0							
15.5							
16.0							

Legend SPT Sample Bulk Sample Shelby Tube Stabilized Groundwater Inferred Groundwater	Well Construction Details Pipe Diameter 50 mm CPVC pipe Installation Depth 9.14 m Screen Length 1.52 m w/ No. 2 filter sand Depth of Bentonite Seal 7.32 m <i>Well equipped with locking J-Plug cap.</i>	Additional Notes MC - denotes moisture content April 27, 2021 - WL, 9.03 m bgs May 30, 2021 - WL, 9.10 m bgs
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Project	Proposed Residential & Commercial Development	Borehole ID
Project Location	952 Southdale Road, London, ON	304/MW - Shallow
Project Number	GE-00085	<i>Sheet 1 of 1</i>

Date Drilled	February 10, 2021	Ground Surface Elevation	282.26 m asl
Drill Rig	GeoProbe	Groundwater Level at Completion	
Drilling Method	Hollow Stem Auger	Technician	Rob Walker
Drilling Contractor	London Soil Test	Checked By	S. Hadden, EIT

Depth (m)	Sample Type	Sample Number	Recovery (%)	SPT N-value (blows/0.3 m)	Graphic Log	Material Description	Remarks and Other Tests
0.0 - 0.5						TOPSOIL - brown, silty loam, 152 mm	
0.5 - 1.0		1	-	-		SILT - brown, weathered, some sand, damp -wet sandy silt seams below 1.1 m depth	May 30/21 WL - 1.04 m
1.0 - 1.5							
1.5 - 2.0		2	-	-		SILT TILL - brown/grey, mottled, weathered, trace to some fine sand, trace fine gravel, damp	MC - 17.3%
2.0 - 2.5							
2.5 - 3.0		3	-	-			MC - 20.5%
3.0 - 3.5							
3.5 - 4.0		4	-	-			MC - 20.6%
4.0 - 4.5							
4.0 - 4.27		5	-	-		- becoming brown and less weathered below 3.7 m depth	MC - 20.1%
4.27 - 4.5							
4.5 - 8.0						BH Terminated at 4.27 m MW Installed at 3.81 m - refer to details below	

Legend

- SPT Sample
- Bulk Sample
- Shelby Tube
- Stabilized Groundwater
- Inferred Groundwater

Well Construction Details

Pipe Diameter	50 mm CPVC pipe
Installation Depth	3.81 m
Screen Length	1.52 m w/ No. 2 filter sand
Depth of Bentonite Seal	1.98 m

Well equipped with locking J-Plug cap.

Additional Notes

MC - denotes moisture content
April 27, 2021 - WL, 0.71 m bgs
May 30, 2021 - WL, 1.04 m bgs



Project **Proposed Residential & Commercial Development**
 Project Location **952 Southdale Road, London, ON**
 Project Number **GE-00085**

Borehole ID
304/MW - Deep
Sheet 1 of 2

Date Drilled	February 10, 2021	Ground Surface Elevation	282.26 m asl
Drill Rig	GeoProbe	Groundwater Level at Completion	
Drilling Method	Hollow Stem Auger	Technician	Rob Walker
Drilling Contractor	London Soil Test	Checked By	S. Hadden, EIT

Depth (m)	Sample Type	Sample Number	Recovery (%)	SPT N-value (blows/0.3 m)	Graphic Log	Material Description	Remarks and Other Tests
0.0 - 0.5						TOPSOIL - brown, silty loam, 152 mm	
0.5 - 1.0	▲	1	-	-		SILT - brown, weathered, some sand, damp -wet sandy silt seams below 1.1 m depth	MC - 24.0%
1.0 - 1.5	▲	2	-	-		SILT TILL - brown/grey, mottled, weathered, trace to some fine sand, trace fine gravel, damp	MC - 19.5%
1.5 - 2.0	▲	3	-	-			MC - 19.9%
2.0 - 2.5	▲	4	-	-		- becoming brown and less weathered below 3.7 m depth	
2.5 - 3.0	▲	5	-	-			
3.0 - 3.5	▲	6	-	-			MC - 27.8%
3.5 - 4.0	▲	7	-	-		- becoming grey below 5.6 m depth	MC - 26.6%
4.0 - 4.5	▲	8	-	-			MC - 19.9%
4.5 - 5.0							
5.0 - 5.5							
5.5 - 6.0							
6.0 - 6.5							
6.5 - 7.0							
7.0 - 7.5							
7.5 - 8.0							

continued on the following page

Legend

- SPT Sample
- Bulk Sample
- Shelby Tube
- Stabilized Groundwater
- Inferred Groundwater

Well Construction Details

Pipe Diameter 50 mm CPVC pipe
 Installation Depth 10.67 m
 Screen Length 1.52 m w/ No. 2 filter sand
 Depth of Bentonite Seal 8.53 m

Well equipped with locking J-Plug cap.

