Hydrogeological and Geotechnical Investigation

Proposed Mixed-Use Development – 510 and 520 Taunton Road East, Oshawa, Ontario

Jamas Inc.

24 October 2023

→ **The Power of Commitment**

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1. Introduction

GHD Limited (GHD) was retained by Jamas Inc. (the Client) to conduct a hydrogeological and geotechnical investigation in support of a proposed mixed-use re-development of 510 and 520 Taunton Road East, in Oshawa, Ontario (collectively to be referred to as "the Site"). GHD conducted this investigation in general accordance with our proposal, dated August 14, 2023. The location of the Site is provided on the **Site Location Plan, Figure 1**.

The Site encompasses an area of 0.60 hectares (6,000 m^2) and currently consists of a dental office (510 Taunton Road East) and a trailer structure (520 Taunton Road East). The Site is proposed to be re-developed with a mixed-use condominium that will consist of commercial / retail space on the ground floor with up to 50 condo apartment units above that will be municipally serviced for water and sewer. The surrounding area is also municipally serviced for water and sewer. The concept plan[1] is illustrated on **Figure 2** and includes the following:

- A slab-on-grade mixed-use development that incorporates the existing dental office and can offer up to 50 residential condominium units.
- The development will be four (4) aboveground levels covering a footprint area of about 1,285 m^2 that includes the up to 50 residential units and commercial space (offices and retail units) as well as elevators, landscaped areas and surficial asphalt covered parking. The building's proposed finished first floor elevations range from 159.65 metres above sea level (masl) to 160.35 masl.

The purpose of the hydrogeological assessment was to define and characterize the subsurface soil and groundwater conditions for the Site including groundwater depth, flow direction and assessment of construction dewatering and groundwater control. The purpose of the geotechnical investigation was to obtain subsurface information regarding the soil and groundwater conditions at the borehole locations and prepare a report summarizing the conditions encountered. This report provides geotechnical engineering recommendations regarding earthwork construction, backfilling, bearing capacity and building foundation design, service installation (bedding and backfill), and pavement structure for access and parking areas.

The scope of work included a desktop review of available geological and groundwater mapping and a review of the Source Protection Information Atlas; a review of the Ministry of the Environment, Conservation and Parks (MECP) well records; the drilling of boreholes to investigate the subsurface conditions; installation of monitoring wells to facilitate water level measurements and single well response testing to assess the hydraulic conductivity of the saturated zones; and, infiltration testing of the vadose zone soils for Low Impact Development (LID) strategies. In addition, a generic water balance evaluation was completed (i.e. pre- and post-development runoff / infiltration conditions) in support of potential mitigative options such as the use of LIDs strategies. GHD notes that the water balance evaluation does not include tasks associated with the required storm water study and / or related design work. As the work at this stage is investigative, this report does not include any applications for Permits to Take Water (PTTW), Environmental Activity and Sector Registry (EASR) permits for construction dewatering, sewer use by-law testing etc. GHD also notes that excess soil management is outside the scope of this report.

This report is organized into the following sections:

Section 1.0 – Introduction: Outlines the objectives and scope of work and presents the report organization.

Section 2.0 – Background: Provides a description of the existing Site conditions, background information and surrounding land uses. The regional environmental setting including the physiography, topography, surface water features in the vicinity, and the surficial geology is presented. This section of the report also considers a review of the Source Protection Information Atlas. The source protection information for the Site is based upon information current as of August 9, 2023.

Section 3.0 – Methodology: Describes the field activities and methodologies used to assess the hydrogeological and geotechnical conditions and to evaluate potential impacts associated with the undertaking.

[1] Barry Bryan Associates "Proposed Mixed-Use Building. 510-520 Taunton Road East, Oshawa, ON". Project No. 22132.

Section 4.0 – Geology and Hydrogeology: Provides a detailed description of the Site geology and hydrogeology. Discusses the potential dewatering volumes related to expected construction activities.

Section 5.0 – Water Balance Evaluation: The water balance evaluation provides calculations regarding the expected pre- and post-development water balance based upon the conceptual plan provided to GHD. An infiltration target is established for the development.

Section 6.0 – Geotechnical Investigation: This section provides detailed subsurface information regarding the soil and groundwater conditions at the borehole locations from a geotechnical perspective.

Section 7.0 – Summary and Conclusions: Provides a summary and conclusion(s) based upon the assessment findings.

2. Background

2.1 Site Description

The Site is comprised of two (2) parcels located at 510 and 520 Taunton Road East in Oshawa, Ontario. The geographical description of the Site is Part of Lot 7, Concession 4, (former Geographic Township of Whitby) within the Town of Oshawa, Regional Municipality of Durham. The Site encompass an area of about 0.60 hectares (1.48 acres).

The Site is bounded by residential properties to the north; residential and commercial properties to the east; Taunton Road East to the south, and a multi-residential property the west.

Currently the Site houses a dental office (510 Taunton Road East) and a trailer structure (520 Taunton Road East). The planned development will involve the removal of the trailer structure on the Site and the incorporation of the dental office into the design. The proposed development will include aboveground parking and condominium units with ground level commercial spaces. No designs for stormwater ponds or Low Impact Development (LID) features were provided to GHD at this time.

The ground surface at the Site generally slopes down from north to south, with measured elevations ranging from 161.07 masl at borehole BH5-23 to 158.75 masl at borehole MW11-23.

2.2 Regional Setting

Regionally, the topography slopes towards Lake Ontario, located approximately 8.5 km south of the Site. Regional topography is provided as **Figure 3**.

The Site is located within the physiographic region known as the South Slope and is shown on the figure entitled **Physiography, Figure 4**. Regionally, the Site is within drumlinized till plains.

The surficial geology in the area of the Site, illustrated on **Figure 5**, consists of stone-poor, sandy silt to silty sand-textured till on Paleozoic terrain. The Quaternary deposits (**Figure 6**) indicate the Halton Till (Ontario – Erie lobe) that is predominantly silt to silt to silty-clay matrix that is high in carbonate and commonly low in clasts.

As identified in **Figure 7**, the bedrock of the area is of Ordovician age and consists of shale, limestone, dolostone, siltstone identified as layers of the Georgian Bay Formation; Blue Mountain Formation; Billings Formation; Collingwood Member; and Eastview Member of the Mesozoic era. Based upon MECP well records from the area, the depth to bedrock is variable and ranged from 15.8 m to 66.4 m based upon the two (2) locations that bedrock was encountered.

Source protection information from the “MECP Source Water Protection Atlas” is depicted on **Figure 8**. The Site is not situated within a Highly Vulnerable Aquifer (HVA), Significant Groundwater Recharge Area (SGRA) or a wellhead protection area (WHPA). These areas are protected under the Clean Water Act (2006).

A SGRA is defined as an area where water seeps into an aquifer from rain and melting snow, supplying water to the underlying aquifer. An HVA aquifer occurs where the subsurface material offers limited protection from contamination resulting from surface activities.

A WHPA is defined as the surface and subsurface area surrounding a water well or well field that supplies a municipal residential system through which contaminants are reasonably likely to move so as to eventually reach the water well. Furthermore, the Site is not within a wellhead protection area Q1 or Q2. WHPA Q1 means that activities that take water without returning it to the same source may be a threat. Activities that take water would include construction dewatering or other groundwater pumping. Pumping or dewatering activities may require appropriate permitting from the MECP but are not a concern from a Source Protection perspective. WHPA Q2 means activities that reduce recharge may be a threat. This may include the increase of impervious surfaces at a site, thus reducing infiltration of water to underlying aquifers. The Site is not subject to any of the Source Water Protection Policies related to these designations.

2.2.1 Existing Local Water Supplies

The Site and immediately surrounding areas are municipally serviced. The locations of water wells and their corresponding data recorded by the MECP within 500 m of the Site are shown in **Appendix A.** Based on the review of the historical well records, there were domestic water supply wells located within 500 m of the Site. The well record information indicates that within 500 m of the Site there were:

- Eight (8) dug / bored well records;
- Five (5) drilled overburden well records; and,
- Two (2) bedrock well records.

There are also thirty (30) monitoring well records and thirteen (13) abandonment, dewatering, and miscellaneous records that have not been considered in the statistical summary provided in **Table 1**.

Table 1 MECP Well Record Data

Well Use	Well Type/Unit	No. Wells	Well Depth Min – Max (Avg) (mbgs)	Water Encountered Depth Min – Max (Avg) (mbgs)	Static WL Min – Max (mbgs)	Yield Min – Max (Avg) (L/min)
Water Supply	Overburden – Dug/Bored	8 (54%)	7.3 – 18.6 (10.8)	1.8 – 18.6 (8.3)	0.0 – 9.8 (4.0)	3.8 – 18.9 (8.5)
Water Supply	Overburden – Drilled	5 (33%)	14.0 – 59.1 (35.7)	12.2 – 55.8 (34.6)	0.0 – 16.5 (5.6)	19 – 45.4 (29.5)
Water Supply	Bedrock	2 (13%)	16.8 – 67.1 (41.9)	15.8 – 55.5 (35.7)	7.6 – 18.3 (13)	3.8 – 34 (18.9)
Total		**15**				
Monitoring Wells	Drilled	30	3.5 – 9.1 (6.4)	1.6 – 7.0 (4.1)	3.7 – 5.5 (4.0)	NA
Abandonments	Unknown	13	7.0 – 49.4 (17.8)	29.9	2.4 – 7.9 (5.2)	7.6

Notes:
Data based on MECP well record information (refer to **Appendix A** for well information).
mbgs indicates metres below ground surface
*Abandonments, dewatering well records, and unknown well records are not included in the statistical data summarized in **Table 1**.

2.3 Previous Investigations

No previous geotechnical or hydrogeological investigations were provided for GHD to review.

3. Methodology

To achieve the purpose and objectives of this hydrogeological and geotechnical investigation, the following activities and tasks were undertaken:

– Borehole advancement for obtaining geotechnical parameters and installation of monitoring wells in selected boreholes to facilitate the collection of groundwater levels to evaluate groundwater flow conditions.
– Obtained groundwater levels from the drilled monitoring wells to evaluate depth to groundwater and flow direction.
– Constant Head Well Permeameter testing to evaluate the hydraulic conductivity of the unsaturated surficial soils.
– SWRTs to assess horizontal hydraulic conductivity and groundwater flux of the saturated stratigraphic deposits investigated.
– Ground elevation surveying of the monitoring wells and borehole locations for purposes of assessing groundwater flow direction.
– Geotechnical laboratory testing in accordance with the latest editions of the ASTM Standards.

3.1 Field Activities

3.1.1 Health and Safety

For projects that incorporate field activities, GHD conducts Health and Safety planning. For this project, a site-specific Health and Safety Plan (HASP) was prepared and implemented during the field activities. The HASP presents the visually observed Site conditions to identify potential physical hazards to field personnel. Required personal protective equipment was also listed in the HASP. It is mandatory for GHD personnel involved in the field program, to read and have a copy of the HASP available at the Site.

3.1.2 Borehole Advancement and Monitoring Well Installations

The scope of work consisted of advancing five (5) boreholes on September 7, 2023 with three (3) being equipped as groundwater monitoring wells denoted as MW7-23, MW10-23 and MW11-23. Previous work performed by GHD consisted of the advancement of six (6) boreholes on February 15, 2023 with three (3) of the boreholes equipped with monitoring wells denoted as MW1-23, MW2-23 and MW4-23. The boreholes and monitoring wells are shown on **Figure 2**. Following their installation, these wells were documented with the MECP and became the property of the site's owner. Borehole information is provided in **Table 2** and the monitoring well completion details are presented in **Table 5.** The logs of the boreholes and monitoring wells are presented in **Appendix B.**

The drilling work was carried out by a truck-mounted conventional drilling rig, supplied and operated by Strong Soil Search Inc (September Drilling) and GET Drilling Ltd. (February Drilling), MECP-licensed well drillers, under the full-time supervision of a GHD experienced technical representative. The boreholes were advanced to depths ranging between 2.9 to 9.1 metres below ground surface (mbgs). The monitoring wells were installed by the drilling subcontractor consistent with the requirements of Ontario Regulation (O. Reg.) 903 – Wells (R.R.O 1990).

The boreholes were advanced using continuous solid stem augers and soil samples were collected using a 50 millimetre (mm) outside diameter split spoon sampler in general accordance with the specifications of the Standard Penetration Test Method (ASTM D1586). The relative density or consistency of the subsurface soil layers were measured using the Standard Penetration Test (SPT) method, by counting the number of blows ('N') required to drive a conventional split barrel soil sampler 300 mm depth. Groundwater level observations and measurements were made in the boreholes as drilling proceeded and upon completion of drilling.

Monitoring wells were constructed with 50 mm (2-inch) Schedule 40 PVC screen and casing. The well screens are 1.5 m (5 feet) in length and pre-slotted (No. 10 slot) (refer to **Table 5**). Silica sand pack was placed at the bottom of the monitoring well screen and typically extended 0.3 m above the screen. The remaining annular space was sealed with bentonite, and the wells were completed with protective monument style casings or flushmount casing. The installation details for each monitoring well are provided in the respective borehole logs.

The boreholes not instrumented as monitoring wells (BH8-23 and BH9-23) were backfilled with auger cuttings and bentonite pellets to seal the borehole annulus in accordance with O. Reg. 903 upon completion of drilling. Installed monitoring wells will need to be abandoned in accordance with O. Reg. 903 once no longer required.

Monitoring well and borehole locations were surveyed using an EOS Arrow Gold+ system connected to the Real-Time Kinematic (RTK) network. The ground elevations are provided for engineering analysis purposes only and should be confirmed by a licensed surveyor.

3.1.3 Laboratory Testing

The physical laboratory testing was completed in accordance with the latest editions of the ASTM standards. A GHD technical representative logged the soil samples encountered in the boreholes and examined the samples as they were obtained. The recovered samples were transferred to the GHD laboratory, where they were reviewed by a geotechnical engineer. The detailed results of the examination are recorded on the borehole logs. The collected soil samples were classified / described in general accordance with the ASTM D2487 – Standard Practice for Classification of Soils for engineering purposes (Unified Soil Classification System-USCS).

Soil samples retrieved during the drilling program were submitted for physical testing. Moisture content testing was completed upon all of the recovered soil samples. Grain size analyses, consisting of sieve and hydrometer testing, were carried out on four (4) selected samples collected from the drilled boreholes. The results of the moisture content, and grain size distribution analysis are recorded at their corresponding depths on the individual logs in **Appendix B**. The laboratory grain size distribution analysis results are provided in **Appendix C**.

In addition to physical laboratory testing, two (2) soil samples were submitted to Caduceon Environmental Laboratories (Caduceon) in Richmond Hill, Ontario and analyzed for a suite of corrosivity parameters including resistivity, soluble chloride, soluble sulphate, sulfide, REDOX potential and pH. The results of these chemical analyses are presented in **Appendix G**.

3.1.4 Constant Head Well Permeameter Testing

In-situ permeability testing was conducted using a Constant Head Well Permeameter (CHWP) to provide infiltration parameters for development of potential stormwater management options. Three (3) infiltration tests were performed on September 20, 2023 within the proposed development area adjacent to MW10-23 (two tests) and MW11-23.

The boreholes for the infiltration tests were hand augered to 0.25 mbgs. The CHWP is used to assess the field saturated hydraulic conductivity within the immediate vicinity of the testing equipment. The field permeameter test consisted of the following:

– Excavation of a cylindrical borehole to the interval to be tested.
– Placement of the permeameter in the borehole and filling of the borehole with water.
– Monitoring the rate of decline of the water level in the reservoir until quasi-steady flow conditions are reached (if applicable).

The hydraulic conductivity measured in the unsaturated (vadose) zone is referred to as the “field-saturated” hydraulic conductivity (K*fs*) (Reynolds, 1993). The CHWP method measures the quasi-steady state flow rate (Q) necessary to maintain a constant depth of water (H) in an uncased borehole. K*fs* can then be calculated from Q and H and other coefficients (Reynolds, 1993).

The analytical solution input parameters include the following:

– Reservoir cross-sectional area
– Water height
– Borehole radius
– Soil texture
– C-factor
– Quasi-steady state rate of water level change.

Alternatively, quick reference tables have been prepared for the specific permeameter characteristics and borehole diameter when utilizing the CHWP testing equipment and were used by GHD during our testing. The infiltration data results are summarized in **Table 4**. The results of the testing are presented in **Appendix D** and are discussed in Section 4.

3.1.5 Groundwater Level Monitoring

Manual groundwater levels were collected using a Solinst water level meter. Groundwater levels were collected from the monitoring wells between February and September 2023. These measurements are summarized in **Table 6**.

3.1.6 Single Well Response Tests

Single well response tests (SWRTs) were completed at monitoring well MW1-23, MW2-23 and MW4-23 on September 20, 2023 to estimate the horizontal hydraulic conductivity of the saturated geologic deposit underlying the Site.

SWRTs involve the injection or removal of a known volume of water into / from the well and measuring the water level response in the well until it returns to static conditions (i.e., falling / rising head test). The water levels were measured using data loggers programmed at three (3) second intervals. The results of the hydraulic testing were analyzed using the Bouwer-Rice (1976) solution for unconfined aquifer conditions as provided in the software package AQTESOLV™.

The solution was used to evaluate the horizontal hydraulic conductivity of the saturated soils within the immediate vicinity of the screened interval of the monitoring well. The SWRTs are summarized in **Table 7**. The results of the testing are presented in **Appendix E** and are discussed in Section 4.

3.1.7 Water Balance

To understand the pre- and post-infiltration components, a water budget analysis was undertaken for the Site to evaluate the amount of water surplus generated for the existing and proposed Site conditions. This evaluation is based upon the conceptual plan provided to GHD. The objective of the water balance is to illustrate that post-development infiltration within the developable area can meet or be close to pre-development values. The calculations of the water balance will establish an infiltration target for post-development infiltration.

The computations have used detailed parameters such as precipitation, regional evapotranspiration, infiltration and runoff that were obtained from data compiled from the Oak Ridges Moraine Groundwater Program.

4. Geology and Hydrogeology

The following sections provide a detailed description of the geology and hydrogeology of the Site, based on the results of the investigation completed and on the available background information. Detailed stratigraphy is shown on the borehole logs.

It should be noted that the subsurface conditions are only confirmed at the borehole locations and may vary between and beyond the borehole locations. The boundaries between the various strata, as shown on the borehole logs are based on non-continuous sampling and drilling resistance noted and observed at the time of drilling. These

boundaries represent an inferred transition between the various strata, rather than precise planes of geological change.

4.1 Summary of Borehole Information

UTM coordinates and ground surface elevations for each borehole location was obtained by GHD during the drilling process in the approximate locations illustrated on **Figure 2**. The location of each borehole is referenced to UTM Zone 17 and ground elevations are based upon measurements obtained using a EOS Arrow Gold+ GPS system connected to the RTK network. The following table presents a summary of investigated depths, surface elevations, and UTM coordinates for the borehole locations:

Table 2 Borehole Information

Borehole ID	Location – UTM Coordinates System		Borehole Depth (mbgs)	Ground Elevation (m)
	Northing	Easting		
MW1-23	4867133	671741	6.7	158.75
MW2-23	4867135	671710	7.6	159.37
BH3-23	4867147	671722	2.9	159.36
MW4-23	4867173	671712	7.6	160.17
BH5-23	4867185	671696	3.7	161.07
BH6-23	4867183	671722	2.9	160.34
MW7-23	4867130	671723	9.6	159.05
BH8-23	4867163	671729	9.3	159.55
BH9-23	4867166	671693	9.2	159.84
MW10-23	4867158	671668	3.5	159.93
MW11-23	4867180	671678	3.2	160.94

It should be noted that the provided coordinates and elevations are approximate and should not be used for construction purposes. The ground elevations are provided for engineering analysis purposes only and should be confirmed by a licensed surveyor.

4.2 Site Geology

Based upon information obtained from this investigation, the following surficial materials and geologic deposits underlie the Site.

- **Surficial Soil** – Fill
- **Fine-Textured Glaciolacustrine Deposits** – Native Silt or Sandy Silt
- **Coarse-Textured Glaciolacustrine Deposits –** Native Gravelly Sand
- **Till** – Sandy Silt to Silty Sand some Clay trace Gravel

A layer of asphalt is present across the majority of the Site and was observed at the surface of all boreholes. The asphalt ranged in thickness from 50 to 125 mm. Bedrock was not encountered during the drilling programs conducted by GHD at the Site.

Surficial Soils

A layer of fill was encountered below the asphalt in all boreholes. The thickness of the fill ranged from about 0.7 to 1.5 mbgs. The fill was generally brown in colour and consisted of sand, some gravel, and traces of silt. The SPT N values obtained from within the fill layer ranged from 5 blows / 300 mm to 35 blows / 300 mm indicating a loose to dense in-situ state of relative density. Samples of this material were visually described to be in a generally moist condition with measured moisture contents ranged from one (1) percent to fourteen (14) percent by weight.

Native – Gravelly Sand

A layer of gravelly sand was observed below the fill in boreholes MW10-23 and MW11-23. This layer was typically encountered at 0.8 mbgs (160.17 to 159.17 masl) and extended to 2.3 meters thick within MW11-23. The gravelly sand layer was observed to the bottom of the borehole within MW10-23. The material was described as light brown and moist.

The SPT N values obtained from within the gravelly sand layer ranged from 50 blows / 300 mm to 86 blows / 300 mm indicating a very dense consistency. The average SPT N value for this soil layer was approximately 72 blows / 300 mm. Based on grain size distribution analyses (gradation) of one (1) sample, the gravelly sand consisted of 28% gravel, 66% sand and 6% silt and clay-sized particles. The moisture content of this layer ranged from 1 to 2 percent by weight and described to be moist. The average moisture content of this soil deposit was 1.6 percent.

Native – Silt with Sand / Sandy Silt

A layer of silt with sand or sandy silt was observed below the fill in all boreholes except MW10-23 and MW11-23. This layer was typically encountered at 0.8 to 1.5 mbgs (157.53 to 159.58 masl) and ranged from 1.5 to 3.7 meters thick within the boreholes where the bottom of this unit was observed. This layer was observed to the bottom of the boreholes within BH3-23 and BH5-23. The material was described as brown to light brown and moist to wet.

The SPT N values obtained from within the silt with sand and sandy silt layer ranged from 5 blows / 300 mm to 57 blows / 300 mm indicating a loose to very dense consistency. The average SPT N value for this soil layer was approximately 26 blows / 300 mm. Based on grain size distribution analyses of three (3) samples, the silt with sand and sandy silt consisted of 1 to 4% gravel, 16 to 28% sand, 77 to 80% silt and clay-sized particles. The moisture content of this layer ranged from 13 to 26 percent by weight and described to be moist to wet. The average moisture content of this soil deposit was 17 percent.

Native – Sandy Silt / Silty Sand Till

Eight (8) of the boreholes (MW1-23, MW2-23, MW4-23, MW6-23, MW7-23, BH8-23, BH9-23 and MW11-23) terminated within glacial till described generally as sandy silt or silty sand. This material was found from 2.3 to 4.6 mbgs (154.79 to 158.06 masl) and extended to the bottom of these boreholes. The material was described as having trace to some gravel and trace to some clay and was brown transitioning to grey with depth. Auguring was described as ‘grinding’ suggestive of cobble and / or boulder sized materials present.

The SPT N values obtained from this material ranged from 30 blows / 300 mm to greater than 50 blows / 50 mm indicating a generally dense to very dense in-situ relative density. Based on grain size distribution analyses of two (2) samples, the material was comprised of 4 to 16% gravel, 27 to 37% sand, 34 to 49% silt and 13 to 20% clay-sized particles by weight. The moisture content of this layer ranged from 5 to 14 percent by weight and described to be moist to wet. The average moisture content of this soil was 8 percent.

4.2.1 Physical Laboratory Testing Results

A total of six (6) samples collected from the soils encountered at the Site were selected for testing of grain size distribution analysis. Of the selected soil samples, three (3) were also tested for hydrometers. The laboratory test results are summarized in the following table and detailed test results are presented in **Appendix C**.

Table 3 Physical Laboratory Testing Results

Borehole ID	Depth (mbgs)	Grain Size Distribution				Soil Description (USCS Symbol)
		%Gravel	%Sand	%Silt	%Clay	
MW2-23	3.0 – 3.7	1	22	77		Sandy Silt (ML)
BH5-23	1.5 – 2.1	4	16	80		Silt (ML)
MW7-23	7.6 – 8.1	16	37	34	13	Silty Sand Till (SM)
BH8-23	1.5 – 2.0	2	28	59	11	Sandy Silt (ML)
BH9-23	4.6 – 5.1	4	27	49	20	Sandy Silt Till (ML)
MW11-23	1.5 – 2.0	28	66	6		Gravelly Sand (SP-SM)

4.3 Site Hydrogeology

4.3.1 Hydrostratigraphic Units

The primary hydrostratigraphic units (i.e. aquifer / aquitard units) underlying the Site include the following:

- **Fill** – unsaturated
- **Sandy Silt** / **Gravelly Sand** – unsaturated (aquifer)
- **Sandy Silt / Silty Sand Till** – unsaturated – saturated (aquitard)

Based on the borehole investigation, the fill and shallow sandy silt / gravelly sand soils are unsaturated across the Site. Generally, the till deposit will also act as an aquitard underlying the Site; however, there may also be thin sand seams throughout the till unit providing a conduit for groundwater flow. The volume of groundwater from these seams within the till is generally expected to be minimal.

Based on hydraulic testing, the horizontal hydraulic conductivity of the underlying till deposit is 7.0×10^{-5} cm/s (geometric mean), which is relatively low and representative of an aquitard.

4.3.2 Infiltration Testing

Constant Head Well Permeameter (CHWP) were completed on the unsaturated fill material at a depth of 0.25 mbgs adjacent to MW10-23 (two tests) and MW11-23. The test data is provided in **Appendix D** and the summary of the infiltration testing is presented in **Table 4**.

Table 4 Infiltration Testing Results

Infiltration Test ID	Depth Tested (mbgs)	Soil Tested	Kfs (m/s)	Test Duration (min)	Estimated Infiltration Rate (mm /hr)
INF-1 at MW10-23	0.25	Fill	1.9×10^{-5}	~11	~100
INF-2 at MW10-23	0.25	Fill	3.2×10^{-6}	20	~60
INF-3 at BH11-22	0.25	Fill	5.3×10^{-6}	20	~70

The field saturated hydraulic conductivity (K_{fs}), based upon INF-1, INF-2 and INF-3 is 6.9×10^{-6} m/s (geometric mean). The corresponding infiltration rate at these locations ranges from approximately 60 to 100 mm/hr. The field saturated hydraulic conductivity indicates the fill at these locations could provide infiltration / recharge capabilities.

It should be noted that the design infiltration rate is based on the ratio between the mean infiltration rate and the lowest infiltration rate for soils within 1.5 metres below the base of the infiltration structure or feature, and an applied

safety factor. The safety factor increases from 2.5 to 8.5 times, the higher the ratio the greater the safety factor required.

4.3.3 Groundwater

Groundwater observations and measurements were collected from the open boreholes during and upon completion of drilling each borehole. Groundwater seepage was observed in five (5) of the eleven (11) boreholes at depths ranging from 6.1 to 7.6 mbgs. Monitoring wells were installed within boreholes MW1-23, MW2-23, MW4-23, MW7-23, MW10-23 and MW11-23. A summary of the monitoring well details are provided in **Table 5**. The seepage depth refers to the approximate depth where water was encountered during drilling activities. The soils were generally grey in colour at the depths where groundwater seepage was observed. The volume of groundwater from within the underlying deposits such as sand seams within the till is generally expected to be minor; however, pockets of more permeable material may be encountered.

Table 5 Monitoring Well Information

Location	Ground Elevation (m)	Screened Interval		Sandpack Interval (effective screen)		Screened Material	Groundwater Seepage	
		Depth (mbgs)	Elevation (masl)	Depth (mbgs)	Elevation (masl)		Depth (mbgs)	Elevation (m)
MW1-23	158.75	2.7 – 5.7	156.1 – 153.1	1.7 – 5.7	157.1 – 153.1	Till	~6.1	~152.7
MW2-23	159.37	4.1 – 7.1	153.3 – 150.3	3.2 – 7.1	156.2 – 150.3	Till & Silt	~6.1	~153.3
MW4-23	160.17	3.6 – 6.7	156.6 – 153.5	2.9 – 6.7	157.3 – 153.5	Till	~6.1	~154.1
MW7-23	159.05	1.5 – 3.1	157.6 – 156.0	1.2 – 3.1	157.9 – 156.0	Sandy Silt	None observed	
MW10-23	159.93	1.5 – 3.1	158.4 – 156.8	1.2 – 3.1	158.7 – 156.8	Gravelly Sand	None observed	
MW11-23	160.94	1.5 – 3.1	159.4 – 157.8	1.2 – 3.1	159.7 – 157.8	Gravelly Sand	None observed	

Notes:
m = metres; mbgs = metres below ground surface
(*) Ground elevations were measured using a EOS Gold+.

Groundwater level monitoring data was collected from the monitoring wells and is summarized in **Table 6**. Based upon the water levels obtained on February 22, 2023, August 18, 2023 and September 20, 2023, the water levels ranged from about 155.5 to 157.2 masl. The monitoring wells installed at MW7-23, MW10-23 and MW11-23 were dry on September 20, 2023.

Table 6 Groundwater Levels and Elevations

Monitoring Well ID	Ground Surface Elevation (masl)	Water Levels (mbgs / masl)		
		February 22, 2023	August 18, 2023	September 20, 2023
MW1-23	158.75	1.56 / 157.19	2.61 / 156.14	2.86 / 155.89
MW2-23	159.37	3.55 / 155.81	3.73 / 155.64	3.83 / 155.54
MW4-23	160.17	2.93 / 157.23	3.08 / 157.09	3.33 / 156.84
MW7-23	159.05	Monitoring well not installed at this time		Dry at 156.0 masl
MW10-23	159.93	Monitoring well not installed at this time		Dry at 156.8 masl
MW11-23	160.94	Monitoring well not installed at this time		Dry at 157.8 masl

Notes:
Ground surface elevations are for the purposes of evaluating groundwater elevation and flow direction and should not be relied upon as a legal survey or topographic elevation survey.

4.3.4 Flow Direction and Gradient

Based upon the water levels measured by GHD, the groundwater elevations indicate that the flow direction is in a southwesterly direction. It should be noted that groundwater levels are transient and tend to fluctuate with the seasons, periods of precipitation and temperature.

Based upon the groundwater elevations at MW2-23 and MW4-23, the average horizontal groundwater gradient across the Site in the direction of flow is estimated to be on the order of 0.03 metres per metre (m/m).

4.3.5 Saturated Hydraulic Properties

A summary of the hydraulic properties generated from the SWRT conducted at MW1-23, MW2-23 and MW4-23 was analyzed using AQTESOLV and the Bouwer-Rice solution for each rising and falling head test (**Appendix E** for the solution data). This monitoring well is screened within the glacial till. The data from the SWRT is summarized in the following table:

Table 7 Single Well Response Test Results

Monitoring Well	Unit Tested	Test Type / Number	Analysis Method	Horizontal Hydraulic Conductivity – K_H (each test) (m/sec)	Geometric Mean Horizontal Hydraulic* Conductivity – K_H (m/sec)
MW1-23	Till	Falling Head	Bouwer-Rice	1.4×10^{-6}	7.3×10^{-7}
		Rising Head		3.7×10^{-7}	
MW2-23	Till and silt	Falling Head	Bouwer-Rice	9.0×10^{-7}	7.8×10^{-7}
		Rising Head		6.8×10^{-7}	
MW4-23	Till	Falling Head	Bouwer-Rice	6.3×10^{-7}	6.0×10^{-7}
		Rising Head		5.6×10^{-7}	
Geometric Mean				**7.0×10^{-7}**	

The results indicate that the horizontal hydraulic conductivity of the screened intervals at MW1-23, MW2-23 and MW4-23 has a geometric mean hydraulic conductivity (K_h) of 7.0×10^{-7} m/s. The groundwater flux (per square metre) in the deposit can be estimated using the following relationship:

$q = Ki$

where:

q = groundwater flux (per square metre)
K = hydraulic conductivity (7.0×10^{-7} m/s)
i = hydraulic gradient (0.03 m/m)

Therefore, the estimated groundwater flux in the native till deposit is estimated to be 2.5×10^{-10} m/s, per square metre (7.0×10^{-7} m/s x 0.03 m/m = 2.4×10^{-8} m/s). The flow rate per square metre is approximately 1.4×10^{-3} L/min (2.4×10^{-8} m/s x 60 sec/minute x 1,000 L/m^3 = 1.4×10^{-3} L/min). Based on the SWRT result, the till deposit would have a very low flow rate.

The SWRT results reflect low hydraulic conductivity characteristics. Note that slight variations in the soil stratigraphy may cause variations in the permeability / transmissivity of the soil in both vertical and horizontal orientations, that could result in K-values outside the stated range if pockets or seams of soils with different grain size and permeabilities (e.g. coarse sand / gravel seams / layers) are encountered.

4.3.6 Construction Dewatering

Excavations are expected to extend through the upper fill material and into the underlying sandy silt or gravelly sand deposit for this development. Based upon our boreholes and monitoring wells, some groundwater seepage may be encountered at depths below the anticipated depth of the development; however, if encountered the volume is anticipated to be minimal. Dewatering to remove groundwater seepage as well as surface water runoff and precipitation to ensure safe and dry working conditions may be required depending on the depth of the excavation and the time of the year. Pumping from collection sumps to an acceptable outlet will control this expected groundwater infiltration.

Should any excavations require more intensive dewatering or groundwater control, the use of filtered sumps, or other suitable method of dewatering is recommended. If short-term pumping of groundwater at volumes greater than 50,000 L/day and less than 400,000 L/day is required during the construction stage, the Environmental Activity and Sector Registry (EASR) must be completed. If the projected construction dewatering volumes exceed 400,000 L/day, then a Category 3 Permit to Take Water (PTTW) will be required from the MECP. Pumping groundwater at volumes of 50,000 L/day or greater is not expected based upon the information collected.

