Hydrogeological Investigation
1300, 1316, 1326, 1342 and 1350 Bronte Road
Oakville, Ontario

Prepared For:
Bronte River Limited Partnership

Project No.: 20-186-100
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20-186-100 **March 28, 2023**

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RE: Hydrogeological Investigation–1300, 1316, 1326,1342 and 1350 Bronte Road, Oakville

DS Consultants Limited (DS) was retained by Bronte River Limited Partnership to complete a Hydrogeological Investigation for the proposed development located at the site comprised of addresses 1300, 1316, 1326, 1342 and 1350 Bronte Road, Oakville, Ontario (Site). The site is located on the western side of Bronte Road between Upper Middle Road West and Highway 403. The Site currently includes three (3) single-storey residential buildings, and the western extent of the Site is bounded by a valley formed by Bronte Creek. It is understood that the proposed redevelopment will consist of residential townhouses and single detached houses with one (1) level of basement serviced by a network of roads and sewers. One Low Impact Development (LID) stormwater management facility with two cells will also be constructed as part of this development.

This 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, and impacts of the proposed development on the local groundwater and provides an estimation of construction dewatering 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). This report was prepared in support of the design for the proposed redevelopment of the Site for residential uses. Based on the results of this investigation, the following conclusions and recommendations are presented:

1. As part of the hydrogeological investigation, DS completed a search of the MECP Water Well Records (WWRs) database. Based on the MECP WWR search, there are nineteen (19) water wells within 500 meters of the site. Seven (7) wells were noted for domestic (DO) use, one (1) well was noted for irrigation (IR) use and one (1) well was noted for livestock (ST) use. All other wells were noted as either monitoring (MO), test hole (TH) or not in use (NU). A water well survey is recommended within the study area to confirm the presence and use of any domestic wells and this survey is better done closer to the start of construction.

2. In August 2020, DS drilled fourteen (14) boreholes at the site as part of the concurrent geotechnical and hydrogeological investigations. In October 2021, DS conducted an additional

geotechnical investigation and drilled two (2) boreholes at 1350 Bronte Road. The boreholes were advanced to depths ranging from 6.7 to 8.9 meters below the ground surface (mbgs). Also, Terraprobe drilled two boreholes in October 2021 to a depth of about 20 m and 25 m as part of slope stability analysis. Nine (9) monitoring wells were installed by DS at depths ranging from 4.6 to 8.7 mbgs.

3. The surficial geology at the site is characterized as coarse-textured glaciolacustrine deposits comprised of sand, gravel, minor silt, and clay. The western portion of the site is also characterized by till comprised of clay to silt-textured till (derived from glaciolacustrine deposits or shale) and Paleozoic bedrock surrounding Bronte Creek.

4. Groundwater levels were measured in all available wells between August 18th, 2020, and October 12th, 2021, by DS. Groundwater levels ranged from 0.92 to 5.1 mbgs or 122.1 to 129.6 meters above sea level (masl) at the site. Based on groundwater elevations, the flow direction is inferred to be northeast towards Fourteen Mile Creek and west towards Bronte Creek.

5. Five (5) single well response tests (slug tests) were completed by DS on November 3rd, 2021, to estimate hydraulic conductivity (k) for the representative geological units in which the wells were screened. The k-values ranged between 5.6 X 10^{-5} to 2.0 x 10^{-6} m/s with a geomean k-value of 7.6 x 10^{-6} m/s.

6. A preliminary site grading plan (March 2023) was available for the proposed development at the time of drafting the report. Based on the available plans, the following assumptions were made to assess groundwater seepage/dewatering requirements during the construction period.

   a) The construction of the proposed development will be phased.

   b) An assumption is that a 60 m long and 30 m wide block comprised of 5-6 townhomes or 3-4 detached homes with one (1) level of basement will be excavated at any given time within the larger site development with a maximum excavation depth of 5 m.

   c) A 30 m long and 2 m wide trench will be opened per day for the site servicing at any given time with a maximum excavation depth of 4 m.

   d) A 200 m long and 20 m wide trench/block for LID features will be opened at any given time with a maximum excavation depth of 3 m.

7. The requirements for dewatering/groundwater control during the construction period are as follows.

   a) Residential block (townhomes/detached homes)- One level of basement (60 m x 30 m): 84,000 L/day without a safety factor and 126,000 L/day with a safety factor of x1.5. Also, about 18,000

L/day of water into excavation areas may be needed to be removed because of major storm events (assuming 10 mm/24 hours).

b) Site servicing trench (30 m x 2 m): 38,000 L/day without a safety factor and 57,000 L/day with a safety factor of x1.2. Also, about 1,000 L/day of water into excavation areas may be needed to be removed because of major storm events (assuming 10 mm/24 hours).

c) LID Block (200 m x 20 m): 134,000 L/day without a safety factor and 201,000 L/day with a safety factor of x1.5. Also, about 40,000 L/day of water into excavation areas may be needed to be removed because of major storm events (assuming 10 mm/24 hours).