Additional Notes

MC - denotes moisture content
 April 27, 2021 - WL, Dry
 May 30, 2021 - WL, Dry



Project **Proposed Residential & Commercial Development**
 Project Location **952 Southdale Road, London, ON**
 Project Number **GE-00085**

Borehole ID
304/MW -
Deep
Sheet 2 of 2

Date Drilled	February 10, 2021	Ground Surface Elevation	282.26 m asl
Drill Rig	GeoProbe	Groundwater Level at Completion	
Drilling Method	Hollow Stem Auger	Technician	Rob Walker
Drilling Contractor	London Soil Test	Checked By	S. Hadden, EIT

Depth (m)	Sample Type	Sample Number	Recovery (%)	SPT N-value (blows/0.3 m)	Graphic Log	Material Description	Remarks and Other Tests
8.5						<i>continued from previous page</i>	
9.0		9	-	-			<i>MC - 7.2%</i>
9.5					9.60 m		
10.0						SAND - brown, fine grained, trace gravel, trace silt, damp	
10.5					10.51 m		
11.0		10	-	-		SILT TILL - grey, some clay, trace sand, trace fine gravel, damp	<i>MC - 20.4%</i>
11.0					11.13 m		
11.5						BH Terminated at 11.13 m MW Installed at 10.67 m - refer to details below	
12.0							
12.5							
13.0							
13.5							
14.0							
14.5							
15.0							
15.5							
16.0							

Legend

- SPT Sample
- Bulk Sample
- Shelby Tube
- Stabilized Groundwater
- Inferred Groundwater

Well Construction Details

Pipe Diameter 50 mm CPVC pipe
 Installation Depth 10.67 m
 Screen Length 1.52 m w/ No. 2 filter sand
 Depth of Bentonite Seal 8.53 m

Well equipped with locking J-Plug cap.

Additional Notes

MC - denotes moisture content
 April 27, 2021 - WL, Dry
 May 30, 2021 - WL, Dry



Project **Proposed Residential & Commercial Development**
 Project Location **952 Southdale Road, London, ON**
 Project Number **GE-00085**

Borehole ID
305/MW
Sheet 1 of 1

Date Drilled	February 11, 2021	Ground Surface Elevation	284.77 m asl
Drill Rig	D50 Turbo	Groundwater Level at Completion	
Drilling Method	Hollow Stem Auger	Technician	Rob Walker
Drilling Contractor	London Soil Test	Checked By	S. Hadden, EIT

Depth (m)	Sample Type	Sample Number	Recovery (%)	SPT N-value (blows/0.3 m)	Graphic Log	Material Description	Remarks and Other Tests
0.5						TOPSOIL - brown, silty loam, 152 mm	
1.0		1	-	-		SILT - brown, weathered, some sand, moist	May 30/21 WL - 1.02 m
1.5		2	-	-		- intermittent wet sand seams below 1.8 m depth	MC - 11.7%
2.0						2.13 m	
2.5		3	-	-		SILT TILL - brown/grey, mottled, weathered, some clay, some sand, trace fine gravel, damp - wet sand seams observed in Sample 3	MC - 22.4%
3.0		4	-	-			MC - 21.0%
3.5							
4.0		5	-	-	4.27 m	- becoming brown and less weathered below 4.0 m depth	MC - 19.4%
4.5						BH Terminated at 4.27 m MW Installed at 3.81 m - refer to details below	
5.0							
5.5							
6.0							
6.5							
7.0							
7.5							
8.0							

Legend

- SPT Sample
- Bulk Sample
- Shelby Tube
- Stabilized Groundwater
- Inferred Groundwater

Well Construction Details

Pipe Diameter 50 mm CPVC pipe
 Installation Depth 3.81 m
 Screen Length 1.52 m w/ No. 2 filter sand
 Depth of Bentonite Seal 1.98 m

Well equipped with locking J-Plug cap.