It is not the purpose of this report to assess the planned water taking related to any required dewatering work. Once the detailed design drawings have been prepared, a water taking assessment can be completed to determine requirements of dewatering and recommendations for an EASR or PTTW application, should they be needed. At the construction stage of the development, any monitoring wells at the Site are to be decommissioned in accordance with O. Reg. 903 by a licensed and experienced contractor.

5. Water Balance

5.1 Pre-Development Water Balance

The pre-development water balance incorporated the existing soils and slope. The infiltration factor for the area was calculated from the table of values presented in the “Land Development Guidelines”[2]. It is based on three sub-factors which are:

- Topography sub-factor;
- Soil sub-factor; and
- Cover sub-factor.

A topography factor of 0.25 for gently rolling topography and a soil factor of 0.2 (representing the underlying sandy silt) was used. The existing vegetation factor for the pre-development site included a lawn area, asphalt / concrete, and two (2) rooftops (see **Appendix F.2** for breakdown of areas). The pre-development infiltration assumes that evaporation from impervious areas will be 20% of the precipitation and that 5% of the precipitation that contacts the existing asphalt will infiltrate due to existing cracking and wear of the asphalt.

Table 8 summarizes the expected pre-development water balance values for the Site.

[2] MOEE Hydrogeological Technical Information Requirements for Land Development Applications. April 1995.

Table 8 Pre-Development Summary

Total Precipitation (Oak Ridges Moraine Groundwater Program)	- 875.0 mm/yr
Regional Evapotranspiration (Oak Ridges Moraine Groundwater Program)	- 188.5 mm/yr
Recharge Available (Oak Ridges Moraine Groundwater Program)	- 38 mm/yr
Site Area	- 6,000 m^2
Pervious Areas -Lawn – 4.0%	- 240 m^2 (4.0%)
Impervious Areas -Rooftops (2 structures) – 8.3% -Gravel parking lot and concrete areas – 87.8%	- 5,760 m^2 (96.0%)
Total Water Surplus after Evaporation -Percent of Precipitation – 98.9%	- 4,197 m^3/yr
Evapotranspiration -Percent of Precipitation – 1.1%	- 45 m^3/yr
Total Estimated Infiltration -Percent of Precipitation – 4.6%	- 193 m^3/yr
Total Estimated Runoff -Percent of Precipitation – 94.4%	- 4,003 m^3/yr

Based upon our calculations, the pre-development site is about 4% pervious. Based upon the pre-development values, the overall Site infiltrates on the order of about 193 m^3 per year or about 32 mm/year. The infiltration rate appears to be suitable given that the Site is generally impervious.

5.2 Post-Development Water Balance (No Infiltration Enhancements)

The computation of the water budget was repeated for the proposed development assuming no infiltration enhancements, that is, runoff from impervious surfaces is unrecoverable and not infiltrated into the ground. The anticipated impact of the development is related to increased runoff from imperious surfaces such as the building rooftop and asphalt surfaces. These are assumed to be impervious surfaces with zero infiltration capacity in this model. A summary of the computations is provided in **Table 9** based upon the conceptual plan provided to GHD:

Table 9 Post-Development Summary (No Infiltration Enhancements)

Site Area	- 6,000 m^2
Pervious Areas -Landscaping / grass – 19.2%	- 1,150 m^2 (19.2%)
Impervious Areas -Rooftops (2 buildings) – 28.5% -Asphalt parking and ramp – 52.3%	- 4,850 m^2 (80.8%)
Total Water Surplus after Evaporation -Percent of Precipitation – 95.1%	- 4,184 m^3/yr
Evapotranspiration -Percent of Precipitation – 4.9%	- 217 m^3/yr
Total Estimated Infiltration -Percent of Precipitation – 1.0%	- 44 m^3/yr
Infiltration % Difference (pre- vs post-)	- (77%) (**decrease**)
Total Estimated Runoff -Percent of Precipitation – 99.0%	- 4,141 m^3/yr
Infiltration % Difference (pre- vs post-)	(3%) (increase)

Assumptions that were made in order to compute the post-development water budget in **Table 9** included evaporation from impervious surfaces and the impermeable surface areas of asphalt surfaces and building roof tops with zero (0) infiltration capability. Under this scenario, the total infiltration volume decreased by about 77% and runoff volume increased by about 3%.

5.3 Post-Development Water Balance Considering LIDs

Based on the water balance calculations and under the proposed development scenario, the infiltration volume is anticipated to decrease without the use of LIDs. To maintain the pre-development infiltration and minimize impacts to groundwater base flow, 16.6% of the precipitation surplus available from the new rooftop must be infiltrated or 12.5% of the precipitation surplus available from the proposed new building rooftop and existing dental office rooftop must be infiltrated (see **Appendix F.5** for the water budget summary).

Based upon LID literature, downspout disconnection can result in a rooftop runoff reduction of 25% to 50%. At the low end of this LID runoff reduction (i.e. 25% runoff reduction), the Site will have an increase in post-development infiltration compared to the pre-development values of approximately 39%. As such, the use of a downspout disconnection LID strategy will provide a surplus of infiltration to the underlying groundwater regime.

6. Geotechnical Discussion and Recommendations

The Site is proposed to be re-developed with a mixed-use condominium that will consist of commercial / retail space on the ground floor with up to 50 condo apartment units above that will be municipally serviced for water and sewer. The surrounding area is also municipally serviced for water and sewer. The concept plan is illustrated on **Figure 2** and includes the following:

- A slab-on-grade mixed-use development that incorporates the existing dental office and can offer up to 50 residential condominium units.
- The development will be four (4) aboveground levels covering a footprint area of about 1,285 m^2 that includes the up to 50 residential units and commercial space (offices and retail units) as well as elevators, landscaped areas and surficial asphalt covered parking. The building's proposed finished first floor elevations range from 159.65 metres above sea level (masl) to 160.35 masl.

Based upon the borehole information, and assuming them to be representative of the subsoil conditions across the Site, the following comments and recommendations are offered.

6.1 Site Preparation, Grading and Backfill

At the time of the field work, the Site grades varied approximately 2.3 m across the Site with the highest surface elevation of 161.07 masl at borehole BH5-23 and the lowest surface elevation of 158.75 masl at borehole MW11-23.

The general stratigraphy at the borehole locations consisted of asphalt (pavement structure) underlain by fill materials (reworked native soils). The fill was observed to be of varying thickness extending to approximately 0.7 to 1.5 mbgs over native soils that generally consisted of silt to sandy silt or gravelly sand underlain by dense to very dense silty sand to sandy silt glacial till deposits.

Any topsoil, asphalt, vegetation, disturbed earth, fill, organic and organic-bearing material should be removed from the footprint of the proposed building and within pavement areas prior to site grading activities. Fill materials found to contain significant amounts of topsoil / organics or rootlets should not be used as backfill. Additionally, care will be required during excavation to separate any fill materials that appears to contain significant amounts of topsoil/organics or rootlets from the clean earth fill.

Prior to Site grading activity, the subgrade soils exposed after the removal of the earth fill within the proposed building areas should be visually inspected, compacted if required, and proof rolled using large axially loaded equipment. Any loose, organic, or unacceptable areas should be subexcavated and removed as directed by the Engineer and replaced with suitable fill materials compacted to a minimum of 98 percent Standard Proctor Maximum Dry Density (SPMDD). Clean earth fill used to raise grades in the proposed building footprint should be placed in thin layers (200 mm thick or less) and compacted by a heavy appropriate roller to 98 percent SPMDD.

The fill (free of topsoil / organics and rootlets) and the native soils encountered at the Site are generally suitable for reuse as backfill to raise site grades (where required), or as backfill against foundation walls or as trench backfill during installation of buried services, provided they are free of organic material, and are within the optimum moisture content. It should be anticipated that reworking of the soils may be necessary to facilitate compaction through slight wetting or drying as required, due to the high percentage of silt within the native soils at this Site. If free-draining and non-frost susceptible materials are required as backfill against basement walls and retaining walls, the use of fine-grained soils such as the native silty soils at the Site will not be appropriate and imported granular fills will be required. Suitable frost tapers will have to be incorporated into the backfill geometry if imported granular soils are used to backfill excavations.

If imported materials are required to raise Site grades to design levels, then potential source Sites should be evaluated for geotechnical and environmental quality prior to acceptance. It is recommended that any proposed fill considered for reuse on the Site be comprised of clean earth material, free of topsoil and building rubble, and is at a moisture content ±2% of the laboratory optimum for compaction.

6.2 Depth of Frost Penetration

It is recommended that the building perimeter foundations and those foundations within unheated areas should be protected from frost effects by at least 1.2 m of earth cover or equivalent insulation. All exterior footings, footings beneath unheated areas, and foundations exposed to freezing temperatures should have at least such earth cover or equivalent synthetic insulation for frost protection. During winter construction exposed surfaces to support foundations must be protected against freezing by means of loose straw and tarpaulins, heating, etc.

6.3 Seismic Site Classification

The latest Ontario Building Code (OBC) requires the assignment of a Seismic Site Class for calculations of earthquake design forces and the structural design based on a two percent probability of exceedance in 50 years. According to the latest OBC, the Seismic Site Class is a function of soil profile and is based on the average properties of the subsoil strata to a depth of 30 m below the ground surface. The OBC provides the following three methods to obtain the average properties for the top 30 m of the subsoil strata:

– Average shear wave velocity.
– Average Standard Penetration Test (SPT) values (uncorrected for overburden).
– Average undrained shear strength.

For design purposes, based on the criteria listed in Table 4.1.8.4.A. of the OBC and the results obtained from standard penetration resistance of the underlying subsurface conditions and our knowledge of the regional geology, a Seismic Site Class ‘D’ can be used for the design of the proposed building. The Site Class may be improved by conducting supplementary investigation (e.g., measurement of shear wave velocity using MASW or other appropriate geophysical methods).

6.4 Foundation Design

The common practice for the Serviceability Limit State (SLS) design of most structures and building foundations is to limit the total and differential foundation settlements to 25 mm and 15 mm, respectively. However, other serviceability criteria for the proposed building may be determined by the structural engineer considering tolerable settlement that would not restrict the use or operation of the building.

As discussed in Section 6.2, the footings for the proposed building must be founded at 1.2 m below the lowest final adjacent surrounding grade to provide adequate protection against frost penetration. In addition, the footings should extend below any existing unsuitable fill and organic material, where present. The table below presents the recommended minimum depth and maximum founding elevation for installation of spread and strip footings or concrete piers (short caissons) at each borehole advanced within the proposed building’s footprint.

Table 10 Minimum Depths and Maximum Elevations for Footings

Borehole ID	Minimum Foundation Depth (mbgs)	Maximum Foundation Elevation (m)
MW1-23	1.5	157.2
MW2-23	1.5	157.8
BH3-23	2.3	157.1
MW4-23	2.3	157.9
BH5-23	2.3	158.8
BH6-23	2.3	158.1
MW7-23	1.5	157.5
BH8-23	1.5	158.0
BH9-23	1.1	158.9

The subgrade soils at the maximum elevation recommended above are expected to consist of compact to very dense silty sand to sandy silt till soils. The footing subgrade must be inspected following excavation to check that any unsuitable fill and organic soils or other unsuitable material have been removed. Proof-rolling of the footing subgrade will be required to identify any softened zones. Where any softened zones are present, sub-excavation is required to remove unsuitable materials, and the sub-excavated area should be backfilled with granular material meeting OPSS.PROV 1010 Granular A or Granular B Type II. It is recommended that all fill material be placed in thin lifts (not more than 200 mm thick) and thoroughly compacted to a minimum of 98 percent of the material's SPMDD.

The subgrade soils at the founding elevation will be susceptible to disturbance from construction traffic and / or ponded water. To limit this degradation, it is recommended that the subgrade be protected within four (4) hours of preparation, inspection and approval of the subgrade for the proposed foundations. It is recommended that a 75mm thick concrete mud slab with lean concrete poured directly on the approved founding subgrade be incorporated into the design, in order to maintain the integrity of the founding soils.

Conventional strip footings with a minimum width of 0.45 m and spread footing between 1 m to 4 m square founded a minimum 1.2 m depth below the lowest final adjacent surrounding grade, placed on properly prepared subgrade, may be designed using a geotechnical reaction at Serviceability Limit State (SLS) of 240 kPa and a factored (Ø=0.5) geotechnical resistance at Ultimate Limit State (ULS) of 600 kPa.

Where it is necessary to place footings at different levels, the upper footing must be founded below an imaginary 10 horizontal to 7 vertical line drawn up from the base of the lower footing. The lower footing must be installed first to help minimize the risk of undermining the upper footing.

6.5 Slab-on-Grade Design

The floor of the proposed building should be supported on compacted fill material over native soils. It is recommended that any existing unsuitable materials that may be present below the proposed floor slab of the proposed building be removed and that grades after sub-excavation be inspected and heavily proof rolled. Any area observed to be soft / loose should be subexcavated and replaced with engineered fill. A qualified geotechnical engineer should review the condition of the subgrade beneath the proposed slab.

A minimum of 200 mm thick layer of 19 mm clear crushed stone should be placed between the prepared subgrade and the floor slab to act as a moisture barrier. For the structural design of the concrete slab-on-grade constructed on compacted granular fill over the native soils, a modulus of subgrade reaction coefficient (k) of 35 MPa/m can be used.

Perimeter drainage of the structure is recommended where there is pavement adjacent to the building face or, the finished floor level of the structure is not at least 200 mm above the prevailing exterior grade level. Perimeter drains should consist of 150 mm diameter pipe, filter-wrapped, perforated pipe appropriately draining into a permanent frost-free outlet. Surface drainage should be directed away from the building.

6.6 Site Servicing

The native soils encountered in the boreholes are suitable to support the proposed Site services. The bedding and sand cover materials for the pipes should be adequately compacted to provide support and protection. Provided the base area of the sewer pipes and watermains are free of all loose and deleterious materials, the pipe bedding should comply with a Class B bedding configuration as per the requirements of OPSD 802.030 (rigid pipe) and/or OPSD 802.010 (flexible pipe).

Where disturbance of the trench base has occurred, due to the presence of soft / loose soils, groundwater seepage and the like, the disturbed soils should be sub-excavated and replaced with suitably compacted granular fill. If the native soil at the pipe founding level is wet, clear stone may be used as bedding material, but must be wrapped with a suitable filter fabric.

If fill material is found at the pipe invert level, the fill material should be visually inspected. Any wet, soft, highly organic or otherwise unsuitable fills should be sub-excavated and replaced with bedding materials or clean fills compacted to a minimum of 95% SPMDD.

6.7 Pavement Design

Based on the results of this investigation, we recommend the following procedures be implemented to prepare the proposed asphalt paved access way and parking areas for its construction:

1. Remove all topsoil, organics, organic-bearing materials and other deleterious materials from the planned pavement areas to a minimum depth to allow for the new pavement structure at which point an assessment of the exposed soils by a member of GHD will deem whether further removal and/or placement of suitable geotextile material or other treatment is required.
2. Inspect and proof roll the subgrade for the purpose of detecting possible zones of overly wet or soft subgrade. Any deleterious areas thus delineated should be replaced with approved granular material compacted to a minimum of 98 percent of its SPMDD.
3. Contour the subgrade surface to prevent ponding of water during the construction and to promote rapid drainage of the sub-base and base course materials.
4. To maximize drainage potential, 150 mm diameter perforated pipe subdrains should be installed below any curb lines in the access way and radiate from catchbasin manholes in the parking lot area. The pipe should be encased in a filter fabric sock and surrounded by free draining aggregate. It is recommended that the subdrains discharge to a suitable, frost-free outlet.
5. Construct transitions between varying depths of granular base materials should be sloped at a rate of 1:25 minimum.

The subgrade materials in the proposed pavement areas will consist of sand, silty sand or sandy silt soils. The frost susceptibility of these soils is assessed as being generally moderate to high. In this regard, the following minimum flexible pavement structures are recommended for the construction of the new access and parking areas.

Table 11 Asphalt Pavement Structure

Profile	Material	Thickness (mm)		In Conformance with OPSS Form
		Light Duty	Heavy Duty	
Asphalt Surface	H.L.3	40	40	1150
Asphalt Base	H.L.8	50	50	
Granular Base	Granular “A”	150	150	1010
Granular Subbase	Granular “B”	300	450	

The following steps are recommended for optimum construction of paved areas:

1. The Granular “A” and “B” courses should be compacted to a minimum 100 percent of their respective SPMDD’s.
2. All asphaltic concrete courses should be placed, spread and compacted conforming to OPSS 310 or equivalent. All asphaltic concrete should be compacted to a minimum 92.0 percent of their respective laboratory Maximum Relative Densities (MRD’s).
3. Adequate drainage should be provided to ensure satisfactory pavement performance.

It is recommended that all fill material be placed in uniform lifts not exceeding 200 mm in thickness before compaction. It is suggested that all granular material used as fill should have an in-situ moisture content within 2 percent of their optimum moisture content. All granular materials should be compacted to 100 percent SPMDD. Granular materials should consist of Granular “A” and “B” conforming to the requirements of OPSS 1010 or equivalent.

The performance of the pavement structure is highly dependent upon the subgrade support conditions. Stringent construction control procedures should be maintained to ensure that uniform subgrade moisture and density conditions are achieved as much as practically possible. It is noted that the above recommended pavement structures are for the end use of the project. The most severe loading conditions on pavement areas and the subgrade may occur during construction. As such, during construction of the project, the recommended granular depths may not be sufficient to support loadings encountered. Consequently, special provisions such as restricted lanes, half-loads during paving, etc. may be required, especially if construction is carried out during unfavorable weather.

6.8 Lateral Earth Pressure

Structures subject to unbalanced earth pressures such as foundation walls, shoring systems, retaining walls and other similar structures should be designed to resist the lateral earth pressures. The following table below summarizes the recommended soil parameters to be used for lateral earth pressure calculations.

Table 12 Soil Parameters and Earth Pressure Coefficients

Soil	Φ	γ (kN/m^3)	K_a	K_o	K_p
OPSS Granular A or B compacted	34	20	0.28	0.44	3.54
Engineered Earth Fill	28	19	0.36	0.53	2.77
Compact to Dense Sandy Silt to Silt	30	21	0.33	0.50	3.00
Dense to Very Dense Silty Sand to Sandy Silt Till	34	21	0.28	0.44	3.54

Surcharge and hydrostatic pressures should be considered as appropriate. The above earth pressure coefficients apply to horizontal surfaces behind the walls / supports only.

If movement sensitive services exist close to the shoring, the lateral pressure should be computed using the coefficient of earth pressure at rest, Ko.

It is noted that large deformations will be required for the full mobilization of soil passive earth pressure.

6.9 Excavation and Temporary Shoring

The Occupational Health and Safety Act (OHSA) regulations require that if works must enter an excavation deeper than 1.2 m, the excavation must be suitably sloped and / or braced in accordance with the OHSA requirements. OHSA specifies maximum slope of the excavations for four (4) broad soil types as summarized in the following table:

Table 13 Soil Types and Slope Information

Soil Type	Base of Slope	Maximum Slope Inclination
1	Within 1.2 metres of bottom	1 horizontal to 1 vertical
2	Within 1.2 metres of bottom of trench	1 horizontal to 1 vertical
3	From bottom of excavation	1 horizontal to 1 vertical
4	From bottom of excavation	3 horizontal to 1 vertical

The fill and native soils underlying the Site are considered Type 3 soils, above groundwater level, and Type 4 if affected by surface water or groundwater seepage. If the above recommended excavation side slopes cannot be maintained due to lack of space or any other reason, the excavation side slopes must be supported by an engineered shoring system. The shoring system should be designed in accordance with Canadian Engineering Foundation Manual (4th Edition) and the OHSA Regulations for Construction Projects.

It is anticipated that excavation for foundations and utility installations can be made with conventional equipment. The presence of various cobbles and large boulders should be expected with the native till soils.

An examination of the slopes should be carried out by qualified soils personnel before any worker enters the excavation. The exposed fill material and native soil should be protected against erosion from water run-off or rain.

6.10 Sulphate Attack and Corrosion Potential of Soils

Corrosivity analysis was carried out on a total of two (2) select soil samples (one from each of MW7-23 and BH9-23) to determine the potential for sulphate attack on buried concrete structures, and corrosion potential on buried ductile iron pipes and metal appurtenances at the Site. However, it is ultimately up to the designer to determine the appropriate construction materials, including the exposure class and ensuring that all aspects of the CSA A23.1-14 Section 4.1.1 “Durability Requirements” are followed when designing buried concrete elements.

The results of the corrosivity analyses conducted are provided in the sections below.

6.10.1 Sulphate Attack

The potential for sulphate attack on concrete (class of exposure) is determined using Table 3 of the Canadian Standards Association (CSA) document A23.1 19/A23.2 19 'Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete', which divides the degree of exposure into the following three (3) classes:

Table 14 Concrete Exposure Class

Degree (Class) of Exposure	Water Soluble Sulphate (SO_4) in Soil Sample (%)
Very Severe (S-1)	> 2.0
Severe (S-2)	0.20 – 2.0
Moderate (S-3)	0.10 – 0.20

Laboratory testing for soluble sulphate content was carried out on a select soil sample from two (2) boreholes (BH7-23 and BH9-23) advanced during this investigation, and the results are summarized in the table below:

Table 15 Summary of Water-Soluble Sulphate Test Results

Borehole No.	Sulphate (%)	Class of Exposure
MW7-23 / SS3	0.0108	Below S-3
BH9-23 / SS3	0.0303	Below S-3

A review of the analytical test results are provided in **Appendix G** and summarized in the table above shows that the measured soluble sulphate content in the tested soil samples from boreholes MW7-23 and BH9-23 is below 0.10 percent, indicative of below 'Moderate' degrees of exposure of buried concrete to sulphate attack. Therefore, for below grade structures in contact with soils in proximity of these boreholes, Type General Use (GU) Portland Cement should be used.

6.10.2 Corrosion Potential

Two (2) select soil samples were submitted for analysis of parameters used to assess the potential corrosivity of the Site soil to buried ductile iron pipes and metal appurtenances. The American Water Works Association (AWWA) publication 'Polyethylene Encasement for Ductile-Iron Pipe Systems' ANSI/AWWA C105/A21.5-10 dated October 1, 2010 assigns points based on the results of the tested parameters. Soil that has a total point score of 10 or more is considered to be potentially corrosive to ductile iron pipes. **Table 16** below summarizes the ANSI / AWWA rating of the tested samples and their potential for corrosion towards buried grey or ductile cast iron pipes:

Table 16 Corrosivity Potential on Ductile Iron Pipes

Sample ID	Parameters					Total Points	Corrosivity Potential
	pH @25°C	Resistivity (ohm-cm)	REDOX potential (mV)	Moisture (%)	Sulphides (µg/g)		
MW7-23 / SS3	8.18	311	221	14	<0.3	14	Yes
BH9-23 / SS3	8.12	958	238	13	<0.2	14	Yes

The tested samples from boreholes MW7-23 and BH9-23 were assigned 14 points based on the ANSI / AWWA rating system, and can be considered potentially corrosive to grey ductile and cast iron pipes, thus requiring external corrosion protection in accordance with manufacturer's specifications.

6.11 Construction Monitoring

The foundation installations and any engineered fill placement must be closely monitored and inspected by qualified personnel to ensure consistency with the design bearing. The on-site review of the condition of the foundation soil as the foundations are constructed is an integral part of the geotechnical design function and is required by Section 6.2.2 of the Ontario Building Code 2012.

Qualified Geotechnical personnel should inspect and test all stages of the proposed development. Specifically, they should ensure that the materials and conditions comply with this geotechnical assessment report. In addition, qualified geotechnical personnel should provide material testing services prior to and during backfilling and/or grade raising operation. Should soil conditions be encountered that vary from those described in this report, our office should be informed immediately such that the proper measures are undertaken.

7. Conclusions and Closure

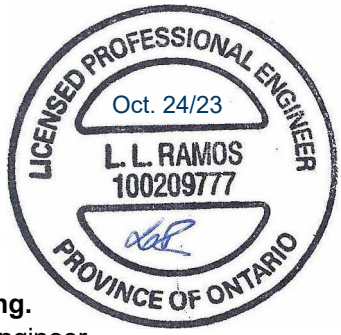
Supporting data upon which our recommendations are based have been presented in the foregoing sections of this report and are governed by the physical properties of the subsurface materials that were encountered at the Site and assume that they are representative of the overall Site conditions.

Based upon the concept plan, the Site is proposed to be re-developed with a mixed-use condominium that will consist of commercial / retail space on the ground floor with up to 50 condo apartment units above that will be municipally serviced for water and sewer. It is our opinion that the results of this hydrogeological and geotechnical investigation support the Site for the re-development as the proposed mixed-use condominium.

We trust this report meets your immediate needs. Should any questions arise regarding any aspect of our report, please contact our office.

All of Which is Respectfully Submitted,

GHD



Leandro Ramos, P.Eng.
Senior Geotechnical Engineer



Robert Neck, P.Geo. (Limited)
Senior Geoscientist, Project Director

8. Limitations of the Investigation

This report is intended solely for Jamas Inc. and their designers and is prohibited for use by others without GHD's prior written consent. This report is considered GHD's professional work product and shall remain the sole property of GHD. Any unauthorized reuse, redistribution of or reliance on the report shall be at the Client and recipient's sole risk, without liability to GHD. No portion of this report may be used as a separate entity; it is to be read in its entirety and shall include all supporting drawings and appendices.

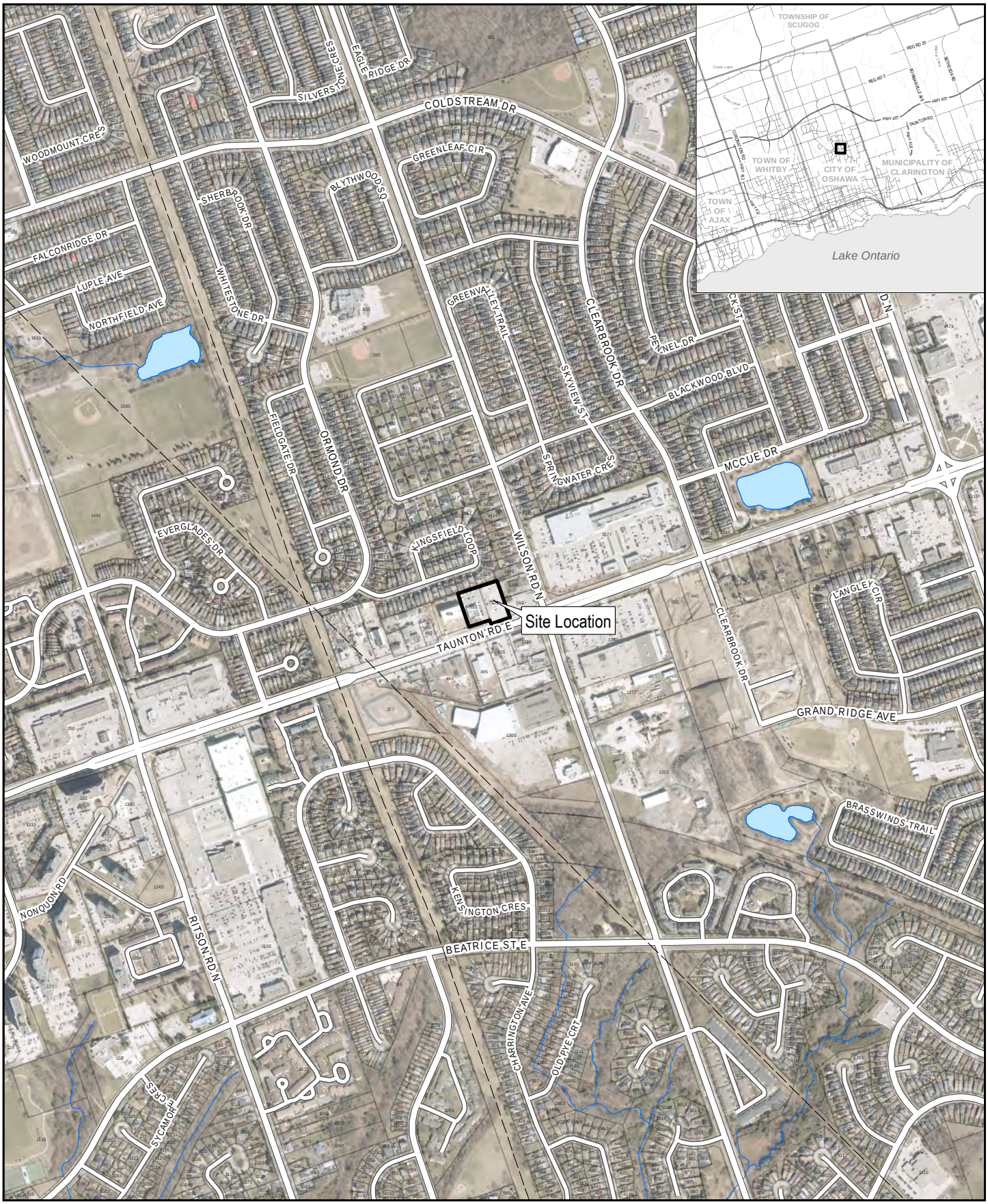
The recommendations made in this report are in accordance with our present understanding of the project, the current site use, ground surface elevation and conditions, and are based on the work scope approved by the Client and described in the report. The services were performed in a manner consistent with that level of care and skill ordinarily exercised by members of geotechnical engineering professions currently practicing under similar conditions in the same locality. No other representations, and no warranties or representations of any kind, either expressed or implied, are made. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties.

All details of design and construction are rarely known at the time of completion of a geotechnical or hydrogeological assessment. The recommendations and comments made in the study report are based on our subsurface investigation and resulting understanding of the project, as defined at the time of the study. We should be retained to review our recommendations when the drawings and specifications are complete. Without this review, GHD will not be liable for any misunderstanding of our recommendations or their application and adaptation into the final design.

By issuing this report, GHD is the geotechnical engineer of record. It is recommended that GHD be retained during construction of all foundations and during earthwork operations to confirm the conditions of the subsoil are actually similar to those observed during our study. The intent of this requirement is to verify that conditions encountered during construction are consistent with the findings in the report and that inherent knowledge developed as part of our study is correctly carried forward to the construction phases.

It is important to emphasize that a soil investigation is, in fact, a random sampling of a site and the comments included in this report are based on the results obtained at the test locations only. The subsurface conditions confirmed at the test locations may vary at other locations. The subsurface conditions can also be significantly modified by the construction activities on site (e.g., excavation, dewatering and drainage, blasting, pile driving, etc.). These conditions can also be modified by exposure of soils or bedrock to humidity, dry periods or frost. Soil and groundwater conditions between and beyond the test locations may differ both horizontally and vertically from those encountered at the test locations and conditions may become apparent during construction which could not be detected or anticipated at the time of our investigation. Should any conditions at the site be encountered which differ from those found at the test locations, we request that we be notified immediately in order to permit a reassessment of our recommendations. If changed conditions are identified during construction, no matter how minor, the recommendations in this report shall be considered invalid until sufficient review and written assessment of said conditions by GHD is completed.

Figures



1 cm = 100 meters

0 100 200 300

Metres

Map Projection: Transverse Mercator
Horizontal Datum: North American 1983
Grid: NAD 1983 UTM Zone 17N

N

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510 & 520 Taunton Road East, Oshawa, ON
City of Oshawa
Regional Municipality of Durham

PROPOSED MIXED-USE BUILDING

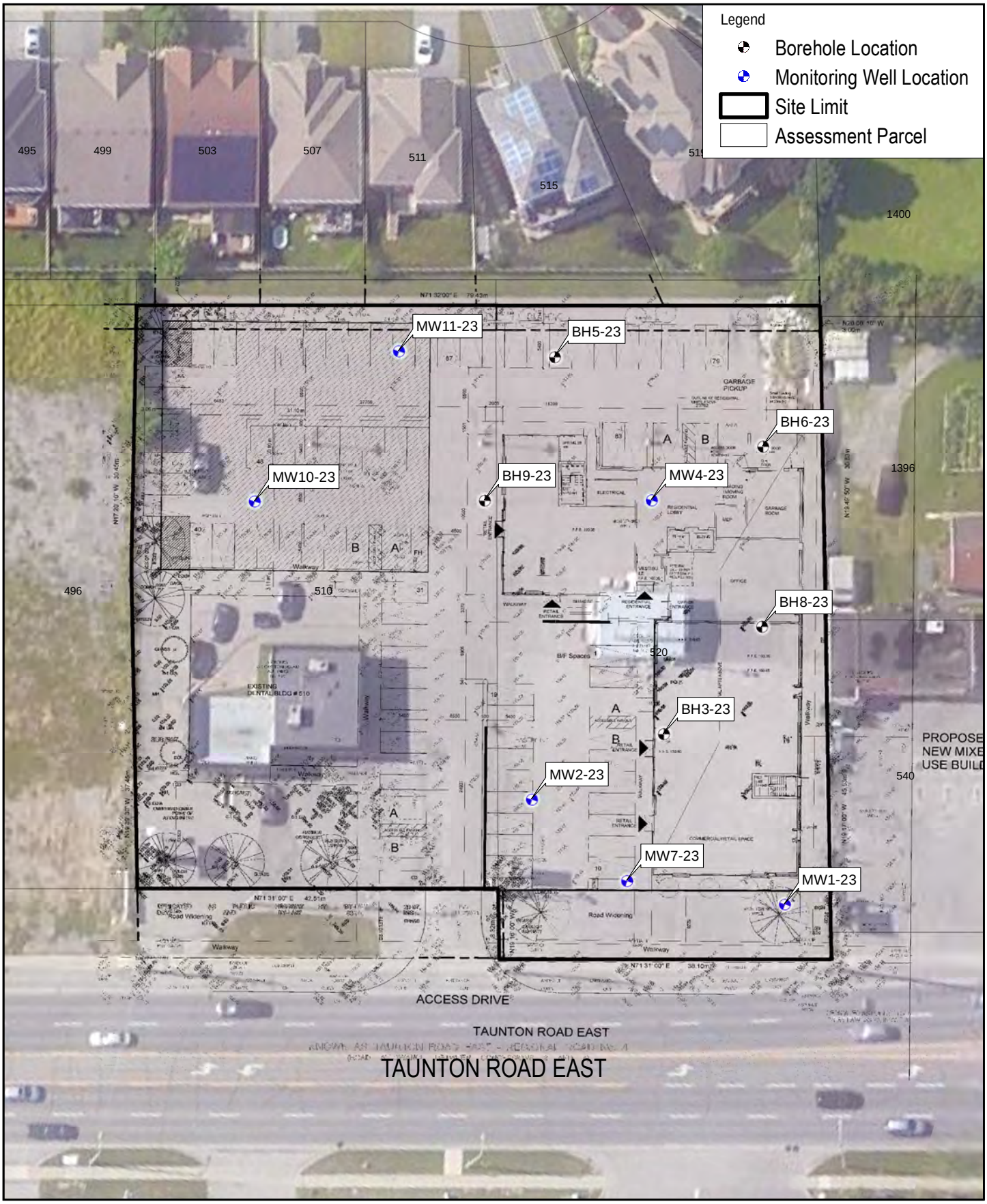
Site Location Plan

Project No. 12603998
Revision No.
Date Sep 14, 2023

Figure 1

O:\GIS\PROJECTS\12603000s\12603998\Layouts\202309_MIX\12603998_202309_MIX_GIS001 - Site Location Plan.mxd
Print date: 14 Sep 2023 - 09:13

Attribution: Image © City of Oshawa, 2022; Produced by GHD Limited under Licence with the Ontario Ministry of Natural Resources and Forestry© King's Printer for Ontario, 2023.



