Preliminary Hydrogeological Investigation

Proposed Residential Building
5160 and 5170 Ninth Line
Mississauga, Ontario

Prepared For:

Branthaven Development

Project No.: 21-071-100
Date: July 29th, 2021

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21-071-100 **July 29st, 2021**

Mr. Enzo Bertucci
Branthaven Development
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Via email: ebertucci@branthaven.com

RE: Preliminary Hydrogeological Investigation – 5160 and 5170 Ninth Line, Mississauga, ON

DS Consultants Limited (DS) was retained by Branthaven Development to complete a Preliminary Hydrogeological Investigation for the proposed development located at 5160 and 5170 Ninth Line, Mississauga, ON (Site). The Site has an area of 7,299 m^2 (0.73 Acre) and currently developed with a single-family residential building at 5160 and an animal hospital at 5170 Ninth Line. It is understood that the existing structures will be demolished, and the new development will include a 6-storey mid-rise residential building with one (1) level of underground parking (P1).

The average ground elevation at the site is at about 191 meters above sea level (masl). The assumed maximum excavation depth for the proposed development considering the footing and elevator shaft would be at about 6 meters below the existing ground surface (mbgs) (around Elev. 185 masl). No below-grade design was available at the time of writing this report.

This preliminary hydrogeological investigation includes an overview of the existing geological and hydrogeological conditions at the Site and the surrounding area, an assessment of the hydrogeological constraints, impacts of the proposed development on the local groundwater, and provides an estimation of construction dewatering and permanent drainage requirements during the proposed development phase.

If needed, the results of this investigation can be used in support of an application for a Category 3 Permit to Take Water (PTTW) or an Environmental Activity Sector Registry (EASR) for construction dewatering from the Ministry of the Environment Conservation and Parks (MECP). The hydrogeological report may also be used to support Site Plan Approvals (SPA) and discharge permitting (short and long term) from the Peel Region/City of Mississauga. Based on the results of this investigation, the following conclusions and recommendations are presented:

1. Based on the MECP water well records search, there are nineteen (19) water wells within 500 meters of the Site. Ten (10) wells were noted as domestic wells, three (3) wells were noted as test holes/monitoring wells and six (6) wells were noted as not in use or unknown. The study area is partly serviced with municipal water. However, a door to door well survey closer to construction start is recommended to confirm the presence or absence of water wells in the study area.

2. Between June 28 and 30, 2021, DS drilled four (4) boreholes (BH21-1 to BH21-4) and equipped three (3) of the drilled boreholes (BH21-1, BH21-2 and BH21-3) with monitoring wells at the site as part of the concurrent geotechnical and hydrogeological investigations. The boreholes were advanced to a maximum depth of 18.9 mbgs. Monitoring wells were screened to depths ranging from 4.6 to 7.7 mbgs.

3. The surficial geology at the site and study area is primarily characterized by clay to silt-textured till, high carbonated content and clast-poor deposits derived from glaciolacustrine deposits or shale. The overburden geology at the site generally consisted of cohesive deposits of silty clay to clayey silt till. The depth to bedrock in the study area is estimated to be approximately 25 meters below the existing surface and was not encountered at the Site during drilling.

4. Groundwater levels were measured in all available wells on July 12, 2021, by DS. Groundwater levels ranged from 1.19 to 7.06 mbgs or 183.81 to 190.54 masl. The estimated groundwater flow direction in the study area is inferred to be south-westerly towards the Sixteen Mile which ultimately discharges into Lake Ontario.

5. Three (3) Single Well Response Tests (slug tests) were completed by DS on July 12, 2021, to estimate hydraulic conductivity (k) for the representative geological units in which the wells were screened. Hydraulic conductivity (k) values were calculated using the Hvorslev method using the AquiferTest® Software. The k-values ranged between 8.10×10^{-8} to 3.80×10^{-7} m/s, indicative of generally low permeability lithology.

6. To assess the suitability for discharge of groundwater during construction to the Peel Region's Sanitary/Storm Sewers, one (1) unfiltered groundwater sample was collected from monitoring well BH21-2. The reported analytical results indicated that no parameters were in exceedance of the Region's Storm Sewer Discharge By-Law criteria except Total Suspended Solid (TSS). All parameters met the Peel Region's Sanitary Sewer Discharge By-Law criteria. Therefore, water cannot be discharged into the Region's storm sewers without basic pre-treatment. Treatment is needed to comply with the water quality limits set in Table 2 for Peel Region Storm Sewer Use By-law 53-2010 before any discharge. Treatment options include but not limited to settlement and filtration of sediments. However, groundwater can be discharged to the sanitary sewer with no pre-treatment requirements if this is an available option at the time of construction.

7. The estimated dewatering rate during construction considering the unsealed excavation method for the residential building with one (1) level of underground parking (for a block of 95x75m) would be approximately 127,000 L/day. This estimated value incorporates a 100% safety factor and a theoretical 10 mm major storm event into the open excavation during construction.

8. Following the construction of the underground structure, long-term groundwater flow to the underfloor drainage system for the building will be a function of the upward flux and from drainage along the foundation wall. The estimated permanent theoretical flow rate for the building is

approximately 19,900 L/day with a 100% safety factor. Site grading, shoring design, etc. may alter these estimates and these values should be confirmed during detail design.

9. Since the expected design dewatering rate for the unsealed excavation is between 50,000 L/day and 400,000 L/day, an EASR application is required to be submitted to the MECP for short-term dewatering prior to construction. However, since the permanent drainage rate is below 50,000 L/day, a PTTW is not required for long-term discharge.

10. Once a groundwater dewatering system is set up at the Site, daily and weekly monitoring should be implemented to assess the groundwater conditions such as water levels, measurement of discharge flow, discharge water quality and any adverse impacts as a result of dewatering.

11. There are structures and utilities within the predicted zone of influence (ZOI) of about 57 meters when considering an unsealed excavation. Since the proposed construction is anticipated to be constructed in within the low permeable silty clay to clayey silt deposits, an effect of settlement due to dewatering is not expected.

12. In conformance with Regulation 903 of the Ontario Water Resources Act, the decommissioning of any dewatering system and monitoring wells should be carried out by a licensed contractor under the supervision of a licensed water well technician.

Should you have any questions regarding these findings, please do not hesitate to contact the undersigned.

DS Consultants Ltd.

Prepared By:

Meysam Jafari, M.Sc., P.Geo.
Geologist

Reviewed By:

Martin Gedeon, M.Sc., P.Geo.
Senior Hydrogeologist

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APPENDICES:

1.0 INTRODUCTION

DS Consultants Limited (DS) was retained by Branthaven Development to complete a Preliminary Hydrogeological Investigation for the proposed development located at 5160 and 5170 Ninth Line, Mississauga, ON (Site). The Site has an area of 7,299 m^2 (0.73 Acre) and currently developed with a single-family residential building at 5160 and an animal hospital at 5170 Ninth Line. It is understood that the existing structures will be demolished, and the new development will include a 6-storey mid-rise residential building with one (1) level of underground parking (P1). **Figure 1** presents the site location map that highlights the location of the site and the surrounding area.

The average ground elevation at the site is at about 191 meters above sea level (masl). The assumed deepest excavation for the proposed development considering the footing and elevator shaft would be at about 6 meters below the existing ground surface (mbgs) (around Elev. 185 masl). No below-grade design was available at the time of writing this report.

1.1 Purpose

The purpose of this Hydrogeological Investigation is to assess the current groundwater conditions at the Site in order to evaluate the following:

- Temporary construction dewatering for the excavations of the proposed building on Site;
- Explore the potential need for a Permit to Take Water (PTTW) or Environmental Activity and Sector Registration (EASR) for the purposes of Construction Dewatering from the MECP;
- Temporary management and discharge of groundwater during short term construction dewatering
- Asses permanent drainage requirements; and
- Assess groundwater quality to identify potential adverse impacts to Peel Region's sewer system.

1.2 Scope of Work

The scope of work for this investigation included:

- Site visits;
- Desktop review of pertinent geological and hydrogeological resources;
- Review the MECP Water Well Records and water use in the surrounding area;
- Field work including monitoring well drilling program consisting of installation of three (3) monitoring wells;

- Conducting single well response tests (slug tests) to determine hydraulic conductivity values across the site;
- Characterize the stratigraphy and measure the ground water levels across the site;
- Collection and analysis of groundwater samples in order to quantify and characterize any possible contaminants that may impact future discharge applications;
- Estimation of construction dewatering volumes, which is to be used to predict the short-term groundwater control requirements for the construction of the proposed building on site.

2.0 FIELDWORK

Between June 28 and 30, 2021, DS drilled four (4) boreholes (BH21-1 to BH21-4) and equipped three (3) of the drilled boreholes (BH21-1, BH21-2 and BH21-3) with monitoring wells at the site as part of the concurrent geotechnical and hydrogeological investigations. The boreholes were advanced to a maximum depth of 18.9 mbgs. Monitoring wells were screened to depths ranging from 4.6 to 7.7 mbgs. DS also used one (1) existing monitoring well (MW) installed by other consultants to the depth of 7.80 mbgs for the purpose of current hydrogeological investigation. All wells were completed with 50 mm diameter PVC pipes with 3.05 m well screens and were installed using above ground mounted protective casings. All monitoring wells were developed before any use to allow for groundwater level monitoring, hydraulic conductivity testing, and to assess groundwater quality. Three (3) single well response tests (SWRTs) were completed by performing a rising head test (slug test) to estimate hydraulic conductivity values of soils at the site. One (1) unfiltered groundwater sample was also collected and analyzed for the parameters listed under the Peel region Sewers By-law to assess groundwater quality. The borehole (BH) and monitoring well (MW) location plan is shown in **Figure 3**.

3.0 PHYSICAL SETTING

Available topographic maps, environmental, geotechnical, and hydrogeological reports were used to develop an understanding of the physical setting of the study area. Borehole logs and the MECP WWRs were used to interpret the geological and hydrogeological conditions at the development site.

3.1 Physiography and Drainage

The topography at the Site is generally flat with a surface elevation of approximately 191 metres above sea level (masl). The topography within the study area generally slopes to the northeast, towards Sixteen Mile Creek. Drainage is generally controlled by streams and artificial channels. Sixteen Mile Creek is located about 3.5 km southwest of the Site.

3.2 Geology

The following presents a brief description of regional and development site geology based on the review of available information and development site-specific soil investigations.

3.2.1 Quaternary Geology

The study area (500 m radius) lies within the Halton Hill physiographic region of southern Ontario and characterized by Till Moraines physiographic landform. Based on the regional mapping, the surficial geology at the Site and study area is dominated by clay to silt-textured till, high carbonated content and clast poor deposits derived from glaciolacustrine deposits or shale (as per OGS Earth). The surficial geology map is shown in **Figure 2**.

3.2.2 Bedrock Geology

Available published mapping shows that bedrock in the area is predominantly shales, limestones, dolostone and siltstone of the Queenston Formation (MNDM Map 2544 Bedrock Geology of Ontario). Based on the review of existing boreholes logs and well record information, the depth to bedrock in the study area is estimated to be approximately 25 meters below the existing surface and was not encountered at the Site during drilling.

3.2.3 Site Geology

On-site subsurface soil conditions were summarized from the boreholes advanced by DS for the current investigation. Detailed subsurface conditions are presented in **Figure 4,** and the borehole logs are presented in **Appendix A**. The subsurface conditions in the boreholes are summarized in the following paragraphs.

Pavement Structure/Topsoil/Fill Materials: A 100 to 1500 mm thick surficial layer of topsoil was encountered at borehole BH21-2, bh21-3, and BH21-4. It should be noted that the thickness of the topsoil explored at the borehole locations may not be representative for the site and should not be relied on to calculate the amount of topsoil at the site. Boreholes BH21-1 was drilled on the paved surface and encountered a 75 mm layer of asphalt overlying 280 mm granular base/subbase.

Fill material was encountered in all boreholes, extending to depth of 0.8 mbgs. The fill was heterogeneous, consisting of clayey silt, trace sand and occasional gravel. Traces of topsoil and organics were also observed in the fill material.

Cohesive Glacial Deposits of Silty Clay to Clayey Silt Till: Below the fill and disturbed native material in the boreholes, cohesive deposits of silty clay to clayey silt till were encountered, extending to depths ranging from 8.2 to 16.8m below ground surface. Trace gravel and occasional cobble were inferred within the till deposits.

Deposits of Sandy Silt Till: Below the cohesive deposits of silty clay to clayey silt till in Boreholes BH21-1, deposits consisting of sandy silt till were encountered and extended to the depts ranging from 16.8 to 18.9m below ground surface.