Additional Notes

MC - denotes moisture content
 April 27, 2021 - WL, 0.70 m bgs
 May 30, 2021 - WL, 1.02 m bgs



Particle Size Distribution Results of Sieve Analysis

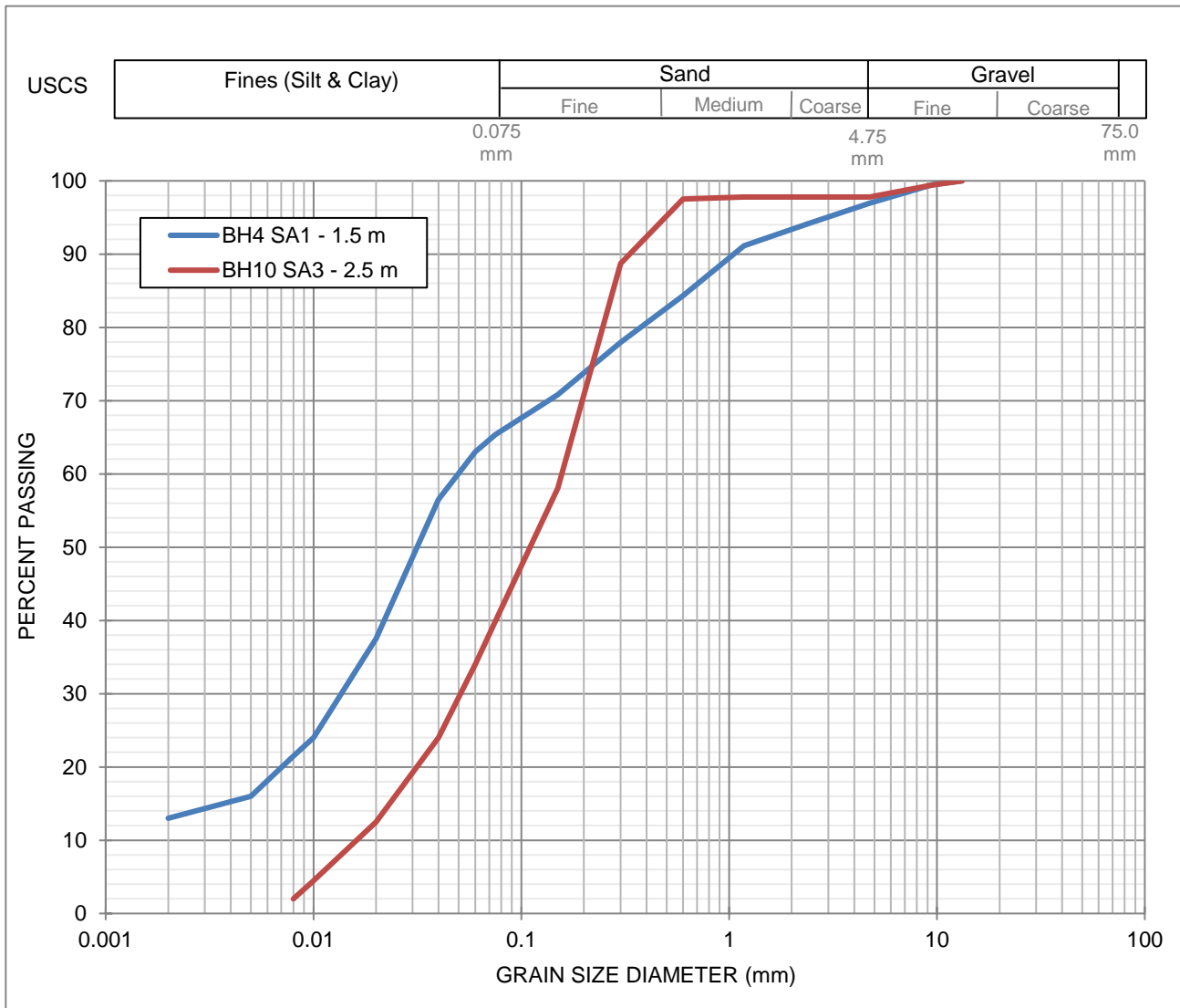
Project Name: 952 Southdale Road

Date: 25-Jan-18

Project Location: London, Ontario

Project No.: GE-00085

Sample ID	Unified Soil Classification				Moisture Content
	% Clay	% Silt	% Sand	% Gravel	
BH4 SA1 - 1.5 m	13.0%	52.4%	31.6%	3.1%	13.8%
BH10 SA3 - 2.5 m		39.9%	57.9%	2.2%	16.9%