1 cm = 6 meters

0 6 12 18

Metres

Map Projection: Transverse Mercator
Horizontal Datum: North American 1983
Grid: NAD 1983 UTM Zone 17N

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PROPOSED MIXED-USE BUILDING

Borehole Plan

Project No. 12567037
Revision No.
Date Oct 23, 2023

Figure 2

Q:\GIS\PROJECTS\12603000s\12603998\Layouts\202309_MIX\12603998_202309_MIX_GIS002 - Borehole Plan.mxd
Print date: 23 Oct 2023 - 10:31

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1 cm = 100 meters

0 100 200 300

Metres

Map Projection: Transverse Mercator
Horizontal Datum: North American 1983
Grid: NAD 1983 UTM Zone 17N

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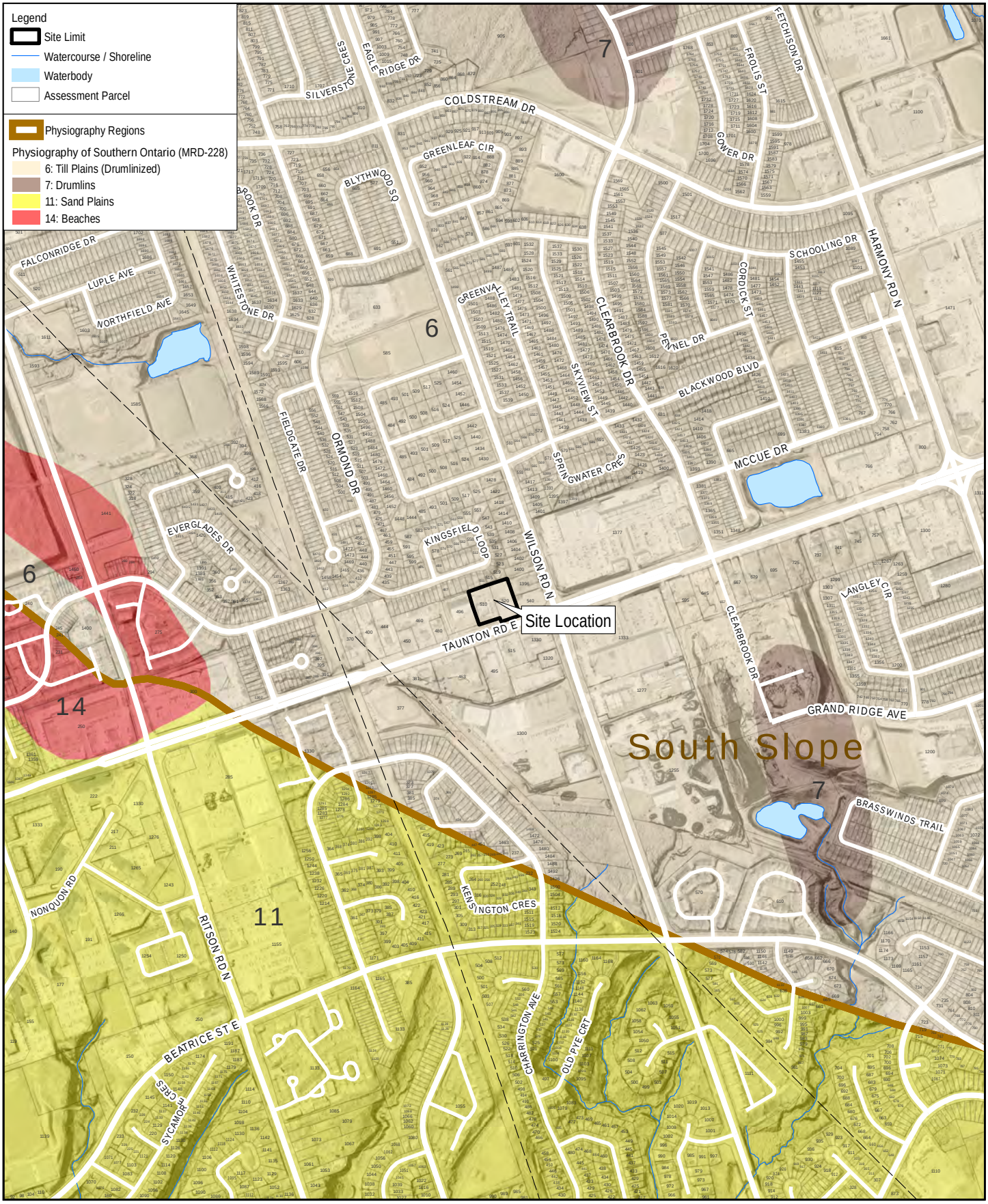
Regional Topography

Project No. 12603998
Revision No.
Date Sep 14, 2023

Figure 3

O:\GIS\PROJECTS\12603000s\12603998\Layouts\202309_MIX\12603998_202309_MIX_GIS003 - Regional Topography.mxd
Print date: 14 Sep 2023 - 09:09

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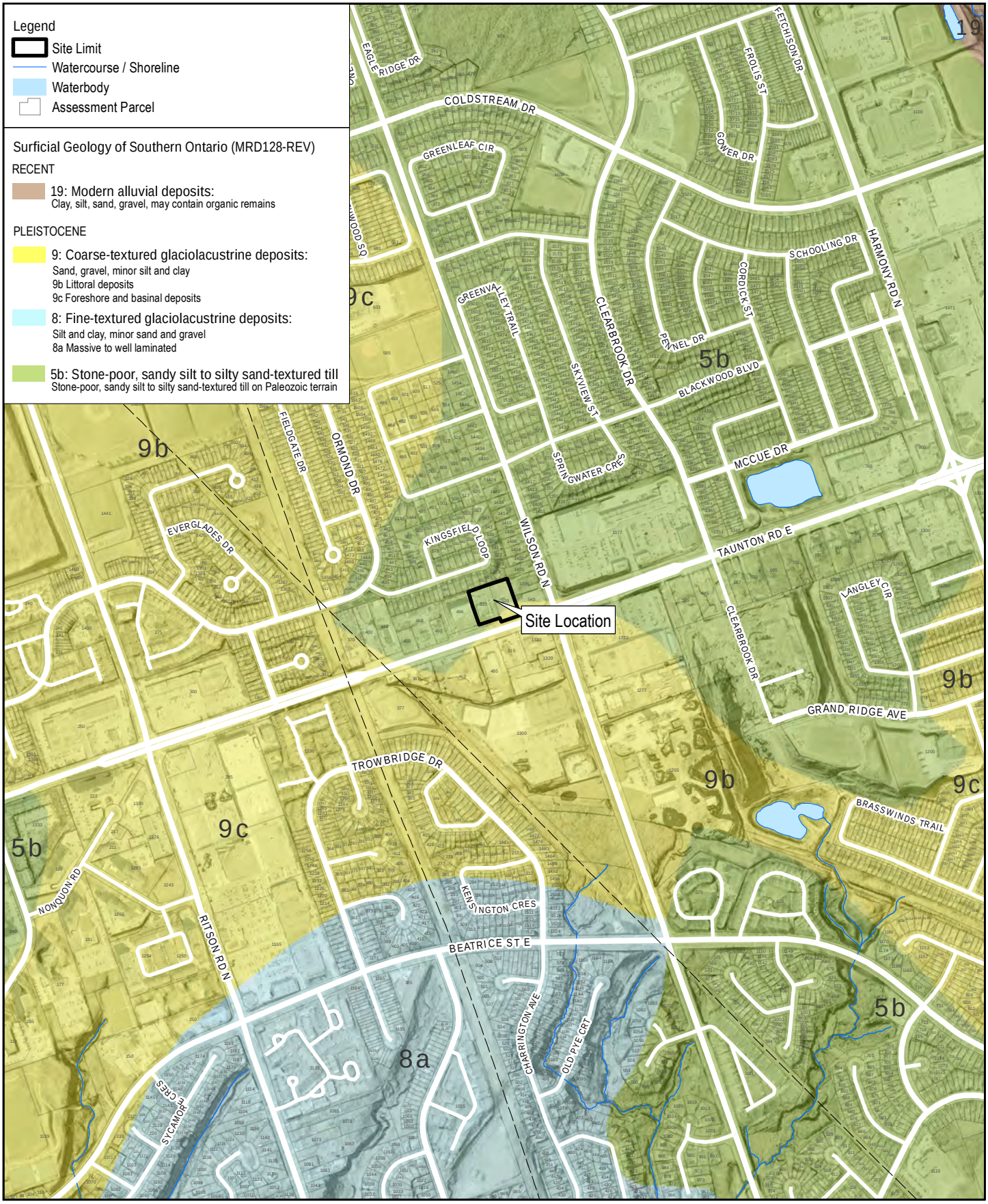
Physiography

Project No. 12603998
Revision No.
Date Sep 14, 2023

Figure 4

Q:\GIS\PROJECTS\12603000s\12603998\Layouts\202309_MIX\12603998_202309_MIX_GIS004 - Physiography.mxd
Print date: 14 Sep 2023 - 09:07

Attribution: Chapman, L.J. and Putnam, D.F. 2007. Physiography of Southern Ontario; Ontario Geological Survey, Miscellaneous Release--Data 228 ISBN 978-1-4249-5158-1., Image © City of Oshawa, 2022.



1 cm = 100 meters

0 100 200 300

Metres

Map Projection: Transverse Mercator
Horizontal Datum: North American 1983
Grid: NAD 1983 UTM Zone 17N

N

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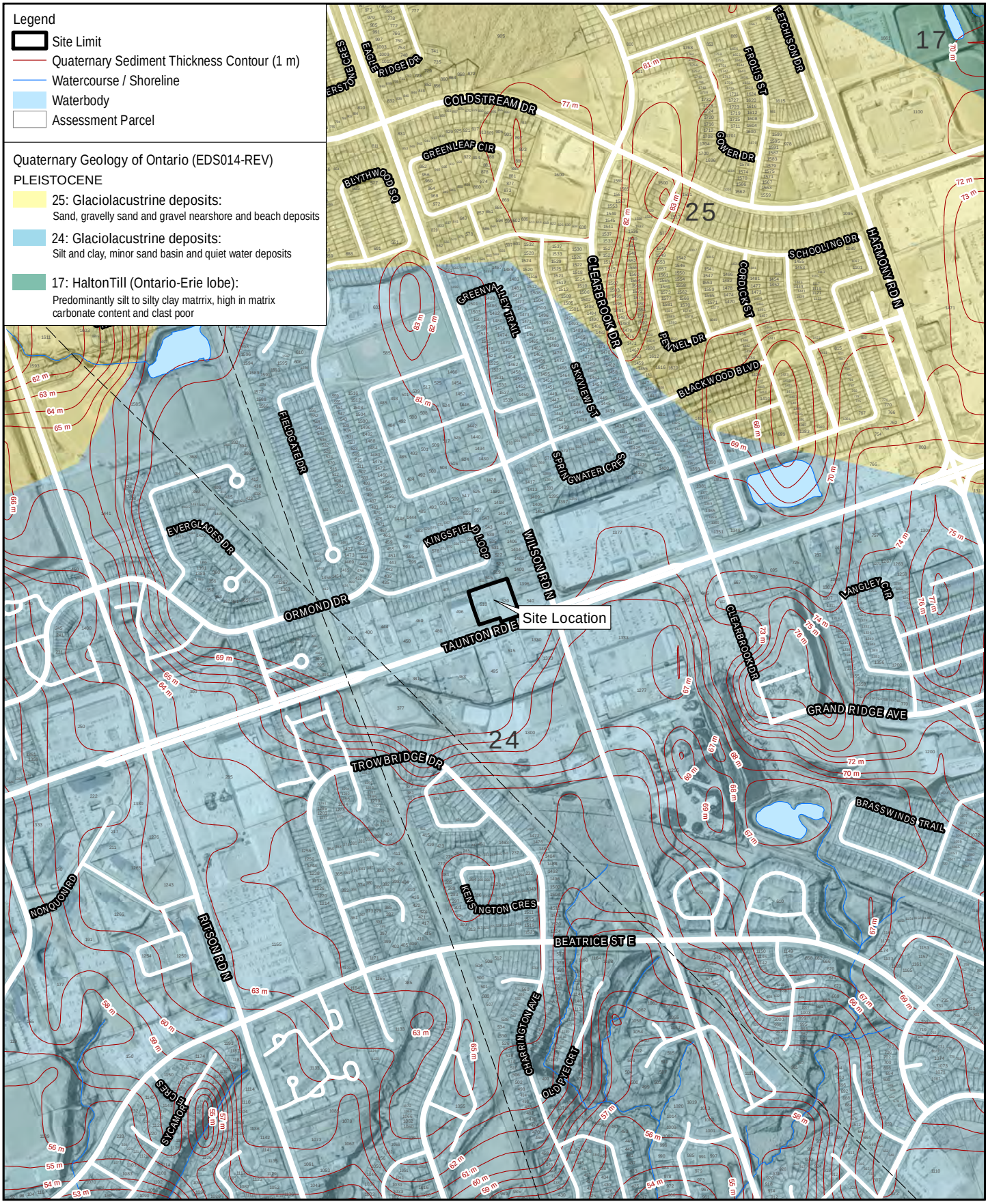
Surficial Geology

Project No. 12603998
Revision No.
Date Sep 14, 2023

Figure 5

Q:\GIS\PROJECTS\12603000s\12603998\Layouts\202309_MIX\12603998_202309_MIX_GIS005 - Surficial Geology.mxd
Print date: 14 Sep 2023 - 09:07

Attribution: MRD128-REV. Ontario Geological Survey 2010. Surficial geology of southern Ontario; Ontario Geological Survey, Miscellaneous Release—Data 128 – Revised., Image © City of Oshawa, 2022.



1 cm = 100 meters

0 100 200 300

Metres

Map Projection: Transverse Mercator
Horizontal Datum: North American 1983
Grid: NAD 1983 UTM Zone 17N

N

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PROPOSED MIXED-USE BUILDING

Quaternary Geology

Project No. 12603998
Revision No.
Date Sep 14, 2023

Figure 6

Q:\GIS\PROJECTS\12603000s\12603998\Layouts\202309_MIX\12603998_202309_MIX_GIS006 - Quaternary Geology.mxd
Print date: 14 Sep 2023 - 09:01

Attribution: EDS014-REV. Ontario Geological Survey, 1997. Quaternary geology, seamless coverage of the province of Ontario: Ontario Geological Survey, Data Set 14., Image © City of Oshawa, 2022; Quaternary Sediment Thickness Contour, ORMGP, 2023.



1 cm = 100 meters

0 100 200 300

Metres

Map Projection: Transverse Mercator
Horizontal Datum: North American 1983
Grid: NAD 1983 UTM Zone 17N

N

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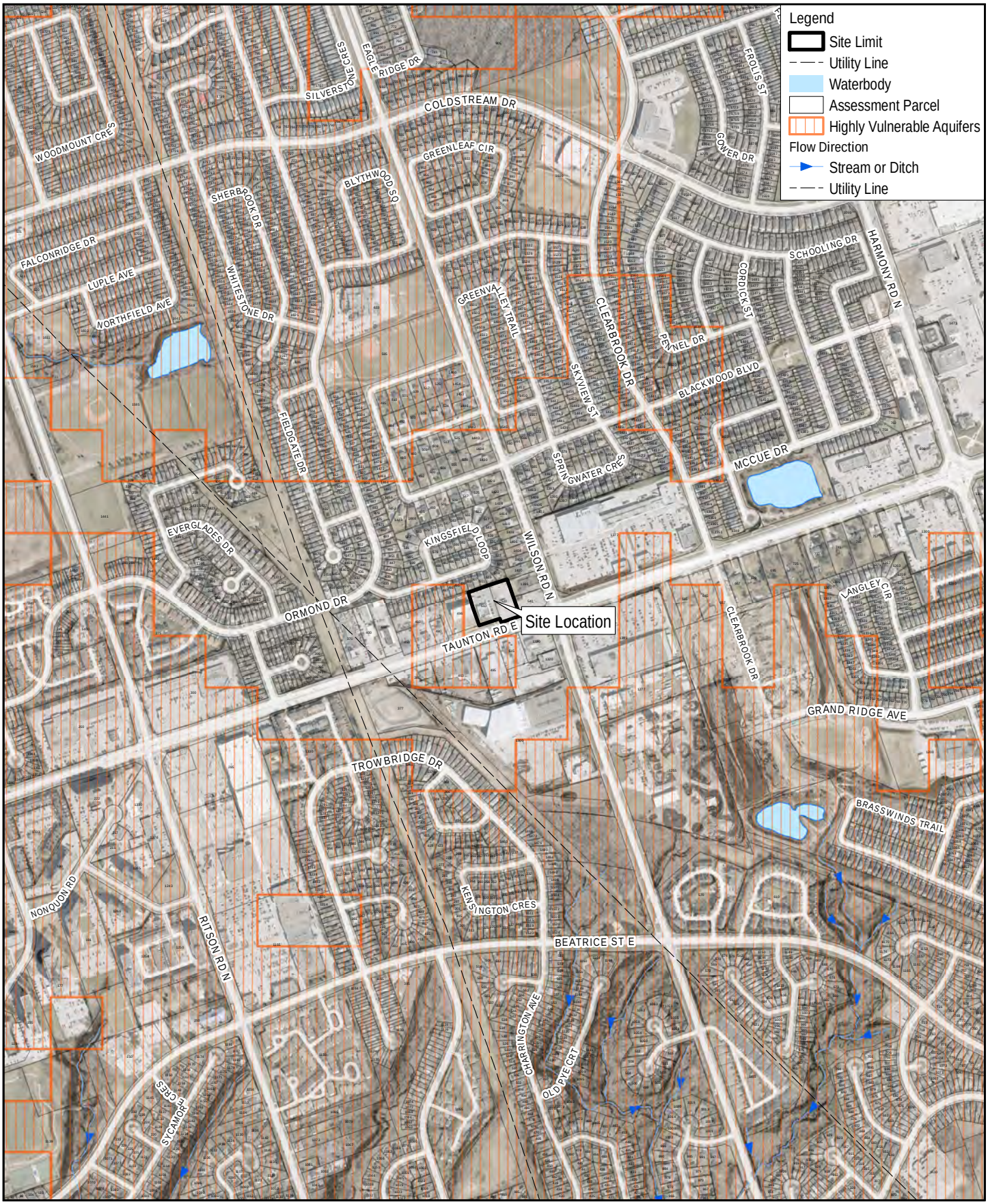
Paleozoic Geology

Project No. 12603998
Revision No.
Date Sep 14, 2023

Figure 7

Q:\GIS\PROJECTS\12603000s\12603998\Layouts\202309_MIX\12603998_202309_MIX_GIS007 - Paleozoic Geology.mxd
Print date: 14 Sep 2023 - 08:56

Attribution: Armstrong, D.K. and Dodge, J.E.P. 2007. Paleozoic geology of southern Ontario; Ontario Geological Survey, Miscellaneous Release—Data 219. , © City of Oshawa, 2022.



1 cm = 100 meters

0 100 200 300

Metres

Map Projection: Transverse Mercator
Horizontal Datum: North American 1983
Grid: NAD 1983 UTM Zone 17N

N

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PROPOSED MIXED-USE BUILDING

Source Protection

Project No. 12603998
Revision No.
Date Sep 14, 2023

Figure 8

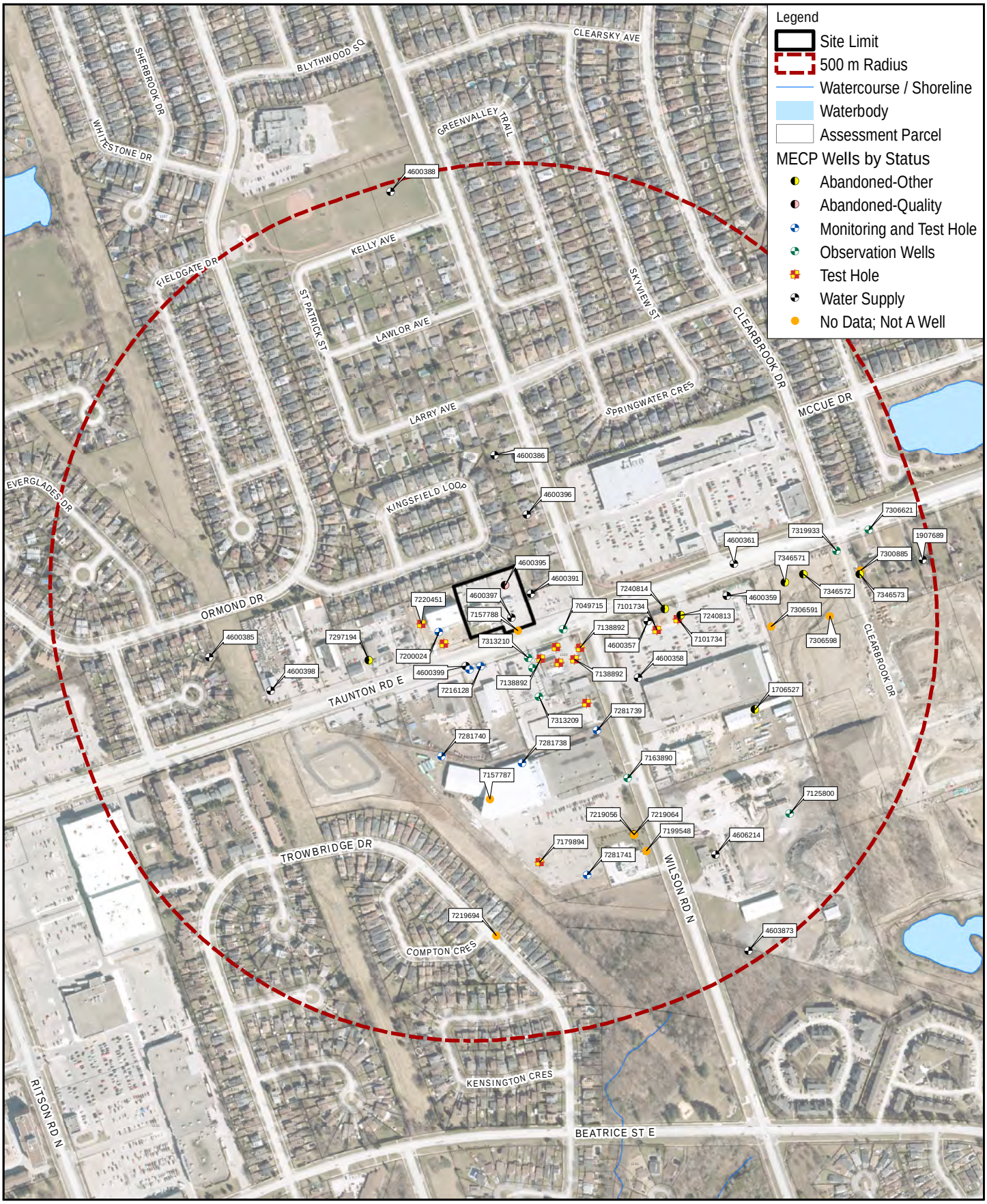
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Print date: 14 Sep 2023 - 09:02

Attribution: Source Protection Information Atlas. Ministry of Environment, Conservation and Parks. Web Application., Image © City of Oshawa, 2022.

Appendices

Appendix A

MECP Well Records



1 cm = 64 meters

0 64 128 192

Metres

Map Projection: Transverse Mercator
Horizontal Datum: North American 1983
Grid: NAD 1983 UTM Zone 17N

N

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PROPOSED MIXED-USE BUILDING

MECP Well Location Plan

Project No. 12603998
Revision No.
Date Sep 14, 2023

Appendix A1

Q:\GIS\PROJECTS\12603000s\12603998\Layouts\202309_MIX\12603998_202309_MIX_GIS00C - MECP Well Location Plan.mxd
Print date: 14 Sep 2023 - 08:56

Data source: Water Well Information System (WWIS). Ministry of the Environment, Conservation, and Parks. 2023., © City of Oshawa, 2022.

MECP WELL RECORD LISTINGS

Ministry of the Environment, Conservation & Parks (MECP)

© Water Well Information System (WWIS). Ministry of the Environment, Conservation, and Parks. 2021.
Powered by Location Intelligence

DISCLAIMER: All effort has been taken to ensure the accuracy of the data is the same as the source. There are instances where the original PDF document is different and in those cases, the PDF should be used instead.

17

Easting:	672022.70
Northing:	4867022.00
Elev (masl):	155.83

Latitude: 43.93622
Longitude: -78.8567

Well ID: 1706527

LOCATION

Lot:	007	**Tag:**	A031531
Con:	04	**Audit No:**	Z34159
Municipality:	DURHAM	**Contractor License:**	7219
Township:	OSHAWA CITY	**Well Completion Date:**	07/15/2005
Street:	516 TAUNTON RD E	**Received Date:**	12/20/2005
City:	OSHAWA		

WELL

Well Status:	Abandoned-Other	**Well Depth (m):**	0
Prim. Use:	n/a	**Depth to Bedrock (m):**	n/a
Sec. Use:	n/a	**Depth to Water:**	
Boring Method:	n/a	**Water Kind:**	

PUMP TEST

Test Method:	n/a	**Pipe ID:**	11331805
Pump Set (m):	n/a	**Pump Test ID**	11346103
SWL (ft)	7.92	**Flowing:**	n/a
Final Level:	n/a m	**Pump Duration (hr):**	n/a
Pump Rate:	n/a LPM	**Pump Duration (m):**	n/a
Recom. Rate:	n/a LPM		

CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth
1	930856693	91.44	cm	CONCRETE	n/a	n/a m

FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth

End of Record

17

Easting:	672231.10
Northing:	4867208.00
Elev (masl):	170.31

Latitude: 43.937845
Longitude: -78.854045

Well ID: 1907689

LOCATION

Lot:	005	**Tag:**	
Con:	03	**Audit No:**	
Municipality:	DURHAM	**Contractor License:**	3136
Township:	OSHAWA CITY	**Well Completion Date:**	04/23/1986
Street:		**Received Date:**	05/15/1986
City:	n/a		

WELL

Well Status:	Water Supply	**Well Depth (m):**	59.1312
Prim. Use:	n/a	**Depth to Bedrock (m):**	n/a
Sec. Use:	n/a	**Depth to Water:**	ft
Boring Method:	Cable Tool	**Water Kind:**	FRESH

PUMP TEST

Test Method:	CLEAR	**Pipe ID:**	10624894
Pump Set (m):	n/a	**Pump Test ID**	991907689
SWL (ft)	54	**Flowing:**	N
Final Level:	115 ft	**Pump Duration (hr):**	2
Pump Rate:	30 GPM	**Pump Duration (m):**	30
Recom. Rate:	10 GPM		

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CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth
1	930134171	6	inch	STEEL	n/a	190 ft

FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth
1	CLAY	STONES	HARD	BROWN	0	25 ft
2	CLAY	STONES	HARD	GREY	25	183 ft
3	FINE SAND	n/a	n/a	GREY	183	194 ft

End of Record

17

Easting:	738676.00
Northing:	4875205.00
Elev (masl):	159.22

Latitude: 43.937241
Longitude: -78.858315

Well ID: 4600357

LOCATION

Lot: 006
Con: 03
Municipality: DURHAM
Township: OSHAWA CITY
Street:
City: n/a

Tag:
Audit No:
Contractor License: 5422
Well Completion Date: 06/26/1956
Received Date: 02/07/1958

WELL

Well Status: Water Supply
Prim. Use: n/a
Sec. Use: n/a
Boring Method: Cable Tool

Well Depth (m): 48.768
Depth to Bedrock (m): n/a
Depth to Water: ft
Water Kind: FRESH

PUMP TEST

Test Method: CLEAR
Pump Set (m): n/a
SWL (ft) 20
Final Level: 60 ft
Pump Rate: 7 GPM
Recom. Rate: n/a GPM

Pipe ID: 10840297
Pump Test ID 994600357
Flowing: N
Pump Duration (hr): 3
Pump Duration (m): 0

CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth
1	930483393	6	inch	STEEL	n/a	160 ft

FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth
1	TOPSOIL	MEDIUM SAND	n/a	n/a	0	2 ft
2	CLAY	n/a	n/a	BLUE	2	48 ft
3	CLAY	BOULDERS	n/a	GREY	48	60 ft
4	QUICKSAND	n/a	n/a	n/a	60	70 ft
5	CLAY	n/a	n/a	BLUE	70	138 ft
6	MEDIUM SAND	n/a	n/a	WHITE	138	159 ft
7	GRAVEL	n/a	n/a	n/a	159	160 ft

End of Record

17

Easting:	741401.50
Northing:	4881695.00
Elev (masl):	156.41

Latitude: 43.936614
Longitude: -78.858487

Well ID: 4600358

LOCATION

Lot: 006
Con: 03
Municipality: DURHAM
Township: OSHAWA CITY
Street:
City: n/a

Tag:
Audit No:
Contractor License: 2202
Well Completion Date: 01/14/1960
Received Date: 02/29/1960

WELL

Well Status: Water Supply
Prim. Use: n/a
Sec. Use: n/a
Boring Method: Boring

Well Depth (m): 16.764
Depth to Bedrock (m): 52
Depth to Water: ft
Water Kind: FRESH

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PUMP TEST

Test Method: CLOUDY
Pump Set (m): n/a
SWL (ft) 25
Final Level: 25 ft
Pump Rate: 1 GPM
Recom. Rate: 1 GPM

Pipe ID: 10840298
Pump Test ID 994600358
Flowing: N
Pump Duration (hr): 48
Pump Duration (m): 0

CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth
1	930483394	36	inch	CONCRETE	n/a	43 ft
2	930483395	4	inch	STEEL	n/a	55 ft

FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth
1	PREVIOUSLY DUG	n/a	n/a	n/a	0	43 ft
2	CLAY	n/a	n/a	BLUE	43	52 ft
3	SHALE	n/a	n/a	BLACK	52	55 ft

End of Record

17

Easting:	726641.40
Northing:	4891347.00
Elev (masl):	158.89

Latitude: 43.937497
Longitude: -78.857085

Well ID: **4600359**

LOCATION

Lot: 006
Con: 03
Municipality: DURHAM
Township: OSHAWA CITY
Street:
City: n/a

Tag:
Audit No:
Contractor License: 2113
Well Completion Date: 11/20/1963
Received Date: 01/28/1964

WELL

Well Status: Water Supply
Prim. Use: n/a
Sec. Use: n/a
Boring Method: Cable Tool

Well Depth (m): 67.056
Depth to Bedrock (m): 140
Depth to Water: ft
Water Kind: SALTY

PUMP TEST

Test Method: CLEAR
Pump Set (m): n/a
SWL (ft) 60
Final Level: 70 ft
Pump Rate: 9 GPM
Recom. Rate: 9 GPM

Pipe ID: 10840299
Pump Test ID 994600359
Flowing: N
Pump Duration (hr): 4
Pump Duration (m): 0

CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth
1	930483396	6	inch	STEEL	n/a	182 ft

FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth
1	PREVIOUSLY DUG	n/a	n/a	n/a	0	32 ft
2	CLAY	BOULDERS	n/a	GREY	32	80 ft
3	CLAY	BOULDERS	n/a	GREY	80	140 ft
4	SHALE	CLAY	n/a	BLACK	140	144 ft
5	CLAY	MEDIUM SAND	STONES	GREY	144	183 ft
6	CLAY	STONES	n/a	GREY	183	189 ft
7	CLAY	FINE SAND	n/a	GREY	189	218 ft
8	LIMESTONE	n/a	n/a	BROWN	218	220 ft

End of Record

17

Easting:	716676.40
Northing:	4883679.00
Elev (masl):	162.43

Latitude: 43.937855
Longitude: -78.85696

Well ID: **4600361**

TION

Lot: 007
Con: 03
Municipality:

Tag:
Audit No:
Contractor License: 5412

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LOCA

Township: DURHAM OSHAWA CITY
Street:
City: n/a

Well Completion Date: 03/12/1965
Received Date: 04/26/1965

WELL

Well Status: Water Supply
Prim. Use: n/a
Sec. Use: n/a
Boring Method: Boring

Well Depth (m): 10.668
Depth to Bedrock (m): n/a
Depth to Water: ft
Water Kind: FRESH

PUMP TEST

Test Method: CLEAR
Pump Set (m): n/a
SWL (ft) 12
Final Level: n/a ft
Pump Rate: 1 GPM
Recom. Rate: 1 GPM

Pipe ID: 10840301
Pump Test ID 994600361
Flowing: N
Pump Duration (hr): n/a
Pump Duration (m): n/a

CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth
1	930483398	30	inch	CONCRETE	n/a	35 ft

FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth
1	TOPSOIL	n/a	n/a	n/a	0	1 ft
2	FINE SAND	n/a	n/a	n/a	1	3 ft
3	GRAVEL	n/a	n/a	n/a	3	8 ft
4	FINE SAND	n/a	n/a	n/a	8	30 ft
5	CLAY	n/a	n/a	BLUE	30	35 ft

End of Record

17

Easting:	770986.40
Northing:	4890845.00
Elev (masl):	155.77

Latitude: 43.936963
Longitude: -78.865103

Well ID: **4600385**

LOCATION

Lot: 007
Con: 04
Municipality: DURHAM
Township: OSHAWA CITY
Street:
City: n/a

Tag:
Audit No:
Contractor License: 2615
Well Completion Date: 03/01/1954
Received Date: 08/25/1954

WELL

Well Status: Water Supply
Prim. Use: n/a
Sec. Use: n/a
Boring Method: Boring

Well Depth (m): 7.62
Depth to Bedrock (m): n/a
Depth to Water: ft
Water Kind: FRESH

PUMP TEST

Test Method: CLEAR
Pump Set (m): n/a
SWL (ft) 3
Final Level: n/a ft
Pump Rate: n/a GPM
Recom. Rate: n/a GPM

Pipe ID: 10840325
Pump Test ID 994600385
Flowing: N
Pump Duration (hr): n/a
Pump Duration (m): n/a

CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth
1	930483424	36	inch	CONCRETE	n/a	25 ft

FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth
1	TOPSOIL	CLAY	STONES	n/a	0	2 ft
2	CLAY	STONES	n/a	n/a	2	20 ft
3	CLAY	GRAVEL	n/a	n/a	20	25 ft

End of Record

17

Easting:	711647.30
Northing:	4883969.00

Latitude: 43.939139
Longitude: -78.860615

Well ID: **4600386**

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17 | **Elev (masl):** | 166.16

LOCATION

Lot:	007	**Tag:**	
Con:	04	**Audit No:**	
Municipality:	DURHAM	**Contractor License:**	2615
Township:	OSHAWA CITY	**Well Completion Date:**	03/18/1954
Street:		**Received Date:**	05/12/1954
City:	n/a		

WELL

Well Status:	Water Supply	**Well Depth (m):**	7.62
Prim. Use:	n/a	**Depth to Bedrock (m):**	n/a
Sec. Use:	n/a	**Depth to Water:**	ft
Boring Method:	Boring	**Water Kind:**	FRESH

PUMP TEST

Test Method:	CLEAR	**Pipe ID:**	10840326
Pump Set (m):	n/a	**Pump Test ID**	994600386
SWL (ft)	0	**Flowing:**	Y
Final Level:	n/a ft	**Pump Duration (hr):**	n/a
Pump Rate:	n/a GPM	**Pump Duration (m):**	n/a
Recom. Rate:	n/a GPM		

CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth
1	930483425	36	inch	CONCRETE	n/a	25 ft

FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth
1	TOPSOIL	CLAY	n/a	n/a	0	3 ft
2	CLAY	STONES	n/a	n/a	3	20 ft
3	CLAY	GRAVEL	n/a	n/a	20	25 ft

End of Record

17

Easting:	747762.30
Northing:	4908362.00
Elev (masl):	161.83

Latitude: 43.942111
Longitude: -78.862115

Well ID: 4600388

LOCATION

Lot:	007	**Tag:**	
Con:	04	**Audit No:**	
Municipality:	DURHAM	**Contractor License:**	2113
Township:	OSHAWA CITY	**Well Completion Date:**	09/16/1954
Street:		**Received Date:**	01/04/1955
City:	n/a		

WELL

Well Status:	Water Supply	**Well Depth (m):**	20.4216
Prim. Use:	n/a	**Depth to Bedrock (m):**	n/a
Sec. Use:	n/a	**Depth to Water:**	ft
Boring Method:	Cable Tool	**Water Kind:**	FRESH

PUMP TEST

Test Method:	CLEAR	**Pipe ID:**	10840328
Pump Set (m):	n/a	**Pump Test ID**	994600388
SWL (ft)	10	**Flowing:**	N
Final Level:	59 ft	**Pump Duration (hr):**	5
Pump Rate:	5 GPM	**Pump Duration (m):**	0
Recom. Rate:	n/a GPM		

CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth
1	930483427	6	inch	STEEL	n/a	67 ft

FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth
1	TOPSOIL	n/a	n/a	n/a	0	1 ft
2	CLAY	n/a	n/a	BROWN	1	8 ft
3	CLAY	MEDIUM SAND	n/a	GREY	8	66 ft
4	GRAVEL	n/a	n/a	n/a	66	67 ft

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End of Record

17		
	Easting:	768803.40
	Northing:	4900458.00
	Elev (masl):	159.87

Latitude: 43.937581
Longitude: -78.86011

Well ID: 4600391

LOCATION

Lot: 007
Con: 04
Municipality: DURHAM
Township: OSHAWA CITY
Street:
City: n/a

Tag:
Audit No:
Contractor License: 2632
Well Completion Date: 03/04/1957
Received Date: 06/03/1957

WELL

Well Status: Water Supply
Prim. Use: n/a
Sec. Use: n/a
Boring Method: Boring

Well Depth (m): 15.24
Depth to Bedrock (m): n/a
Depth to Water: ft
Water Kind: FRESH

PUMP TEST

Test Method: CLEAR
Pump Set (m): n/a
SWL (ft) 5
Final Level: n/a ft
Pump Rate: n/a GPM
Recom. Rate: n/a GPM

Pipe ID: 10840331
Pump Test ID 994600391
Flowing: N
Pump Duration (hr): n/a
Pump Duration (m): n/a

CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth	
1	930483430	36	inch	CONCRETE	n/a	50	ft

FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth	
1	TOPSOIL	CLAY	n/a	n/a	0	2	ft
2	MEDIUM SAND	GRAVEL	n/a	n/a	2	7	ft
3	CLAY	n/a	n/a	n/a	7	45	ft
4	CLAY	MEDIUM SAND	n/a	n/a	45	50	ft

End of Record

17		
	Easting:	726999.50
	Northing:	4872331.00
	Elev (masl):	160.67

Latitude: 43.937678
Longitude: -78.860505

Well ID: 4600395

LOCATION

Lot: 007
Con: 04
Municipality: DURHAM
Township: OSHAWA CITY
Street:
City: n/a

Tag:
Audit No:
Contractor License: 2202
Well Completion Date: 03/16/1963
Received Date: 07/24/1963

WELL

Well Status: Abandoned-Quality
Prim. Use: n/a
Sec. Use: n/a
Boring Method: Cable Tool

Well Depth (m): 49.3776
Depth to Bedrock (m): n/a
Depth to Water: ft
Water Kind: FRESH

PUMP TEST

Test Method: CLEAR
Pump Set (m): n/a
SWL (ft) 26
Final Level: 40 ft
Pump Rate: 4 GPM
Recom. Rate: 2 GPM

Pipe ID: 10840335
Pump Test ID 994600395
Flowing: N
Pump Duration (hr): 12
Pump Duration (m): 0

CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth	
1	930483434	6	inch	<null>	n/a	n/a	ft

FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth	
1	MEDIUM SAND	CLAY	GRAVEL	n/a	0	40	ft

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2	GRAVEL	n/a	n/a	n/a	40	85	ft
3	CLAY	n/a	n/a	n/a	85	97	ft
4	GRAVEL	n/a	n/a	n/a	97	98	ft
5	CLAY	n/a	n/a	BLUE	98	153	ft
6	COARSE SAND	n/a	n/a	n/a	153	162	ft

End of Record

17

Easting:	726998.50
Northing:	4872340.00
Elev (masl):	163.80

Latitude: 43.938463
Longitude: -78.86014

Well ID: 4600396

LOCATION

Lot: 007
Con: 04
Municipality: DURHAM
Township: OSHAWA CITY
Street:
City: n/a

Tag:
Audit No:
Contractor License: 2615
Well Completion Date: 11/13/1963
Received Date: 01/28/1964

WELL

Well Status: Water Supply
Prim. Use: n/a
Sec. Use: n/a
Boring Method: Boring

Well Depth (m): 10.668
Depth to Bedrock (m): n/a
Depth to Water: ft
Water Kind: FRESH

PUMP TEST

Test Method: CLEAR
Pump Set (m): n/a
SWL (ft) 32
Final Level: n/a ft
Pump Rate: n/a GPM
Recom. Rate: n/a GPM

Pipe ID: 10840336
Pump Test ID 994600396
Flowing: N
Pump Duration (hr): n/a
Pump Duration (m): n/a

CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth	
1	930483435	36	inch	CONCRETE	n/a	35	ft

FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth	
1	TOPSOIL	CLAY	n/a	n/a	0	3	ft
2	CLAY	n/a	n/a	BROWN	3	16	ft
3	CLAY	n/a	n/a	BLUE	16	35	ft

End of Record

17

Easting:	726987.50
Northing:	4872339.00
Elev (masl):	158.93

Latitude: 43.937316
Longitude: -78.860418

Well ID: 4600397

LOCATION

Lot: 007
Con: 04
Municipality: DURHAM
Township: OSHAWA CITY
Street:
City: n/a

Tag:
Audit No:
Contractor License: 2609
Well Completion Date: 08/30/1965
Received Date: 09/22/1965

WELL

Well Status: Water Supply
Prim. Use: n/a
Sec. Use: Domestic
Boring Method: Boring

Well Depth (m): 18.5928
Depth to Bedrock (m): n/a
Depth to Water: ft
Water Kind: FRESH

PUMP TEST

Test Method: CLEAR
Pump Set (m): n/a
SWL (ft) 26
Final Level: n/a ft
Pump Rate: 7 GPM
Recom. Rate: 5 GPM

Pipe ID: 10840337
Pump Test ID 994600397
Flowing: N
Pump Duration (hr): n/a
Pump Duration (m): n/a

CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth

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1	930483436	36	inch	CONCRETE	n/a	61	ft

FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth	
1	TOPSOIL	n/a	n/a	n/a	0	3	ft
2	FINE SAND	n/a	n/a	n/a	3	20	ft
3	CLAY	n/a	n/a	BROWN	20	28	ft
4	CLAY	n/a	n/a	BLUE	28	52	ft
5	CLAY	MEDIUM SAND	n/a	BLUE	52	61	ft

End of Record

17

Easting:	726994.50
Northing:	4872332.00
Elev (masl):	156.20

Latitude: 43.936567
Longitude: -78.864171

Well ID: 4600398

LOCATION

Lot: 007
Con: 04
Municipality: DURHAM
Township: OSHAWA CITY
Street:
City: n/a

Tag:
Audit No:
Contractor License: 5422
Well Completion Date: 05/07/1966
Received Date: 06/20/1966

WELL

Well Status: Water Supply
Prim. Use: n/a
Sec. Use: n/a
Boring Method: Cable Tool

Well Depth (m): 14.0208
Depth to Bedrock (m): n/a
Depth to Water: ft
Water Kind: FRESH

PUMP TEST

Test Method: CLEAR
Pump Set (m): n/a
SWL (ft) 8
Final Level: 17 ft
Pump Rate: 20 GPM
Recom. Rate: 12 GPM

Pipe ID: 10840338
Pump Test ID 994600398
Flowing: N
Pump Duration (hr): 7
Pump Duration (m): 0

CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth	
1	930483437	6	inch	STEEL	n/a	40	ft

FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth	
1	TOPSOIL	MEDIUM SAND	n/a	n/a	0	2	ft
2	CLAY	STONES	n/a	GREY	2	23	ft
3	CLAY	BOULDERS	n/a	GREY	23	40	ft
4	MEDIUM SAND	GRAVEL	n/a	n/a	40	46	ft

End of Record

17

Easting:	726999.50
Northing:	4872334.00
Elev (masl):	158.19

Latitude: 43.93679
Longitude: -78.861147

Well ID: 4600399

LOCATION

Lot: 007
Con: 04
Municipality: DURHAM
Township: OSHAWA CITY
Street:
City: n/a

Tag:
Audit No:
Contractor License: 3102
Well Completion Date: 05/17/1967
Received Date: 07/07/1967

WELL

Well Status: Water Supply
Prim. Use: n/a
Sec. Use: n/a
Boring Method: Boring

Well Depth (m): 8.8392
Depth to Bedrock (m): n/a
Depth to Water: ft
Water Kind: FRESH

JMP TEST

Test Method: CLEAR
Pump Set (m): n/a
SWL (ft) 22
Final Level: n/a ft
Pump Rate: 1

Pipe ID: 10840339
Pump Test ID 994600399
Flowing: N
Pump Duration (hr): n/a
Pump Duration (m): n/a

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PI

Recom. Rate: 1 GPM

CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth
1	930483438	30	inch	CONCRETE	n/a	29 ft

FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth
1	TOPSOIL	n/a	n/a	n/a	0	1 ft
2	FINE SAND	n/a	n/a	n/a	1	6 ft
3	CLAY	MEDIUM SAND	n/a	BROWN	6	15 ft
4	CLAY	n/a	n/a	BLUE	15	25 ft
5	CLAY	MEDIUM SAND	n/a	BLUE	25	29 ft

End of Record

17

Easting:	649997.80
Northing:	4871014.00
Elev (masl):	146.84

Latitude: 43.933532
Longitude: -78.856891

Well ID: **4603873**

LOCATION

Lot: 006
Con: 03
Municipality: DURHAM
Township: OSHAWA CITY
Street:
City: n/a

Tag:
Audit No:
Contractor License: 3102
Well Completion Date: 07/01/1968
Received Date: 11/19/1968

WELL

Well Status: Water Supply
Prim. Use: n/a
Sec. Use: n/a
Boring Method: Boring

Well Depth (m): 7.3152
Depth to Bedrock (m): n/a
Depth to Water: ft
Water Kind: FRESH

PUMP TEST

Test Method: CLEAR
Pump Set (m): n/a
SWL (ft) 6
Final Level: n/a ft
Pump Rate: n/a GPM
Recom. Rate: 2 GPM

Pipe ID: 10843793
Pump Test ID 994603873
Flowing: N
Pump Duration (hr): n/a
Pump Duration (m): n/a

CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth
1	930487428	30	inch	CONCRETE	n/a	24 ft

FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth
1	TOPSOIL	n/a	n/a	n/a	0	2 ft
2	CLAY	STONES	n/a	GREY	2	24 ft

End of Record

17

Easting:	659234.90
Northing:	4886423.00
Elev (masl):	149.42

Latitude: 43.934612
Longitude: -78.857363

Well ID: **4606214**

LOCATION

Lot: 006
Con: 03
Municipality: DURHAM
Township: OSHAWA CITY
Street:
City: n/a

Tag:
Audit No:
Contractor License: 2104
Well Completion Date: 05/15/1975
Received Date: 05/29/1975

WELL

Well Status: Water Supply
Prim. Use: n/a
Sec. Use: n/a
Boring Method: Cable Tool

Well Depth (m): 35.9664
Depth to Bedrock (m): n/a
Depth to Water: ft
Water Kind: FRESH

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PUMP TEST

Test Method: CLEAR
Pump Set (m): n/a
SWL (ft) 0
Final Level: 6 ft
Pump Rate: 6 GPM
Recom. Rate: 5 GPM

Pipe ID: 10846083
Pump Test ID 994606214
Flowing: N
Pump Duration (hr): 5
Pump Duration (m): 0

CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth
1	930490122	6	inch	STEEL	n/a	118 ft

FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth
1	FILL	n/a	n/a	n/a	0	8 ft
2	CLAY	STONES	n/a	GREY	8	60 ft
3	SAND	CLAY	n/a	GREY	60	113 ft
4	GRAVEL	n/a	n/a	n/a	113	118 ft

End of Record

17

Easting:	671785.00
Northing:	4867122.00
Elev (masl):	158.20

Latitude: 43.937175
Longitude: -78.859627

Well ID: 7049715

LOCATION

Lot: n/a
Con: n/a
Municipality: DURHAM
Township: OSHAWA CITY
Street:
City: n/a

Tag: A061583
Audit No: Z74073
Contractor License: 7241
Well Completion Date: 08/14/2007
Received Date: 09/19/2007

WELL

Well Status: Observation Wells
Prim. Use: n/a
Sec. Use: n/a
Boring Method: Other Method

Well Depth (m): 5.2
Depth to Bedrock (m): n/a
Depth to Water:
Water Kind:

PUMP TEST

Test Method:
Pump Set (m):
SWL (ft)
Final Level:
Pump Rate:
Recom. Rate:

Pipe ID:
Pump Test ID
Flowing:
Pump Duration (hr):
Pump Duration (m):

CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth
1	42149715	5	cm	STEEL	0	2.1 m

FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth
1	SAND	GRAVEL	THIN	BROWN	0	3.6 m
2	SILT	GRAVEL	THIN	BROWN	3.6	5.2 m

End of Record

17

Easting:	641938.00
Northing:	4891134.00
Elev (masl):	158.90

Latitude: 43.937139
Longitude: -78.858183

Well ID: 7101734

LOCATION

Lot: n/a
Con: n/a
Municipality: DURHAM
Township: OSHAWA CITY
Street: 1333 WILSON RD N
City: Oshawa

Tag: A062344
Audit No: M00743
Contractor License: 6607
Well Completion Date: 12/07/2007
Received Date: 01/18/2008

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WELL

Well Status: Test Hole
Prim. Use: n/a
Sec. Use: n/a
Boring Method: Auger

Well Depth (m): 6
Depth to Bedrock (m): n/a
Depth to Water:
Water Kind:

PUMP TEST

Test Method: n/a
Pump Set (m): n/a
SWL (ft) n/a
Final Level: n/a
Pump Rate: n/a
Recom. Rate: n/a

Pipe ID: 1002640323
Pump Test ID 1002640317
Flowing: n/a
Pump Duration (hr): n/a
Pump Duration (m): n/a

CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth	
0	1002640316	n/a	n/a	PLASTIC	n/a	1.5	m
0	1002640325	n/a	n/a	PLASTIC	n/a	1.5	m
1	1002640333	5.1	cm	PLASTIC	0	1.5	m

FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth	
1	SAND	GRAVEL	FILL	BROWN	0	1	m
2	FINE SAND	SILT	GRAVEL	BROWN	1	3.6	m
3	FINE SAND	SILT	GRAVEL	GREY	3.6	6	m

End of Record

17

Easting:	682740.00
Northing:	4861830.00
Elev (masl):	

Latitude: 43.937259
Longitude: -78.857855

Well ID: **7101734**

LOCATION

Lot: n/a
Con: n/a
Municipality: DURHAM
Township: OSHAWA CITY
Street: 1333 WILSON RD N
City: Oshawa

Tag: A062344
Audit No: M00743
Contractor License: 6607
Well Completion Date: 12/06/2007
Received Date: 01/18/2008

WELL

Well Status: Test Hole
Prim. Use: n/a
Sec. Use: n/a
Boring Method: Auger

Well Depth (m): 0
Depth to Bedrock (m): n/a
Depth to Water:
Water Kind:

PUMP TEST

Test Method: n/a
Pump Set (m): n/a
SWL (ft) n/a
Final Level: n/a
Pump Rate: n/a
Recom. Rate: n/a

Pipe ID: 1002640314
Pump Test ID 1002640317
Flowing: n/a
Pump Duration (hr): n/a
Pump Duration (m): n/a

CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth	
0	1002640316	n/a	n/a	PLASTIC	n/a	1.5	m
0	1002640325	n/a	n/a	PLASTIC	n/a	1.5	m
1	1002640333	5.1	cm	PLASTIC	0	1.5	m

FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth	
1	SAND	GRAVEL	FILL	BROWN	0	1	m
2	FINE SAND	SILT	GRAVEL	BROWN	1	3.6	m
3	FINE SAND	SILT	GRAVEL	GREY	3.6	6	m

End of Record

17

Easting:	642138.00
Northing:	4860484.00
Elev (masl):	154.90

Latitude: 43.935049
Longitude: -78.856203

Well ID: **7125800**

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LOCATION

Lot:		**Tag:**	A068265
Con:	n/a	**Audit No:**	Z092847
Municipality:	DURHAM	**Contractor License:**	6032
Township:	OSHAWA CITY	**Well Completion Date:**	06/26/2006
Street:	1255 WILSON RD. N	**Received Date:**	07/17/2009
City:	Oshawa		

WELL

Well Status:	Observation Wells	**Well Depth (m):**	3.66
Prim. Use:	n/a	**Depth to Bedrock (m):**	n/a
Sec. Use:	n/a	**Depth to Water:**	m
Boring Method:	Boring	**Water Kind:**	

PUMP TEST

Test Method:		**Pipe ID:**	
Pump Set (m):		**Pump Test ID**	
SWL (ft)		**Flowing:**	
Final Level:		**Pump Duration (hr):**	
Pump Rate:		**Pump Duration (m):**	
Recom. Rate:			

CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth	
0	1002618532	n/a	cm	<null>	n/a	n/a	m

FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth	
1	SAND	GRAVEL	SILT	n/a	0	3.66	m

End of Record

---

n/a

Easting:	<null>
Northing:	<null>
Elev (masl):	157.15

Latitude: 43.936799
Longitude: -78.859703

Well ID: 7138892

LOCATION

Lot:	n/a	**Tag:**	A069014
Con:	n/a	**Audit No:**	M02097
Municipality:	DURHAM	**Contractor License:**	7383
Township:	OSHAWA CITY	**Well Completion Date:**	08/25/2009
Street:	1330 WILSON AVE.	**Received Date:**	01/28/2010
City:	Oshawa		

WELL

Well Status:	Test Hole	**Well Depth (m):**	9.144
Prim. Use:	n/a	**Depth to Bedrock (m):**	n/a
Sec. Use:	n/a	**Depth to Water:**	ft
Boring Method:	n/a	**Water Kind:**	FRESH

PUMP TEST

Test Method:	n/a	**Pipe ID:**	1003258299
Pump Set (m):	n/a	**Pump Test ID**	1003258293
SWL (ft)	12	**Flowing:**	n/a
Final Level:	n/a ft	**Pump Duration (hr):**	n/a
Pump Rate:	n/a	**Pump Duration (m):**	n/a
Recom. Rate:	n/a		

CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth	
0	1003258292	n/a	n/a	PLASTIC	n/a	10	ft
0	1003258301	n/a	n/a	PLASTIC	n/a	10	ft
0	1003258274	n/a	n/a	PLASTIC	n/a	10	ft
0	1003258283	n/a	n/a	PLASTIC	n/a	10	ft
1	1003258328	2	inch	PLASTIC	0	15	ft

FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth	
1	OTHER	n/a	n/a	BLACK	0	0.5	ft
2	SILT	SAND	LOOSE	BROWN	0.5	12	ft

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3	SILT	TILL	DENSE	BROWN	12	20	ft
4	SILT	TILL	DENSE	GREY	20	30	ft

End of Record

n/a

Easting:	<null>
Northing:	<null>
Elev (masl):	157.41

Latitude: 43.93683
Longitude: -78.859465

Well ID: **7138892**

LOCATION

Lot: n/a
Con: n/a
Municipality: DURHAM
Township: OSHAWA CITY
Street: 1330 WILSON AVE.
City: Oshawa

Tag: A069014
Audit No: M02097
Contractor License: 7383
Well Completion Date: 08/26/2009
Received Date: 01/28/2010

WELL

Well Status: Test Hole
Prim. Use: n/a
Sec. Use: n/a
Boring Method: n/a

Well Depth (m): 0
Depth to Bedrock (m): n/a
Depth to Water: ft
Water Kind: FRESH

PUMP TEST

Test Method: n/a
Pump Set (m): n/a
SWL (ft) 18
Final Level: n/a ft
Pump Rate: n/a
Recom. Rate: n/a

Pipe ID: 1003258290
Pump Test ID 1003258275
Flowing: n/a
Pump Duration (hr): n/a
Pump Duration (m): n/a

CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth	
0	1003258301	n/a	n/a	PLASTIC	n/a	10	ft
0	1003258283	n/a	n/a	PLASTIC	n/a	10	ft
0	1003258292	n/a	n/a	PLASTIC	n/a	10	ft
0	1003258274	n/a	n/a	PLASTIC	n/a	10	ft
1	1003258328	2	inch	PLASTIC	0	15	ft

FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth	
1	OTHER	n/a	n/a	BLACK	0	0.5	ft
2	SILT	SAND	LOOSE	BROWN	0.5	12	ft
3	SILT	TILL	DENSE	BROWN	12	20	ft
4	SILT	TILL	DENSE	GREY	20	30	ft

End of Record

n/a

Easting:	<null>
Northing:	<null>
Elev (masl):	157.34

Latitude: 43.936964
Longitude: -78.859373

Well ID: **7138892**

LOCATION

Lot: n/a
Con: n/a
Municipality: DURHAM
Township: OSHAWA CITY
Street: 1330 WILSON AVE.
City: Oshawa

Tag: A069014
Audit No: M02097
Contractor License: 7383
Well Completion Date: 08/27/2009
Received Date: 01/28/2010

WELL

Well Status: Test Hole
Prim. Use: n/a
Sec. Use: n/a
Boring Method: n/a

Well Depth (m): 0
Depth to Bedrock (m): n/a
Depth to Water: ft
Water Kind: FRESH

PUMP TEST

Test Method: n/a
Pump Set (m): n/a
SWL (ft) 12
Final Level: n/a ft
Pump Rate: n/a
Recom. Rate: n/a

Pipe ID: 1003258272
Pump Test ID 1003258275
Flowing: n/a
Pump Duration (hr): n/a
Pump Duration (m): n/a

CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

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Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth	
0	1003258301	n/a	n/a	PLASTIC	n/a	10	ft
0	1003258283	n/a	n/a	PLASTIC	n/a	10	ft
0	1003258274	n/a	n/a	PLASTIC	n/a	10	ft
0	1003258292	n/a	n/a	PLASTIC	n/a	10	ft
1	1003258328	2	inch	PLASTIC	0	15	ft

FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth	
1	OTHER	n/a	n/a	BLACK	0	0.5	ft
2	SILT	SAND	LOOSE	BROWN	0.5	12	ft
3	SILT	TILL	DENSE	BROWN	12	20	ft
4	SILT	TILL	DENSE	GREY	20	30	ft

End of Record

---

n/a

Easting:	<null>
Northing:	<null>
Elev (masl):	157.61

Latitude: 43.936849
Longitude: -78.859988

Well ID: **7138892**

LOCATION

Lot: n/a
Con: n/a
Municipality: DURHAM
Township: OSHAWA CITY
Street: 1330 WILSON AVE.
City: Oshawa

Tag: A069014
Audit No: M02097
Contractor License: 7383
Well Completion Date: 08/25/2009
Received Date: 01/28/2010

WELL

Well Status: Test Hole
Prim. Use: n/a
Sec. Use: n/a
Boring Method: Boring

Well Depth (m): 0
Depth to Bedrock (m): n/a
Depth to Water: ft
Water Kind: FRESH

PUMP TEST

Test Method: n/a
Pump Set (m): n/a
SWL (ft) 12
Final Level: n/a ft
Pump Rate: n/a
Recom. Rate: n/a

Pipe ID: 1003258281
Pump Test ID 1003258293
Flowing: n/a
Pump Duration (hr): n/a
Pump Duration (m): n/a

CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth	
0	1003258301	n/a	n/a	PLASTIC	n/a	10	ft
0	1003258274	n/a	n/a	PLASTIC	n/a	10	ft
0	1003258292	n/a	n/a	PLASTIC	n/a	10	ft
0	1003258283	n/a	n/a	PLASTIC	n/a	10	ft
1	1003258328	2	inch	PLASTIC	0	15	ft

FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth	
1	OTHER	n/a	n/a	BLACK	0	0.5	ft
2	SILT	SAND	LOOSE	BROWN	0.5	12	ft
3	SILT	TILL	DENSE	BROWN	12	20	ft
4	SILT	TILL	DENSE	GREY	20	30	ft

End of Record

---

n/a

Easting:	<null>
Northing:	<null>
Elev (masl):	157.80

Latitude: 43.93698
Longitude: -78.859746

Well ID: **7138892**

LOCATION

Lot: n/a
Con: n/a
Municipality: DURHAM
Township: OSHAWA CITY
Street: 1330 WILSON AVE.
City: Oshawa

Tag: A069014
Audit No: M02097
Contractor License: 7383
Well Completion Date: 08/27/2009
Received Date: 01/28/2010

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WELL

Well Status: Test Hole
Prim. Use: n/a
Sec. Use: n/a
Boring Method: n/a

Well Depth (m): 0
Depth to Bedrock (m): n/a
Depth to Water: ft
Water Kind: FRESH

PUMP TEST

Test Method: n/a
Pump Set (m): n/a
SWL (ft) 12
Final Level: n/a ft
Pump Rate: n/a
Recom. Rate: n/a

Pipe ID: 1003258290
Pump Test ID 1003258284
Flowing: n/a
Pump Duration (hr): n/a
Pump Duration (m): n/a

CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth	
0	1003258274	n/a	n/a	PLASTIC	n/a	10	ft
0	1003258292	n/a	n/a	PLASTIC	n/a	10	ft
0	1003258301	n/a	n/a	PLASTIC	n/a	10	ft
0	1003258283	n/a	n/a	PLASTIC	n/a	10	ft
1	1003258328	2	inch	PLASTIC	0	15	ft

FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth	
1	OTHER	n/a	n/a	BLACK	0	0.5	ft
2	SILT	SAND	LOOSE	BROWN	0.5	12	ft
3	SILT	TILL	DENSE	BROWN	12	20	ft
4	SILT	TILL	DENSE	GREY	20	30	ft

End of Record

---

n/a

Easting: <null>
Northing: <null>
Elev (masl): 152.37

Latitude: 43.935298
Longitude: -78.860828

Well ID: **7157787**

LOCATION

Lot: n/a
Con: n/a
Municipality: DURHAM
Township: OSHAWA CITY
Street: 520 TAUNTON RD E
City: OSHAWA

Tag: A112734
Audit No: Z127878
Contractor License: 7241
Well Completion Date: 01/04/2011
Received Date: 01/14/2011

WELL

Well Status: <null>
Prim. Use: n/a
Sec. Use: n/a
Boring Method: Direct Push

Well Depth (m): 6.7056
Depth to Bedrock (m): n/a
Depth to Water: ft
Water Kind:

PUMP TEST

Test Method:
Pump Set (m):
SWL (ft)
Final Level:
Pump Rate:
Recom. Rate:

Pipe ID:
Pump Test ID
Flowing:
Pump Duration (hr):
Pump Duration (m):

CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth	
1	1003782277	1.5	inch	PLASTIC	0	5	ft

FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth	
1	OTHER	n/a	n/a	BLACK	0	0.5	ft
2	SAND	GRAVEL	LOOSE	BROWN	0.5	1	ft
3	SILT	SAND	DENSE	BROWN	1	16	ft
4	SAND	SILT	DENSE	BROWN	16	22	ft

End of Record

---

n/a

Easting: <null>
Northing: <null>
Elev (masl):

Latitude: 43.93717
Longitude: -78.860325

Well ID: **7157788**

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Elev (masl):	158.17

LOCATION

Lot: n/a
Con: n/a
Municipality: DURHAM
Township: OSHAWA CITY
Street: 520 TAUNTON RD E.
City: OSHAWA

Tag: A112735
Audit No: Z127877
Contractor License: 7241
Well Completion Date: 01/04/2011
Received Date: 01/14/2011

WELL

Well Status: <null>
Prim. Use: n/a
Sec. Use: n/a
Boring Method: Direct Push

Well Depth (m): 6.7056
Depth to Bedrock (m): n/a
Depth to Water: ft
Water Kind:

PUMP TEST

Test Method:
Pump Set (m):
SWL (ft)
Final Level:
Pump Rate:
Recom. Rate:

Pipe ID:
Pump Test ID
Flowing:
Pump Duration (hr):
Pump Duration (m):

CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth	
1	1003782306	1.5	inch	PLASTIC	0	5	ft

FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth	
1	OTHER	n/a	n/a	BLACK	0	0.5	ft
2	SAND	GRAVEL	LOOSE	BROWN	0.5	1	ft
3	SILT	SAND	DENSE	BROWN	1	16	ft
4	SAND	SILT	DENSE	BROWN	16	22	ft

End of Record

---

n/a

Easting:	<null>
Northing:	<null>
Elev (masl):	151.94

Latitude: 43.935492
Longitude: -78.858691

Well ID: **7163890**

LOCATION

Lot: n/a
Con: n/a
Municipality: DURHAM
Township: OSHAWA CITY
Street: 1300 WILSON ROAD NORTH
City: Oshawa

Tag: A110466
Audit No: Z124725
Contractor License: 7247
Well Completion Date: 05/04/2011
Received Date: 06/02/2011

WELL

Well Status: Observation Wells
Prim. Use: n/a
Sec. Use: n/a
Boring Method: Rotary (Convent.)