3.3 Hydrogeology

The hydrogeology at the site was evaluated using the on-site monitoring wells installed by DS and other consultants, and the MECP WWRs in the study area.

3.3.1 Local Groundwater Use

As part of the hydrogeological study, DS completed a search of the Ministry of the Environment, Conservation and Parks (MECP) Water Well Records (WWRs) database. Based on the MECP water well records search, there are nineteen (19) water wells within 500 meters of the Site (**Appendix D**). Ten (10) wells were noted as domestic wells, three (3) wells were noted as test holes/monitoring wells and six (6) wells were noted as not in use or unknown. **Figure 1** shows the MECP water well location plan. The study area is partly serviced with municipal water. However, a door to door well survey is needed to confirm the presence or absence of domestically used wells in the study area.

3.3.2 Groundwater Conditions

Groundwater levels were measured in all available wells on July 12, 2021, by DS staff. **Table 3-1** presents the groundwater levels in all monitoring wells. Groundwater levels ranged from 1.19 to 7.06 mbgs or 183.81 to 190.54 masl, representing the groundwater elevation at the Site which can be subject to seasonal fluctuations. The groundwater flow direction within the site area is inferred to be south-westerly towards the Sixteen Mile.

Table 3-1: Groundwater Levels in Monitoring Wells

Well ID	Ground Elevation (masl)	Screened Interval (mbgs)	Depth to Water (mbgs)	Groundwater Elevation (masl)
BH21-1	190.87	4.8-7.9	7.06	183.81
BH21-2	191.77	4.8-7.9	1.62	190.15
BH21-3	192.09	4.8-7.9	1.55	190.54
MW (Existing Well)	191.05	4.8-7.9	1.19	189.86

3.3.3 Hydraulic Conductivity

Three (3) Single Well Response Tests (slug tests) were completed by DS on July 12, 2021 to estimate hydraulic conductivity (k) for the representative geological units in which the wells were screened. SWRTs were completed by performing a rising head test (slug test) with the use of Waterra® tubing to 'instantaneously' remove water from the well. A data logger was placed at the bottom of the wells to accurately measure the change in the hydraulic head versus time. There was not sufficient water in BH21-1 in order to perform the rising head test. Hydraulic conductivity (k) values were calculated using the Hvorslev method using the AquiferTest® Software. The semi-log plots for normalized drawdown versus time are provided in **Appendix B.** The k-values ranged between 8.10 X 10^{-8} to 3.80 x 10^{-7} m/s, which is consistent with typical K-values 10^{-7} to 10^{-9} m/sec. **Table 3-2** presents the Hydraulic Conductivity (k) values

for the representative geological units. The highest K-value of 3.80 × 10^{-7} m/s was used in the dewatering assessment as a conservative measure.

Table 3-2: Summary of Hydraulic Conductivity (k) Test Results

Well ID	Screened Interval (mbgs)	Screened Formation	K-value (m/s)	Geomean value
BH21-2	4.8-7.9	Clayey silt till	1.49 x 10^{-7}	1.66 X 10^{-7}
BH21-3	4.8-7.9	Clayey silt till	8.10 x 10^{-8}	
MW (Existing Well)	4.8-7.9	Clayey silt till	3.80 x $10^{-7.}$	

3.3.4 Groundwater Quality

To assess the suitability for discharge of groundwater to the Peel Region's Sanitary and Storm Sewers, one (1) unfiltered groundwater sample was collected from monitoring well BH21-2 on July 12th, 2021. The samples were placed in pre-cleaned laboratory supplied vials and/or bottles provided with analytical test group-specific preservatives, as required. Dedicated nitrile gloves were used during sample handling. The groundwater samples were submitted to SGS Laboratories in Mississauga, Ontario. SGS is certified by the Canadian Association of Laboratory Accreditation Inc. (CALA) and the Canadian Standard Association (CSA). The analytical results were compared to the Peel Region's Table 1- Limits for Sanitary Sewer Discharge, and Table 2 Limits for Storm Sewer Discharge. The reported analytical results indicated that no parameters were in exceedance of the Peel Region's Storm Sewer Discharge By-Law criteria except Total Suspended Solid (TSS). All parameters met the Region's Sanitary Sewer Discharge By-Law criteria. Therefore, water cannot be discharged to the Region's storm sewers without treatment. Treatment is needed to comply with the water quality limits set in 2 for Peel Region Storm Sewer Use By-law 53-2010 before any discharge. Treatment options include but not limited to settlement and filtration of sediments. Groundwater can be discharged to the sanitary sewer without any treatment requirements. **Table 3-3** presents a summary of the exceeded parameters, and the certificates of analyses are provided in **Appendix D.**

Table 3-3: Parameters in Groundwater Exceeding Peel Region's Sewer Use By-law 53-2010

Parameter	Unit	Peel Sanitary By-Law Criteria	Peel Storm By-Law Criteria	BH21-2
Total Suspended Solid (TSS)	mg/L	350	15	<u>27</u>
Bold- Exceeds Sanitary Sewer Use by Law Criteria <u>Underlined</u>- Exceeds Storm Sewer Use by Law Criteria				

4.0 CONSTRUCTION DEWATERING

The proposed residential development will include the construction of one (1) level of underground parking (P1). No below-grade design was available at the time of writing this report, so assumptions were made to estimate the potential construction dewatering rates. The deepest assumed finished floor elevation of the P1 for the proposed development considering the footing and elevator shaft would be approximately 6 meters below the existing ground surface (mbgs) (Elev. 185 masl). For construction

dewatering purposes the water level should be lowered at least one (1) m below the footings and elevator shaft elevation at about 184 masl. The open-cut construction excavation method for entire Site with excavation dimensions of 75 m long and 95 m wide was considered for the proposed development. Since the proposed underground structure will be below the groundwater table, dewatering will be required during the excavation of overburden material.

The following section calculates the estimated dewatering required during the construction of the proposed developments using the steady-state flow equation for an unsealed excavation.

4.1 Total Estimation of Flow Rate- (Short Term/Construction Dewatering)

This section calculates the estimated dewatering needed considering the open-cut excavation methods.

As a conservative measure, the estimated dewatering values are based on the highest k-value obtained from the in-situ hydraulic testing and highest groundwater elevation using the Dupuit expression for an unconfined aquifer in steady-state conditions.

$$Q = \frac{\pi(H^2 - h^2)}{2.3 \log\left(\frac{R_0}{re}\right)}$$ Equation 4.1

$$R_0 = C(H - h)\sqrt{k}$$ Equation 4.2

$$r_e = \sqrt{\frac{ab}{\pi}}$$ Equation 4.3

Where,

Q- Flow rate = 27,800 L/day (27.8 m^3/day)

H- Initial Elevation of Water Table = 7.5 m
h- Final Elevation of Water Table = 2 m
K- Hydraulic Conductivity=3.80 x 10^{-7} m/s
Ro- Radius of Influence = 57 m
Re- Equivalent Radius = 47 m
a- Length of excavation =95 m
b- Width of excavation = 75 m
C- Dimensionless constant= 3

Additional pumping capacity may be required to maintain dry conditions within the open excavations during and following a major precipitation event. The estimated flow rate is based on the excavation dimensions and a 10 mm precipitation event in 24 hours. The total estimated dewatering that may be required from a 10 mm precipitation event is approximately **71,300 L/day (71.3 m^3/day).**

The total estimated daily rate for short term construction is estimated to be **55,700 L/day (55.7 m^3/day)** with an applied safety factor of %100. With the addition of storm water, the total estimated maximum daily rate would result to be **127,000 L/day (127 m^3/day).**

It is expected that the initial dewatering rate will be higher to remove groundwater within the overburden formation. The dewatering rates are expected to decrease once the target water level is achieved in the excavation footprint as groundwater will have been removed locally from storage resulting in lower seepage rates into the excavation. The maximum flow calculation is intended to provide a conservative value to account for unforeseeable conditions that may arise during construction.

4.3 Permanent Drainage (Long-term Discharge)

Following the construction of the underground structure, long-term groundwater flow to the underfloor drainage system for the building will be a function of the upward flux and from drainage along the foundation wall. The horizontal hydraulic gradient was calculated based on the groundwater levels recorded on July 12th, 2021. The Darcy flow equation was used to estimate permanent drainage to the building as follows:

$$Q = K\,x\,i\,x\,A \qquad \textit{EQUATION 4.4}$$

Where,

K- Hydraulic Conductivity (m/day)	3.2×10^{-2}
i- Hydraulic Gradient	0.042
A- Area (m^2)	7,299
Q- Flow (L/day)	**9,950**

Based on the assumed design, depth to water and given K-value, the estimated permanent theoretical flow to the development is approximately **19,900 L/day (19.9 m^3/day)** with a safety factor of 100%. The drainage control system around and beneath the buildings should be designed with enough capacity to handle the expected permanent volume. This value is recommended to be verified once the underground construction is completed and access is provided to DS to assess actual flow rates at the sumps.

4.4 Permit Requirements

4.4.1 Environmental Activity and Sector Registry (EASR) /Permit to Take Water (PTTW) Application

An EASR is required to be submitted to the MECP if the taking of groundwater and stormwater for a temporary construction project is between 50,000 L/day and 400,000 L/ day. The EASR application is an online registry and should be submitted to the MECP before any construction dewatering. A PTTW is only required to be submitted to the MECP if the taking of groundwater and stormwater for a temporary construction project is more than 400,000 L/ day.

Since the expected design dewatering rate for the unsealed excavation is between 50,000 L/day and 400,000 L/ day, an EASR application is required to be submitted to the MECP for short-term dewatering prior to construction. Since the permanent drainage rate is below 50,000 L/day, a PTTW is not required for long-term discharge. These values can change based on actual soil and groundwater conditions at the site.

4.4.2 Discharge Permits (Construction Dewatering)

A discharge permit will be required from the Peel Region/City of Mississauga if private water is to be sent to the sewer system for construction dewatering and permanent drainage.

5.0 POTENTIAL IMPACTS

The following are the predicted potential impacts due to construction dewatering:

5.1 Local Groundwater Use

The study area is partly serviced with municipal water. However, a door to door well survey is needed to confirm the presence or absence of private wells and groundwater users within a radius of 500 metres from the Site.

5.2 Point of Discharge and Groundwater Quality

The reported analytical results indicated that no parameters were in exceedance of the Peel Region's Storm Sewer Discharge By-Law criteria except Total Suspended Solid (TSS). All parameters met the Region's Sanitary Sewer Discharge By-Law criteria. Therefore, groundwater at the Site is not suitable for direct discharge into the Region's storm sewers without treatment. Treatment is needed to comply with the water quality limits set in for Peel Region's Table 2 Limits for Storm Sewer Discharge before any discharge. Treatment options include but are not limited to settlement and filtration of sediments.

5.3 Settlement Due to Dewatering Activities

There are structures and utilities within the maximum predicted zone of influence (ZOI) about 57 meters when considering an unsealed excavation. Since the proposed construction is anticipated to be constructed within the low permeable clayey silt to silty clay till deposits, an effect of settlement due to dewatering would be negligible. DS recommends consulting geotechnical consultants for settlement monitoring requirements to access potential settlement due to any dewatering activities at the site during construction.

5.4 Well Decommissioning

Following the completion of construction activities, all dewatering wells, well points, eductors and monitoring wells installed at various stages of this project must be decommissioned. The installation and eventual decommissioning of the wells and the dewatering system must be carried out by a licenced water well contractor in accordance with Regulation 903 of the Ontario Water Resources Act.

6.0 MONITORING AND MITIGATION

Based on the finding of hydrogeological assessment and associated potential impacts due to development, the following monitoring and mitigation program is provided:

- Baseline groundwater quality has been assessed and established before construction. However, groundwater quality can change based on several factors (land-use change, spills, etc.) and should be monitored during construction dewatering and after construction to ensure that water quality meets the guideline or regulations associated with any permits from the MECP and the Region.

- Once a groundwater dewatering system is set up at the Site, daily and weekly monitoring should be implemented to assess the groundwater conditions such as water levels, measurement of discharge flow, discharge water quality and any adverse impacts as a result of dewatering include settlement.

- Based on this preliminary dewatering assessment, an EASR application is required. Additional monitoring may be required by the MECP to be implemented during the design stage.

- A discharge permit is required to be submitted to the Peel Region/City of Mississauga for short-term dewatering if private water is sent to the sewer system.

- Following the completion of construction activities, all dewatering wells, well points, eductors and monitoring wells installed at various stages of this project must be decommissioned. The installation and eventual decommissioning of the wells and the dewatering system must be carried out by a licensed water well contractor in accordance with Regulation 903 of the Ontario Water Resources Act.