Particle Size Distribution Results of Sieve Analysis

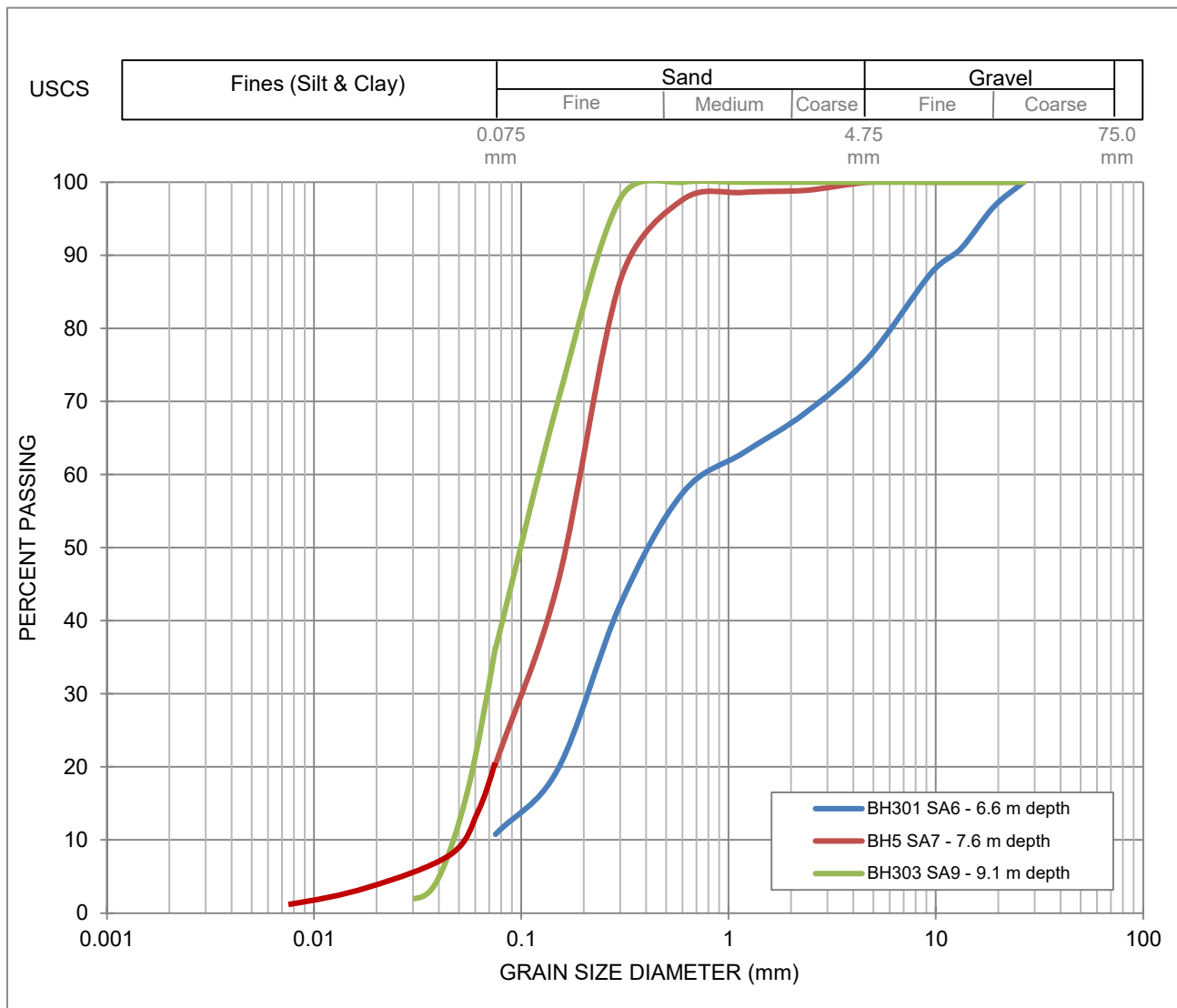
Project Name: Proposed Residential & Commercial Development

Date: 4-Jun-21

Project Location: 952 Southdale Rd, London, Ontario

Project No.: GE-00085

Sample ID	Unified Soil Classification				Moisture Content (%)
	Fines (Silt & Clay)	% Sand	% Gravel	% Cobbles	
BH301 SA6 - 6.6 m depth	10.8%	65.3%	23.9%	0.0%	2.4%
BH5 SA7 - 7.6 m depth	20.4%	79.6%	0.0%	0.0%	12.3%
BH303SA9 - 9.1 m depth	36.2%	63.8%	0.0%	0.0%	5.1%



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