8. The total estimated steady-state flow rate for an assumed low residential area/block and servicing trench at any given time is 256,000 L/day without a safety factor and 384,000 L/day with a safety factor of x1.5. However, the total dewatering flow rate for assumed block/areas and trench including stormwater consideration is estimated at 443,000 L/day. The total estimated volume can vary depending on grading excavation depths, the permeable nature of soils, groundwater elevation, any hydraulic connection of the existing pond to groundwater and weather conditions.

9. DS anticipates that the construction of the proposed development will be phased. The total estimated dewatering rate of 443,000 L/day is based on an assumed block area and trenches for site servicing. If multiple blocks/trenches are excavated, additional dewatering may be required. Therefore, an EASR or PTTW requirement can be determined once the final design, revised dewatering rates, and construction sequences are available.

10. An EASR application is required to be submitted to the Ministry of the Environment, Conservation and Parks (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 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. The PTTW application is also an online registry and should be submitted to the MECP 90 days from the start of construction dewatering.

11. To assess the suitability for discharge of groundwater to the Halton Region sanitary sewers and/or the Town of Oakville storm sewers, one (1) unfiltered groundwater sample was collected from monitoring well BH20-10 on May 27th, 2021. The analytical results were also compared to Provincial Water Quality Objectives (PWQOs) to assess the baseline groundwater quality conditions and suitability for discharge overland. The reported analytical results indicate that only Total Suspended Solids (TSS) exceeded the Halton Region's sewer criteria, but several parameters exceeded the Town of Oakville's storm sewer criteria and PWQO. Therefore, groundwater encountered during construction at the site is not suitable for discharge into the Halton Region's sanitary and combined sewers or the Town of Oakville's storm sewers or overland without pre-

treatment. The Region or the Town should be consulted for discharge options and policies for short-term and long-term discharge at the site.

12. DS collected one (1) unfiltered surface water sample from the onsite pond on March 13, 2023. The water sample was analyzed against the PWQO, the Halton Region Sewer Use Bylaw and the Town of Oakville Sewer Use Bylaw to assess the baseline water quality conditions and suitability for discharge to the Region/Town's sewer system and nearby water bodies. The reported analytical results indicate that all parameters met the Halton Region's and the Town of Oakville's sewer discharge criteria, but various total metals, PAHs, OCs and Pesticides exceeded the PWQOs. Therefore, surface water at the development site is suitable for discharge into the Halton Region's or the Town of Oakville sewers system but not suitable for direct discharge to nearby water bodies without pre-treatment.

13. A seep area observed near the outlet from the Pond at an elevation of 128 masl was identified as a source of shallow interflow that may be wet in the spring or after precipitation events or related to water stored in the ponds. This seep is linked to the shallow sand unit found at the site and is the source of water to the onsite pond. Also, deeper groundwater-derived seeps were identified in the valley between the Site and Bronte Creek in an alluvial fan area at an elevation of 108.5 masl. Multiple seep zones are noted to the north and south of the site along the same general elevation indicative of natural groundwater discharge in the valley. These seeps are hydraulically connected to a more regionally expansive sand unit found at other sites to the east of Bronte Road. This area is expected to have longer seasonal longevity as reported by the previous owner.

14. There are artificial ponds located at the site and the nearest water feature is Bronte Creek located about 50 m from the western boundary of the development area. A drainage feature is located onsite (BCT-1) that drains from the onsite ponds into the river valley. According to the previous owner, these ponds are groundwater-fed. The outlet from the pond directly flows to the channel or gully within the ravine area associated with Bronte Creek (BCT-1). It is DS's opinion that the water stored in the ponds is likely to be from a groundwater source. Considering surficial geology, most of the areas of the Site are characterized by coarse-textured glaciolacustrine deposits of sand and gravel which can be considered a source of water for the ponds. Evidence of groundwater seeps identified and observed immediately near the outlet may be related to water stored in the ponds.

15. It is proposed to remove the ponds at the site as part of the development. Groundwater elevation varies within the pond area between 129.6 and 127 masl and the flow direction is inferred to be west towards Bronte Creek. The elevation of water in the ponds varies between 129.3 and 128.5 masl and is representative of groundwater levels and indicates groundwater-fed ponding conditions. Based on the grading plan, the approximate FFLs for the residential dwellings within the pond areas are between 133 to 132.5 masl and the expected lowest basement elevations are between 130.5-130 masl. An analysis of existing groundwater patterns and a review of the grading plan indicate that the seasonal high-water level will likely be below the basements and is

not expected to intersect the basements. Also, any long-term impacts on groundwater-derived seeps are not anticipated as a result of the removal of ponds due to the natural function of these seeps.