7.0 LIMITATIONS

This report was prepared for the sole use of the addressee to provide an assessment of the hydrogeological conditions on the property. The information presented in this report is based on information collected during the completion of the hydrogeological investigation. DS Consultants Limited was required to use and rely upon various information sources produced by other parties. The information provides in this report reflects DS' judgment in light of the information available at the time of report preparation. This report may not be relied upon by any other person or entity without the written authorization of DS Consultants Ltd. The scope of services performed in the execution of this investigation may not be appropriate to satisfy the needs of other users, and any use or reuse of this documents or finding, conclusions, and recommendations represented herein, is at the sole risk of said users. The conclusions drawn from the Hydrogeological report were based on information at selected observation and sampling locations. Different conditions between and beyond these locations may become apparent during future investigations or on-site work, which could not be detected or anticipated at the time of this investigation. DS Consultants Ltd. cannot be held responsible for hydrogeological conditions at the site that was not apparent from the available information.

Should you have any questions regarding these findings, please do not hesitate to contact the undersigned.

DS Consultants Ltd.

Prepared By:

Meysam Jafari, M.Sc., P.Geo.
Geologist

Reviewed By:

Martin Gedeon, M.Sc., P.Geo.
Senior Hydrogeologist

8.0 CONSULTANT QUALIFICATIONS

Martin Gedeon, M.Sc., P.Geo., is a Professional Geoscientist (P.Geo.) with over 25 years of experience as an environmental/hydrogeological consultant in the areas of groundwater and soil monitoring, environmental site assessments, environmental due diligence, and remediation. Martin has significant experience in physical and contaminant hydrogeology across Canada and overseas and has provided hydrogeological/environmental technical support on various projects. Martin has prepared hundreds of hydrogeological reports in support of permit applications for a private sector development application, municipal dewatering operations, and provincial infrastructure projects across the province.

Meysam Jafari, M.Sc., P.Geo., is a Professional Geoscientist (P.Geo.) with DS Consultants Ltd. Meysam holds two master's degrees in Engineering Geology and Geology (Soil & Groundwater) and has several years of experience working in the geoscience industry. Meysam has experience with conducting Phase One and Phase Two Environmental Site Assessments, hydrogeological and geotechnical investigations in the Greater Toronto Area (GTA), and has been involved with project coordination, field assessments, data interpretation and reporting.

9.0 REFERENCES

Approved Source Protection Plan: CTC Source Protection Region. Prepared by: CTC Source Protection Committee. Amendment (Version 2.0). Effective March 25, 2019

Chapman, L.J., and D.F. Putnam; The Physiography of Southern Ontario, Third Edition, Ontario Geological Survey Special Volume 2; 1984, & 2007.

Freeze, R.A. and J.A. Cherry. "Groundwater". Prentice-Hall, Inc. Englewood Cliffs, NJ. 1979.

Ontario Regulation 245/11- Environmental Activity and Sector Registry.

Ontario Ministry of Environment and Climate Change, Permit to Take Water Manual, April 2005

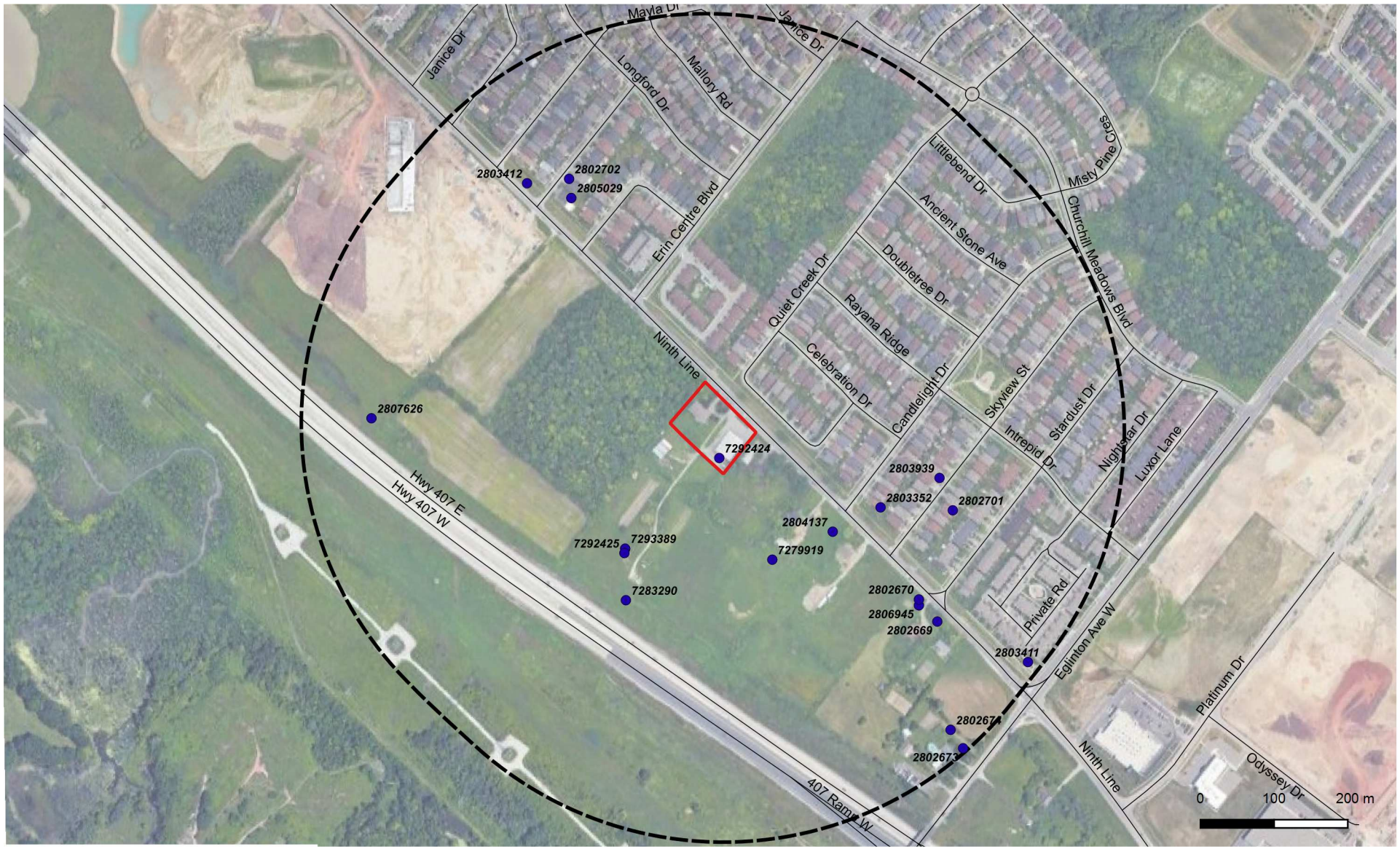
Phase II Environmental Site Assessment- 351-365 Royal York Road, Etobicoke, Ontario. Prepared by Cambium Inc. January 19, 2021.

Powers, J. Patrick, P.E. (1992); Construction Dewatering: New Methods and Applications - Second Edition, New York: John Wiley & Sons.

Pat M. Cashman and Martin Preene; Groundwater Lowering in Construction- Second Edition, CRC Press.

Figures

C:\0Sharon\21-071-100 Cofini Property 5160 and 5170 Ninth Line\1-QGIS\HydroG\Figure 1 – Site Location and MECP Well Records.qgs Jul-19 12:40



Legend

- Approx Property Boundary
- 500m Buffer
- Registered Water Well (MECP WWR)

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Project: HYDROGEOLOGICAL INVESTIGATION
5160 & 5170 Ninth Line , Mississauga, ON

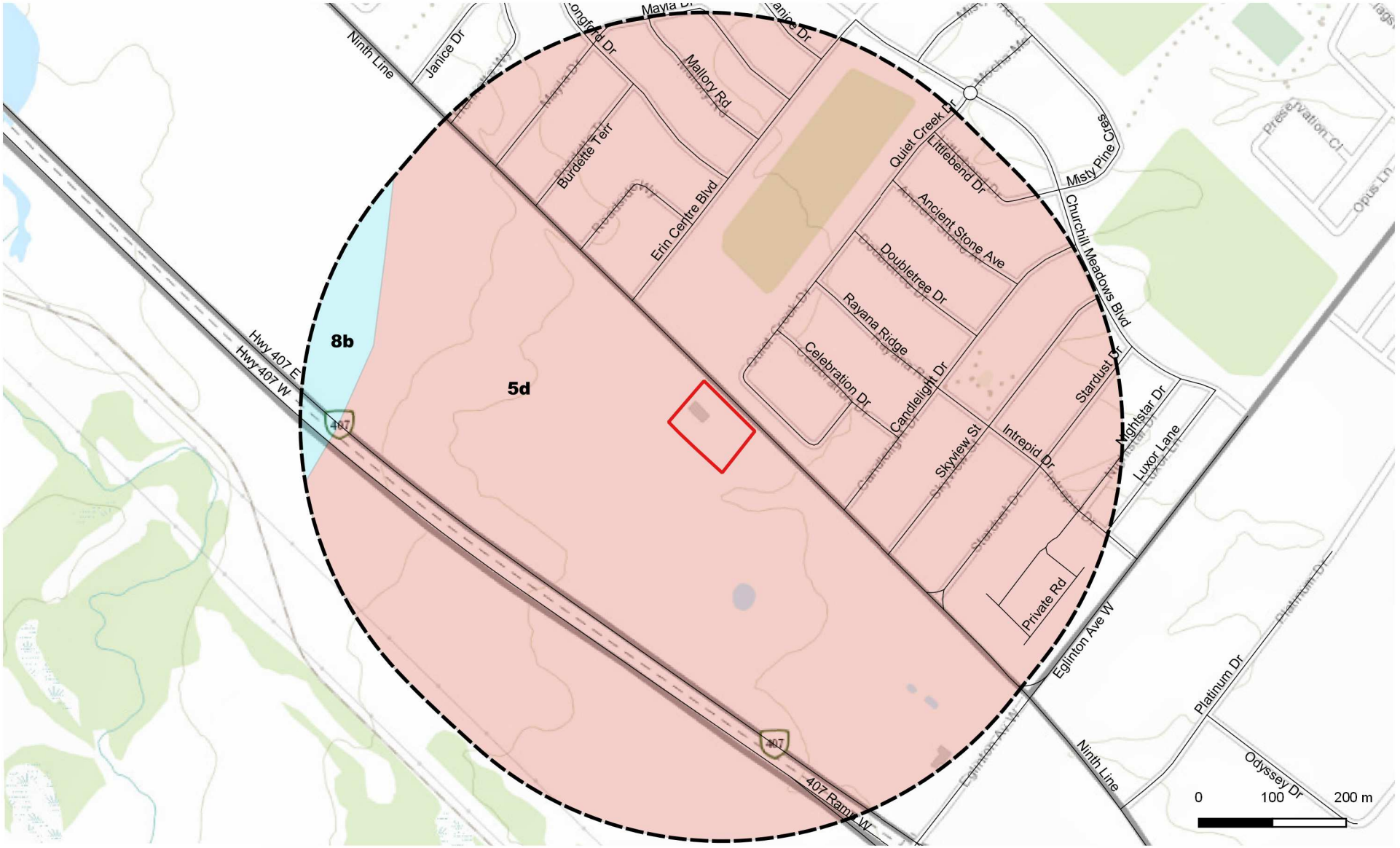
Title: **SITE LOCATION AND MECP WELL RECORDS**

Client: BRANTHAVEN DEVELOPMENT

Size:	Approved By:	Drawn By:	Date:
8.5 x 11	M.J	S.Y	July 2021
Rev: 0	Scale: As Shown	Project No.: 21-071-100	Figure No.: 1

Image/Map Source: *Google Satellite Image*

C:\0Sharon\21-071-100 Cofini Property 5160 and 5170 Ninth Line\1-QGIS\HydroG\Figure 2 – Surficial Geology Map.qgs Jul-19 12:53



Legend

- 500m Buffer
- Approx Property Boundary
- 5d - Till
- 8b - Glaciolacustrine Deposits

DS CONSULTANTS LTD.
6221 Highway 7, UNIT 16
Vaughan, Ontario L4H 0K8
Telephone: (905) 264-9393
www.dsconsultants.ca