Well Depth (m): 4.572
Depth to Bedrock (m): n/a
Depth to Water: ft
Water Kind: Untested

PUMP TEST

Test Method:
Pump Set (m):
SWL (ft)
Final Level:
Pump Rate:
Recom. Rate:

Pipe ID:
Pump Test ID
Flowing:
Pump Duration (hr):
Pump Duration (m):

CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth	
1	1003830669	2	inch	PLASTIC	0	6.5	ft

FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth	
1	TOPSOIL	n/a	n/a	BLACK	0	0.5	ft
2	TOPSOIL	SAND	SILTY	BROWN	0.5	2.5	ft
3	SAND	GRAVEL	DENSE	BROWN	2.5	5	ft
4	SAND	GRAVEL	DENSE	BROWN	5	15	ft

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End of Record

n/a

Easting:	<null>
Northing:	<null>
Elev (masl):	148.79

Latitude: 43.934582
Longitude: -78.860082

Well ID: 7179894

LOCATION

Lot: n/a
Con: n/a
Municipality: DURHAM
Township: OSHAWA CITY
Street: 1318 WILSON RD
City: Oshawa

Tag: A126364
Audit No: Z146199
Contractor License: 7215
Well Completion Date: 01/16/2012
Received Date: 04/24/2012

WELL

Well Status: Test Hole
Prim. Use: n/a
Sec. Use: n/a
Boring Method: Rotary (Convent.)

Well Depth (m): 0
Depth to Bedrock (m): n/a
Depth to Water: ft
Water Kind:

PUMP TEST

Test Method:
Pump Set (m):
SWL (ft)
Final Level:
Pump Rate:
Recom. Rate:

Pipe ID:
Pump Test ID
Flowing:
Pump Duration (hr):
Pump Duration (m):

CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth
1	1004288449	2	inch	PLASTIC	5	0 ft

FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth

End of Record

n/a

Easting:	<null>
Northing:	<null>
Elev (masl):	148.85

Latitude: 43.934677
Longitude: -78.858434

Well ID: 7199548

LOCATION

Lot: 007
Con: 03
Municipality: DURHAM
Township: OSHAWA CITY
Street:
City: n/a

Tag: A132608
Audit No: C19677
Contractor License: 7147
Well Completion Date: 03/18/2013
Received Date: 03/28/2013

WELL

Well Status: <null>
Prim. Use: n/a
Sec. Use: n/a
Boring Method:

Well Depth (m): 0
Depth to Bedrock (m): n/a
Depth to Water:
Water Kind:

PUMP TEST

Test Method:
Pump Set (m):
SWL (ft)
Final Level:
Pump Rate:
Recom. Rate:

Pipe ID:
Pump Test ID
Flowing:
Pump Duration (hr):
Pump Duration (m):

CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth

FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth

End of Record

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n/a

Easting:	<null>
Northing:	<null>
Elev (masl):	160.02

Latitude: 43.937175
Longitude: -78.861546

Well ID: 7200024

LOCATION

Lot: n/a
Con: n/a
Municipality: DURHAM
Township: OSHAWA CITY
Street: 496 TAUTON RD E
City: OSHAWA

Tag: A142610
Audit No: Z167522
Contractor License: 7241
Well Completion Date: 03/13/2013
Received Date: 04/08/2013

WELL

Well Status: Monitoring and Test Hole
Prim. Use: n/a
Sec. Use: n/a
Boring Method: Direct Push

Well Depth (m): 7.62
Depth to Bedrock (m): n/a
Depth to Water: ft
Water Kind:

PUMP TEST

Test Method:
Pump Set (m):
SWL (ft)
Final Level:
Pump Rate:
Recom. Rate:

Pipe ID:
Pump Test ID
Flowing:
Pump Duration (hr):
Pump Duration (m):

CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth	
1	1004803409	1.5	inch	PLASTIC	0	15	ft

FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth	
1	FILL	n/a	n/a	BROWN	0	6	ft
2	SILT	SAND	ROCK	BROWN	6	18	ft
3	SAND	SILT	n/a	BROWN	18	25	ft

End of Record

---

n/a

Easting:	<null>
Northing:	<null>
Elev (masl):	157.51

Latitude: 43.936785
Longitude: -78.860912

Well ID: 7216128

LOCATION

Lot: n/a
Con: n/a
Municipality: DURHAM
Township: OSHAWA CITY
Street: 495 TAUTON ROAD EAST
City: OSHAWA

Tag: A156288
Audit No: Z183010
Contractor License: 7241
Well Completion Date: 12/06/2013
Received Date: 02/10/2014

WELL

Well Status: Monitoring and Test Hole
Prim. Use: n/a
Sec. Use: n/a
Boring Method: Direct Push

Well Depth (m): 5.4864
Depth to Bedrock (m): n/a
Depth to Water: ft
Water Kind:

PUMP TEST

Test Method:
Pump Set (m):
SWL (ft)
Final Level:
Pump Rate:
Recom. Rate:

Pipe ID:
Pump Test ID
Flowing:
Pump Duration (hr):
Pump Duration (m):

CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth	
1	1005075628	1.5	inch	PLASTIC	0	8	ft

FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

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Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth
1	FILL	n/a	n/a	BROWN	0	4 ft
2	SAND	n/a	n/a	BROWN	4	13 ft
3	SAND	n/a	n/a	BROWN	13	18 ft

End of Record

---

n/a

Easting:	<null>
Northing:	<null>
Elev (masl):	157.88

Latitude: 43.936753
Longitude: -78.861088

Well ID: 7216129

LOCATION

Lot: n/a
Con: n/a
Municipality: DURHAM
Township: OSHAWA CITY
Street: 495 TAUTON ROAD EAST
City: OSHAWA

Tag: A156287
Audit No: Z183009
Contractor License: 7241
Well Completion Date: 12/06/2013
Received Date: 02/10/2014

WELL

Well Status: Monitoring and Test Hole
Prim. Use: n/a
Sec. Use: n/a
Boring Method: Direct Push

Well Depth (m): 6.096
Depth to Bedrock (m): n/a
Depth to Water: ft
Water Kind:

PUMP TEST

Test Method:
Pump Set (m):
SWL (ft)
Final Level:
Pump Rate:
Recom. Rate:

Pipe ID:
Pump Test ID
Flowing:
Pump Duration (hr):
Pump Duration (m):

CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth
1	1005075674	1.5	inch	PLASTIC	0	10 ft

FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth
1	FILL	n/a	n/a	n/a	0	14 ft
2	SAND	STONES	n/a	BROWN	14	20 ft

End of Record

---

n/a

Easting:	<null>
Northing:	<null>
Elev (masl):	149.96

Latitude: 43.934861
Longitude: -78.858614

Well ID: 7219056

LOCATION

Lot: n/a
Con: n/a
Municipality: DURHAM
Township: OSHAWA CITY
Street: 1260 WILSON ROAD NORTH
City: OSHAWA

Tag: A066239
Audit No: Z150254
Contractor License: 7341
Well Completion Date:
Received Date: 04/08/2014

WELL

Well Status: Abandoned-Other
Prim. Use: n/a
Sec. Use: n/a
Boring Method: n/a

Well Depth (m): 0
Depth to Bedrock (m): n/a
Depth to Water: ft
Water Kind:

PUMP TEST

Test Method: n/a
Pump Set (m): n/a
SWL (ft) 8
Final Level: n/a ft
Pump Rate: n/a GPM
Recom. Rate: n/a GPM

Pipe ID: 1005139305
Pump Test ID 1005139306
Flowing: N
Pump Duration (hr): n/a
Pump Duration (m): n/a

CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth
0	1005139310	n/a	inch	<null>	n/a	n/a ft

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FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth

End of Record

---

n/a

Easting:	<null>
Northing:	<null>
Elev (masl):	149.96

Latitude: 43.934861
Longitude: -78.858614

Well ID: 7219064

LOCATION

Lot: n/a
Con: n/a
Municipality: DURHAM
Township: OSHAWA CITY
Street: 1260 WILSON ROAD NORTH
City: OSHAWA

Tag: A066239
Audit No: Z150253
Contractor License: 7341
Well Completion Date:
Received Date: 04/08/2014

WELL

Well Status: <null>
Prim. Use: n/a
Sec. Use: n/a
Boring Method: n/a

Well Depth (m): 7.0104
Depth to Bedrock (m): n/a
Depth to Water: ft
Water Kind:

PUMP TEST

Test Method: n/a
Pump Set (m): n/a
SWL (ft) 8
Final Level: n/a ft
Pump Rate: n/a GPM
Recom. Rate: n/a GPM

Pipe ID: 1005139457
Pump Test ID 1005139458
Flowing: N
Pump Duration (hr): n/a
Pump Duration (m): n/a

CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth
1	1005139462	1.5	inch	PLASTIC	0	23 ft

FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth
1	SAND	TILL	n/a	BROWN	0	23 ft

End of Record

---

n/a

Easting:	<null>
Northing:	<null>
Elev (masl):	144.80

Latitude: 43.933776
Longitude: -78.860783

Well ID: 7219694

LOCATION

Lot: n/a
Con: n/a
Municipality: DURHAM
Township: OSHAWA CITY
Street:
City: n/a

Tag: A162660
Audit No: C25510
Contractor License: 7215
Well Completion Date: 04/03/2014
Received Date: 04/30/2014

WELL

Well Status: <null>
Prim. Use: n/a
Sec. Use: n/a
Boring Method:

Well Depth (m): 0
Depth to Bedrock (m): n/a
Depth to Water:
Water Kind:

PUMP TEST

Test Method:
Pump Set (m):
SWL (ft)
Final Level:
Pump Rate:
Recom. Rate:

Pipe ID:
Pump Test ID
Flowing:
Pump Duration (hr):
Pump Duration (m):

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CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth

FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth

End of Record

---

n/a

Easting:	<null>
Northing:	<null>
Elev (masl):	159.42

Latitude: 43.937048
Longitude: -78.861476

Well ID: 7220450

LOCATION

Lot: n/a
Con: n/a
Municipality: DURHAM
Township: OSHAWA CITY
Street: 496 TAUNTON RD E
City: Oshawa

Tag: A162947
Audit No: Z164073
Contractor License: 7241
Well Completion Date: 04/14/2014
Received Date: 05/15/2014

WELL

Well Status: Test Hole
Prim. Use: n/a
Sec. Use: n/a
Boring Method: Auger

Well Depth (m): 8.53
Depth to Bedrock (m): n/a
Depth to Water: m
Water Kind:

PUMP TEST

Test Method:
Pump Set (m):
SWL (ft)
Final Level:
Pump Rate:
Recom. Rate:

Pipe ID:
Pump Test ID
Flowing:
Pump Duration (hr):
Pump Duration (m):

CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth
1	1005154688	5.2	cm	PLASTIC	0	5.49 m

FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth
1	FILL	GRAVEL	LOOSE	BROWN	0	1.5 m
2	SAND	SILT	DENSE	BROWN	1.5	5.49 m
3	SAND	SILT	DENSE	GREY	5.49	8.53 m

End of Record

---

n/a

Easting:	<null>
Northing:	<null>
Elev (masl):	160.43

Latitude: 43.937279
Longitude: -78.861816

Well ID: 7220451

LOCATION

Lot: n/a
Con: n/a
Municipality: DURHAM
Township: OSHAWA CITY
Street: 496 TAUNTON RD E
City: Oshawa

Tag: A162948
Audit No: Z164074
Contractor License: 7241
Well Completion Date: 04/14/2014
Received Date: 05/15/2014

WELL

Well Status: Test Hole
Prim. Use: n/a
Sec. Use: n/a
Boring Method: Auger

Well Depth (m): 8.53
Depth to Bedrock (m): n/a
Depth to Water: m
Water Kind:

TEST

Test Method:
Pump Set (m):
SWL (ft)

Pipe ID:
Pump Test ID
Flowing:

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PUMP

Final Level: **Pump Duration (hr):**
Pump Rate: **Pump Duration (m):**
Recom. Rate:

CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth	
1	1005154702	5.2	cm	PLASTIC	0	5.49	m

FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth	
1	FILL	GRAVEL	LOOSE	BROWN	0	1.5	m
2	SAND	SILT	DENSE	BROWN	1.5	5.49	m
3	SAND	SILT	DENSE	GREY	5.49	8.53	m

End of Record

---

n/a

Easting:	<null>
Northing:	<null>
Elev (masl):	159.63

Latitude: 43.937294
Longitude: -78.857804

Well ID: 7240813

LOCATION

Lot: n/a **Tag:**
Con: n/a **Audit No:** Z208072
Municipality: DURHAM **Contractor License:** 7241
Township: OSHAWA CITY **Well Completion Date:** 04/17/2015
Street: 1333 WILSON RD. NORTH **Received Date:** 05/05/2015
City: OSHAWA

WELL

Well Status: Abandoned-Other **Well Depth (m):** 0
Prim. Use: n/a **Depth to Bedrock (m):** n/a
Sec. Use: n/a **Depth to Water:** ft
Boring Method: Direct Push **Water Kind:**

PUMP TEST

Test Method: **Pipe ID:**
Pump Set (m): **Pump Test ID**
SWL (ft) **Flowing:**
Final Level: **Pump Duration (hr):**
Pump Rate: **Pump Duration (m):**
Recom. Rate:

CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth	
1	1005585064	2	inch	PLASTIC	n/a	n/a	ft

FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth

End of Record

---

n/a

Easting:	<null>
Northing:	<null>
Elev (masl):	159.91

Latitude: 43.937371
Longitude: -78.85805

Well ID: 7240814

LOCATION

Lot: n/a **Tag:**
Con: n/a **Audit No:** Z208071
Municipality: DURHAM **Contractor License:** 7241
Township: OSHAWA CITY **Well Completion Date:** 04/17/2015
Street: 1333 WILSON RD. NORTH **Received Date:** 05/05/2015
City: OSHAWA

WELL

Well Status: Abandoned-Other **Well Depth (m):** 0
Prim. Use: n/a **Depth to Bedrock (m):** n/a
Sec. Use: n/a **Depth to Water:** ft
Boring Method: Direct Push **Water Kind:**

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PUMP TEST

Test Method:
Pump Set (m):
SWL (ft)
Final Level:
Pump Rate:
Recom. Rate:

Pipe ID:
Pump Test ID
Flowing:
Pump Duration (hr):
Pump Duration (m):

CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth	
1	1005585076	2	inch	PLASTIC	n/a	n/a	ft

FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth

End of Record

---

n/a

Easting:	<null>
Northing:	<null>
Elev (masl):	153.21

Latitude: 43.935694
Longitude: -78.860316

Well ID: 7281738

LOCATION

Lot: n/a
Con: n/a
Municipality: DURHAM
Township: OSHAWA CITY
Street: 1300 WILSON RD N
City: Oshawa

Tag: A211823
Audit No: Z241951
Contractor License: 7383
Well Completion Date: 11/24/2016
Received Date: 02/24/2017

WELL

Well Status: Monitoring and Test Hole
Prim. Use: n/a
Sec. Use: Monitoring
Boring Method: Rotary (Convent.)

Well Depth (m): 4.572
Depth to Bedrock (m): n/a
Depth to Water: ft
Water Kind: Untested

PUMP TEST

Test Method:
Pump Set (m):
SWL (ft)
Final Level:
Pump Rate:
Recom. Rate:

Pipe ID:
Pump Test ID
Flowing:
Pump Duration (hr):
Pump Duration (m):

CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth	
1	1006599725	2	inch	PLASTIC	0	5	ft

FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth	
1	SAND	SILT	DENSE	BROWN	0	10	ft
2	TILL	n/a	DENSE	GREY	10	15	ft

End of Record

---

n/a

Easting:	<null>
Northing:	<null>
Elev (masl):	153.73

Latitude: 43.936032
Longitude: -78.859145

Well ID: 7281739

LOCATION

Lot: n/a
Con: n/a
Municipality: DURHAM
Township: OSHAWA CITY
Street: 1300 WILSON RD N
City: Oshawa

Tag: A211821
Audit No: Z241950
Contractor License: 7383
Well Completion Date: 11/24/2016
Received Date: 02/24/2017

ELL

Well Status: Monitoring and Test Hole
Prim. Use:

Well Depth (m): 4.572
Depth to Bedrock (m): n/a

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WE

Sec. Use: Monitoring
Boring Method: Rotary (Convent.)

Depth to Water: ft
Water Kind: Untested

PUMP TEST

Test Method:
Pump Set (m):
SWL (ft)
Final Level:
Pump Rate:
Recom. Rate:

Pipe ID:
Pump Test ID
Flowing:
Pump Duration (hr):
Pump Duration (m):

CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth
1	1006599738	2	inch	PLASTIC	0	5 ft

FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth
1	SAND	SILT	DENSE	BROWN	0	10 ft
2	TILL	n/a	DENSE	GREY	10	15 ft

End of Record

---

n/a

Easting:	<null>
Northing:	<null>
Elev (masl):	155.01

Latitude: 43.935789
Longitude: -78.861558

Well ID: 7281740

LOCATION

Lot: n/a
Con: n/a
Municipality: DURHAM
Township: OSHAWA CITY
Street: 1300 WILSON RD N
City: Oshawa

Tag: A211822
Audit No: Z241952
Contractor License: 7383
Well Completion Date: 11/24/2016
Received Date: 02/24/2017

WELL

Well Status: Monitoring and Test Hole
Prim. Use: n/a
Sec. Use: Monitoring
Boring Method: Rotary (Convent.)

Well Depth (m): 6.7056
Depth to Bedrock (m): n/a
Depth to Water: ft
Water Kind: Untested

PUMP TEST

Test Method:
Pump Set (m):
SWL (ft)
Final Level:
Pump Rate:
Recom. Rate:

Pipe ID:
Pump Test ID
Flowing:
Pump Duration (hr):
Pump Duration (m):

CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth
1	1006599751	2	inch	PLASTIC	0	12 ft

FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth
1	SAND	SILT	DENSE	BROWN	0	10 ft
2	TILL	n/a	DENSE	GREY	10	22 ft

End of Record

---

n/a

Easting:	<null>
Northing:	<null>
Elev (masl):	149.31

Latitude: 43.934424
Longitude: -78.859352

Well ID: 7281741

LOCATION

Lot: n/a
Con: n/a
Municipality: DURHAM
Township: OSHAWA CITY
Street: 1300 WILSON RD N
City: Oshawa

Tag: A222694
Audit No: Z241949
Contractor License: 7383
Well Completion Date: 11/23/2016
Received Date: 02/24/2017

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WELL

Well Status: Monitoring and Test Hole
Prim. Use: n/a
Sec. Use: Monitoring
Boring Method: Rotary (Convent.)

Well Depth (m): 7.62
Depth to Bedrock (m): n/a
Depth to Water: ft
Water Kind: Untested

PUMP TEST

Test Method:
Pump Set (m):
SWL (ft)
Final Level:
Pump Rate:
Recom. Rate:

Pipe ID:
Pump Test ID
Flowing:
Pump Duration (hr):
Pump Duration (m):

CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth	
1	1006599764	2	inch	PLASTIC	0	15	ft

FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth	
1	SAND	SILT	DENSE	BROWN	0	10	ft
2	TILL	n/a	DENSE	GREY	10	25	ft

End of Record

---

n/a

Easting:	<null>
Northing:	<null>
Elev (masl):	159.27

Latitude: 43.936881
Longitude: -78.86264

Well ID: **7297194**

LOCATION

Lot: n/a
Con: n/a
Municipality: DURHAM
Township: OSHAWA CITY
Street: 450 TAUNTON ROAD EAST
City: Oshawa

Tag:
Audit No: Z265388
Contractor License: 5459
Well Completion Date:
Received Date: 10/12/2017

WELL

Well Status: Abandoned-Other
Prim. Use: n/a
Sec. Use: n/a
Boring Method: n/a

Well Depth (m): 0
Depth to Bedrock (m): n/a
Depth to Water: ft
Water Kind:

PUMP TEST

Test Method:
Pump Set (m):
SWL (ft)
Final Level:
Pump Rate:
Recom. Rate:

Pipe ID:
Pump Test ID
Flowing:
Pump Duration (hr):
Pump Duration (m):

CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth	
0	1006922657	n/a	inch	<null>	n/a	n/a	ft

FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth	
0	n/a	n/a	n/a	n/a	n/a	n/a	ft

End of Record

---

n/a

Easting:	<null>
Northing:	<null>
Elev (masl):	169.58

Latitude: 43.937746
Longitude: -78.855009

Well ID: **7300885**

TION

Lot: n/a
Con: n/a
Municipality:

Tag: A223396
Audit No: C38328
Contractor License: 7147

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LOCA

Township: DURHAM OSHAWA CITY
Street:
City: n/a

Well Completion Date:
Received Date: 12/06/2017

WELL

Well Status: <null>
Prim. Use: n/a
Sec. Use: n/a
Boring Method:

Well Depth (m): 0
Depth to Bedrock (m): n/a
Depth to Water:
Water Kind:

PUMP TEST

Test Method:
Pump Set (m):
SWL (ft)
Final Level:
Pump Rate:
Recom. Rate:

Pipe ID:
Pump Test ID
Flowing:
Pump Duration (hr):
Pump Duration (m):

CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth

FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth

End of Record

---

n/a

Easting:	<null>
Northing:	<null>
Elev (masl):	

Latitude: 43.937142
Longitude: -78.856414

Well ID: 7306591

LOCATION

Lot: n/a
Con: n/a
Municipality: DURHAM
Township: OSHAWA CITY
Street:
City: n/a

Tag: A229450
Audit No: C40167
Contractor License: 7230
Well Completion Date: 10/25/2017
Received Date: 02/28/2018

WELL

Well Status: <null>
Prim. Use: n/a
Sec. Use: n/a
Boring Method:

Well Depth (m): 0
Depth to Bedrock (m): n/a
Depth to Water:
Water Kind:

PUMP TEST

Test Method:
Pump Set (m):
SWL (ft)
Final Level:
Pump Rate:
Recom. Rate:

Pipe ID:
Pump Test ID
Flowing:
Pump Duration (hr):
Pump Duration (m):

CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth

FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth

End of Record

---

n/a

Easting:	<null>
Northing:	<null>
Elev (masl):	

Latitude: 43.937242
Longitude: -78.855501

Well ID: 7306598

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LOCATION

Lot:	n/a	**Tag:**	A226675
Con:	n/a	**Audit No:**	C40153
Municipality:	DURHAM	**Contractor License:**	7230
Township:	OSHAWA CITY	**Well Completion Date:**	10/26/2017
Street:		**Received Date:**	02/28/2018
City:	n/a		

WELL

Well Status:	<null>	**Well Depth (m):**	0
Prim. Use:	n/a	**Depth to Bedrock (m):**	n/a
Sec. Use:	n/a	**Depth to Water:**	
Boring Method:		**Water Kind:**	

PUMP TEST

Test Method:		**Pipe ID:**	
Pump Set (m):		**Pump Test ID**	
SWL (ft)		**Flowing:**	
Final Level:		**Pump Duration (hr):**	
Pump Rate:		**Pump Duration (m):**	
Recom. Rate:			

CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth

FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth

End of Record

---

n/a

Easting:	<null>
Northing:	<null>
Elev (masl):	

Latitude: 43.938194
Longitude: -78.854868

Well ID: **7306621**

LOCATION

Lot:	n/a	**Tag:**	A229456
Con:	n/a	**Audit No:**	Z258016
Municipality:	DURHAM	**Contractor License:**	7230
Township:	OSHAWA CITY	**Well Completion Date:**	10/26/2017
Street:	667 TAUNTON RD	**Received Date:**	02/28/2018
City:	OSHAWA		

WELL

Well Status:	Observation Wells	**Well Depth (m):**	6.1
Prim. Use:	n/a	**Depth to Bedrock (m):**	n/a
Sec. Use:	Monitoring	**Depth to Water:**	m
Boring Method:	Boring	**Water Kind:**	Untested

PUMP TEST

Test Method:		**Pipe ID:**	
Pump Set (m):		**Pump Test ID**	
SWL (ft)		**Flowing:**	
Final Level:		**Pump Duration (hr):**	
Pump Rate:		**Pump Duration (m):**	
Recom. Rate:			

CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth	
1	1007179363	5.2	cm	PLASTIC	0	3	m

FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth	
1	FILL	SAND	LOOSE	BROWN	0	0.8	m
2	SILT	SAND	DENSE	BROWN	0.8	4.6	m
3	SAND	SILT	DENSE	GREY	4.6	6.1	m

End of Record

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n/a		
	Easting:	<null>
	Northing:	<null>
	Elev (masl):	

Latitude: 43.936743
Longitude: -78.860116

Well ID: 7313176

LOCATION

Lot:	n/a
Con:	n/a
Municipality:	DURHAM
Township:	OSHAWA CITY
Street:	515 TAUNTON RD E
City:	Oshawa

Tag:	A246338
Audit No:	Z286708
Contractor License:	7241
Well Completion Date:	05/03/2018
Received Date:	06/19/2018

WELL

Well Status:	Observation Wells
Prim. Use:	n/a
Sec. Use:	Monitoring
Boring Method:	Rotary (Convent.)

Well Depth (m):	6.096
Depth to Bedrock (m):	n/a
Depth to Water:	ft
Water Kind:	

PUMP TEST

Test Method:	
Pump Set (m):	
SWL (ft)	
Final Level:	
Pump Rate:	
Recom. Rate:	

Pipe ID:	
Pump Test ID	
Flowing:	
Pump Duration (hr):	
Pump Duration (m):	

CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth	
1	1007374220	2	inch	PLASTIC	0	10	ft

FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth	
1	OTHER	n/a	n/a	BLACK	0	0.5	ft
2	SAND	GRAVEL	FILL	BROWN	0.5	5	ft
3	CLAY	SAND	n/a	GREY	5	14	ft
4	SAND	CLAY	GRAVEL	GREY	14	20	ft

End of Record

---

n/a		
	Easting:	<null>
	Northing:	<null>
	Elev (masl):	

Latitude: 43.936427
Longitude: -78.860028

Well ID: 7313209

LOCATION

Lot:	n/a
Con:	n/a
Municipality:	DURHAM
Township:	OSHAWA CITY
Street:	515 TAUNTON RD E
City:	Oshawa

Tag:	A246341
Audit No:	Z286707
Contractor License:	7241
Well Completion Date:	05/03/2018
Received Date:	06/19/2018

WELL

Well Status:	Observation Wells
Prim. Use:	n/a
Sec. Use:	Monitoring
Boring Method:	Direct Push

Well Depth (m):	6.096
Depth to Bedrock (m):	n/a
Depth to Water:	ft
Water Kind:	

PUMP TEST

Test Method:	
Pump Set (m):	
SWL (ft)	
Final Level:	
Pump Rate:	
Recom. Rate:	

Pipe ID:	
Pump Test ID	
Flowing:	
Pump Duration (hr):	
Pump Duration (m):	

CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth	
1	1007374797	2	inch	PLASTIC	0	10	ft

FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth	
1	OTHER	n/a	n/a	BROWN	0	0.5	ft
2	SAND	GRAVEL	FILL	BROWN	0.5	5	ft
3	CLAY	SAND	FILL	GREY	5	14	ft

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4	SAND	CLAY	TILL	GREY	14	20	ft

End of Record

n/a

Easting:	<null>
Northing:	<null>
Elev (masl):	

Latitude: 43.936862
Longitude: -78.860174

Well ID: 7313210

LOCATION

Lot: n/a
Con: n/a
Municipality: DURHAM
Township: OSHAWA CITY
Street: 515 TAUNTON RD E
City: Oshawa

Tag: A220327
Audit No: Z286706
Contractor License: 7241
Well Completion Date: 05/03/2018
Received Date: 06/19/2018

WELL

Well Status: Observation Wells
Prim. Use: n/a
Sec. Use: Monitoring
Boring Method: Direct Push

Well Depth (m): 6.096
Depth to Bedrock (m): n/a
Depth to Water: ft
Water Kind:

PUMP TEST

Test Method:
Pump Set (m):
SWL (ft)
Final Level:
Pump Rate:
Recom. Rate:

Pipe ID:
Pump Test ID
Flowing:
Pump Duration (hr):
Pump Duration (m):

CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth	
1	1007374812	2	inch	PLASTIC	0	10	ft

FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth	
1	OTHER	n/a	n/a	BLACK	0	0.5	ft
2	SAND	GRAVEL	FILL	BROWN	0.5	5	ft
3	CLAY	SAND	n/a	GREY	5	14	ft
4	SAND	CLAY	GRAVEL	GREY	14	20	ft

End of Record

n/a

Easting:	<null>
Northing:	<null>
Elev (masl):	

Latitude: 43.93635
Longitude: -78.859296

Well ID: 7316857

LOCATION

Lot: n/a
Con: n/a
Municipality: DURHAM
Township: OSHAWA CITY
Street: 515 TAUNTON RD E
City: Oshawa

Tag: A221790
Audit No: Z290262
Contractor License: 7241
Well Completion Date: 06/05/2018
Received Date: 08/03/2018

WELL

Well Status: Test Hole
Prim. Use: n/a
Sec. Use: Monitoring
Boring Method: Rotary (Convent.)

Well Depth (m): 6.096
Depth to Bedrock (m): n/a
Depth to Water: ft
Water Kind:

PUMP TEST

Test Method:
Pump Set (m):
SWL (ft)
Final Level:
Pump Rate:
Recom. Rate:

Pipe ID:
Pump Test ID
Flowing:
Pump Duration (hr):
Pump Duration (m):

CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth	
1	1007429318	2	inch	PLASTIC	0	10	ft

FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth

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1	SAND	GRAVEL	FILL	BROWN	0	7	ft
2	CLAY	SILT	n/a	GREY	7	15	ft
3	SILT	TILL	n/a	BROWN	15	20	ft

End of Record

n/a

Easting:	<null>
Northing:	<null>
Elev (masl):	

Latitude: 43.937969
Longitude: -78.855375

Well ID: **7319933**

LOCATION

Lot: n/a
Con: n/a
Municipality: DURHAM
Township: OSHAWA CITY
Street: 657 TAUNTON RD E
City: n/a

Tag: A236781
Audit No: Z288967
Contractor License: 7247
Well Completion Date: 04/09/2018
Received Date: 09/18/2018

WELL

Well Status: Observation Wells
Prim. Use: n/a
Sec. Use: Monitoring
Boring Method: Rotary (Convent.)