16. A water balance study was completed to maintain groundwater flow. A site-based water balance assessment using a Thornthwaite approach was completed which identified the infiltration deficit for the site because of the proposed development. Based on the results of the pre-development and post-development water balance completed, the proposed development without LID mitigation is expected to produce a decrease in annual infiltration of about 5,666 m^3/year and an increase in annual runoff of about 16,763 m^3/year. The effects are the result of increased impervious areas, replacing previous areas of the Site. With the proposed mitigation measures (redirecting of water to pervious areas with increased topsoil depth), the infiltration deficit is expected to be reduced from 5,666 m^3/year to 1,618 m^3/year. Also, the proposed Biofiltration Facility (with liner) has been proposed and designed to retain and store 25 mm of rainfall events and enhance evaporation.

17. It should be noted that due to the highly impervious nature of the post-development plan and the higher water level at the site, there are limited options to provide additional mitigation measures. As discussed in the FSR dated March 2023, there is a potential for infiltration through the biofiltration facility (no liner) subject to field determination of groundwater levels following the decommissioning of the on-site man-made pond which may lower groundwater levels. The post-development water balance with mitigation measures will be refined during detailed design.

18. The MECP PTTW Open Data Catalogue was searched within a 1 km radius of the Site. The search indicated that there were five (5) active PTTWs within 1 km of the Site. Groundwater interferences may occur if multiple units and trench excavations are to occur at the same time for the proposed development. It is recommended that the development be constructed in phases to minimize total dewatering requirements at the site.

Should you have any questions regarding these findings, please contact the undersigned.

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1.0 INTRODUCTION

DS Consultants Limited (DS) was retained by Bronte River Limited Partnership to complete a Hydrogeological Investigation for the proposed development located at the site comprised of addresses 1300, 1316, 1326, 1342 and 1350 Bronte Road, Oakville, Ontario (Site). The site is located on the western side of Bronte Road between Upper Middle Road West and Highway 403. **Figure 1** presents the site location map that highlights the location of the site and the surrounding area.

The Site currently includes three (3) single-storey residential buildings, and the western extent of the Site is bounded by a valley formed by Bronte Creek. It is understood that the proposed redevelopment will consist of residential townhouses and single detached houses with one (1) level of basement serviced by a network of roads and sewers. One Low Impact Development (LID) stormwater management facility with two cells will also be constructed as part of this development.

This hydrogeological investigation will evaluate the groundwater conditions at the site for the proposed building to support construction and post-construction design. Construction dewatering volumes were estimated based on preliminary site plan dimensions provided to DS. Once below-grade and site plan designs are finalized, construction dewatering values should be reassessed.

1.1 Purpose

The purpose of this preliminary hydrogeological investigation is to assess the current groundwater conditions at the site to evaluate the following:

- Temporary construction dewatering for the excavations of the proposed unit(s), LID facility and the on-site site servicing trenches.
- Explore the potential need for a Permit to Take Water (PTTW) or Environmental Activity and Sector Registration (EASR) for Construction Dewatering from the MECP.
- Temporary management and discharge of groundwater during short-term construction dewatering; and
- Assess groundwater quality to identify potential adverse impacts on the Town of Oakville sewer system.
- Water balance analysis.

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.
- Fieldwork includes a monitoring well drilling program consisting of sixteen (16) boreholes and the installation of nine (9) monitoring wells.
- Conducting single well response tests (slug tests) to determine hydraulic conductivity values across the site.
- Characterize the stratigraphy and measure the groundwater levels across the site.
- Collection and analysis of groundwater samples to quantify and characterize any 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(s) on the site.

2.0 FIELDWORK

- In August 2020, DS drilled fourteen (14) boreholes at the site as part of the concurrent geotechnical and hydrogeological investigations. In October 2021, DS conducted an additional geotechnical investigation and drilled two (2) boreholes at 1350 Bronte Road. The boreholes were advanced to depths ranging from 6.7 to 8.9 meters below the ground surface (mbgs). Also, Terraprobe drilled two boreholes in October 2021 to a depth of about 20 m and 25 m as part of slope stability analysis.
- Nine (9) monitoring wells were installed at depths ranging from 4.6-8.7 mbgs. All monitoring wells were developed before any use to allow for groundwater level monitoring, hydraulic conductivity testing, and to assess groundwater quality.
- Total of seven (7) single well response tests (SWRTs) were completed by performing a rising head test (slug test) to estimate the hydraulic conductivity values of the soils at the site.
- One (1) unfiltered groundwater sample from a selected monitoring well and one surface water sample from the existing pond were collected and analyzed for the parameters listed under the Halton Region sewer discharge by-law, Town of Oakville storm sewer discharge by law, and PWQO. The borehole and monitoring well location plan are shown in **Figure 3**.