Project: HYDROGEOLOGICAL INVESTIGATION
5160 & 5170 Ninth Line , Mississauga, ON

Title: **SURFICIAL GEOLOGY MAP**

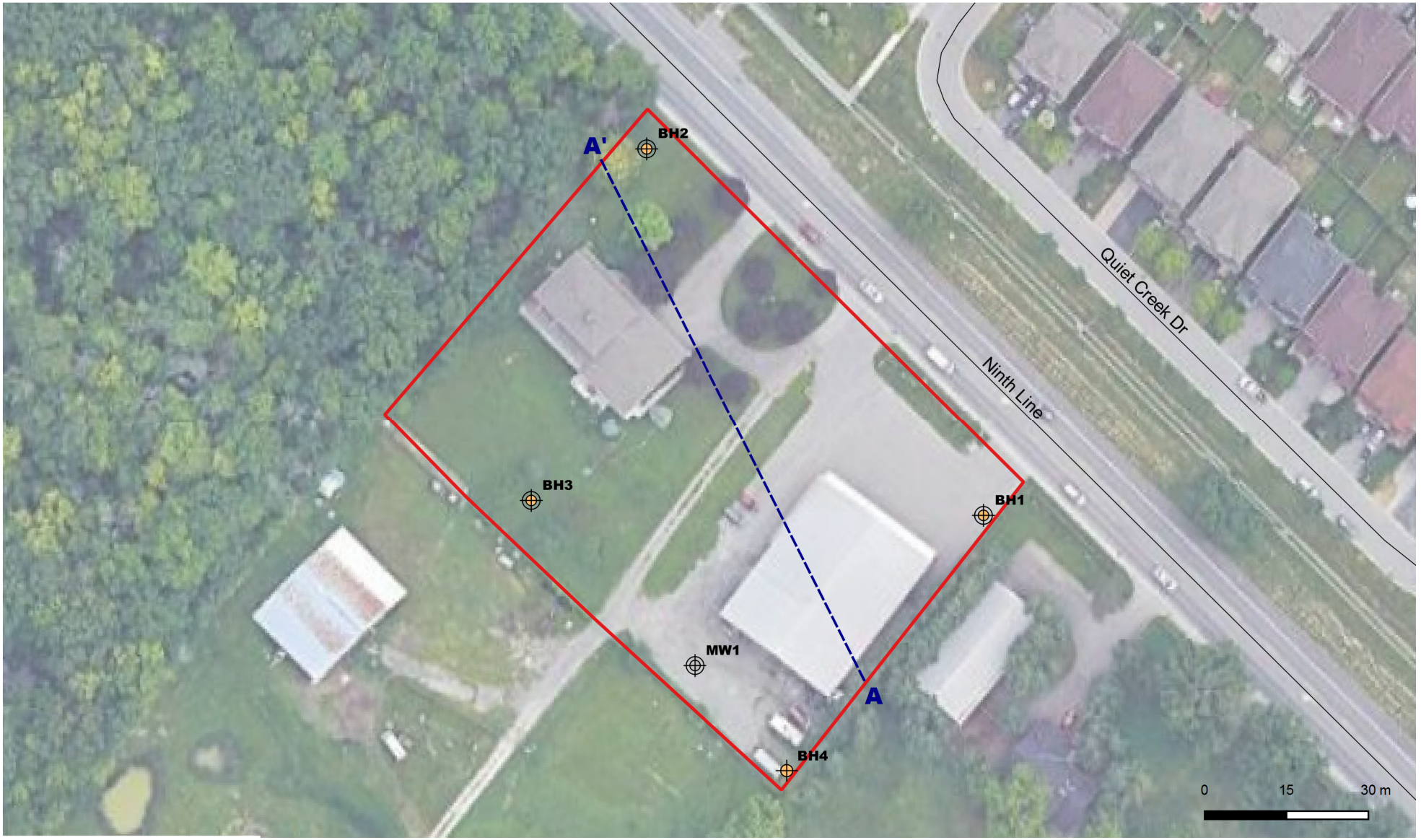
N

Client: BRANTHAVEN DEVELOPMENT

Size:	Approved By:	Drawn By:	Date:
8.5 x 11	M.J	S.Y	July 2021
Rev: 0	Scale: As Shown	Project No.: 21-071-100	Figure No.: 2

Image/Map Source: *Google Satellite Image*

C:\0Sharon\21-071-100 Cofini Property 5160 and 5170 Ninth Line\1-QGIS\HydroG\Figure 3 – Borehole and Monitoring Well Locations.qgs Jul-19 12:27



Legend

- Approx Property Boundary
- Borehole - DS
- Ex. Monitoring Well -Others
- Monitoring Well-DS
- Cross Section

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6221 Highway 7, UNIT 16
Vaughan, Ontario L4H 0K8
Telephone: (905) 264-9393
www.dsconsultants.ca

Client: BRANTHAVEN DEVELOPMENT

Project: HYDROGEOLOGICAL INVESTIGATION
5160 & 5170 Ninth Line , Mississauga, ON

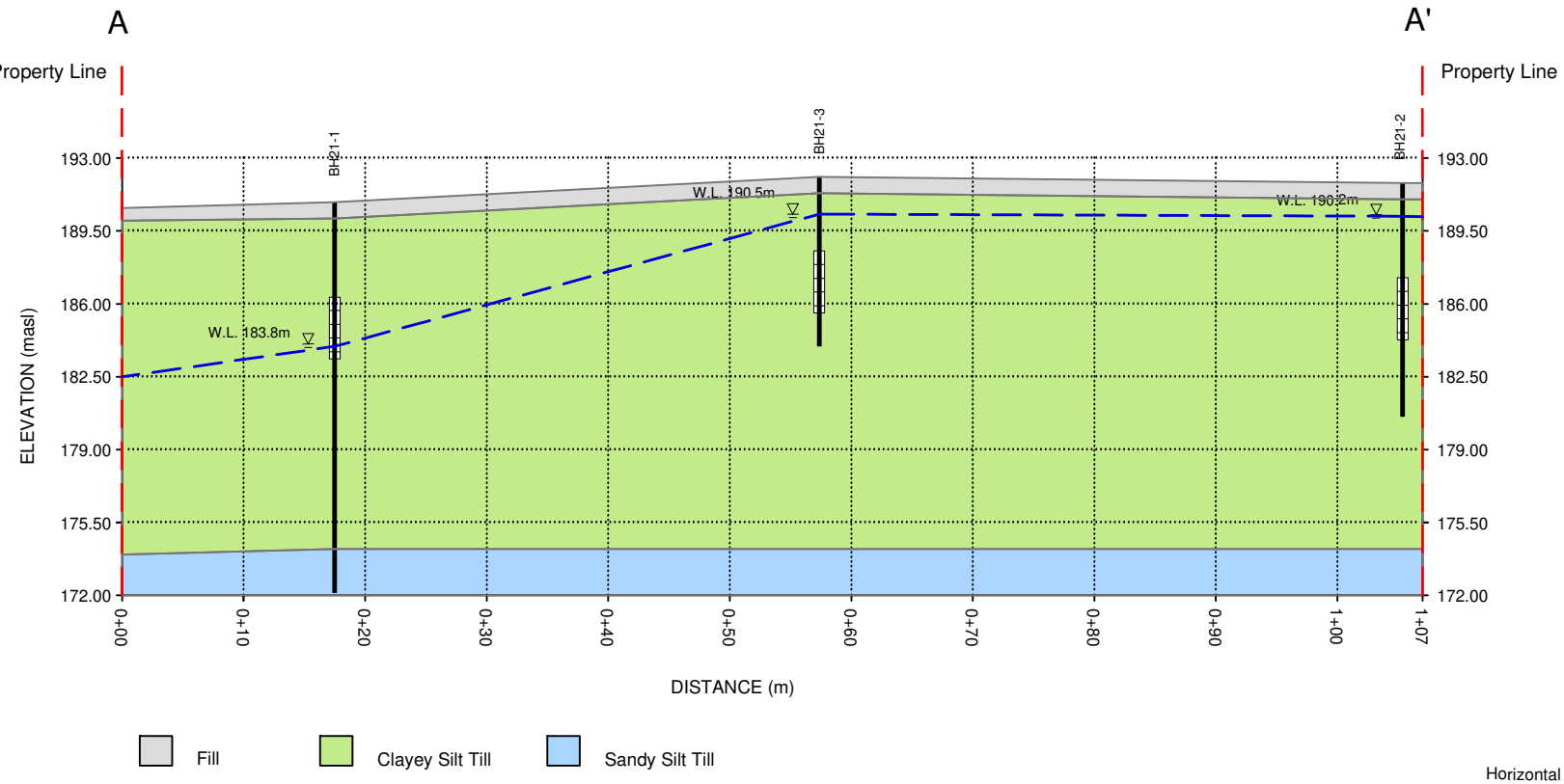
Title: **BOREHOLE AND MONITORING WELL LOCATIONS**

N

Size:	Approved By:	Drawn By:	Date:
8.5 x 11	M.J	S.Y	July 2021
Rev: 0	Scale: As Shown	Project No.: 21-071-100	Figure No.: 3

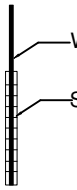
Image/Map Source: *Google Satellite Image*

Path:c:\0sharon\21-071-100 cofini property 5160 and 5170 ninth line\7-misc\cad\geological cross section 21-071.dwg



Horizontal Scale: 1:600
Vertical Scale: 1:350

Groundwater Elevation (12 July 2021)



DS CONSULTANTS LTD.
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Vaughan, Ontario L4H 0K8
Telephone: (905) 264-9393
www.dsconsultants.ca

Project: HYDROGEOLOGICAL INVESTIGATION
5160 & 5170 Ninth Line , Mississauga, ON

Title: **GEOLOGICAL CROSS SECTION A-A'**

Client: BRANTHAVEN DEVELOPMENT

Size:	Approved By:	Drawn By:	Date:
8.5 x 11	M.J	S.Y	July 2021
Rev.	Scale:	Project No:	Figure No.
	As Shown	21-071-100	4

Appendices

Appendix A: Borehole Logs

DS CONSULTANTS LTD.
Geotechnical ◆ Environmental ◆ Materials ◆ Hydrogeology

LOG OF BOREHOLE BH21-1

PROJECT: Geotechnical and Hydrogeological Investigation
CLIENT: Branthaven Development
PROJECT LOCATION: Cofini Property, 5160 & 5170 Ninth Line , Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1 N 4821358.776 E 601978.592

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150mm
Date: Jun/30/2021

REF. NO.: 21-071-100
ENCL NO.: 2

(m) ELEV / DEPTH	DESCRIPTION	NUMBER	TYPE	BLOWS "N" 0.3 m	ELEVATION
190.9					
190.8 / 0.1	**ASPHALT:** 75mm	1	SS	7	190
190.7 / 0.2	**SAND AND GRAVEL:** 280mm				
190.1 / 0.8	**FILL:** clayey silt, trace sand, trace rootlets, trace gravel, brown, moist, firm	2	SS	12	
	CLAYEY SILT: trace sand, some gravel, brown, moist, stiff to hard	3	SS	29	189
		4	SS	30	188
		5	SS	24	187
186.3 / 4.6	**CLAYEY SILT TILL:** trace to some sand, trace gravel, grey, moist, stiff to very stiff	6	SS	12	186
		7	SS	8	184
		8	SS	11	183
	very moist at 9.1m	9	SS	10	182
		10	SS	15	180
		11	SS	14	179
		12	SS	20	178
174.1 / 16.8	**SANDY SILT TILL:** trace clay, trace gravel, occasional cobble, grey, very moist, hard				175
		13	SS	52	174
172.0 / 18.9	**END OF BOREHOLE:**				173

Notes:
1) 50mm dia. monitoring well installed upon completion.
2) Water Level Readings:

Date:	Water Level(mbgl):
July 12, 2021	7.06

GROUND WATER CONDITIONS: holeplug; filterpack; screen; W. L. 183.8 m Jul 12, 2021; backfill cutting

DYNAMIC CONE PENETRATION RESISTANCE PLOT: 20 40 60 80 100

SHEAR STRENGTH (kPa): ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE; 20 40 60 80 100

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L

WATER CONTENT (%): 10 20 30

POCKET PEN. (Cu) (kPa): 65; 50; 100

NATURAL UNIT WT (kN/m³)

METHANE AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

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

DS SOIL LOG 21-071-100 COFINI PROPERTY_HYDROG.GPJ DS.GDT 7/21/21

DS CONSULTANTS LTD.
Geotechnical ◆ Environmental ◆ Materials ◆ Hydrogeology

LOG OF BOREHOLE BH21-2

PROJECT: Geotechnical and Hydrogeological Investigation
CLIENT: Branthaven Development
PROJECT LOCATION: Cofini Property, 5160 & 5170 Ninth Line , Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1 N 4821426.007 E 601916.827