Well Depth (m): 6.096
Depth to Bedrock (m): n/a
Depth to Water: ft
Water Kind: Untested

PUMP TEST

Test Method:
Pump Set (m):
SWL (ft)
Final Level:
Pump Rate:
Recom. Rate:

Pipe ID:
Pump Test ID
Flowing:
Pump Duration (hr):
Pump Duration (m):

CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth	
1	1007536377	2	inch	PLASTIC	0	10	ft

FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth	
1	TOPSOIL	n/a	n/a	n/a	0	1	ft
2	SILT	CLAY	GRAVEL	BROWN	1	2.5	ft
3	SILT	GRAVEL	SANDY	BROWN	2.5	20	ft
4	n/a	n/a	n/a	n/a	20	n/a	ft

End of Record

n/a

Easting:	<null>
Northing:	<null>
Elev (masl):	

Latitude: 43.937633
Longitude: -78.856184

Well ID: **7346571**

LOCATION

Lot: n/a
Con: n/a
Municipality: DURHAM
Township: OSHAWA CITY
Street: 595 taunton rd.
City: Oshawa

Tag:
Audit No: Z317713
Contractor License: 4102
Well Completion Date: 08/30/2019
Received Date: 11/05/2019

WELL

Well Status: Abandoned-Other
Prim. Use: n/a
Sec. Use: n/a
Boring Method:

Well Depth (m): 0
Depth to Bedrock (m): n/a
Depth to Water:
Water Kind:

PUMP TEST

Test Method: n/a
Pump Set (m): n/a
SWL (ft) n/a
Final Level: n/a ft
Pump Rate: n/a GPM
Recom. Rate: n/a GPM

Pipe ID: 1008257909
Pump Test ID 1008259817
Flowing: n/a
Pump Duration (hr): n/a
Pump Duration (m): n/a

CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth

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FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth

End of Record

---

n/a

Easting:	<null>
Northing:	<null>
Elev (masl):	

Latitude: 43.937718
Longitude: -78.855895

Well ID: 7346572

LOCATION

Lot:	n/a	**Tag:**	
Con:	n/a	**Audit No:**	Z317714
Municipality:	DURHAM	**Contractor License:**	4102
Township:	OSHAWA CITY	**Well Completion Date:**	08/29/2019
Street:	647 taunton rd.	**Received Date:**	11/05/2019
City:	Oshawa		

WELL

Well Status:	Abandoned-Other	**Well Depth (m):**	0
Prim. Use:	n/a	**Depth to Bedrock (m):**	n/a
Sec. Use:	n/a	**Depth to Water:**	
Boring Method:		**Water Kind:**	

PUMP TEST

Test Method:	n/a	**Pipe ID:**	1008257910
Pump Set (m):	n/a	**Pump Test ID**	1008259818
SWL (ft)	n/a	**Flowing:**	n/a
Final Level:	n/a ft	**Pump Duration (hr):**	n/a
Pump Rate:	n/a GPM	**Pump Duration (m):**	n/a
Recom. Rate:	n/a GPM		

CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth

FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth

End of Record

---

n/a

Easting:	<null>
Northing:	<null>
Elev (masl):	

Latitude: 43.937701
Longitude: -78.855023

Well ID: 7346573

LOCATION

Lot:	n/a	**Tag:**	
Con:	n/a	**Audit No:**	Z317712
Municipality:	DURHAM	**Contractor License:**	4102
Township:	OSHAWA CITY	**Well Completion Date:**	08/29/2019
Street:	647 taunton rd.	**Received Date:**	11/05/2019
City:	Oshawa		

WELL

Well Status:	Abandoned-Other	**Well Depth (m):**	0
Prim. Use:	n/a	**Depth to Bedrock (m):**	n/a
Sec. Use:	n/a	**Depth to Water:**	
Boring Method:		**Water Kind:**	

PUMP TEST

Test Method:	n/a	**Pipe ID:**	1008257911
Pump Set (m):	n/a	**Pump Test ID**	1008259819
SWL (ft)	n/a	**Flowing:**	n/a
Final Level:	n/a ft	**Pump Duration (hr):**	n/a
Pump Rate:	n/a GPM	**Pump Duration (m):**	n/a
Recom. Rate:	n/a GPM		

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CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth

FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth

End of Record

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Appendix B

Borehole Logs

REFERENCE No.: 12603998 ENCLOSURE No.: B-1

BOREHOLE No.: MW1-23
ELEVATION: 158.75 m

BOREHOLE REPORT

Page: 1 of 1

CLIENT: Jasmas Inc.
PROJECT: Phase Two Environmental Site Assessment
LOCATION: 520 Taunton Road East, Oshawa
DESCRIBED BY: M. Grieger CHECKED BY: E. Wierdsma
DATE (START): 15 February 2023 DATE (FINISH): 15 February 2023

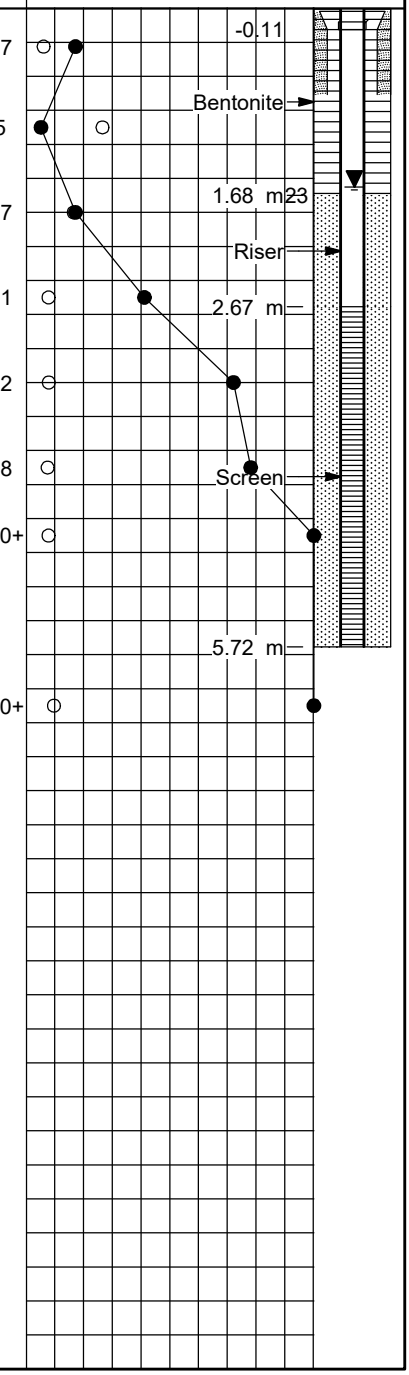
LEGEND
- SS - SPLIT SPOON
- ST - SHELBY TUBE
- RC - ROCK CORE
- WATER LEVEL

NORTHING: 4867133 EASTING: 671741

Depth (Feet / Metres)	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	State	Type and Number	Recovery/ TCR(%)	Moisture Content %	Blows per 15cm/ RQD(%)	'N' Value/ SCR(%)
GROUND SURFACE	158.75								
0	158.67		**ASPHALT -** 75 mm						
1			**FILL - SAND** with gravel, compact, light brown, moist		SS-1	100	6	10-7-10-6	17
2	157.99		**ML - SILT** with sand, loose, dark brown, moist		SS-2	79	26	3-2-3-3	5
3 – 1.0	157.23		compact, light brown		SS-3	100	16	4-8-9-12	17
4	156.46		**TILL - SILTY SAND** with gravel, trace clay, very dense, brown, moist		SS-4	100	8	12-17-24-35	41
5 – 2.0					SS-5	100	8	18-35-37-40	72
6	154.94		grey		SS-6	100	7	27-30-48-42	78
7 – 3.0					SS-7	100	8	27-50+	100+
8									
9 – 4.0									
10									
11 – 5.0									
12	152.65		wet		SS-8	83	10	49-50+	100+
13 – 6.0	152.04		**END OF BOREHOLE**						
14			**NOTES:**						
15 – 7.0			- End of Borehole at 6.7 mbgs						
16			- Depth of first groundwater seepage encountered: 6.1 mbgs						
17 – 8.0			- Monitoring well water level measured on February 21, 2023 as 1.60 mbgs						
18			- mbgs denotes 'metres below ground surface'						
19 – 9.0									
20									
21 – 10.0									
22									
23 – 11.0									
24									
25 – 12.0									
26									
27									
28									
29									
30									
31									
32									
33									
34									
35									
36									
37									
38									
39									

Shear test (Cu) △ Field
Sensitivity (S) □ Lab
○ Water content (%)
W_p W_l Atterberg limits (%)
● "N" Value (blows / 12 in.-30 cm)

10 20 30 40 50 60 70 80 90



File: G:\12603998\WORKSHARE\FIELD\GINT LOGS\12603998-FLD-23-03-01, TAUNTON ROAD BOREHOLE LOGS, MG.GPJ Library File: GHD_GEOTECH_V05.GLB Report: SOIL LOG WITH GRAPH+WELL Date: 23/10/23

REFERENCE No.: 12603998 ENCLOSURE No.: B-2

GHD

BOREHOLE No.: MW2-23
ELEVATION: 159.37 m

BOREHOLE REPORT

Page: 1 of 1

CLIENT: Jasmas Inc.
PROJECT: Phase Two Environmental Site Assessment
LOCATION: 520 Taunton Road East, Oshawa
DESCRIBED BY: M. Grieger CHECKED BY: E. Wierdsma
DATE (START): 15 February 2023 DATE (FINISH): 15 February 2023

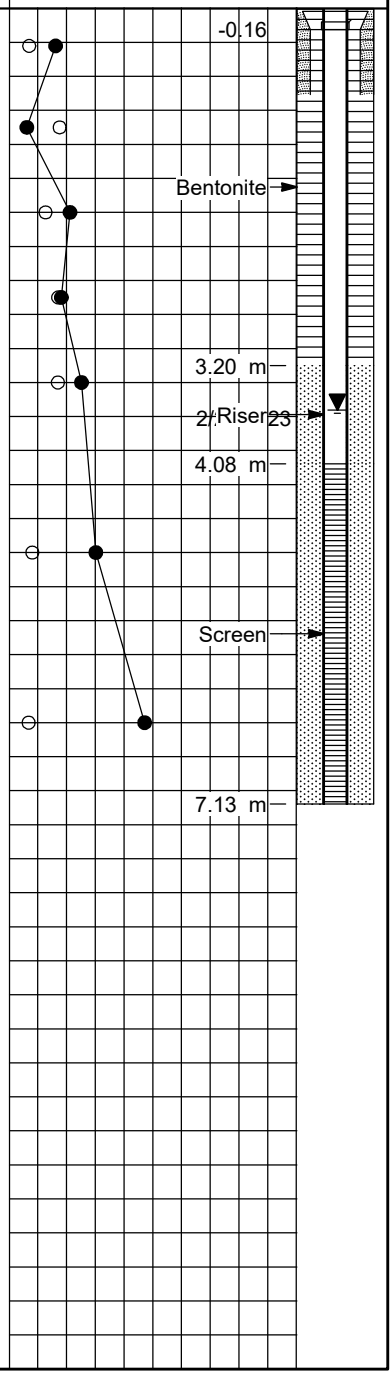
LEGEND
- SS - SPLIT SPOON
- ST - SHELBY TUBE
- RC - ROCK CORE
- WATER LEVEL

NORTHING: 4867135 EASTING: 671710

Depth (Feet / Metres)	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	State	Type and Number	Recovery/ TCR(%)	Moisture Content	Blows per 15cm/ RQD(%)	'N' Value/ SCR(%)
	159.37		GROUND SURFACE				%		
0	159.30		**ASPHALT -** 60 mm						
1			**FILL - SAND & GRAVEL**, compact, brown, moist		SS-1	50	7	7-9-7-5	16
2	158.60								
3			**ML - SILT** with sand, trace gravel, loose, brown, moist		SS-2	100	17	2-2-4-9	6
4	1.0								
5	157.84		compact, light brown		SS-3	100	13	8-10-11-8	21
6									
7	2.0								
8					SS-4	83	17	6-7-11-13	18
9									
10	3.0								
11	156.32		Grain Size Analysis: SS5 1% Gravel, 22% Sand, 77% Clay & Silt-sized particles		SS-5	100	17	8-11-14-24	25
12									
13	4.0								
14									
15	154.79		**TILL - SILTY SAND** with gravel, trace gravel, dense, brown, moist		SS-6	83	8	16-11-19-40	30
16									
17	5.0								
18									
19									
20	6.0								
21	153.27		very dense, grey, wet		SS-7	100	7	20-26-21-23	47
22									
23	7.0								
24									
25	151.75		**END OF BOREHOLE**						
26			**NOTES:**						
27	8.0		- End of Borehole at 7.6 mbgs						
28			- Depth of first groundwater seepage encountered: 6.1 mbgs						
29			- Monitoring well water level measured on February 21, 2023 as 3.6 mbgs						
30	9.0		- mbgs denotes 'metres below ground surface'						
31									
32									
33	10.0								
34									
35									
36	11.0								
37									
38									
39	12.0								

Shear test (Cu) △ Field
Sensitivity (S) □ Lab
○ Water content (%)
W_p W_l Atterberg limits (%)
● "N" Value (blows / 12 in.-30 cm)

10 20 30 40 50 60 70 80 90



File: G:\12603998\WORKSHARE\FIELD\GINT LOGS\12603998-FLD-23-03-01, TAUNTON ROAD BOREHOLE LOGS, MG.GPJ Library File: GHD_GEOTECH_V05.GLB Report: SOIL LOG WITH GRAPH+WELL Date: 23/10/23

REFERENCE No.: 12603998 ENCLOSURE No.: B-3

GHD

BOREHOLE No.: BH3-23
ELEVATION: 159.36 m

BOREHOLE REPORT

Page: 1 of 1

CLIENT: Jasmas Inc.
PROJECT: Phase Two Environmental Site Assessment
LOCATION: 520 Taunton Road East, Oshawa
DESCRIBED BY: M. Grieger CHECKED BY: E. Wierdsma
DATE (START): 15 February 2023 DATE (FINISH): 15 February 2023

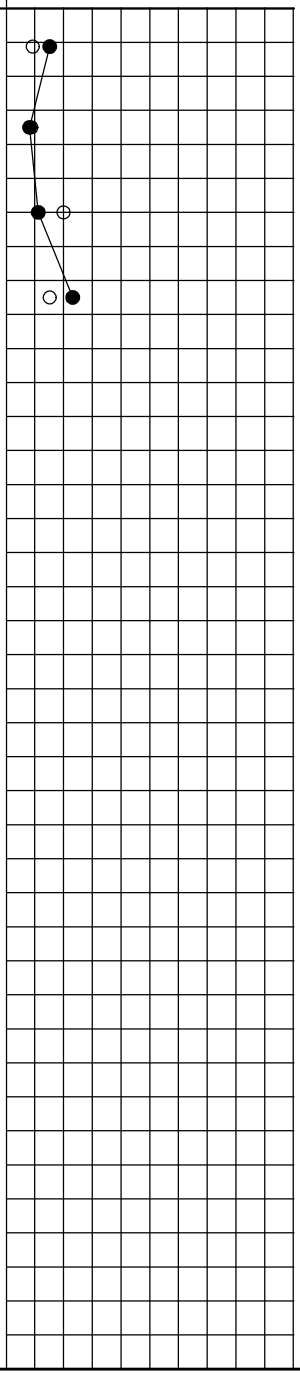
LEGEND
- SS - SPLIT SPOON
- ST - SHELBY TUBE
- RC - ROCK CORE
- ▼ - WATER LEVEL

NORTHING: 4867147 EASTING: 671722

Depth Feet	Depth Metres	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	State	Type and Number	Recovery/ TCR(%)	Moisture Content %	Blows per 15cm/ RQD(%)	'N' Value/ SCR(%)
		159.36		GROUND SURFACE						
0		159.28		**ASPHALT -** 75 mm						
1				**FILL - SAND & GRAVEL**, compact, brown, moist		SS-1	83	9	13-9-6-5	15
2		158.60		loose						
3	1.0					SS-2	83	9	5-4-4-3	8
4										
5		157.83		**ML - SILT** with sand, compact, light brown, moist		SS-3	83	20	7-5-6-6	11
6										
7	2.0									
8						SS-4	83	15	8-12-11-12	23
9										
10	3.0	156.46		**END OF BOREHOLE**						
11				**NOTES:**						
12				- End of Borehole at 2.9 mbgs						
13	4.0			- mbgs denotes 'metres below ground surface'						
14										
15										
16										
17	5.0									
18										
19										
20	6.0									
21										
22										
23	7.0									
24										
25										
26	8.0									
27										
28										
29										
30	9.0									
31										
32										
33	10.0									
34										
35										
36	11.0									
37										
38										
39	12.0									

Shear test (Cu) △ Field
Sensitivity (S) ☐ Lab
○ Water content (%)
W_p W_l Atterberg limits (%)
● "N" Value (blows / 12 in.-30 cm)

10 20 30 40 50 60 70 80 90



File: G:\12603998\WORKSHARE\FIELD\GINT LOGS\12603998-FLD-23-03-01, TAUNTON ROAD BOREHOLE LOGS, MG.GPJ Library File: GHD_GEOTECH_V05.GLB Report: SOIL LOG WITH GRAPH+WELL Date: 23/10/23

REFERENCE No.: 12603998 ENCLOSURE No.: B-4

BOREHOLE No.: MW4-23
ELEVATION: 160.17 m

BOREHOLE REPORT

Page: 1 of 1

CLIENT: Jasmas Inc.
PROJECT: Phase Two Environmental Site Assessment
LOCATION: 520 Taunton Road East, Oshawa
DESCRIBED BY: M. Grieger CHECKED BY: E. Wierdsma
DATE (START): 15 February 2023 DATE (FINISH): 15 February 2023

LEGEND
- SS - SPLIT SPOON
- ST - SHELBY TUBE
- RC - ROCK CORE
- WATER LEVEL

NORTHING: 4867172 EASTING: 671712

Depth (Feet)	Depth (Metres)	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	State	Type and Number	Recovery/ TCR(%)	Moisture Content %	Blows per 15cm/ RQD(%)	'N' Value/ SCR(%)
		160.17		GROUND SURFACE						
0		160.09		**ASPHALT -** 75 mm						
1				**FILL - SAND** , trace gravel, compact, brown, moist		SS-1	100	9	5-6-4-3	10
2		159.40		loose						
3	1.0					SS-2	100	6	4-3-3-4	6
4										
5		158.64		**ML - SILT** with sand, loose, light brown, moist		SS-3	100	21	3-3-4-5	7
6										
7	2.0									
8		157.88		dense, grey		SS-4	100	13	7-13-21-3	34
9										
10	3.0	157.12		**TILL - SILTY SAND** with gravel, trace clay, very dense, grey, wet		SS-5	83	14	12-50+	100+
11										
12										
13	4.0									
14										
15		155.59		occasional cobbles						
16						SS-6	67	9	33-50+	100+
17	5.0									
18										
19										
20	6.0									
21						SS-7	100	8	30-47-49-49	96
22										
23	7.0									
24										
25		152.55		**END OF BOREHOLE**						
26	8.0			**NOTES:**						
27				- End of Borehole at 7.6 mbgs						
28				- Depth of first groundwater seepage encountered: 6.1 mbgs						
29				- Monitoring well water level measured on February 21, 2023 as 2.93 mbgs						
30	9.0			- mbgs denotes 'metres below ground surface'						
31										
32										
33	10.0									
34										
35										
36	11.0									
37										
38										
39	12.0									

Shear test (Cu) △ Field
Sensitivity (S) □ Lab
○ Water content (%)
W_p W_l Atterberg limits (%)
● "N" Value (blows / 12 in.-30 cm)

10 20 30 40 50 60 70 80 90

-0.11
Bentonite
2.90 m
Riser
3.62 m
Screen
6.67 m

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REFERENCE No.: 12603998 ENCLOSURE No.: B-5

BOREHOLE No.: BH5-23
ELEVATION: 161.07 m

BOREHOLE REPORT

Page: 1 of 1

CLIENT: Jasmas Inc.
PROJECT: Phase Two Environmental Site Assessment
LOCATION: 520 Taunton Road East, Oshawa
DESCRIBED BY: M. Grieger CHECKED BY: E. Wierdsma
DATE (START): 15 February 2023 DATE (FINISH): 15 February 2023

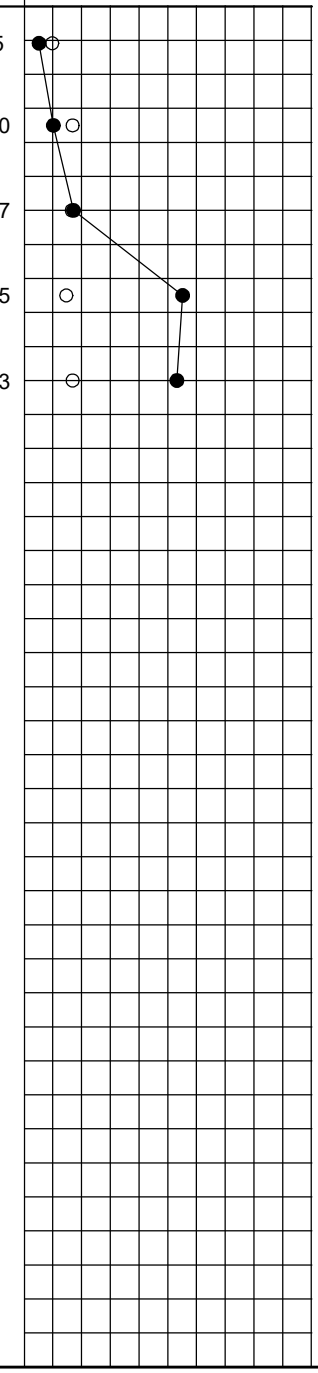
LEGEND
- SS - SPLIT SPOON
- ST - SHELBY TUBE
- RC - ROCK CORE
- WATER LEVEL

NORTHING: 4867184 EASTING: 671696

Depth Feet	Depth Metres	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	State	Type and Number	Recovery/ TCR(%)	Moisture Content	Blows per 15cm/ RQD(%)	'N' Value/ SCR(%)
		161.07		GROUND SURFACE				%		
0		161.02		**ASPHALT -** 50 mm						
1				**FILL - SAND** with gravel, loose, brown, moist		SS-1	83	10	2-3-2-4	5
2		160.31		compact						
3	1.0					SS-2	100	17	4-5-5-9	10
4										
5		159.54		**ML - SILT** with sand, compact, light brown, moist						
6				Grain Size Analysis: SS3		SS-3	100	16	6-6-11-14	17
7	2.0									
8		158.78		4% Gravel, 16% Sand, 80% Clay & Silt-sized particles						
9				very dense		SS-4	100	15	15-22-33-35	55
10	3.0									
11						SS-5	100	17	26-25-28-46	53
12		157.41		**END OF BOREHOLE**						
13	4.0			**NOTES:**						
14				- End of Borehole at 3.7 mbgs						
15				- mbgs denotes 'metres below ground surface'						
16										
17	5.0									
18										
19										
20	6.0									
21										
22										
23	7.0									
24										
25										
26	8.0									
27										
28										
29	9.0									
30										
31										
32										
33	10.0									
34										
35										
36	11.0									
37										
38										
39	12.0									

Shear test (Cu) △ Field
Sensitivity (S) □ Lab
○ Water content (%)
W_p W_l Atterberg limits (%)
● "N" Value (blows / 12 in.-30 cm)

10 20 30 40 50 60 70 80 90



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REFERENCE No.: 12603998 ENCLOSURE No.: B-6

GHD

BOREHOLE No.: BH6-23
ELEVATION: 160.34 m

BOREHOLE REPORT

Page: 1 of 1

CLIENT: Jasmas Inc.
PROJECT: Phase Two Environmental Site Assessment
LOCATION: 520 Taunton Road East, Oshawa
DESCRIBED BY: M. Grieger CHECKED BY: E. Wierdsma
DATE (START): 15 February 2023 DATE (FINISH): 15 February 2023

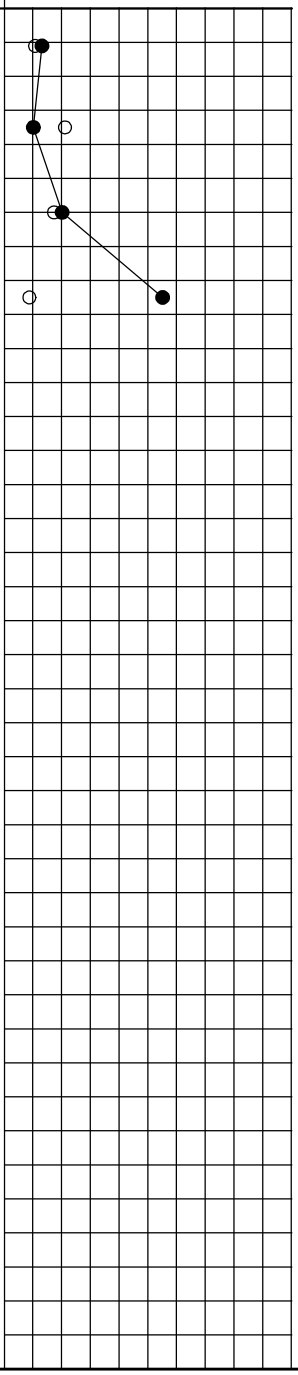
LEGEND
- SS - SPLIT SPOON
- ST - SHELBY TUBE
- RC - ROCK CORE
- ▼ - WATER LEVEL

NORTHING: 4867182 EASTING: 671722

Depth (Feet / Metres)	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	State	Type and Number	Recovery/ TCR(%)	Moisture Content	Blows per 15cm/ RQD(%)	'N' Value/ SCR(%)
	160.34		GROUND SURFACE				%		
0	160.28		**ASPHALT -** 60 mm						
1			**FILL - SAND & GRAVEL**, crushed asphalt, compact, grey, moist		SS-1	25	11	8-6-7-5	13
2	159.58								
3 – 1.0			**ML - SILT** with sand, compact, brown, moist		SS-2	100	21	2-3-7-9	10
4									
5					SS-3	100	17	9-7-13-18	20
6 – 2.0									
7	158.06								
8			**TILL - SILTY SAND** with gravel, trace clay, very dense, light brown, moist		SS-4	83	9	32-21-34-36	55
9	157.45								
10 – 3.0			**END OF BOREHOLE**						
11			**NOTES:**						
12			- End of Borehole at 2.9 mbgs						
13 – 4.0			- mbgs denotes 'metres below ground surface'						
14									
15									
16 – 5.0									
17									
18									
19									
20 – 6.0									
21									
22									
23 – 7.0									
24									
25									
26 – 8.0									
27									
28									
29 – 9.0									
30									
31									
32 – 10.0									
33									
34									
35 – 11.0									
36									
37									
38 – 12.0									
39									

Shear test (Cu) △ Field
Sensitivity (S) □ Lab
○ Water content (%)
W_p W_l Atterberg limits (%)
● "N" Value (blows / 12 in.-30 cm)

10 20 30 40 50 60 70 80 90



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REFERENCE No.: 12603998-03 ENCLOSURE No.: B-7

BOREHOLE No.: MW7-23
ELEVATION: 159.05 m

BOREHOLE REPORT

Page: 1 of 1

CLIENT: Jasmas Inc
PROJECT: Geotechnical and Hydrogeological Investigation
LOCATION: 510 & 520 Taunton Rd. E. Oshawa, ON
DESCRIBED BY: M. Yee CHECKED BY: L. Ramos
DATE (START): 7 September 2023 DATE (FINISH): 7 September 2023

LEGEND

- SS - SPLIT SPOON
- ST - SHELBY TUBE
- RC - ROCK CORE
- WATER LEVEL

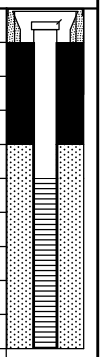
NORTHING: 4867129 EASTING: 671723

Depth (Feet)	Depth (Metres)	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	State	Type and Number	Recovery/ TCR(%)	Moisture Content	Blows per 15cm/ RQD(%)	'N' Value/ SCR(%)
		159.05		GROUND SURFACE				%		
0		158.95		**ASPHALT** (100mm)						
1				**FILL:** SAND some gravel, trace silt, brown, moist, compact		SS1	92	6	17-14-9-5	23
2		158.29		SANDY SILT, trace gravel, brown, moist, very loose (reworked native)		SS2	100	14	2-1-3	4
3	1.0									
4										
5		157.53		**NATIVE:** SANDY SILT, trace clay, light brown, moist, compact		SS3	100	14	13-8-10	19
6										
7	2.0									
8				Wet		SS4	100	16	16-12-17	29
9										
10	3.0	156.00		TILL - SANDY SILT, some clay, trace gravel, occasional cobble/boulders, light brown, moist, very dense		SS5	100	10	34-21-50/125mm	71+
11										
12										
13	4.0									
14										
15						SS6	100	9	49-50/100mm	50+
16										
17	5.0									
18										
19										
20	6.0	152.95		SILTY SAND, some gravel, some clay, grey, moist, very dense		SS7	100	7	48-34-50/100mm	84+
21										
22										
23	7.0									
24										
25				Wet SS8: Hydrometer Gravel: 16%, Sand: 37%, Silt: 34%, clay: 13%		SS8	100	6	16-35-50/125mm	85+
26										
27	8.0									
28										
29										
30	9.0									
31						SS9	100	5	18-24-30	54
32		149.45		**END OF BOREHOLE**						
33	10.0			NOTES: -End of borehole at 9.6 m bgs -Borehole caved to 8.8 m bgs after completion -Water level in open borehole at 8.5 m bgs after completion -'bgs' denotes 'below ground surface'						
34										
35										
36	11.0									
37										
38										
39	12.0									

Shear test (Cu) △ Field
Sensitivity (S) □ Lab
○ Water content (%)
W_p W_l Atterberg limits (%)
● "N" Value (blows / 12 in.-30 cm)

10 20 30 40 50 60 70 80 90

0.30 m
1.22 m
1.52 m
3.05 m



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REFERENCE No.: 12603998-03 ENCLOSURE No.: B-8

BOREHOLE No.: BH8-23
ELEVATION: 159.55 m

BOREHOLE REPORT

Page: 1 of 1

CLIENT: Jasmas Inc
PROJECT: Geotechnical and Hydrogeological Investigation
LOCATION: 510 & 520 Taunton Rd. E. Oshawa, ON
DESCRIBED BY: M. Yee CHECKED BY: L. Ramos
DATE (START): 7 September 2023 DATE (FINISH): 7 September 2023

NORTHING: 4867162 EASTING: 671729

LEGEND

- SS - SPLIT SPOON
- ST - SHELBY TUBE
- RC - ROCK CORE
- WATER LEVEL

Depth (Feet)	Depth (Metres)	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	State	Type and Number	Recovery/ TCR(%)	Moisture Content %	Blows per 15cm/ RQD(%)	'N' Value/ SCR(%)
		159.55		GROUND SURFACE						
0		159.42		**ASPHALT** (125mm)						
1				**FILL:** SAND some gravel, trace silt, brown, moist, compact		SS1	67	4	17-11-9-5	20
2		158.79								
3	1.0			**NATIVE:** SANDY SILT, some clay, brown, moist, compact		SS2	44	16	3-6-8	14
4				Wet (perched)						
5				SS3: Hydrometer		SS3	100	14	12-9-11	20
6				Gravel: 2%, Sand: 28%,						
7	2.0			Silt: 59%, Clay: 11%						
8		157.27				SS4	100	7	45-50/125mm	50+
9				TILL - SANDY SILT, some clay, trace gravel, occasional cobble/boulders, light brown, moist, very dense						
10	3.0					SS5	100	7	35-49-50	99
11										
12										
13	4.0									
14										
15		154.98		SILTY SAND, some gravel, some clay, grey, moist, very dense		SS6	100	10	50/100mm	50+
16										
17	5.0									
18										
19										
20	6.0			Grey		SS7	100	6	50/125mm	50+
21										
22										
23	7.0									
24										
25						SS8	100	8	50/75mm	50+
26	8.0									
27										
28										
29										
30	9.0	150.36		**END OF BOREHOLE**		SS9	100	7	50/50mm	50+
31										
32				NOTES:						
33	10.0			-End of borehole at 9.2 m bgs						
34				-Borehole caved to 7.9 m bgs after completion						
35				-Water level in open borehole at 2.7 m bgs after completion						
36	11.0			-'bgs' denotes 'below ground surface'						
37										
38										
39	12.0									

Shear test (Cu) △ Field
Sensitivity (S) □ Lab
○ Water content (%)
W_p W_l Atterberg limits (%)
● "N" Value (blows / 12 in.-30 cm)

10 20 30 40 50 60 70 80 90

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REFERENCE No.: 12603998-03 ENCLOSURE No.: B-9

BOREHOLE No.: BH9-23
ELEVATION: 159.84 m

BOREHOLE REPORT

Page: 1 of 1

CLIENT: Jasmas Inc
PROJECT: Geotechnical and Hydrogeological Investigation
LOCATION: 510 & 520 Taunton Rd. E. Oshawa, ON
DESCRIBED BY: M. Yee CHECKED BY: L. Ramos
DATE (START): 7 September 2023 DATE (FINISH): 7 September 2023

LEGEND

- SS - SPLIT SPOON
- ST - SHELBY TUBE
- RC - ROCK CORE
- WATER LEVEL

NORTHING: 4867166 EASTING: 671693

Depth (Feet / Metres)	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	State	Type and Number	Recovery/ TCR(%)	Moisture Content	Blows per 15cm/ RQD(%)	'N' Value/ SCR(%)
	159.84		GROUND SURFACE				%		
0	159.71		**ASPHALT** (125mm)						
1			**FILL:** SAND some gravel, trace silt, brown, moist, dense		SS1	100	2	34-16-20-28	36
2									
3					SS2A	100	2	30-19-21	40
1.0	158.78				SS2B		13	--	--
4			**NATIVE:** SANDY SILT, trace clay, brown, moist, dense						
5									
6			Very dense		SS3	89	13	26-20-36	56
2.0									
7									
8			Wet		SS4	100	18	30-25-32	57
9									
3.0									
10					SS5	100	18	30-22-33	55
11			Silty sand seam (150mm thick)						
12									
13									
4.0									
14									
15	155.27		TILL - SANDY SILT, some clay, trace gravel, occasional cobble/boulders, grey, moist, very dense		SS6	100	8	50/125mm	50+
16			SS6: Hydrometer						
5.0			Gravel: 4%, Sand: 27%,						
17			Silt: 49%, Clay: 20%						
18									
19									
6.0	153.75								
20			SILTY SAND, some gravel, some clay, grey, moist, very dense		SS7	100	9	32-35-35	70
21									
22									
7.0									
23									
24									
25					SS8	100	6	45-50/125mm	50+
26			Augers grinding, inferred boulder/cobble						
8.0									
27									
28									
29									
9.0									
30	150.57				SS9	100	9	50/125mm	50+
31			**END OF BOREHOLE**						
32									
33			NOTES:						
10.0			-End of borehole at 9.3 m bgs						
34			-Borehole open and dry after completion						
35			-'bgs' denotes 'below ground surface'						
36									
11.0									
37									
38									
39									
12.0									

Shear test (Cu) △ Field
Sensitivity (S) □ Lab
○ Water content (%)
W_p W_l Atterberg limits (%)
● "N" Value (blows / 12 in.-30 cm)

10 20 30 40 50 60 70 80 90

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REFERENCE No.: 12603998-03 ENCLOSURE No.: B-10

BOREHOLE No.: MW10-23
ELEVATION: 159.93 m

BOREHOLE REPORT

Page: 1 of 1

CLIENT: Jasmas Inc
PROJECT: Geotechnical and Hydrogeological Investigation
LOCATION: 510 & 520 Taunton Rd. E. Oshawa, ON
DESCRIBED BY: M. Yee CHECKED BY: L. Ramos
DATE (START): 7 September 2023 DATE (FINISH): 7 September 2023

LEGEND

- SS - SPLIT SPOON
- ST - SHELBY TUBE
- RC - ROCK CORE
- WATER LEVEL

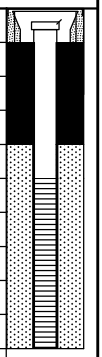
NORTHING: 4867157 EASTING: 671668

Depth Feet	Depth Metres	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	State	Type and Number	Recovery/ TCR(%)	Moisture Content	Blows per 15cm/ RQD(%)	'N' Value/ SCR(%)
		159.93		GROUND SURFACE				%		
0		159.80		**ASPHALT** (125mm)						
1				**FILL:** SAND AND GRAVEL, trace silt, brown, moist, dense		SS1	83	1	30-18-28-30	46
2		159.17								
3	1.0			**NATIVE:** GRAVELLY SAND, trace silt, brown, moist, dense		SS2	100	2	23-20-30	50
4										
5						SS3	100	2	28-33-46	79
6	2.0									
7										
8						SS4	100	1	32-40-46	86
9										
10	3.0									
11						SS5	100	1	32-30-50	80
12		156.42		**END OF BOREHOLE**						
13	4.0			NOTES: -End of borehole at 3.5 m bgs -Borehole open and dry after completion -'bgs' denotes 'below ground surface'						
14										
15										
16										
17	5.0									
18										
19										
20	6.0									
21										
22										
23	7.0									
24										
25										
26	8.0									
27										
28										
29	9.0									
30										
31										
32	10.0									
33										
34										
35	11.0									
36										
37										
38	12.0									
39										

Shear test (Cu) △ Field
Sensitivity (S) □ Lab
○ Water content (%)
W_p W_l Atterberg limits (%)
● "N" Value (blows / 12 in.-30 cm)

10 20 30 40 50 60 70 80 90

0.30 m
1.22 m
1.52 m
3.05 m



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REFERENCE No.: 12603998-03 ENCLOSURE No.: B-11