3.0 PHYSICAL SETTING

Available topographic maps, and 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 site is currently occupied by residential dwellings, open spaces, woodland and man-made ponds. The topography at the site mainly slopes south towards Bronte Creek, located approximately 50 m west of the site. Surface elevation across the site ranges from 129.0 to 131.9 masl. The existing drainage from the site is segmented between Fourteen Mile Creek and Bronte Creek. Most of the site area drains to Bronte Creek. The northeast portion of the site drains to Fourteen Mile Creek.

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

According to the Ontario Geological Survey mapping across the region, the site lies within the Iroquois Plain physiographic region of southern Ontario characterized by drumlinized till plains landforms. Shale plains landforms are located south adjacent to the site. The surficial geology at the site is characterized as coarse-textured glaciolacustrine deposits comprised of sand, gravel, minor silt, and clay. The western portion of the site is also characterized by till comprised of clay to silt-textured till (derived from glaciolacustrine deposits or shale) and Paleozoic bedrock surrounding Bronte Creek. The surficial geology map is shown in **Figure 2.**

3.2.2 Bedrock Geology

According to the Ontario Geological Survey mapping across the region, the bedrock at the site is comprised of shale, limestone, dolostone, and siltstone of the Queenston Formation.

3.2.3 Site Geology

On-site subsurface soil conditions were summarized from the boreholes advanced by DS and Terraprobe for the current investigation. Detailed subsurface conditions are presented in **Figure 5,** and the borehole logs are presented in **Appendix A**. The subsurface conditions in the boreholes are summarized in the following paragraphs.

<u>Topsoil and Fill Materials</u>

A surficial layer of topsoil ranging in thickness from 75mm to 150mm was found in the boreholes. Fill material consisting of sandy silt to silty sand, sand and gravel, clayey silt and inclusions of

topsoil/organics was found in boreholes, extending to depths varying from 0.8 to 3.0m below the ground surface.

Upper Silt, Sandy Silt/Silty Sand/Sand and Gravel/Gravelly Sand

Below the fill, silt, silty sand to sandy silt, and gravelly sand to sand and gravel were encountered in all boreholes except BH20-5 to BH20-7 and BH20-11, 21-1 and 21-2 extending to depths ranging from 2.3m to 6.0m. A lower layer of sand and gravel was found in boreholes BH20-8 and BH20-14 below the sandy silt till deposits, extending to the termination depths of boreholes.

Silty Clay/Clayey Silt Till:

Cohesive deposits of silty clay and clayey silt till were encountered in all boreholes below the upper cohesionless deposits, extending to maximum drilled depths of BH20-1 to BH20-3 and underlain by sandy silt till deposits in other boreholes.

Sandy Silt Till:

Sandy silt till deposits were encountered below the cohesive deposits in Boreholes BH20-4 through BH20-14, 21-1 and 21-2 extending to depths ranging from 6.0m to 8.2m below ground surface. Boreholes BH20-4 to BH20-7, BH20-9 to BH20-11 and BH20-13 were terminated in sandy silt till deposit.

Lower silty sand/sand and gravel:

These deposits were found in boreholes BH20-8, BH20-14, BH 21-1(Terraprobe) and BH 21-2(Terraprobe) below the sandy silt till deposits, extending to the bedrock depths at about 20- 25 mbgs.

Shale Bedrock:

The shale bedrock of the Queenston Formation was encountered in BH 21-1(Terraprobe) and BH 21-2(Terraprobe) at about 20- 25 mbgs with corresponding elevations of about 101-100 masl. The bedrock surface elevations at the borehole location were not proven by coring and therefore the actual depth of bedrock may vary from the noted elevations.

3.3 Hydrogeology

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

3.3.1 Local Groundwater Use

As part of the hydrogeological investigation, DS completed a search of the MECP WWRs database. Based on the MECP WWR search, there are nineteen (19) water wells within 500 meters of the site (**Appendix D**). Seven (7) wells were noted for domestic (DO) use, one (1) well was noted for irrigation (IR) use and one (1)

well was noted for livestock (ST) use. All other wells were noted as either monitoring (MO), test hole (TH) or not in use (NU). **Figure 1** shows the MECP water well location plan. A water well survey is recommended within the study area to confirm the presence and use of any domestic wells.