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150mm
Date: Jun/29/2021

REF. NO.: 21-071-100
ENCL NO.: 3

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION
191.8							
191.6 0.2	**TOPSOIL:** 150mm		1	SS	8		
191.0 0.8	**FILL:** clayey silt, trace sand, trace gravel, trace rootlets/organics, brown, moist, stiff		2	SS	38		191
189.5 2.3	**CLAYEY SILT:** trace sand, some gravel, brown, moist, very stiff to hard		3	SS	26	W. L. 190.2 m Jul 12, 2021	
	CLAYEY SILT TILL: trace sand, trace gravel, occasional cobble, brown, moist, stiff to hard		4	SS	28	holeplug	
			5	SS	34		188
	grey at 4.6m		6	SS	14		187
			7	SS	25		186
184.2 7.6	**SILTY CLAY TILL:** trace sand, trace gravel, grey, moist, stiff to very stiff		8	SS	14		185
			9	SS	13	soil cuttings	184
			10	SS	18		183
180.5 11.3	**END OF BOREHOLE:**						182
							181

Notes:
1) Monitoring well installed upon completion.
2) Water Level Readings:

Date:	Water Level(mbgl):
July 12, 2021	1.62

DYNAMIC CONE PENETRATION RESISTANCE PLOT
20 40 60 80 100

SHEAR STRENGTH (kPa)
○ UNCONFINED + FIELD VANE & Sensitivity
● QUICK TRIAXIAL × LAB VANE
20 40 60 80 100

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30

POCKET PEN. (Cu) (kPa)
100
75
44

NATURAL UNIT WT (kN/m³)

METHANE AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+3, ×3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

DS SOIL LOG 21-071-100 COFINI PROPERTY_HYDROG.GPJ DS.GDT 7/21/21

DS CONSULTANTS LTD.
Geotechnical ◆ Environmental ◆ Materials ◆ Hydrogeology

LOG OF BOREHOLE BH21-3

PROJECT: Geotechnical and Hydrogeological Investigation
CLIENT: Branthaven Development
PROJECT LOCATION: Cofini Property, 5160 & 5170 Ninth Line , Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1 N 4821361.507 E 601895.67

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150mm
Date: Jun/28/2021

REF. NO.: 21-071-100
ENCL NO.: 4

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION
192.1							
192.0 0.1	**TOPSOIL:** 100mm		1	SS	15		
191.3 0.8	**FILL:** clayey silt, trace sand, trace gravel, occasional cobble, trace rootlets, brown, moist, very stiff		2	SS	14		191
	CLAYEY SILT: trace sand, trace gravel, brown, moist, stiff to hard		3	SS	21	W. L. 190.5 m Jul 12, 2021	
			4	SS	26		189
			5	SS	23		188
187.5 4.6	**CLAYEY SILT TILL:** trace sand, trace gravel, occasional cobble, grey, moist, very stiff		6	SS	22		187
			7	SS	19		186
	greyish brown at 7.6m						185
183.9			8	SS	21		184
8.2	**END OF BOREHOLE:** Notes: 1) 50mm dia. monitoring well installed upon completion. 2) Water Level Readings: Date: Water Level(mbgl): July 12, 2021 1.55						

DYNAMIC CONE PENETRATION RESISTANCE PLOT
20 40 60 80 100

SHEAR STRENGTH (kPa)
○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE
20 40 60 80 100

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30

POCKET PEN. (Cu) (kPa)

NATURAL UNIT WT (kN/m³)

METHANE AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

DS SOIL LOG 21-071-100 COFINI PROPERTY_HYDROG.GPJ DS.GDT 7/21/21

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

DS CONSULTANTS LTD.
Geotechnical ◆ Environmental ◆ Materials ◆ Hydrogeology

LOG OF BOREHOLE BH21-4

PROJECT: Geotechnical and Hydrogeological Investigation
CLIENT: Branthaven Development
PROJECT LOCATION: Cofini Property, 5160 & 5170 Ninth Line , Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1 N 4821312.073 E 601942.531

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150mm
Date: Jun/28/2021

REF. NO.: 21-071-100
ENCL NO.: 5

ELEV / DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS "N" 0.3 m	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE (20 40 60 80 100)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L — WATER CONTENT (%) (10 20 30)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	METHANE AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
191.1 / 0.0	**TOPSOIL:** 100mm		1	SS	4		190					
190.3 / 0.8	**FILL:** clayey silt, trace sand, trace rootlets/organics, some gravel, brown, moist, firm		2	SS	19							
	CLAYEY SILT TILL: trace sand, trace gravel, occasional cobble, brown, moist, stiff to hard		3	SS	19		189					
			4	SS	23							
	grey below 2.8m		5	SS	11		188			90		
			6	SS	14		187			112		
			7	SS	16		186					
			8	SS	26		185					
			9	SS	18		184					
			10	SS	17		183					
179.8 / 11.3	**END OF BOREHOLE:**						182					
	Notes: 1) Borehole open and dry upon completion.						181					
							180					

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

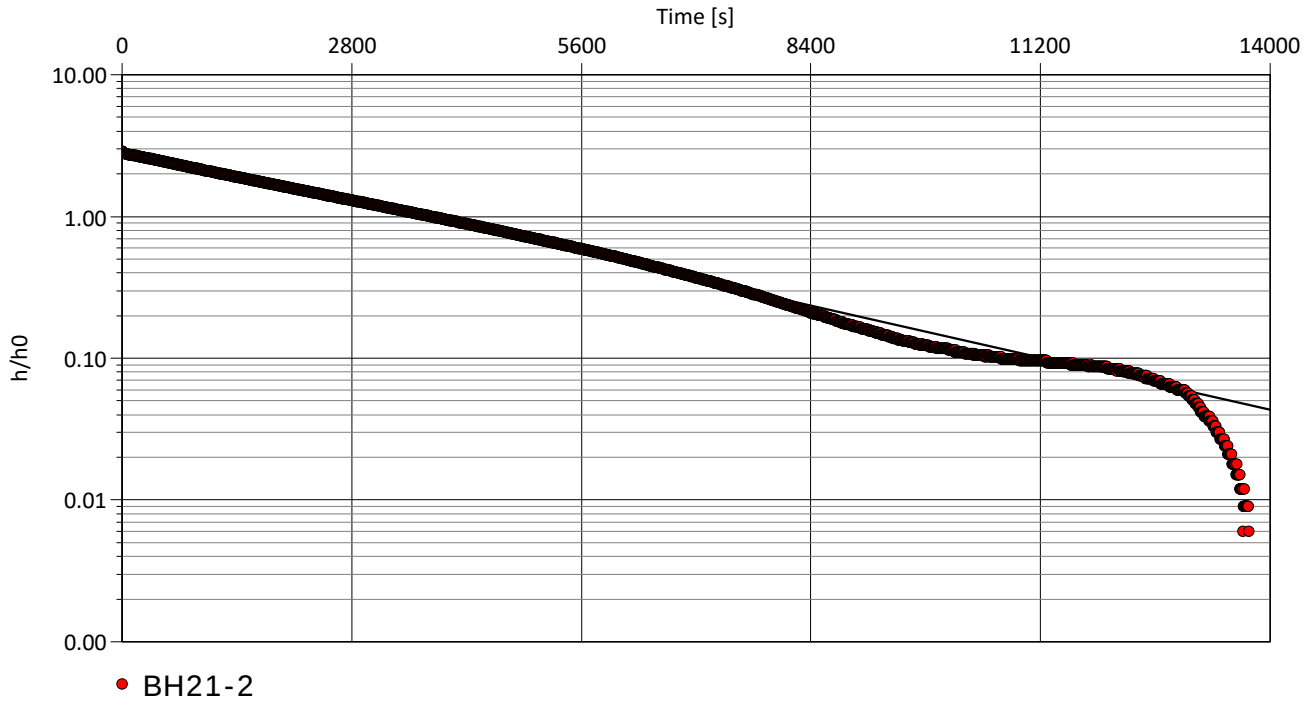
GRAPH NOTES: + 3, × 3: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

DS SOIL LOG 21-071-100 COFINI PROPERTY_HYDROG.GPJ DS.GDT 7/21/21

Appendix B: Hydraulic Conductivity Analysis

Slug Test Analysis Report	
Project: 5160 & 5170 Ninth Line	
Number: 21-071-100	
Client: Branthaven Development	

Location: Missassauga, ON	Slug Test: BH21-2	Test Well: BH21-2
Test Conducted by: MP		Test Date: 7/12/2021
Analysis Performed by: MJ	Hvorslev	Analysis Date: 7/13/2021
Aquifer Thickness:		

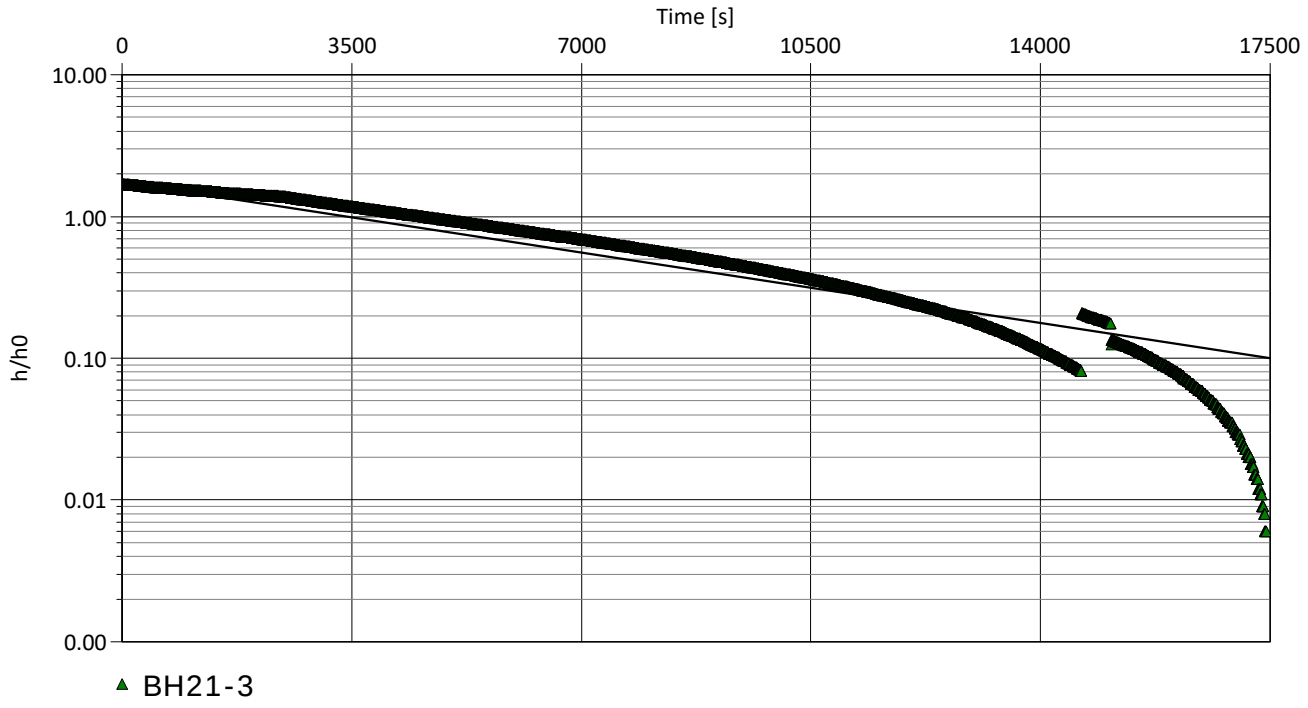


Calculation using Hvorslev

Observation Well	Hydraulic Conductivity [m/s]	
BH21-2	1.49×10^{-7}	

	Slug Test Analysis Report
	Project: 5160 & 5170 Ninth Line
	Number: 21-071-100
	Client: Branthaven Development

Location: Missassauga, ON	Slug Test: BH21-3	Test Well: BH21-3
Test Conducted by: MP		Test Date: 7/12/2021
Analysis Performed by: MJ	Hvorslev	Analysis Date: 7/13/2021
Aquifer Thickness:		