BOREHOLE No.: MW11-23
ELEVATION: 160.94 m

BOREHOLE REPORT

Page: 1 of 1

CLIENT: Jasmas Inc
PROJECT: Geotechnical and Hydrogeological Investigation
LOCATION: 510 & 520 Taunton Rd. E. Oshawa, ON
DESCRIBED BY: M. Yee CHECKED BY: L. Ramos
DATE (START): 7 September 2023 DATE (FINISH): 7 September 2023

LEGEND

- SS - SPLIT SPOON
- ST - SHELBY TUBE
- RC - ROCK CORE
- WATER LEVEL

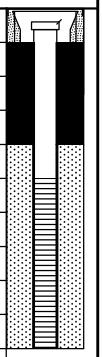
NORTHING: 4867179 EASTING: 671678

Depth Feet	Depth Metres	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	State	Type and Number	Recovery/ TCR(%)	Moisture Content	Blows per 15cm/ RQD(%)	'N' Value/ SCR(%)
		160.94		GROUND SURFACE				%		
0		160.81		**ASPHALT** (125mm)						
1				**FILL:** SAND AND GRAVEL, trace silt, brown,		SS1	75	2	30-20-25-21	45
2		160.17		moist, dense						
3	1.0			**NATIVE:**		SS2	100	2	18-18-47	65
4				GRAVELLY SAND, trace silt, brown, moist, dense						
5				SS3: Gradation		SS3	100	2	37-37-30	67
6	2.0			Gravel: 28%, Sand: 66%,						
7				Clay and Silt: 6%						
8						SS4	100	1	30-30-45	75
9										
10	3.0	157.89				SS5	100	1	50/100mm	50+
11		157.76		TILL - SANDY SILT, some gravel, occasional boulder/cobble, brown, moist, very dense						
12				**END OF BOREHOLE**						
13	4.0									
14				NOTES:						
15				-End of borehole at 3.2 m bgs						
16				-Borehole open and dry after completion						
17	5.0			-'bgs' denotes 'below ground surface'						
18										
19										
20	6.0									
21										
22										
23	7.0									
24										
25										
26	8.0									
27										
28										
29	9.0									
30										
31										
32	10.0									
33										
34										
35	11.0									
36										
37										
38	12.0									
39										

Shear test (Cu) △ Field
Sensitivity (S) □ Lab
○ Water content (%)
W_p W_l Atterberg limits (%)
● "N" Value (blows / 12 in.-30 cm)

10 20 30 40 50 60 70 80 90

0.30 m
1.22 m
1.52 m
3.05 m



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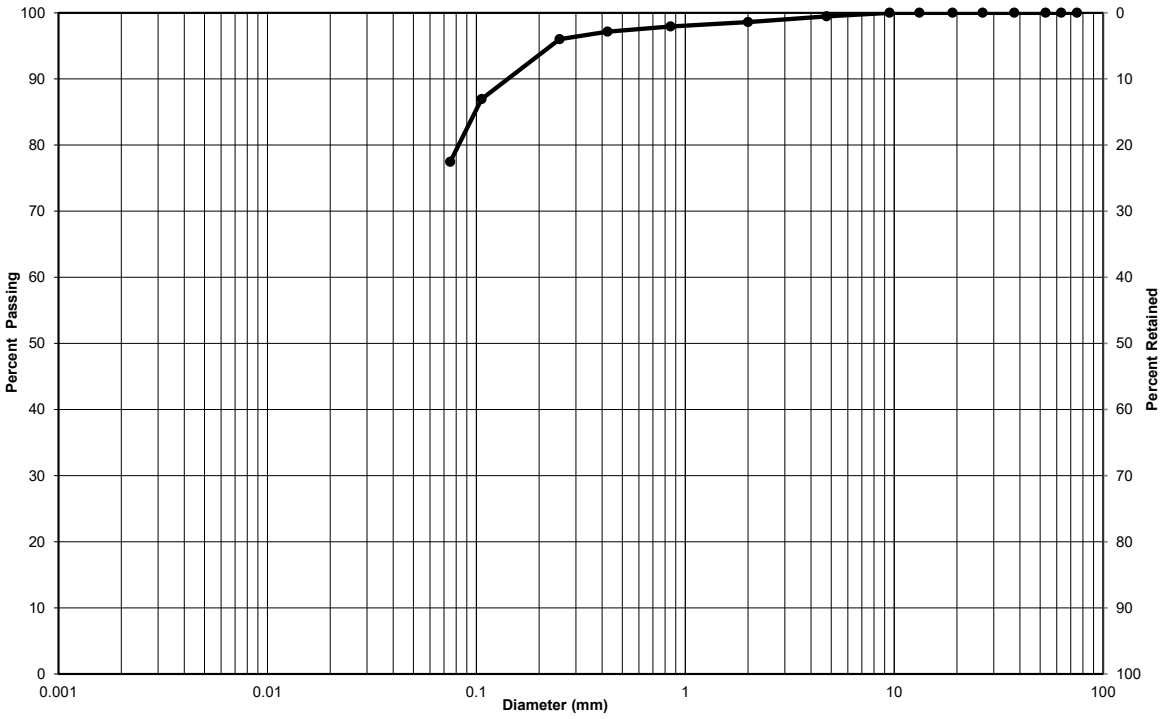
Appendix C

Geotechnical Laboratory Testing Results

Particle-Size Analysis of Soils
MTO LS-702 (Geotechnical)

Client:	Jasmas Inc.	**Lab No.:**	SS-23-07
Project/Site:	510-520 Taunton Road East, Oshawa, Ontario	**Project No.:**	12603998

Borehole No.:	BH2-23	Sample No.:	SS-5
Depth:	3.0 - 3.7 m	Enclosure:	C-1



Clay & Silt	Sand			Gravel	
	Fine	Medium	Coarse	Fine	Coarse
Particle-Size Limits as per USCS (ASTM D-2487)					

Soil Description	Gravel (%)	Sand (%)	Clay & Silt (%)
	1	22	77

Additional laboratory reporting information available upon request.

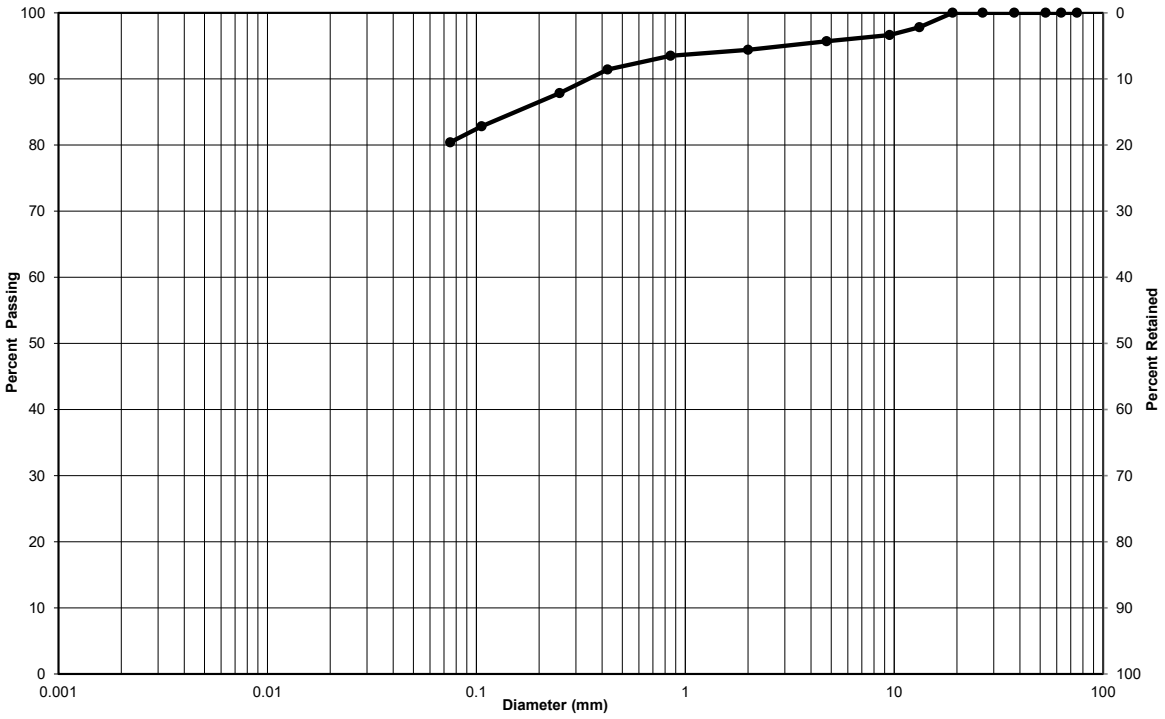
Remarks:

Performed by:	Josh Sullivan	**Date:**	February 22, 2023
Verified by:	Joe Sullivan	**Date:**	February 22, 2023
Laboratory Location:	GHD Limited - 347 Pido Road, Unit 29, Peterborough, ON		

Particle-Size Analysis of Soils
MTO LS-702 (Geotechnical)

Client:	Jasmas Inc.	**Lab No.:**	SS-23-07
Project/Site:	510-520 Taunton Road East, Oshawa, Ontario	**Project No.:**	12603998

Borehole No.:	BH5-23	Sample No.:	SS-3
Depth:	1.5 - 2.1 m	Enclosure:	C-2



Clay & Silt	Sand			Gravel	
	Fine	Medium	Coarse	Fine	Coarse
Particle-Size Limits as per USCS (ASTM D-2487)					

Soil Description	Gravel (%)	Sand (%)	Clay & Silt (%)
	4	16	80

Additional laboratory reporting information available upon request.

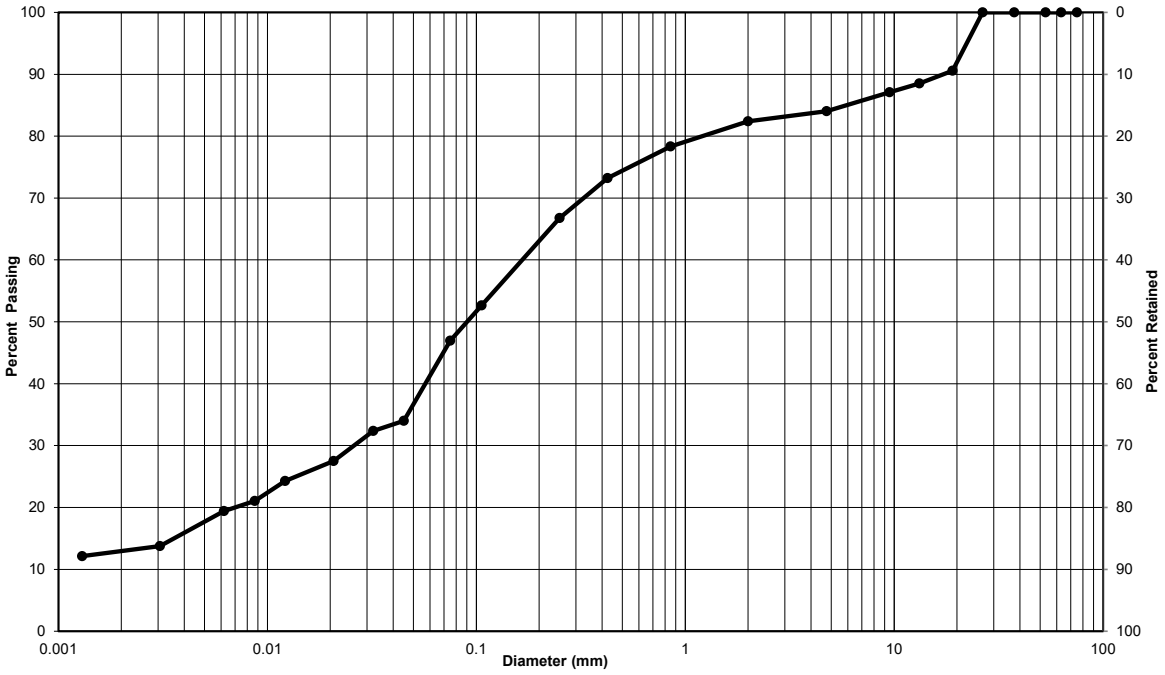
Remarks:

Performed by:	Josh Sullivan	**Date:**	February 22, 2023
Verified by:	Joe Sullivan	**Date:**	February 22, 2023
Laboratory Location:	GHD Limited - 347 Pido Road, Unit 29, Peterborough, ON		

Particle-Size Analysis of Soils

MTO LS-702 (Geotechnical)

Client:	Jasmas Inc.	**Lab No.:**	SS-23-57
Project/Site:	510-520 Taunton Road East, Oshawa	**Project No.:**	12603998-03
Borehole No.:	MW7-23	Sample No.:	SS8
Depth:	7.5-8.0m	Enclosure:	C-3



Clay & Silt	Sand			Gravel	
	Fine	Medium	Coarse	Fine	Coarse
Particle-Size Limits as per USCS (ASTM D-2487)					

Soil Description	Gravel (%)	Sand (%)	Clay & Silt (%)
Silty sand, some gravel and clay	16	37	47
Silt-size particles (%) :	34		
Clay-size particles (%) (<0.002 mm):	13		

Additional laboratory reporting information available upon request.

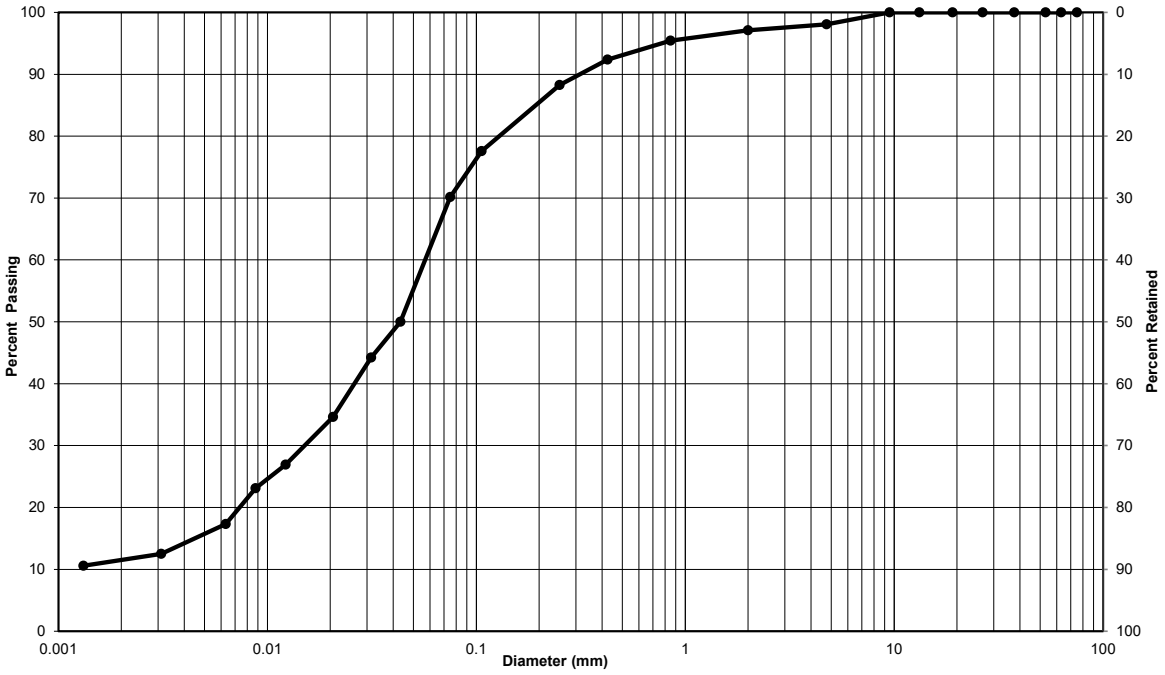
Remarks:

Performed by:	Josh Sullivan	**Date:**	September 20, 2023
Verified by:	Joe Sullivan	**Date:**	September 20, 2023
Laboratory Location:	GHD Limited - 347 Pido Road, Unit 29, Peterborough, ON		

Particle-Size Analysis of Soils

MTO LS-702 (Geotechnical)

Client:	Jasmas Inc.	**Lab No.:**	SS-23-57
Project/Site:	510-520 Taunton Road East, Oshawa	**Project No.:**	12603998-03
Borehole No.:	BH8-23	Sample No.:	SS3
Depth:	1.5-2.0m	Enclosure:	C-4



Clay & Silt	Sand			Gravel	
	Fine	Medium	Coarse	Fine	Coarse
Particle-Size Limits as per USCS (ASTM D-2487)					

Soil Description	Gravel (%)	Sand (%)	Clay & Silt (%)
Sandy silt, some clay, trace gravel	2	28	70
Silt-size particles (%) :	59		
Clay-size particles (%) (<0.002 mm):	11		

Additional laboratory reporting information available upon request.

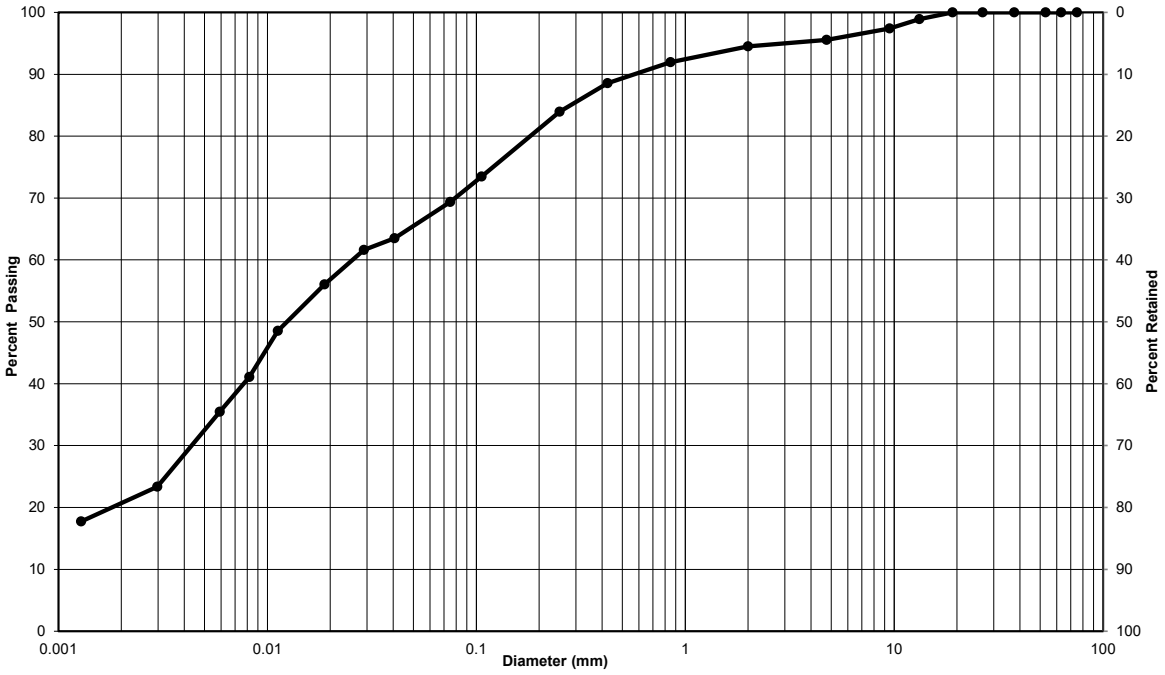
Remarks:

Performed by:	Josh Sullivan	**Date:**	September 20, 2023
Verified by:	Joe Sullivan	**Date:**	September 20, 2023
Laboratory Location:	GHD Limited - 347 Pido Road, Unit 29, Peterborough, ON		

Particle-Size Analysis of Soils

MTO LS-702 (Geotechnical)

Client:	Jasmas Inc.	**Lab No.:**	SS-23-57
Project/Site:	510-520 Taunton Road East, Oshawa	**Project No.:**	12603998-03
Borehole No.:	BH9-23	Sample No.:	SS6
Depth:	4.5-5.0m	Enclosure:	C-5



Clay & Silt	Sand			Gravel	
	Fine	Medium	Coarse	Fine	Coarse
Particle-Size Limits as per USCS (ASTM D-2487)					

Soil Description	Gravel (%)	Sand (%)	Clay & Silt (%)
Sandy silt, some clay, trace gravel	4	27	69
Silt-size particles (%) :	49		
Clay-size particles (%) (<0.002 mm):	20		

Additional laboratory reporting information available upon request.

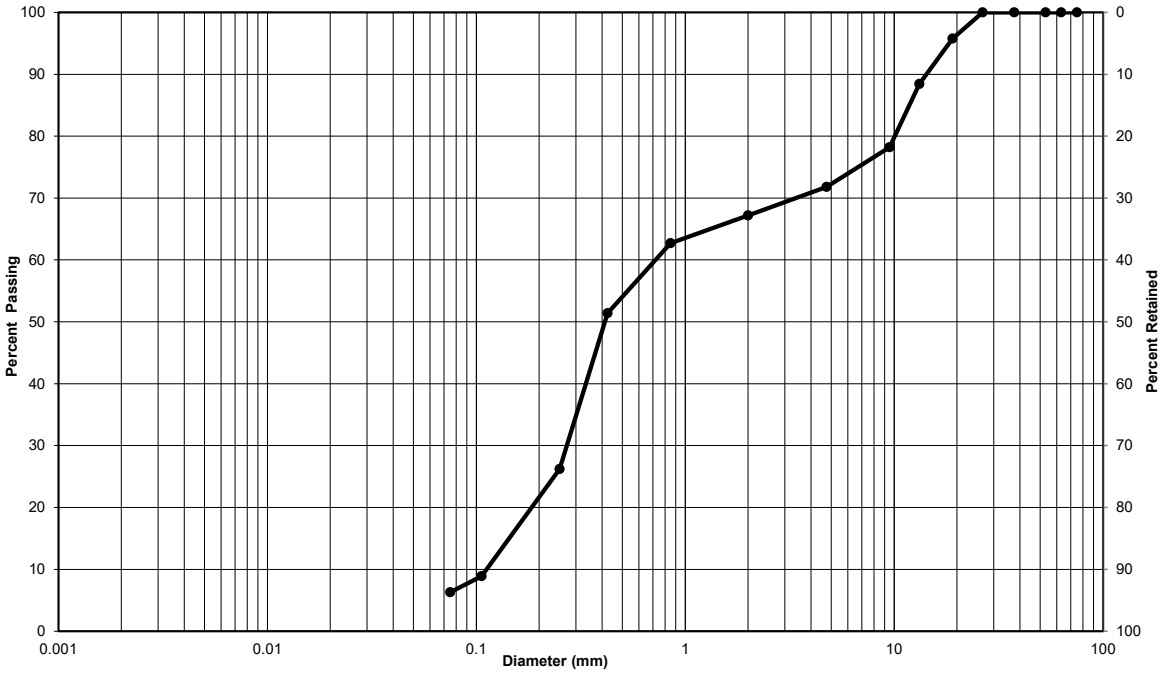
Remarks:

Performed by:	Josh Sullivan	**Date:**	September 20, 2023
Verified by:	Joe Sullivan	**Date:**	September 20, 2023
Laboratory Location:	GHD Limited - 347 Pido Road, Unit 29, Peterborough, ON		

Particle-Size Analysis of Soils

MTO LS-702 (Geotechnical)

Client:	Jasmas Inc.	**Lab No.:**	SS-23-57
Project/Site:	510-520 Taunton Road East, Oshawa	**Project No.:**	12603998-03
Borehole No.:	MW11-23	Sample No.:	SS3
Depth:	1.5-2.0m	Enclosure:	C-6



Clay & Silt	Sand			Gravel	
	Fine	Medium	Coarse	Fine	Coarse
Particle-Size Limits as per USCS (ASTM D-2487)					

Soil Description	Gravel (%)	Sand (%)	Clay & Silt (%)
Gravelly sand, trace silt	28	66	6

Additional laboratory reporting information available upon request.

Remarks:

Performed by:	Josh Sullivan	**Date:**	September 20, 2023
Verified by:	Joe Sullivan	**Date:**	September 20, 2023
Laboratory Location:	GHD Limited - 347 Pido Road, Unit 29, Peterborough, ON		

Appendix D

Infiltration Testing Results

Appendix D.1: Infiltration Testing (in-situ)

Project No.: 12603998
Date: September 20, 2023
Equipment: ETC Pask Permeameter

Test ID.:	**INF-1**	**INF-2**
Description:	**MW10-23**	**MW10-23**
Location:	**Parking Lot Infiltration Feature**	**Parking Lot Infiltration Feature**
Depth of hole:	**0.25 mbgs**	**0.25 mbgs**

Elapsed Time (minutes)	Permeameter Reading (cm)	Rate (cm/min)
0.1	37.6	--
0.5	35.5	5.3
1.0	33.5	4.0
1.5	31.2	4.6
2.0	29.8	2.8
3.0	26.2	3.6
4.0	22.9	3.3
5.0	19.5	3.4
6.0	16.0	3.5
7.0	12.5	3.5
8.0	9.2	3.3
9.0	6.0	3.2
10.0	3.0	3.0
10.9	0.0	3.3

Elapsed Time (minutes)	Permeameter Reading (cm)	Rate (cm/min)
0.0	43.7	--
0.5	42.9	1.6
1.5	42.2	0.7
2.0	41.7	1.0
3.0	40.9	0.8
4.0	40.2	0.7
5.0	39.5	0.7
6.0	38.8	0.7
7.0	38.1	0.7
8.0	37.5	0.6
9.0	36.7	0.8
10.0	36.1	0.6
11.0	35.5	0.6
12.0	34.8	0.7
13.0	34.2	0.6
14.0	33.6	0.6
15.0	33.0	0.6
16.0	32.4	0.6
17.0	31.8	0.6
18.0	31.2	0.6
19.0	30.6	0.6
20.0	30	0.6

Quasi Steady Flow Rate ® -for full test

(cm/min)	3.5	0.6

Field-Saturated Hydraulic Conductivity (Ksf)

(m/sec)	1.90E-05	3.20E-06

Estimated Infiltration Rate = (K_{fs} / 6E-11) exp (3.7363^{-1})

(mm/hr)	101.7	63.2

Appendix D.2: Infiltration Testing (in-situ)

Project No.: 12603998
Date: September 20, 2023
Equipment: ETC Pask Permeameter

Test ID.: **INF-3**
Description: **MW11-23**
Location: **North of parking lot**
Depth of hole: **0.25 mbgs**

Elapsed Time (minutes)	Permeameter Reading (cm)	Rate (cm/min)
0.1	35.6	--
0.7	34.5	1.9
1.0	33.8	2.1
1.5	32.9	1.8
2.0	32.2	1.4
3.0	30.8	1.4
4.0	29.5	1.3
5.0	28.3	1.2
6.0	27.1	1.2
7.0	26	1.1
8.0	24.9	1.1
9.0	23.9	1.0
10.0	22.9	1.0
11.0	21.9	1.0
12.0	20.9	1.0
13.0	19.9	1.0
14.0	18.9	1.0
15.0	17.9	1.0
16.0	16.9	1.0
17.0	15.9	1.0
18.0	15.0	0.9
19.0	14.0	1.0
20.0	13.0	1.0

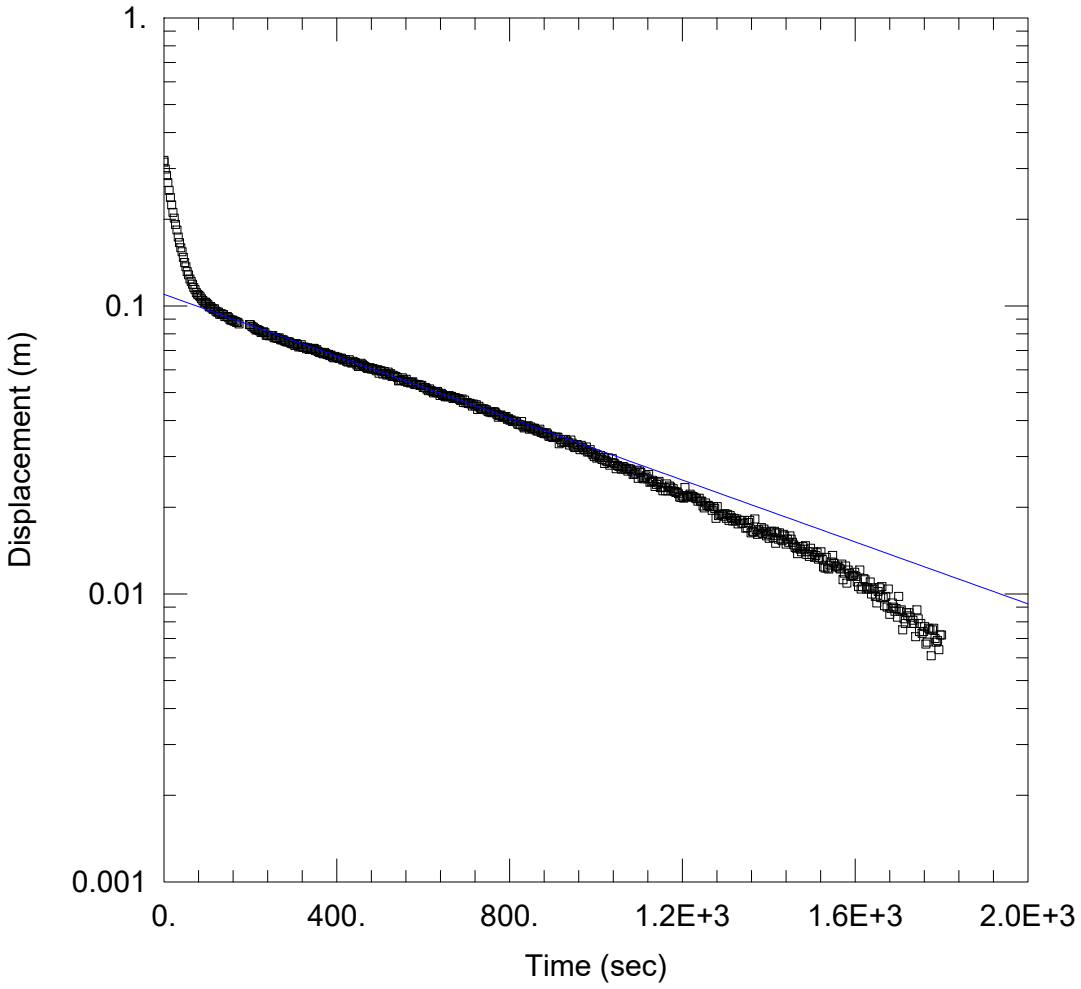
Quasi Steady Flow Rate ®
(cm/min) 1.0

Field-Saturated Hydraulic Conductivity (Ksf)
(m/sec) 5.30E-06

Estimated Infiltration Rate = (K_{fs} / 6E-11) exp (3.7363^{-1})
(mm/hr) 72.3

Appendix E

Single Well Response Testing Results



MW1-23 - FALLING HEAD TEST

Data Set: N:\...\12603998-MW1-falling.aqt
Date: 10/23/23 Time: 08:25:29

PROJECT INFORMATION

Company: GHD Limited
Client: Jasmas Inc.
Project: 12603998
Location: 520 Taunton Rd E. Oshawa
Test Well: MW1-23
Test Date: Sept 20, 2023

AQUIFER DATA

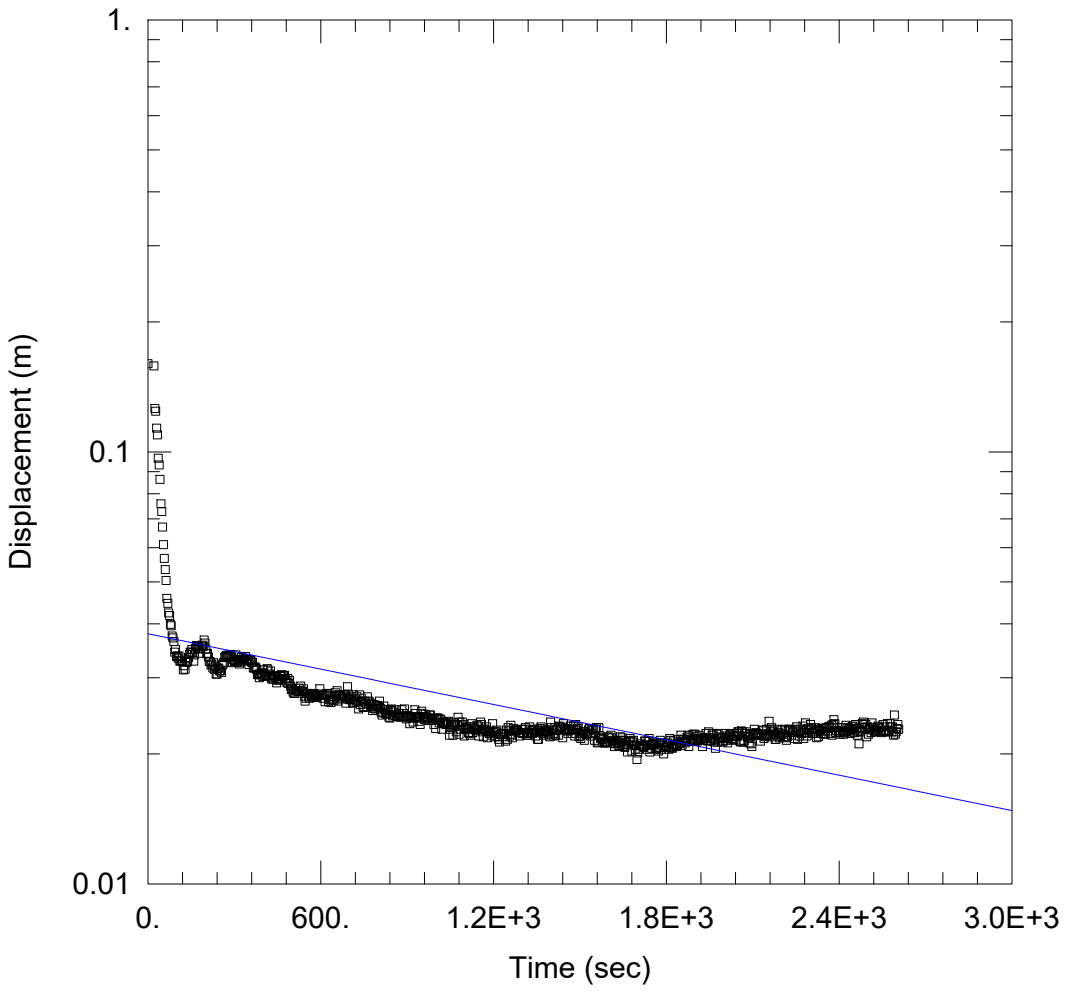
Saturated Thickness: 2.93 m
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW1-23)