3.3.2 Groundwater Conditions

Groundwater levels were measured in all available wells between August 18th, 2020, and October 12th, 2021, by DS. **Table 3-1** presents the groundwater levels in all monitoring wells. The groundwater in shallow wells was found between 0.9 and 3.1 mbgs and in deep well at 7.7 mbgs representing shallow and deep groundwater conditions at the site. The interpreted shallow groundwater contour map for the water level measurements is shown in **Figure 4.** Based on groundwater elevations, the flow direction is inferred to be northeast towards Fourteen Mile Creek and southwest towards Bronte Creek. The groundwater levels are subject to seasonal fluctuations and may vary in response to changing climate conditions and may also affect the shallow groundwater flow direction at the Site. Infilled material and underground utilities may also affect shallow groundwater flow direction at the Site. The groundwater monitoring data is presented in **Appendix F.**

Table 3-1: Groundwater Levels in Monitoring Wells

Well ID/ Location	Ground Elevation (masl)	Well Depth (mbgs)	Screened Interval (masl)	Date	Depth to Water (mbgs)	Groundwater Elevation (masl)
BH/MW 20-1	129.0	6.2	3.2-6.2	Between August 2020 & June 2021	2.0-1.9	127.1-127.0
BH/MW 20-2	131.9	4.6	1.6-4.6		3.0-3.1	128.9-128.8
BH/MW 20-3	130.2	4.6	1.6-4.6		1.8-2.5	128.4-127.7
BH/MW 20-5	129.9	4.6	1.6-4.6		1.1-1.6	128.8-128.3
BH/MW 20-8	129.9	5.2	2.2-5.2		4.6-5.1	125.3-124.8
BH/MW 20-10	130.4	4.6	1.6-4.6		0.9-1.2	129.5-129.2
BH/MW 20-13	131.0	4.6	1.6-4.6		1.5-1.6	129.6-129.4
BH/MW 21-1	130.1	8.7	57-8.7	October 2021	7.7	122.4

3.3.3 Hydraulic Conductivity

Five (5) Single Well Response Tests (slug tests) were completed by DS on November 3, 2021, to estimate hydraulic conductivity (k) for the representative geological units in which the wells were screened. The testing was completed using data loggers placed at the bottom of the monitoring wells to accurately measure the change in the hydraulic head versus time. Hydraulic conductivity (k) values were calculated using the Bouwer and Rice method using the AquiferTest® Software. The semi-log plots for normalized drawdown versus time are provided in **Appendix B.** The k-values ranged between 5.6 X

10^{-5} to 2.0 x 10^{-6} m/s with a geomean k-value of 7.6 x 10^{-6} m/s. **Table 3-2** presents the Hydraulic Conductivity (k) values for the representative geological units.

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

Well ID	Screened Interval (mbgs)	Screened Formation	K-value (m/s)
BH20-1	3.3-6.3	Silt to Sandy Silt & Clayey Silt Till	2.0 x 10^{-6}
BH20-2	1.9-4.9	Fill & Sand	1.0 x 10^{-5}
BH20-3	1.3-4.3	Fill, Silty Sand, & Silt	1.0 x 10^{-6}
BH21-5	1.3-4.3	Sand, Silty Sand, Silt to Sandy Silt, Silty Clay, Clayey Silt Till	2.0 x 10^{-5}
BH21-10	1.3-4.3	Sand, Silty Sand, Silt to Sandy Silt, Silty Clay, Clayey Silt Till	5.6 x 10^{-5}
		Geomean	7.6 x 10^{-6}

3.3.4 Groundwater Quality

To assess the suitability for discharge of groundwater to the Halton Region sanitary and combined (by-law 2_03) and Town of Oakville storm sewers (by-law 2009_031), one (1) unfiltered groundwater sample was collected from monitoring well BH20-10 on May 27th, 2021. Samples were also assessed against PWQO to assess the baseline water quality conditions and suitability for discharge overland. 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 Lakefield, Ontario. SGS is certified by the Canadian Association of Laboratory Accreditation Inc. (CALA) and the Canadian Standard Association (CSA). The reported analytical results indicate that only TSS exceeded the Halton Region's sewer criteria, but several parameters exceeded the Town of Oakville's storm sewer criteria and the PWQOs. **Tables 3-3** a **3-4** present a summary of the exceeded parameters, and the certificates of analyses are provided in **Appendix D.**

Table 3-3: Parameters in Groundwater Exceeding Halton Region Sewer Use By-Law and Town of Oakville Storm Sewer Use By-law

Parameter	Unit	Halton Region Sanitary Sewer By-Law Criteria	Halton Region/Town of Oakville Storm Sewer By-Law Criteria	BH20-10
Hexachlorobenzene	mg/L	n/a	0.00004	***<0.0001**
Total Suspended Solids (TSS)	mg/L	350	15	**<u>791</u>**
Copper	mg/L	3	0.04	**0.0545**
Total Manganese	mg/L	5	0.05	**1.28**
Total Phosphorus	mg/L	10	0.4	**0.574**
Zinc	mg/L	3	0.04	**0.110**
<u>0.00</u>- Exceeds Storm Sewer Criteria; **0.00(bold)**- Exceeds Sanitary and Combined Sewer Criteria; 0.00- Exceeds Both Criteria. *- Detection Limit Exceeds Criteria.				