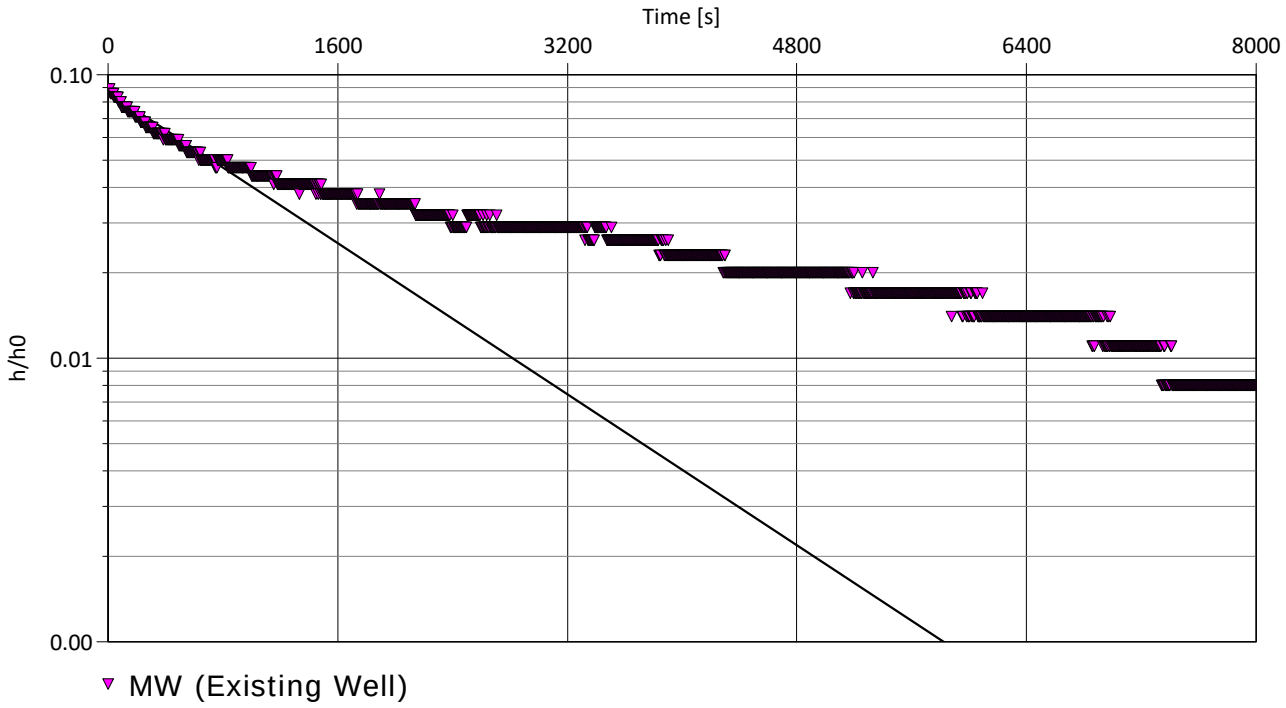


Calculation using Hvorslev

Observation Well	Hydraulic Conductivity [m/s]	
BH21-3	8.10×10^{-8}	

Slug Test Analysis Report	
Project: 5160 & 5170 Ninth Line	
Number: 21-071-100	
Client: Branthaven Development	

Location: Missassauga, ON	Slug Test: MW (Existing Well)	Test Well: MW (Existing Well)
Test Conducted by: MP		Test Date: 7/12/2021
Analysis Performed by: MJ	Hvorslev	Analysis Date: 7/13/2021
Aquifer Thickness:		



Calculation using Hvorslev

Observation Well	Hydraulic Conductivity [m/s]	
MW (Existing Well)	3.80×10^{-7}	

Appendix C: Groundwater Quality Certificate of Analysis

FINAL REPORT

CA14199-JUL21 R1

21-071-100, 5160 Ninth Line

Prepared for

DS Consultants

FINAL REPORT

CA14199-JUL21 R1

First Page

CLIENT DETAILS		LABORATORY DETAILS	
Client	DS Consultants	Project Specialist	Jill Campbell, B.Sc.,GISAS
		Laboratory	SGS Canada Inc.
Address	6221 Highway 7 Unit 16 Vaughan, Ontario L4H 0K8. Canada	Address	185 Concession St., Lakefield ON, K0L 2H0
Contact	Meysam Jafari	Telephone	2165
Telephone	905-264-9393	Facsimile	705-652-6365
Facsimile	905-264-2685	Email	jill.campbell@sgs.com
Email	meysam.jafari@dsconsultants.ca	SGS Reference	CA14199-JUL21
Project	21-071-100, 5160 Ninth Line	Received	07/12/2021
Order Number		Approved	07/19/2021
Samples	Ground Water (1)	Report Number	CA14199-JUL21 R1
		Date Reported	07/19/2021

COMMENTS

RL - SGS Reporting Limit
Temperature of Sample upon Receipt: 9 degrees C
Cooling Agent Present:Yes
Custody Seal Present:Yes

Chain of Custody Number:025566

SIGNATORIES

Jill Campbell, B.Sc.,GISAS

TABLE OF CONTENTS

Client: DS Consultants
Project: 21-071-100, 5160 Ninth Line
Project Manager: Meysam Jafari
Samplers: Mansi Patel

PACKAGE: **SANSEW - General Chemistry**
(WATER)

L1 = SANSEW / WATER / - - Peel Table 1 - Sanitary Sewer Discharge - BL_53_2010
L2 = SANSEW / WATER / - - Peel Table 2 - Storm Sewer Discharge - BL_53_2010

Sample Number	8
Sample Name	BH21-2
Sample Matrix	Ground Water
Sample Date	12/07/2021

General Chemistry

Parameter	Units	RL	L1	L2	Result
Biochemical Oxygen Demand (BOD5)	mg/L	2	300	15	< 12↑
Total Suspended Solids	mg/L	2	350	15	27
Total Kjeldahl Nitrogen	as N mg/L	0.5	100	1	0.8

PACKAGE: **SANSEW - Metals and Inorganics**
(WATER)

L1 = SANSEW / WATER / - - Peel Table 1 - Sanitary Sewer Discharge - BL_53_2010
L2 = SANSEW / WATER / - - Peel Table 2 - Storm Sewer Discharge - BL_53_2010

Sample Number	8
Sample Name	BH21-2
Sample Matrix	Ground Water
Sample Date	12/07/2021

Metals and Inorganics

Parameter	Units	RL	L1	L2	Result
Fluoride	mg/L	0.06	10		0.29
Cyanide (total)	mg/L	0.01	2	0.02	< 0.01
Sulphate	mg/L	2	1500		150
Aluminum (total)	mg/L	0.001	50		0.491
Antimony (total)	mg/L	0.0009	5		< 0.0009
Arsenic (total)	mg/L	0.0002	1	0.02	0.0012
Cadmium (total)	mg/L	0.000003	0.7	0.008	0.000008
Chromium (total)	mg/L	0.00008	5	0.08	0.00133
Copper (total)	mg/L	0.0002	3	0.05	0.0011
Cobalt (total)	mg/L	0.000004	5		0.000243

Client: DS Consultants
Project: 21-071-100, 5160 Ninth Line
Project Manager: Meysam Jafari
Samplers: Mansi Patel

PACKAGE: **SANSEW - Metals and Inorganics**
(WATER)

L1 = SANSEW / WATER / - - Peel Table 1 - Sanitary Sewer Discharge - BL_53_2010
L2 = SANSEW / WATER / - - Peel Table 2 - Storm Sewer Discharge - BL_53_2010

Sample Number	8
Sample Name	BH21-2
Sample Matrix	Ground Water
Sample Date	12/07/2021

Metals and Inorganics (continued)

Parameter	Units	RL	L1	L2	Result
Lead (total)	mg/L	0.00009	3	0.12	0.00054
Manganese (total)	mg/L	0.00001	5	0.05	0.0115
Molybdenum (total)	mg/L	0.00004	5		0.0113
Nickel (total)	mg/L	0.0001	3	0.08	0.0007
Phosphorus (total)	mg/L	0.003	10	0.4	0.021
Selenium (total)	mg/L	0.00004	1	0.02	0.00184
Silver (total)	mg/L	0.00005	5	0.12	< 0.00005
Tin (total)	mg/L	0.00006	5		0.00238
Titanium (total)	mg/L	0.00005	5		0.00959
Zinc (total)	mg/L	0.002	3	0.04	0.002

Client: DS Consultants
Project: 21-071-100, 5160 Ninth Line
Project Manager: Meysam Jafari
Samplers: Mansi Patel

PACKAGE: **SANSEW - Microbiology** (WATER)

L1 = SANSEW / WATER / - - Peel Table 1 - Sanitary Sewer Discharge - BL_53_2010
L2 = SANSEW / WATER / - - Peel Table 2 - Storm Sewer Discharge - BL_53_2010

Parameter	Units	RL	L1	L2	Sample Number: 8 Sample Name: BH21-2 Sample Matrix: Ground Water Sample Date: 12/07/2021
Microbiology					
E. Coli	cfu/100mL	-		200	< 2↑

PACKAGE: **SANSEW - Nonylphenol and Ethoxylates** (WATER)

L1 = SANSEW / WATER / - - Peel Table 1 - Sanitary Sewer Discharge - BL_53_2010
L2 = SANSEW / WATER / - - Peel Table 2 - Storm Sewer Discharge - BL_53_2010

Parameter	Units	RL	L1	L2	Sample Number: 8 Sample Name: BH21-2 Sample Matrix: Ground Water Sample Date: 12/07/2021
Nonylphenol and Ethoxylates					
Nonylphenol	mg/L	0.001	0.02		< 0.001
Nonylphenol Ethoxylates	mg/L	0.01	0.2		< 0.01
Nonylphenol diethoxylate	mg/L	0.01			< 0.01
Nonylphenol monoethoxylate	mg/L	0.01			< 0.01

PACKAGE: **SANSEW - Oil and Grease** (WATER)

L1 = SANSEW / WATER / - - Peel Table 1 - Sanitary Sewer Discharge - BL_53_2010
L2 = SANSEW / WATER / - - Peel Table 2 - Storm Sewer Discharge - BL_53_2010

Parameter	Units	RL	L1	L2	Sample Number: 8 Sample Name: BH21-2 Sample Matrix: Ground Water Sample Date: 12/07/2021
Oil and Grease					
Oil & Grease (total)	mg/L	2			< 2
Oil & Grease (animal/vegetable)	mg/L	4	150		< 4
Oil & Grease (mineral/synthetic)	mg/L	4	15		< 4

Client: DS Consultants
Project: 21-071-100, 5160 Ninth Line
Project Manager: Meysam Jafari
Samplers: Mansi Patel

PACKAGE: **SANSEW - Other (ORP)** (WATER)

L1 = SANSEW / WATER / - - Peel Table 1 - Sanitary Sewer Discharge - BL_53_2010
L2 = SANSEW / WATER / - - Peel Table 2 - Storm Sewer Discharge - BL_53_2010

Sample Number	8
Sample Name	BH21-2
Sample Matrix	Ground Water
Sample Date	12/07/2021

Parameter	Units	RL	L1	L2	Result
Other (ORP)					
pH	No unit	0.05	10	9	7.72
Mercury (total)	mg/L	0.00001	0.01	0.0004	< 0.00001

PACKAGE: **SANSEW - PCBs** (WATER)

L1 = SANSEW / WATER / - - Peel Table 1 - Sanitary Sewer Discharge - BL_53_2010
L2 = SANSEW / WATER / - - Peel Table 2 - Storm Sewer Discharge - BL_53_2010

Sample Number	8
Sample Name	BH21-2
Sample Matrix	Ground Water
Sample Date	12/07/2021

Parameter	Units	RL	L1	L2	Result
PCBs					
Polychlorinated Biphenyls (PCBs) - Total	mg/L	0.0001	0.001	0.0004	< 0.0001

PACKAGE: **SANSEW - Phenols** (WATER)

L1 = SANSEW / WATER / - - Peel Table 1 - Sanitary Sewer Discharge - BL_53_2010
L2 = SANSEW / WATER / - - Peel Table 2 - Storm Sewer Discharge - BL_53_2010

Sample Number	8
Sample Name	BH21-2
Sample Matrix	Ground Water
Sample Date	12/07/2021

Parameter	Units	RL	L1	L2	Result
Phenols					
4AAP-Phenolics	mg/L	0.002	1	0.008	< 0.002

PACKAGE: **SANSEW - SVOCs** (WATER)

L1 = SANSEW / WATER / - - Peel Table 1 - Sanitary Sewer Discharge - BL_53_2010
L2 = SANSEW / WATER / - - Peel Table 2 - Storm Sewer Discharge - BL_53_2010

Sample Number	8
Sample Name	BH21-2
Sample Matrix	Ground Water
Sample Date	12/07/2021

Parameter	Units	RL	L1	L2	Result

Client: DS Consultants
Project: 21-071-100, 5160 Ninth Line
Project Manager: Meysam Jafari
Samplers: Mansi Patel

PACKAGE: **SANSEW - SVOCs** (WATER)

L1 = SANSEW / WATER / - - Peel Table 1 - Sanitary Sewer Discharge - BL_53_2010
L2 = SANSEW / WATER / - - Peel Table 2 - Storm Sewer Discharge - BL_53_2010