Initial Displacement: 0.32 m
Total Well Penetration Depth: 5.72 m
Casing Radius: 0.025 m
Static Water Column Height: 2.93 m
Screen Length: 3.05 m
Well Radius: 0.075 m
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.0001439 cm/sec
y0 = 0.1097 m



MW1-23 - RISING HEAD TEST

Data Set: N:\...\12603998-MW1-rising.aqt
Date: 10/23/23 Time: 08:28:04

PROJECT INFORMATION

Company: GHD Limited
Client: Jasmas Inc.
Project: 12603998
Location: 520 Taunton Rd E. Oshawa
Test Well: MW1-23
Test Date: Sept 20, 2023

AQUIFER DATA

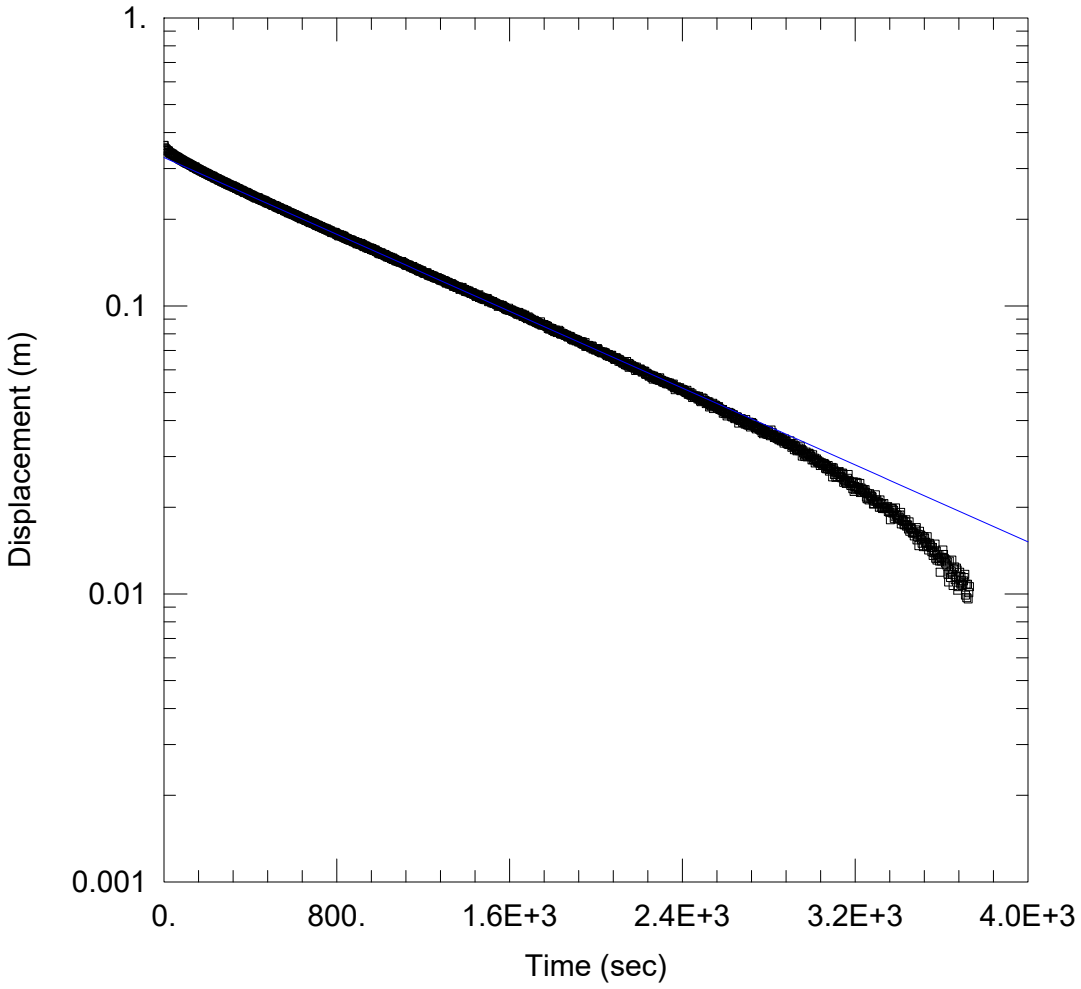
Saturated Thickness: 2.93 m
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW1-23)

Initial Displacement: 0.16 m
Total Well Penetration Depth: 5.72 m
Casing Radius: 0.025 m
Static Water Column Height: 2.93 m
Screen Length: 3.05 m
Well Radius: 0.075 m
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 3.653E-5 cm/sec
y0 = 0.03793 m



MW2-23 - FALLING HEAD TEST

Data Set: N:\...\12603998-MW2-falling.aqt
Date: 10/23/23 Time: 08:29:49

PROJECT INFORMATION

Company: GHD Limited
Client: Jasmas Inc.
Project: 12603998
Location: 520 Taunton Rd E. Oshawa
Test Well: MW2-23
Test Date: Sept 20, 2023

AQUIFER DATA

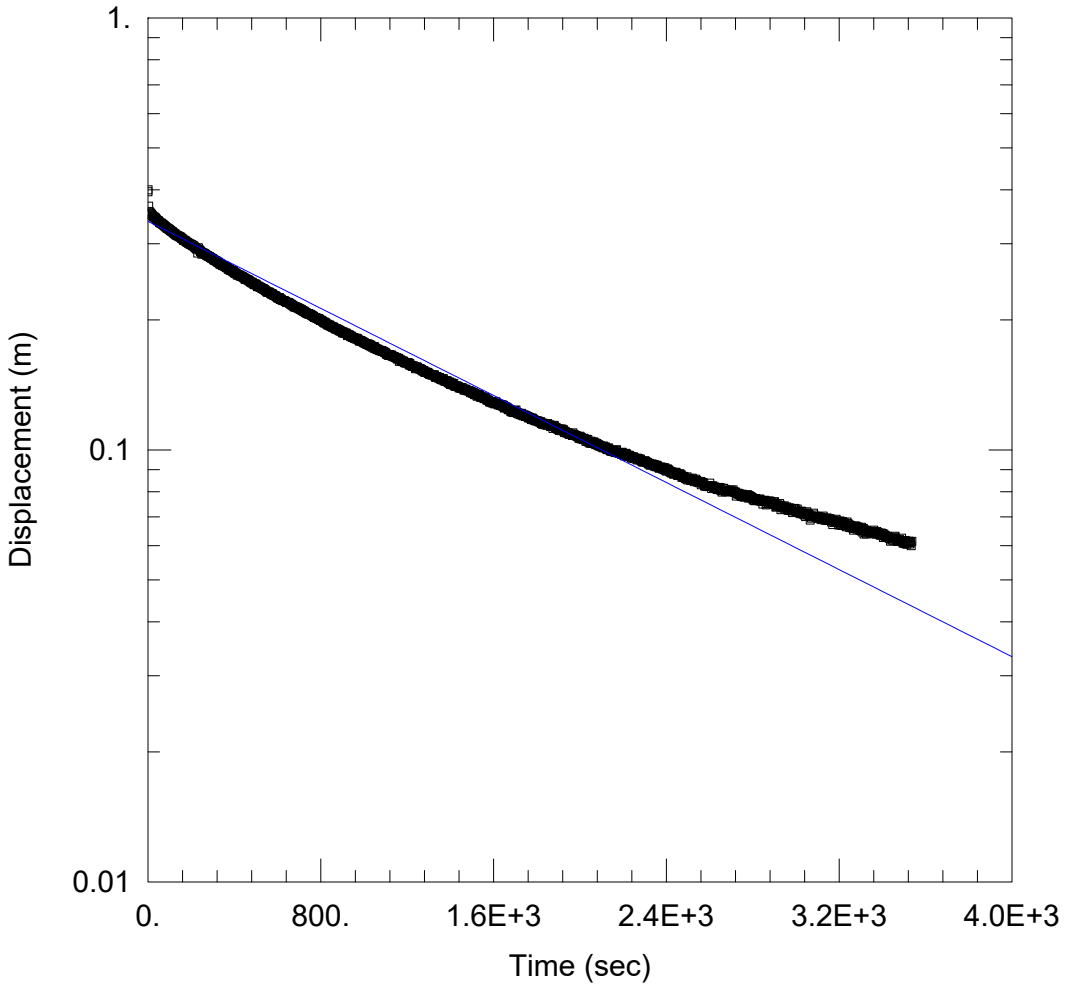
Saturated Thickness: 3.31 m
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW2-23)

Initial Displacement: 0.36 m
Total Well Penetration Depth: 7.13 m
Casing Radius: 0.025 m
Static Water Column Height: 3.31 m
Screen Length: 3.05 m
Well Radius: 0.075 m
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 8.963E-5 cm/sec
y0 = 0.3276 m



MW2-23 - RISING HEAD TEST

Data Set: N:\...\12603998-MW2-rising.aqt
Date: 10/23/23 Time: 08:31:04

PROJECT INFORMATION

Company: GHD Limited
Client: Jasmas Inc.
Project: 12603998
Location: 520 Taunton Rd E. Oshawa
Test Well: MW2-23
Test Date: Sept 20, 2023

AQUIFER DATA

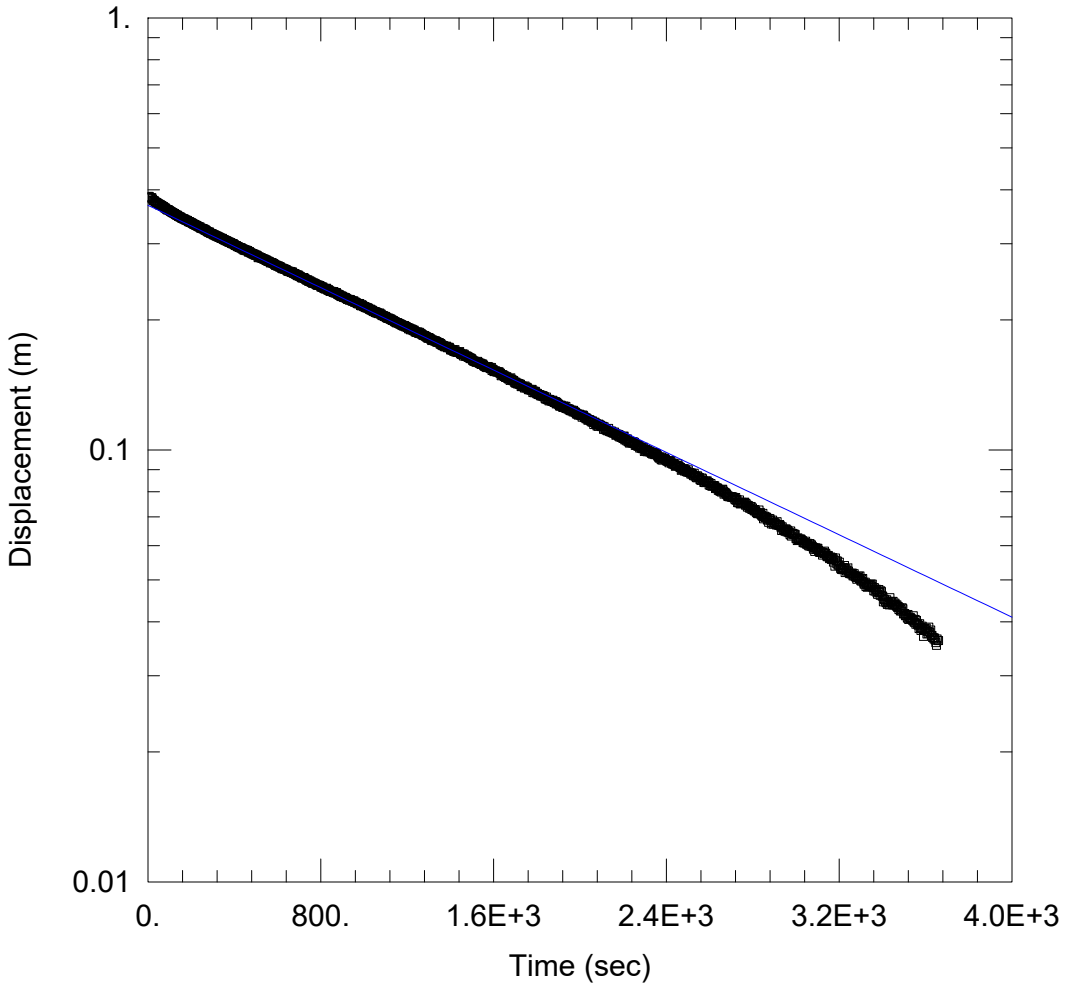
Saturated Thickness: 3.31 m
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW2-23)

Initial Displacement: 0.4 m
Total Well Penetration Depth: 7.13 m
Casing Radius: 0.025 m
Static Water Column Height: 3.31 m
Screen Length: 3.05 m
Well Radius: 0.075 m
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 6.77E-5 cm/sec
y0 = 0.3382 m



MW4-23 - FALLING HEAD TEST

Data Set: N:\...\12603998-MW4 falling.aqt
Date: 10/23/23 Time: 08:32:20

PROJECT INFORMATION

Company: GHD Limited
Client: Jasmas Inc.
Project: 12603998
Location: 520 Taunton Rd E. Oshawa
Test Well: MW4-23
Test Date: Sept 20, 2023

AQUIFER DATA

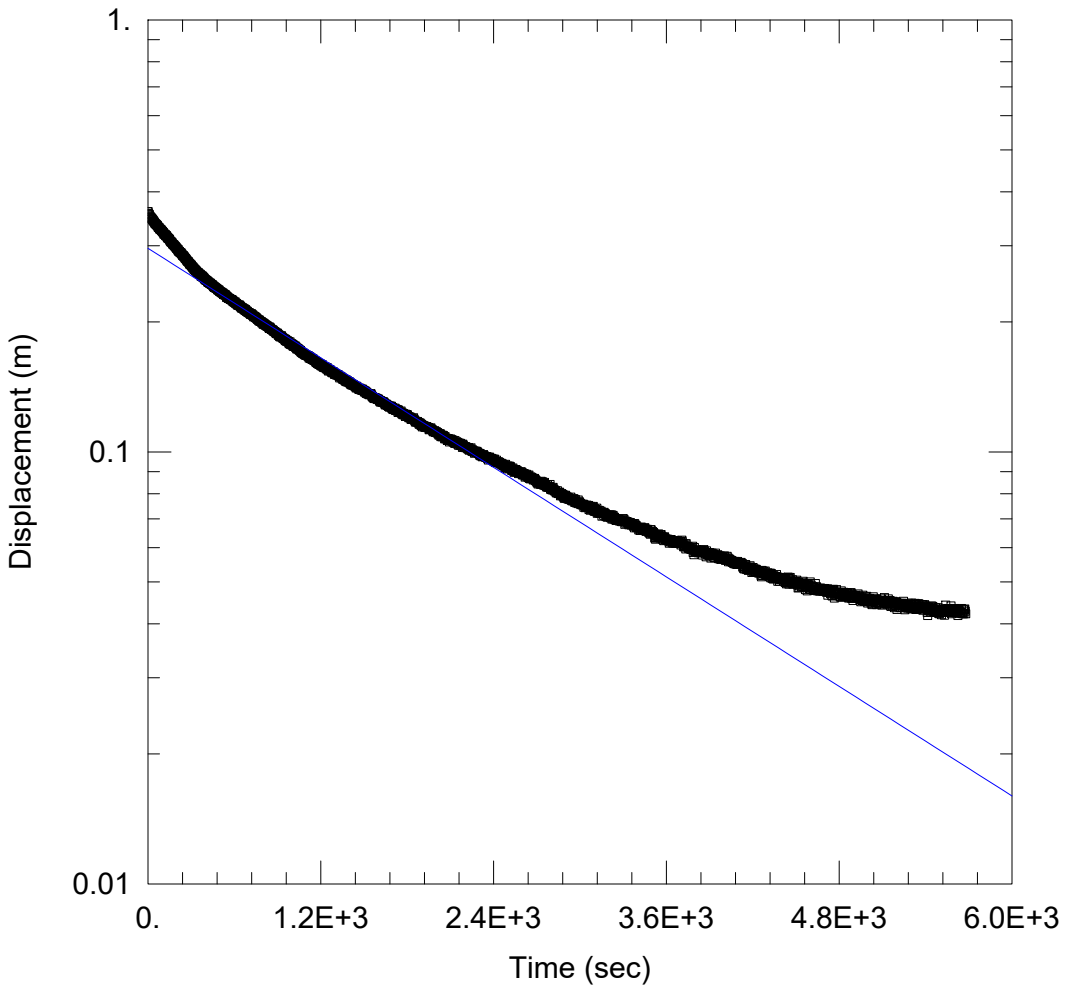
Saturated Thickness: 3.47 m
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW4-23)

Initial Displacement: 0.385 m
Total Well Penetration Depth: 6.67 m
Casing Radius: 0.025 m
Static Water Column Height: 3.47 m
Screen Length: 3.05 m
Well Radius: 0.075 m
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 6.328E-5 cm/sec
y0 = 0.3684 m



MW4-23 - RISING HEAD TEST

Data Set: N:\...\12603998-MW4 Rising.aqt
Date: 10/23/23 Time: 08:40:41

PROJECT INFORMATION

Company: GHD Limited
Client: Jasmas Inc.
Project: 12603998
Location: 520 Taunton Rd E. Oshawa
Test Well: MW4-23
Test Date: Sept 20, 2023

AQUIFER DATA

Saturated Thickness: 3.47 m
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW4-23)

Initial Displacement: 0.36 m
Total Well Penetration Depth: 6.67 m
Casing Radius: 0.025 m
Static Water Column Height: 3.47 m
Screen Length: 3.05 m
Well Radius: 0.075 m
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 5.609E-5 cm/sec
y0 = 0.296 m

Appendix F

Water Balance Calculations

Appendix F.1

Water Budget Values*

510 Taunton Road			*520 Taunton Road*			*Average Values*		
Precip =	875	mm/yr	Precip =	875	mm/yr	Precip =	875	mm/yr
ET =	219	mm/yr	ET =	158	mm/yr	ET =	188.5	mm/yr
Recharge =	24	mm/yr	Recharge =	52	mm/yr	Recharge =	38	mm/yr
Runoff =	632	mm/yr	Runoff =	665	mm/yr	Runoff =	648.5	mm/yr
Surplus =	656	mm/yr	Surplus =	717	mm/yr	Surplus =	686.5	mm/yr

*Water budget values based upon the Oak Ridges Moraine Groundwater Program data for 510 and 520 Taunton Road East, Oshawa, ON

Surplus calculated as Runoff + Recharge

Appendix F.2

Water Budget Pre-Development

Catchment Designation	EXISTING PRE-DEVELOPMENT SITE				TOTAL
	Lawn	Existing Dental Office Rooftop	Trailer Rooftop	Asphalt / Concrete	
Area (m^2)	240	423	70	5267	6000
Pervious Area (m^2)	240	0	0	0	240
% Pervious	4.0%	0%	0%	0%	4.0%
Impervious Area (m^2)	0	423	70	5267	5760
% Impervious	0%	7.1%	1.2%	87.8%	96.0%
INFILTRATION FACTORS					
Topography Infiltration Factor	0.25	0	0	0.25	
Soil Infiltration Factor	0.2	0	0	0	
Land Cover Infiltration Factor	0.1	0	0	0	
MECP Infiltration Factor	0.55	0	0	0.25	
Actual Infiltration Factor	0.55	0	0	0.05	
Runoff Coefficient	0.45	1	1	1	
Evaporation (%)	0	0.2	0.2	0.2	
Runoff from Impervious Surfaces*	0	0.8	0.8	0.8	
INPUTS (PER UNIT AREA)					
Precipitation (mm/yr)	875	875	875	875	
Precipitation after Evaporation (mm/yr)	875	700	700	700	
Run On (mm/yr)	0	0	0	0	
Other Inputs (mm/yr)	0	0	0	0	
Total Inputs (mm/yr)	875	700	700	700	
OUTPUTS (PER UNIT AREA)					
Precipitation Surplus after Evaporation (mm/yr)	687	700	700	700	699
Evaportranspiration (mm/yr)	189	0	0	0	8
Infiltration (mm/yr)	38	0	0	35	32
Rooftop Infiltration (mm/yr)	0	0	0	0	0
Total Infiltration (mm/yr)	38	0	0	35	32
Runoff Pervious Areas	649	0	0	0	26
Runoff Impervious Areas	0	700	700	665	641
Total Runoff (mm/yr)	649	700	700	665	667
Total Outputs (mm/yr)	875	700	700	700	707
Difference (Inputs - Outputs)	0	0	0	0	0
INPUTS (VOLUMES)					
Precipitation after Evaporation (m^3/yr)	210	296	49	3687	4242
Run On (m^3/yr)	0	0	0	0	0
Other Inputs (m^3/yr)	0	0	0	0	0
Total Inputs (m^3/yr)	210	296	49	3687	4242
OUTPUTS (VOLUMES)					
Precipitation Surplus after Evaporation (m^3/yr)	165	296	49	3687	4197
Evaportranspiration (m^3/yr)	45	0	0	0	45
Infiltration (m^3/yr)	9	0	0	184	193
Rooftop Infiltration (m^3/yr)	0	0	0	0	0
Total Infiltration (m^3/yr)	9	0	0	184	193
Runoff Pervious Areas (m^3/yr)	156	0	0	0	156
Runoff Impervious Areas (m^3/yr)	0	296	49	3503	3848
Total Runoff (m^3/yr)	156	296	49	3503	4003
Total Outputs (m^3/yr)	210	296	49	3687	4242
Difference (Inputs - Outputs)	0	0	0	0	0

Notes:

*Evaporation from impervious areas was assumed to be 20% of precipitation.

It is assumed that the existing asphalt is cracked and has 5% infiltration capability

Appendix F.3

Water Budget Post-Development - No Infiltration Enhancements

Catchment Designation	PROPOSED MIXED-USE POST-DEVELOPMENT SITE				TOTAL
	Lawns / Landscaping	Dental Office Rooftop	Asphalt / Concrete	Proposed Mixed Use Building Rooftop	
Area (m^2)	1150	423	3141	1286	6000
Pervious Area (m^2)	1150	0	0	0	1150
% Pervious	19.2%	0%	0%	0%	19.2%
Impervious Area (m^2)	0	423	3141	1286	4850
% Impervious	0%	7.1%	52.3%	21.4%	80.8%
	INFILTRATION FACTORS				
Topography Infiltration Factor	0.25	0	0.25	0	
Soil Infiltration Factor	0.2	0	0	0	
Land Cover Infiltration Factor	0.1	0	0	0	
MECP Infiltration Factor	0.55	0	0.25	0	
Actual Infiltration Factor	0.55	0	0	0	
Runoff Coefficient	0.45	1	1	1	
Evaporation (%)	0	0.2	0.2	0.2	
Runoff from Impervious Surfaces*	0	0.8	0.8	0.8	
	INPUTS (PER UNIT AREA)				
Precipitation (mm/yr)	875	875	875	875	
Precipitation after Evaporation (mm/yr)	875	700	700	700	
Run On (mm/yr)	0	0	0	0	
Other Inputs (mm/yr)	0	0	0	0	
Total Inputs (mm/yr)	875	700	700	700	
	OUTPUTS (PER UNIT AREA)				
Precipitation Surplus after Evaporation (mm/yr)	687	700	700	700	697
Evaportranspiration (mm/yr)	189	0	0	0	36
Infiltration (mm/yr)	38	0	0	0	7
Rooftop Infiltration (mm/yr)	0	0	0	0	0
Total Infiltration (mm/yr)	38	0	0	0	7
Runoff Pervious Areas	649	0	0	0	124
Runoff Impervious Areas	0	700	700	700	566
Total Runoff (mm/yr)	649	700	700	700	690
Total Outputs (mm/yr)	875	700	700	700	734
Difference (Inputs - Outputs)	0	0	0	0	0
	INPUTS (VOLUMES)				
Precipitation after Evaporation (m^3/yr)	1006	296	2199	900	4401
Run On (m^3/yr)	0	0	0	0	0
Other Inputs (m^3/yr)	0	0	0	0	0
Total Inputs (m^3/yr)	1006	296	2199	900	4401
	OUTPUTS (VOLUMES)				
Precipitation Surplus after Evaporation (m^3/yr)	789	296	2199	900	4184
Evaportranspiration (m^3/yr)	217	0	0	0	217
Infiltration (m^3/yr)	44	0	0	0	44
Rooftop Infiltration (m^3/yr)	0	0	0	0	0
Total Infiltration (m^3/yr)	44	0	0	0	44
Runoff Pervious Areas (m^3/yr)	746	0	0	0	746
Runoff Impervious Areas (m^3/yr)	0	296	2199	900	3395
Total Runoff (m^3/yr)	746	296	2199	900	4141
Total Outputs (m^3/yr)	1006	296	2199	900	4401
Difference (Inputs - Outputs)	0	0	0	0	0

Notes:

*Evaporation from impervious areas was assumed to be 20% of precipitation.

New asphalt has 0% infiltration capability

Information for water balance obtained from Barry Bryan Associates drawing (project no. 22132 - A000) proposed mixed-use building. 510-520 Taunton Rd East, Oshawa, Ontario

Appendix F.4

Water Budget Post-Development - With Downspout Disconnection Mitigation Strategies

Catchment Designation	PROPOSED MIXED-USE POST-DEVELOPMENT SITE				TOTAL
	Lawns / Landscaping	Dental Office Rooftop	Asphalt / Concrete	Proposed Mixed Use Building Rooftop	
Area (m^2)	1150	423	3141	1286	6000
Pervious Area (m^2)	1150	0	0	0	1150
% Pervious	19.2%	0%	0%	0%	19.2%
Impervious Area (m^2)	0	423	3141	1286	4850
% Impervious	0%	7.1%	52.3%	21.4%	80.8%
	INFILTRATION FACTORS				
Topography Infiltration Factor	0.25	0	0.25	0	
Soil Infiltration Factor	0.2	0	0	0	
Land Cover Infiltration Factor	0.1	0	0	0	
MECP Infiltration Factor	0.55	0	0.25	0	
Actual Infiltration Factor	0.55	0	0	0.25	
Runoff Coefficient	0.45	1	1	1	
Evaporation (%)	0	0.2	0.2	0.2	
Runoff from Impervious Surfaces*	0	0.8	0.8	0.8	
	INPUTS (PER UNIT AREA)				
Precipitation (mm/yr)	875	875	875	875	
Precipitation after Evaporation (mm/yr)	875	700	700	700	
Run On (mm/yr)	0	0	0	0	
Other Inputs (mm/yr)	0	0	0	0	
Total Inputs (mm/yr)	875	700	700	700	
	OUTPUTS (PER UNIT AREA)				
Precipitation Surplus after Evaporation (mm/yr)	687	700	700	700	697
Evaportranspiration (mm/yr)	189	0	0	0	36
Infiltration (mm/yr)	38	0	0	0	7
Rooftop Infiltration (downspout disconnect) (mm/yr)	0	0	0	175	38
Total Infiltration (mm/yr)	38	0	0	175	45
Runoff Pervious Areas	649	0	0	0	124
Runoff Impervious Areas	0	700	700	525	528
Total Runoff (mm/yr)	649	700	700	525	653
Total Outputs (mm/yr)	875	700	700	700	734
Difference (Inputs - Outputs)	0	0	0	0	0
	INPUTS (VOLUMES)				
Precipitation after Evaporation (m^3/yr)	1006	296	2199	900	4401
Run On (m^3/yr)	0	0	0	0	0
Other Inputs (m^3/yr)	0	0	0	0	0
Total Inputs (m^3/yr)	1006	296	2199	900	4401
	OUTPUTS (VOLUMES)				
Precipitation Surplus after Evaporation (m^3/yr)	789	296	2199	900	4184
Evaportranspiration (m^3/yr)	217	0	0	0	217
Infiltration (m^3/yr)	44	0	0	0	44
Rooftop Infiltration (m^3/yr)	0	0	0	225	225
Total Infiltration (m^3/yr)	44	0	0	225	269
Runoff Pervious Areas (m^3/yr)	746	0	0	0	746
Runoff Impervious Areas (m^3/yr)	0	296	2199	675	3170
Total Runoff (m^3/yr)	746	296	2199	675	3916
Total Outputs (m^3/yr)	1006	296	2199	900	4401
Difference (Inputs - Outputs)	0	0	0	0	0

Notes:

*Evaporation from impervious areas was assumed to be 20% of precipitation.

New asphalt has 0% infiltration capability

This scenario assumes that 25% of the rooftop runoff from the proposed new building is infiltrated via downspout disconnection and zero (0) infiltration occurs from the rooftop runoff from the existing dental office.

Information for water balance obtained from Barry Bryan Associates drawing (project no. 22132 - A000) proposed mixed-use building. 510-520 Taunton Rd East, Oshawa, Ontario

Appendix F.5

Water Budget Summary

PARAMETER	SITE				
	Pre-Development	*Post-Development No Mitigation*	*Difference Pre- vs. Post-*	*Post-Development With Mitigation*	*Difference Pre- vs. Post-*
		INPUTS (VOLUMES)			
Precipitation After Evaporation (m^3/yr)	4242	4401	4%	4401	4%
Run On (m^3/yr)	0	0	0%	0	0%
Other Inputs (m^3/yr)	0	0	0%	0	0%
Total Inputs (m^3/yr)	4242	4401	4%	4401	4%
		OUTPUTS (VOLUMES)			
Precipitation Surplus (m^3/yr)	4197	4184	0%	4184	0%
Evapotranspiration (m^3/yr)	45	217	379%	217	379%
Infiltration (m^3/yr)	193	44	-77%	44	-77%
Rooftop Infiltration (m^3/yr)	0	0	0%	225	0%
Total Infiltration (m^3/yr)	193	44	-77%	269	39%
Runoff Pervious Areas (m^3/yr)	156	746	379%	746	379%
Runoff Impervious Areas (m^3/yr)	3848	3395	-12%	3170	-18%
Total Runoff (m^3/yr)	4003	4141	3%	3916	-2%
Total Outputs (m^3/yr)	4242	4401	4%	4401	4%

To maintain infiltration at pre-development values using the new proposed new building rooftop only, the % of the precipitation surplus available from the new rooftop that must be infiltrated is =	**16.6%**

To maintain infiltration at pre-development values using the proposed new building rooftop and existing rooftop, the % of the precipitation surplus available from those rooftops that must be infiltrated is =	**12.5%**

Appendix G

Corrosivity Testing

CADUCEON ENVIRONMENTAL LABORATORIES
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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: G105606 **REPORT No: 23-024363 - Rev. 0**

Report To:
GHD Limited
455 Phillip Street
Waterloo, ON N2L 3X2

CADUCEON Environmental Laboratories
110 West Beaver Creek Rd
Unit #14
Richmond Hill, ON L4B 1J9

Attention: Matt Yee

DATE RECEIVED: 2023-Sep-12
DATE REPORTED: 2023-Sep-20
SAMPLE MATRIX: Soil

CUSTOMER PROJECT: 12603998-03/510 Taunton Rd. E
P.O. NUMBER: 735-007791

Analyses	Qty	Site Analyzed	Authorized	Date Analyzed	Lab Method	Reference Method
Anions (Solid)	2	OTTAWA	PCURIEL	2023-Sep-17	A-IC-01	SM 4110B
Conductivity Meter (Solid)	2	OTTAWA	STAILLON	2023-Sep-15	A-COND-03	MECP E3530
pH Meter (Solid)	2	OTTAWA	STAILLON	2023-Sep-15	pH-03	MECP E3530
Redox Potential (Solid)	2	RICHMOND_HILL	JEVANS	2023-Sep-12	In House	SM 2580
Sulphide Solid (Subcontracted)	2	TESTMARK	CBURKE	2023-Sep-19		Subcontracted

R.L. = Reporting Limit
NC = Not Calculated
Test methods may be modified from specified reference method unless indicated by an *

			Client I.D.	BH7-23 - 1.2m	BH9-23 - 1.2m
			Sample I.D.	23-024363-3	23-024363-4
			Date Collected	2023-09-07	2023-09-07
Parameter	**Units**	**R.L.**		-	-
Conductivity @25°C	mS/cm	0.001		3.21	1.04
Resistivity (calculated)	O·cm	-		311	958
pH @25°C	-	-		8.18	8.12
Redox Potential	mV	-		211	238
Chloride	µg/g	5		1960	406
Sulphate	µg/g	10		108	303

Michelle Dubien
Data Specialist

The analytical results reported herein refer to the samples as received. Reproduction of this analytical report in full or in part is prohibited without prior consent from Caduceon Environmental Laboratories.

Subcontracted Analyses

Parameter	Units	R.L.	Client I.D.	BH7-23 - 1.2m	BH9-23 - 1.2m
			Sample I.D.	23-024363-3	23-024363-4
			Date Collected	2023-09-07	2023-09-07
			-	-	-
Sulphide	µg/g	-		<0.3	<0.2

Michelle Dubien
Data Specialist

The analytical results reported herein refer to the samples as received. Reproduction of this analytical report in full or in part is prohibited without prior consent from Caduceon Environmental Laboratories.



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