Table 3-4: Parameters in Groundwater Exceeding PWQO

Parameter	Unit	PWQO Criteria	BH20-10
Aldrin + Diedrin	mg/L	$1x10^{-6}$	**<0.00002***
Anthracene	mg/L	$8x10^{-7}$	**<0.0001***
Benz(a)anthracene	mg/L	$4x10^{-7}$	**<0.0001***
Benzo(k)fluranthene	mg/L	$2x10^{-7}$	**<000001***
Chlordane	mg/L	$6x10^{-5}$	**<0.0001***
Chyrsene	mg/L	$1x10^{-7}$	**<0.001***
DDT+Metabolites	mg/L	$3x10^{-6}$	**<0.00001***
Dibenz (a, h)anthracene	mg/L	$2x10^{-6}$	**<0.00004***
Fluoranthene	mg/L	$8x10^{-7}$	**<0.0001***
Hexachlorobenzene	mg/L	$6.5x10^{-6}$	**<0.0001***
Phenanthrene	mg/L	$3x10^{-5}$	**<0.0001***
Aluminum	mg/L	0.075	**21.6**
Arsenic	mg/L	0.005	**0.0093**
Cadmium	mg/L	0.0001	**0.000268**
Cobalt	mg/L	0.0009	**0.018**
Copper	mg/L	0.001	**0.0545**
Iron	mg/L	0.3	**34.3**
Lead	mg/L	0.011	**0.0282**
Nickel	mg/L	0.025	**0.0363**
Phosphorus	mg/L	0.01	**0.773**
Zinc	mg/L	0.02	**0.11**
4AAP-Phenolics	mg/L	0.001	**<0.002***
0.00- Exceeds PWQO Criteria**; 0.00***- Detection Limit Exceeds PWQO			

3.3.5 Surface Water Conditions

The existing drainage from the site is segmented between Fourteen Mile Creek and Bronte Creek. Most of the site area drains to Bronte Creek. The northeast portion of the site drains to Fourteen Mile Creek. A large pond (Pond 1) is constructed for recreation purposes at the west portion of the site and connected with two other small ponds and ultimately discharge to Bronte Creek (BCT-1). The elevation of the water level at the larger pond was 129.35 masl on February 16, 2023. It is DS's opinion that the water stored in the ponds is likely to be from a groundwater source. Considering surficial geology, most of the areas of the Site are characterized by coarse-textured glaciolacustrine deposits of sand and gravel which can be considered a source of water for the ponds.

3.3.6 Surface Water Quality

DS collected one unfiltered surface water sample from the large pond (Pond 1) on March 13, 2023. The Sample was analyzed against the PWQO the Halton Region Sewer Use Bylaw and the Town of Oakville Sewer Use Bylaw to assess the baseline water quality conditions and suitability for discharge to the Region/Town's sewer system and nearby water bodies.

The reported analytical results indicate that all parameters met the Halton Region's and the Town of Oakville's sewer discharge criteria, but several parameters exceeded the PWQOs. **Table 3-5** presents a summary of the exceeded parameters, and the certificates of analyses are provided in **Appendix D.**

Table 3-5: Parameters in Surface Water Exceeding PWQO

Parameter	Unit	PWQO Criteria	Large Pond (Pond 1)
Aldrin + Diedrin	mg/L	$1x10^{-6}$	**<0.00002***
Anthracene	mg/L	$8x10^{-7}$	**<0.0001***
Benz(a)anthracene	mg/L	$4x10^{-7}$	**<0.0001***
Benzo(g,h,i)perylene		$2x10^{-8}$	**<0.0002***
Benzo(k)fluranthene	mg/L	$2x10^{-7}$	**<0001**
Chlordane	mg/L	$6x10^{-5}$	**<0.001***
Chyrsene	mg/L	$1x10^{-7}$	**<0.0001***
DDT+Metabolites	mg/L	$3x10^{-6}$	**<0.00004***
Dibenz (a, h)anthracene	mg/L	$2x10^{-6}$	**<0.0001***
Fluoranthene	mg/L	$8x10^{-7}$	**<0.0001***
Hexachlorobenzene	mg/L	$6.5x10^{-6}$	**<0.00001***
Perylene		$7x10^{-8}$	**<0.0005***
Phenanthrene	mg/L	$3x10^{-5}$	**<0.0001***
Copper	mg/L	0.001	**0.0055**
Phosphorus	mg/L	0.01	**0.014**
4AAP-Phenolics	mg/L	0.001	**<0.002***
0.00- Exceeds PWQO Criteria**; 0.00***- Detection Limit Exceeds PWQO criteria			