Sample Number	8
Sample Name	BH21-2
Sample Matrix	Ground Water
Sample Date	12/07/2021

Parameter	Units	RL	L1	L2	Result
SVOCs					
di-n-Butyl Phthalate	mg/L	0.002	0.08	0.015	< 0.002
Bis(2-ethylhexyl)phthalate	mg/L	0.002	0.012	0.0088	< 0.002

PACKAGE: **SANSEW - VOCs** (WATER)

L1 = SANSEW / WATER / - - Peel Table 1 - Sanitary Sewer Discharge - BL_53_2010
L2 = SANSEW / WATER / - - Peel Table 2 - Storm Sewer Discharge - BL_53_2010

Sample Number	8
Sample Name	BH21-2
Sample Matrix	Ground Water
Sample Date	12/07/2021

Parameter	Units	RL	L1	L2	Result
VOCs					
Chloroform	mg/L	0.0005	0.04	0.002	< 0.0005
1,2-Dichlorobenzene	mg/L	0.0005	0.05	0.0056	< 0.0005
1,4-Dichlorobenzene	mg/L	0.0005	0.08	0.0068	< 0.0005
cis-1,2-Dichloroethene	mg/L	0.0005	4	0.0056	< 0.0005
trans-1,3-Dichloropropene	mg/L	0.0005	0.14	0.0056	< 0.0005
Methylene Chloride	mg/L	0.0005	2	0.0052	< 0.0005
1,1,2,2-Tetrachloroethane	mg/L	0.0005	1.4	0.017	< 0.0005
Methyl ethyl ketone	mg/L	0.02	8		< 0.02
Styrene	mg/L	0.0005	0.2		< 0.0005
Tetrachloroethylene (perchloroethylene)	mg/L	0.0005	1	0.0044	< 0.0005
Trichloroethylene	mg/L	0.0005	0.4	0.008	< 0.0005

Client: DS Consultants
Project: 21-071-100, 5160 Ninth Line
Project Manager: Meysam Jafari
Samplers: Mansi Patel

PACKAGE: **SANSEW - VOCs - BTEX** (WATER)

L1 = SANSEW / WATER / - - Peel Table 1 - Sanitary Sewer Discharge - BL_53_2010

L2 = SANSEW / WATER / - - Peel Table 2 - Storm Sewer Discharge - BL_53_2010

Sample Number	8
Sample Name	BH21-2
Sample Matrix	Ground Water
Sample Date	12/07/2021

VOCs - BTEX

Parameter	Units	RL	L1	L2	Result
Benzene	mg/L	0.0005	0.01	0.002	< 0.0005
Ethylbenzene	mg/L	0.0005	0.16	0.002	< 0.0005
Toluene	mg/L	0.0005	0.27	0.002	< 0.0005
Xylene (total)	mg/L	0.0005	1.4	0.0044	< 0.0005
m-p-xylene	mg/L	0.0005			< 0.0005
o-xylene	mg/L	0.0005			< 0.0005

EXCEEDANCE SUMMARY

Parameter	Method	Units	Result	SANSEW / WATER / - - Peel Table 1 - Sanitary Sewer Discharge - BL_53_2010 L1	SANSEW / WATER / - - Peel Table 2 - Storm Sewer Discharge - BL_53_2010 L2
BH21-2					
Total Suspended Solids	SM 2540D	mg/L	27		15

QC SUMMARY

Anions by discrete analyzer

Method: US EPA 375.4 | Internal ref.: ME-CA-[ENVIEWL-LAK-AN-026

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Sulphate	DIO5022-JUL21	mg/L	2	<2	2	20	109	80	120	94	75	125

Biochemical Oxygen Demand

Method: SM 5210 | Internal ref.: ME-CA-[ENVIEWL-LAK-AN-007

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Biochemical Oxygen Demand (BOD5)	BOD0021-JUL21	mg/L	2	< 2	2	30	89	70	130	NV	70	130

Cyanide by SFA

Method: SM 4500 | Internal ref.: ME-CA-[ENVISFA-LAK-AN-005

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Cyanide (total)	SKA0117-JUL21	mg/L	0.01	<0.01	ND	10	93	90	110	76	75	125

QC SUMMARY

Fluoride by Specific Ion Electrode

Method: SM 4500 I Internal ref.: ME-CA-[ENV]EWL-LAK-AN-014

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Fluoride	EWL0186-JUL21	mg/L	0.06	<0.06	ND	10	100	90	110	103	75	125

Mercury by CVAAS

Method: EPA 7471A/SM 3112B I Internal ref.: ME-CA-[ENV]SPE-LAK-AN-004

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Mercury (total)	EHG0012-JUL21	mg/L	0.00001	< 0.00001	ND	20	106	80	120	107	70	130

QC SUMMARY

Metals in aqueous samples - ICP-MS

Method: SM 3030/EPA 200.8 | Internal ref.: ME-CA-IENVISPE-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Silver (total)	EMS0058-JUL21	mg/L	0.00005	<0.00005	ND	20	94	90	110	89	70	130
Aluminum (total)	EMS0058-JUL21	mg/L	0.001	<0.001	3	20	91	90	110	105	70	130
Arsenic (total)	EMS0058-JUL21	mg/L	0.0002	<0.0002	8	20	98	90	110	103	70	130
Cadmium (total)	EMS0058-JUL21	mg/L	0.000003	<0.000003	17	20	93	90	110	99	70	130
Cobalt (total)	EMS0058-JUL21	mg/L	0.000004	<0.000004	2	20	98	90	110	89	70	130
Chromium (total)	EMS0058-JUL21	mg/L	0.00008	<0.00008	ND	20	97	90	110	102	70	130
Copper (total)	EMS0058-JUL21	mg/L	0.0002	<0.0002	0	20	95	90	110	102	70	130
Manganese (total)	EMS0058-JUL21	mg/L	0.00001	<0.00001	3	20	98	90	110	100	70	130
Molybdenum (total)	EMS0058-JUL21	mg/L	0.00004	<0.00004	1	20	97	90	110	97	70	130
Nickel (total)	EMS0058-JUL21	mg/L	0.0001	<0.0001	1	20	95	90	110	87	70	130
Lead (total)	EMS0058-JUL21	mg/L	0.00009	<0.00001	8	20	107	90	110	85	70	130
Phosphorus (total)	EMS0058-JUL21	mg/L	0.003	<0.003	1	20	99	90	110	NV	70	130
Antimony (total)	EMS0058-JUL21	mg/L	0.0009	<0.0009	ND	20	99	90	110	76	70	130
Selenium (total)	EMS0058-JUL21	mg/L	0.00004	<0.00004	ND	20	91	90	110	98	70	130
Tin (total)	EMS0058-JUL21	mg/L	0.00006	<0.00006	ND	20	99	90	110	NV	70	130
Titanium (total)	EMS0058-JUL21	mg/L	0.00005	<0.00005	5	20	100	90	110	NV	70	130
Zinc (total)	EMS0058-JUL21	mg/L	0.002	<0.002	1	20	94	90	110	108	70	130

QC SUMMARY

Microbiology

Method: SM 9222D | Internal ref.: ME-CA-IENVIMIC-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
E. Coli	BAC9181-JUL21	cfu/100mL	-	ACCEPTED	ACCEPTED							

Nonylphenol and Ethoxylates

Method: ASTM D7065-06 | Internal ref.: ME-CA-IENVIGC-LAK-AN-015

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Nonylphenol diethoxylate	GCM0238-JUL21	mg/L	0.01	<0.01			82	55	120			
Nonylphenol Ethoxylates	GCM0238-JUL21	mg/L	0.01	0								
Nonylphenol monoethoxylate	GCM0238-JUL21	mg/L	0.01	<0.01			85	55	120			
Nonylphenol	GCM0238-JUL21	mg/L	0.001	<0.001			83	55	120			

QC SUMMARY

Oil & Grease

Method: MOE E3401 | Internal ref.: ME-CA-[ENV]GC-LAK-AN-019

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Oil & Grease (total)	GCM0279-JUL21	mg/L	2	<2	NSS	20	104	75	125			

Oil & Grease-AV/MS

Method: MOE E3401/SM 5520F | Internal ref.: ME-CA-[ENV]GC-LAK-AN-019

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Oil & Grease (animal/vegetable)	GCM0279-JUL21	mg/L	4	< 4	NSS	20	NA	70	130			
Oil & Grease (mineral/synthetic)	GCM0279-JUL21	mg/L	4	< 4	NSS	20	NA	70	130			

pH

Method: SM 4500 | Internal ref.: ME-CA-[ENV]EWL-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
pH	EWL0188-JUL21	No unit	0.05	NA	1		100			NA		

QC SUMMARY

Phenols by SFA

Method: SM 5530B-D | Internal ref.: ME-CA-[ENV]SFA-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
4AAP-Phenolics	SKA0133-JUL21	mg/L	0.002	<0.002	ND	10	103	80	120	NV	75	125

Polychlorinated Biphenyls

Method: MOE E3400/EPA 8082A | Internal ref.: ME-CA-[ENV]GC-LAK-AN-001

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Polychlorinated Biphenyls (PCBs) - Total	GCM0259-JUL21	mg/L	0.0001	<0.0001	NSS	30	96	60	140	NSS	60	140

QC SUMMARY

Semi-Volatile Organics

Method: EPA 3510C/8270D | Internal ref.: ME-CA-[ENV]GC-LAK-AN-005

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Bis(2-ethylhexyl)phthalate	GCM0284-JUL21	mg/L	0.002	< 0.002	NSS	30	103	50	140	NSS	50	140
di-n-Butyl Phthalate	GCM0284-JUL21	mg/L	0.002	< 0.002	NSS	30	101	50	140	NSS	50	140

Suspended Solids

Method: SM 2540D | Internal ref.: ME-CA-[ENV]EWL-LAK-AN-004

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Total Suspended Solids	EWL0234-JUL21	mg/L	2	< 2	1	10	95	90	110	NA		

Total Nitrogen

Method: SM 4500-N C/4500-NO3- F | Internal ref.: ME-CA-[ENV]SFA-LAK-AN-002

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Total Kjeldahl Nitrogen	SKA0125-JUL21	as N mg/L	0.5	<0.5	ND	10	101	90	110	102	75	125

QC SUMMARY

Volatile Organics

Method: EPA 5030B/8260C | Internal ref.: ME-CA-[ENVIGC-LAK-AN-004

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
1,1,2,2-Tetrachloroethane	GCM0231-JUL21	mg/L	0.0005	<0.0005	ND	30	95	60	130	94	50	140
1,2-Dichlorobenzene	GCM0231-JUL21	mg/L	0.0005	<0.0005	ND	30	97	60	130	94	50	140
1,4-Dichlorobenzene	GCM0231-JUL21	mg/L	0.0005	<0.0005	ND	30	97	60	130	93	50	140
Benzene	GCM0231-JUL21	mg/L	0.0005	<0.0005	ND	30	99	60	130	94	50	140
Chloroform	GCM0231-JUL21	mg/L	0.0005	<0.0005	ND	30	97	60	130	90	50	140
cis-1,2-Dichloroethene	GCM0231-JUL21	mg/L	0.0005	<0.0005	ND	30	96	60	130	92	50	140
Ethylbenzene	GCM0231-JUL21	mg/L	0.0005	<0.0005	ND	30	102	60	130	96	50	140
m-p-xylene	GCM0231-JUL21	mg/L	0.0005	<0.0005	ND	30	102	60	130	96	50	140
Methyl ethyl ketone	GCM0231-JUL21	mg/L	0.02	<0.02	ND	30	98	50	140	99	50	140
Methylene Chloride	GCM0231-JUL21	mg/L	0.0005	<0.0005	ND	30	96	60	130	90	50	140
o-xylene	GCM0231-JUL21	mg/L	0.0005	<0.0005	ND	30	100	60	130	94	50	140
Styrene	GCM0231-JUL21	mg/L	0.0005	<0.0005	ND	30	104	60	130	98	50	140
Tetrachloroethylene (perchloroethylene)	GCM0231-JUL21	mg/L	0.0005	<0.0005	ND	30	98	60	130	92	50	140
Toluene	GCM0231-JUL21	mg/L	0.0005	<0.0005	ND	30	99	60	130	94	50	140
trans-1,3-Dichloropropene	GCM0231-JUL21	mg/L	0.0005	<0.0005	ND	30	102	60	130	97	50	140
Trichloroethylene	GCM0231-JUL21	mg/L	0.0005	<0.0005	ND	30	98	60	130	90	50	140

QC SUMMARY

Method Blank: a blank matrix that is carried through the entire analytical procedure. Used to assess laboratory contamination.