3.3.7 Groundwater seeps

A seep area observed near the outlet from the Pond at an elevation of 128 masl was identified as a source of shallow interflow that may be wet in the spring or after precipitation events or related to water stored in the ponds. This seep is linked to the shallow sand unit found at the site and is the source of water to the onsite pond. Also, deeper groundwater-derived seeps were identified in the valley between the Site and Bronte Creek in an alluvial fan area at an elevation of 108.5 masl. Multiple seep zones are noted to the north and south of the site along the same general elevation indicative of natural groundwater discharge in the valley. These seeps are hydraulically connected to a more

regionally expansive sand unit found at other sites to the east of Bronte Road. This area is expected to have longer seasonal longevity as reported by the previous owner.

4.0 WATER BALANCE

To inform the design of LIDs, a Thornthwaite Monthly Water Balance Model was completed and used to evaluate pre-development and post-development hydrological conditions at the Site. The results can be used to design appropriate LID measures to compensate for any anticipated changes or deficits in site hydrology.

4.1 Existing Conditions (Pre-Development)

The Site has a total area of 121,200 m^2 (12.12 ha) and includes approximate pervious areas of 110,400 m^2 and impervious areas of 10,800 m^2. Pre-development land use is summarised in **Table 4-1**. **Figure 6A** shows the pre-development conceptual model considered for establishing current hydrologic conditions.

4.2 Proposed Development (Post-Development)

The proposed area for subdivision is 121,200 m^2 (12.12 ha) with Low Impact Development (LID) measures. For the water balance calculations in this report, it is estimated that the proposed subdivision will include residential dwellings with a pervious area of about 84,500 m^2 and impervious area of about 36,700 m^2. Post-development land use is summarised in **Table 4-1**. **Figure 6B** shows the post-development conceptual model considered for establishing post-hydrologic conditions.

Table 4-1: Pre-Development and Post-Development Land Use

Land Use	Pre-Development Area (m^2)	Post-Development Area (m^2)
Impervious Area		
Residential Dwellings/Townhomes(Roof)	2,500	16,700
Driveways/Roads/Paved surface	3,700	15,900
Pond	4,600	-
LID Facility	**-**	4,100
Sub-total	**10,800**	**36,700**
Pervious Area		
Open Space/Landscaped	51,000	18,800
Wooded Area/Buffers	59,400	65,700
Sub-total	**110,400**	**84,500**
Total	**121,200**	**121,200**

4.3 Water Balance Components (Thornthwaite Monthly Water Balance Model)

The Thornthwaite water balance (Thornthwaite, 1948; Mather, 1978; 1979) is an accounting type method used to analyze the allocation of water among various components of the hydrologic cycle. Inputs to the model are monthly temperature, Site latitude, precipitation, and stormwater run-on. Outputs include monthly potential and actual evapotranspiration, evaporation, water surplus, total infiltration, and total runoff. For ease of calculation, a spreadsheet model was used for the computation.

When precipitation (P) occurs, it can either runoff (R) through the surface water system, infiltrate (I) to the water table, or evaporate/evapotranspiration (ET) from the earth's surface and vegetation. The sum of R and I is termed the water surplus (S). When long-term averages of P, R, I and ET are used, there is no net change in groundwater storage (ST). Annually, however, there is a potential for minor changes in ST. The annual water budget can be stated as **P = ET + R + I + ST** and the components are discussed below.

Precipitation (P)

Based on the 30-year average for Georgetown WWTP Station in Ontario, the average precipitation for the area is about 877.3 mm/year for the period between 1981 and 2010. Also, the average monthly temperature from this station has been used. The monthly distribution of precipitation is presented in **Table E1, Appendix E.**

Storage (ST)

Groundwater storage (ST) of native soils for the existing Site was estimated using values of Water Holding Capacity (mm) of respective land use and soil types identified in Table 3.1 of the Storm Water Management (SWM) Planning & Design Manual (MOE, March 2003). The land uses, soil types and respective water-holding capacities shown in **Table 4-2** were chosen to represent existing conditions and applied to March for monthly calculations.

Table 4-2: Water Holding Capacity of Native Soils in Pervious Areas

Land Uses	Soil Types	Water Holding Capacity (mm/year)	
		Pre-Development	Post-Development
Wooded Area	Clayey Loam	400	400
Landscape/Urban Lawn/grass	Silty Loam	200	200

Using the procedures outlined in the SWM Planning & Design Manual for the above land use and soil type, the annual change in storage is zero (0).

Evapotranspiration (ET)

Monthly Potential Evapotranspiration (PET) is estimated using monthly temperature data and is defined as a water loss from a homogeneous vegetation-covered area that never lacks water (Thornthwaite,1948; Mather, 1978). In the Thornthwaite water balance model, PET is calculated using the Hamon equation (Hamon, 1061).