Duplicate: Paired analysis of a separate portion of the same sample that is carried through the entire analytical procedure. Used to evaluate measurement precision.

LCS/Spike Blank: Laboratory control sample or spike blank refer to a blank matrix to which a known amount of analyte has been added. Used to evaluate analyte recovery and laboratory accuracy without sample matrix effects.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate laboratory accuracy with sample matrix effects.

Reference Material: a material or substance matrix matched to the samples that contains a known amount of the analyte of interest. A reference material may be used in place of a matrix spike.

RL: Reporting limit

RPD: Relative percent difference

AC: Acceptance criteria

Multielement Scan Qualifier: as the number of analytes in a scan increases, so does the chance of a limit exceedance by random chance as opposed to a real method problem. Thus, in multielement scans, for the LCS and matrix spike, up to 10% of the analytes may exceed the quoted limits by up to 10% absolute and the spike is considered acceptable.

Duplicate Qualifier: for duplicates as the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.

Matrix Spike Qualifier: for matrix spikes, as the concentration of the native analyte increases, the uncertainty of the matrix spike recovery increases. Thus, the matrix spike acceptance limits apply only when the concentration of the matrix spike is greater than or equal to the concentration of the native analyte.

LEGEND

FOOTNOTES

NSS Insufficient sample for analysis.
RL Reporting Limit.
↑ Reporting limit raised.
↓ Reporting limit lowered.
NA The sample was not analysed for this analyte
ND Non Detect

Samples analysed as received. Solid samples expressed on a dry weight basis. "Temperature Upon Receipt" is representative of the whole shipment and may not reflect the temperature of individual samples.

Analysis conducted on samples submitted pursuant to or as part of Reg. 153/04, are in accordance to the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act" published by the Ministry and dated March 9, 2004 as amended.

SGS provides criteria information (such as regulatory or guideline limits and summary of limit exceedances) as a service. Every attempt is made to ensure the criteria information in this report is accurate and current, however, it is not guaranteed. Comparison to the most current criteria is the responsibility of the client and SGS assumes no responsibility for the accuracy of the criteria levels indicated. This document is issued, on the Client's behalf, by the Company under its General Conditions of Service available on request and accessible at http://www.sgs.com/terms_and_conditions.htm. The Client's attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any other holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents.

-- End of Analytical Report --

Request for Laboratory Services and CHAIN OF CUSTODY

SGS Environment, Health & Safety - Lakefield: 185 Concession St., Lakefield, ON K0L 2H0 Phone: 705-652-2000 Fax: 705-652-6365 Web: www.sgs.com/environment
- London: 657 Consortium Court, London, ON, N6E 2S8 Phone: 519-672-4500 Toll Free: 877-848-8060 Fax: 519-672-0361

No: 025566 Page 1 of 1

Laboratory Information Section - Lab use only

Received By: Matt
Received Date: 07/12/2021 (mm/dd/yy)
Received Time: 17:00 (hr:min)
Received By (signature):
Custody Seal Present: Yes ☐ No ☐
Custody Seal Intact: Yes ☐ No ☐
Cooling Agent Present: Yes ☑ No ☐ Type: Ice
Temperature Upon Receipt (°C): 9°C, 9°C, 9°C
LAB LIMS #: CA14199-Jul21

REPORT INFORMATION

Company: DS Consultants Ltd.
Contact: Meysam Jafari
Address: 6221 Hwy 7 Unit 16, Vaughan
Phone: 905-264-9393
Fax:
Email: meysam.jafari@dsconsultants.ca

INVOICE INFORMATION

☑ (same as Report Information)
Company:
Contact:
Address:
Phone:
Email: accounting

Quotation #:
Project #: 21-071-100
P.O. #:
Site Location/ID: 5160 Ninth line

TURNAROUND TIME (TAT) REQUIRED

☑ Regular TAT (5-7days)
TAT's are quoted in business days (exclude statutory holidays & weekends).
Samples received after 6pm or on weekends: TAT begins next business day

RUSH TAT (Additional Charges May Apply): ☐ 1 Day ☐ 2 Days ☐ 3 Days ☐ 4 Days
PLEASE CONFIRM RUSH FEASIBILITY WITH SGS REPRESENTATIVE PRIOR TO SUBMISSION

Specify Due Date:
*NOTE: DRINKING (POTABLE) WATER SAMPLES FOR HUMAN CONSUMPTION MUST BE SUBMITTED WITH SGS DRINKING WATER CHAIN OF CUSTODY

REGULATIONS

☐ O.Reg 153/04 ☐ O.Reg 406/19
☐ Table 1 ☐ Res/Park Soil Texture: ☐ Coarse
☐ Table 2 ☐ Ind/Com ☐ Medium/Fine
☐ Table 3 ☐ Agri/Other
☐ Table _____ Appx. _____
Soil Volume ☐ <350m3 ☐ >350m3

Other Regulations:
☐ Reg 347/558 (3 Day min TAT)
☐ PWQO ☐ MMER
☐ CCME ☐ Other:
☐ MISA
☐ ODWS Not Reportable *See note

Sewer By-Law:
☑ Sanitary
☐ Storm
Municipality: PEEL

RECORD OF SITE CONDITION (RSC) ☐ YES ☐ NO

ANALYSIS REQUESTED

	SAMPLE IDENTIFICATION	DATE SAMPLED	TIME SAMPLED	# OF BOTTLES	MATRIX	Field Filtered (Y/N)	M&I: Metals & Inorganics (incl CrVI, CN,Hg pH,(B(HWS),EC,SAR--soil) (Cl, Na-water)	M&I: Full Metals Suite (ICP metals plus B(HWS-soil only) Hg, CrVI	M&I: ICP Metals only Sb,As,Ba,Be,B,Cd,Cr,Co,Cu,Pb,Mo,Ni,	SVOC: PAHs only	SVOC: SVOCs all incl PAHs, ABNs, CPs	PCB: PCBs Total ☐ Aroclor ☐	PHC: F1-F4 + BTEX	PHC: F1-F4 only no BTEX	VOC: VOCs all incl BTEX	VOC: BTEX only	Pest: Pesticides Organochlorine or specify other	Other (please specify)	Other (please specify)	Other (please specify)	Other (please specify)	Other (please specify)	Other (please specify)	SPLP Specify tests	TCLP Specify tests	COMMENTS:
																					Sewer Use: Specify pkg: PEEL	Water Characterization Pkg: General ☐ Extended ☐			
1	BH21-2	07/12/21	3:15pm	17	GW	N															X				unfiltered samples
2																									
3																									
4																									
5																									
6																									
7																									
8																									
9																									
10																									
11																									
12																									

Observations/Comments/Special Instructions

Sampled By (NAME): Mansi Patel Signature: Patel Date: 07, 12, 21 (mm/dd/yy)
Relinquished by (NAME): Mansi Patel Signature: Patel Date: 07, 12, 21 (mm/dd/yy)

Pink Copy - Client
Yellow & White Copy - SGS

Revision #: 1.5
Date of Issue: 11 June 2021

Appendix D: MECP Water Wells Records

Preliminary Hydrogeological Investigation - Proposed Residential Building- 5160 and 5170 Ninth Line, Mississauga, Ontario												
TOWNSHIP C	**UTM**	**E**	**N**	**DATE CNTR**	**CASING**	**WATER**	**PUMP TEST**	**WELL USE**	**SCREEN**	**WELL**	**1**	**FORMATION**
MILTON TOWN (TRAFALG	17 W	601809	4821137	2017/02 7472	2			MO	0015 10	7283290	(Z252633) A222847	BRWN CLAY TILL PCKD 0025
MILTON TOWN (TRAFALG NS 01 001	17 W	602207	4821130	1988/06 4868	30 30	FR 0020	28/49/3/1:0	DO		2806945	-7770	BRWN LOAM SOFT 0001 BRWN CLAY STNS HARD 0014 GREY CLAY STNS HARD 0045 RED CLAY STNS HARD 0050 GREY CLAY SAND STNS 0055
MILTON TOWN (TRAFALG NS 09 001	17 W	602008	4821192	7147						7279919	(C35694) A216288 P	
MILTON TOWN (TRAFALG NS 09 001	17 W	602232	4821108	1964/01 1612	4	FR 0086	19/80/2/1:0	DO		2802669	()	LOAM 0002 CLAY BLDR 0055 CLAY MSND 0083 GRVL 0086
MILTON TOWN (TRAFALG NS 09 001	17 W	602090	4821230	1972/08 3637	30 32	FR 0074	18/72/2/2:0	DO		2804137	()	BRWN LOAM 0002 BRWN CLAY 0014 GREY CLAY 0050 RED CLAY 0052 GREY CLAY 0062 BRWN SAND STNS 0074 BLCK SAND 0075
MILTON TOWN (TRAFALG NS 09 001	17 W	601936	4821330	2017/06 7472	2			MO	0015 10	7292424	(Z259507) A227426	BRWN LOAM LOOS 0002 BRWN CLAY SAND PCKD 0014 GREY CLAY SAND PCKD 0025
MILTON TOWN (TRAFALG NS 09 001	17 W	602207	4821138	1965/05 1612	5 5	FR 0110	16/111/1/2:30	DO		2802670	()	LOAM 0002 BLUE CLAY 0062 MSND GRVL 0083 RED SHLE 0111
MILTON TOWN (TRAFALG NS 09 001	17 W	601808	4821207	7360						7293389	(C38677) A227427 P	
MILTON TOWN (TRAFALG NS 09 001	17 W	602267	4820936	1967/07 1612	6					2802673	() A	LOAM 0001 BLUE CLAY 0054 GRVL MSND 0093 RED SHLE 0140
MILTON TOWN (TRAFALG NS 09 001	17 W	601807	4821201	2017/06 7472	2			MO	0015 10	7292425	(Z259508) A227427	BRWN LOAM LOOS 0002 BRWN CLAY SAND PCKD 0014 GREY CLAY SAND PCKD 0025
MILTON TOWN (TRAFALG NS 09 001	17 W	602250	4820961	1967/07 1612	5 5	FR 0105	25/108/0/48:0	DO		2802674	()	LOAM 0001 BRWN CLAY 0068 GRVL FSND 0090 RED SHLE 0108
MILTON TOWN (TRAFALG NS 09 002	17 W	601464	4821384	1990/07 4005	6	UK 0077	34/75/2/2:0	PS		2807626	-76656	BRWN CLAY SAND LOOS 0025 GREY CLAY SAND LOOS 0076 BRWN GRVL SAND LOOS 0077
MISSISSAUGA CITY (TR NS 10 001	17 W	602253	4821259	1967/09 4602	6 6	0080 FR 0	21/111/2/2:0	DO		2802701	()	PRDG 0032 GREY CLAY 0044 GREY CLAY GRVL 0068 RED CLAY 0073 RED SHLE 0111
MISSISSAUGA CITY (TR NS 10 001	17 W	602155	4821263	1970/04 4602	6	MN 0067	18/72//:	DO		2803352	()	CLAY 0019 GREY CLAY 0055 GREY CLAY GRVL 0067 RED CLAY 0073 RED SHLE 0076
MISSISSAUGA CITY (TR NS 10 001	17 W	602355	4821053	1970/03 3903	6 1	0073 SA 0	32/125/8/0:17	NU	0126 2	2803411	()	BRWN LOAM 0002 BRWN CLAY STNS 0073 BRWN CLAY MSND GRVL 0074 BRWN CLAY STNS 0080 BRWN MSND CLAY GRVL 0100 RED SHLE 0130
MISSISSAUGA CITY (TR NS 10 001	17 W	602235	4821303	1972/09 1307	30	FR 0065	35/62/0/1:0	DO		2803939	()	BRWN OBDN SAND 0015 GREY CLAY 0055 GREY CLAY SAND 0063 SAND 0065
MISSISSAUGA CITY (TR NS 10 002	17 W	601732	4821709	1964/11 1307	30	FR 0076	40//0/:	DO		2802702	()	BRWN LOAM CLAY 0018 GREY CLAY 0050 RED CLAY 0068 RED SHLE 0076
MISSISSAUGA CITY (TR NS 10 002	17 W	601735	4821683	1976/08 1307	30	FR 0050	52/72/1/1:0	DO		2805029	()	BRWN LOAM 0018 GREY CLAY STNS 0050 SAND 0052 RED CLAY 0074 RED SHLE 0074
MISSISSAUGA CITY (TR NS 10 002	17 W	601675	4821703	1970/03 3903	2 1	FR 0063	29/94/11/0:13	NU	0095 2	2803412	()	BRWN LOAM 0002 BRWN CLAY STNS 0012 GREY CLAY STNS SILT 0063 GREY CLAY SILT 0073 RED SHLE 0105