PET Hamon = 13.97 * d * D2 * Wt

Where:

d = the number of days in the month

D = the mean monthly hours of daylight in units of 12 hours

Wt = a saturated water vapour density term = 4.95 * e0.627/100

T = the monthly mean temperature in degrees Celsius

The calculated Actual Evapotranspiration (AET) is based on PET and changes in ST (Δ ST). Where there is not enough P to satisfy PET, a reduction in ST occurs. As a result, volumes of AET are less than PET. Also, it is assumed that evaporation will occur and will amount to 15% of the total precipitation for an impervious cover.

Precipitation Surplus (S)

Precipitation surplus is calculated as P–ET. For pervious areas, ET is considered AET and for impervious areas, ET is evaporation.

Infiltration (I) and Runoff (R)

For pervious areas, precipitation surplus has two components in the Thornthwaite model: a runoff component (overland flow that occurs when soil moisture capacity is exceeded) and an infiltration component. The accumulation of infiltration factors for topography, soil types and the cover as prescribed in Table 3.2 of the SWM Planning & Design Manual, MECP (2003) gives infiltration factors for existing conditions on the Site as shown below in **Table 4-3**. The runoff component calculated in the pre-development and post-development is the remaining volume of precipitation surplus following AET, ET and infiltration.

Table 4-3: Pre-Development and Post-Development Conditions – Infiltration Factors

Land Uses	Topography	Soil	Cover	Infiltration factor	Runoff Coefficient
Pre- Development Conditions					
Wooded Area	0.2	0.3	0.2	0.7	0.3
Agriculture land/ Grass area	0.2	0.3	0.1	0.6	0.4
Road/Walkway/Buildings/Pond	-	-	-	-	0.85

Land Uses	Topography	Soil	Cover	Infiltration factor	Runoff Coefficient
Post-Development Conditions					
Urban Lawn/Landscape/Buffer Area	-	-	-	0.50	0.50
Road/Walkway/Buildings/ LID Block	-	-	-	-	0.85
Note: *** Table 3.2 of the SWM Planning & Design Manual (March 2003), MECP**					

4.4 Water Balance Analysis

To predict outputs of the pre-development and post-development water balance, various inputs were entered into the Thornthwaite model including monthly precipitation and temperature, Site latitude, water holding capacity values for native soils and factors of infiltration as discussed in section 4.3. The analysis is summarised below, and the detailed calculations are presented in **Table E 1-3, Appendix E.**

4.4.1 Water Balance- Pre-Development

The average precipitation for the area is about 877 mm/year. For the pervious area, the calculated PET is 585 mm/year or about 67 % of the total precipitation. The monthly distribution of ST for the pervious area in silty loam produced a unit area annual AET of 545 mm/year and 565 mm/year for landscaped and wooded lands. For the impervious areas, it is assumed that evaporation will occur and will amount to 15% of total precipitation (877 mm/year). Given a total pervious area of 110,400 m^2 and impervious area of 10,800 m^2, the existing development is expected to produce an evapotranspiration/AET of 62,788 m^3/year, an infiltration of 23,147 m^3/year and a runoff of 20,394 m^3/year. The analysis is summarised below in **Table 4-4**. The detailed calculations are presented in **Table E-2, Appendix E.**

4.4.2 Water Balance- Post-Development (Without mitigation)

A post-development water balance was completed using the conceptual plan of subdivision. In the post-construction scenario, changes in land use will result in about 36,700 m^2 of impervious paved/buildings/LID areas, and 84,500 m^2 of pervious areas (landscaped, wooded and buffer areas). The monthly distribution of ST for landscaped areas and the wooded area produced an annual AET of 545 mm/year and 565 mm/year, respectively. For the impervious areas, it is assumed that evaporation will occur and will amount to 15% of total precipitation (877 mm/year). Given a total pervious area of 36,700 m^2 and an impervious area of 84,500 m^2, the proposed development is expected to produce an evapotranspiration/AET of 52,205 m^3/year, an infiltration of 17,480 m^3/year and a runoff of 36,443 m^3/year. The analysis is summarised below in **Table 4-4.** The detailed calculations are presented in **Table E-3-, Appendix E.**

4.4.3 Water Balance Results - Pre-Development to Post-Development Changes (without mitigation)

Based on the results of the pre-development and post-development water balance completed, the proposed development without mitigation is expected to produce a decrease in annual infiltration of about 5,666 m^3/year and an increase in annual runoff of about 16,249 m^3/year. The effects are the result of increased impervious areas, replacing pervious areas of the Site. The analysis is summarised below in Table 4-4.

Table 4-4: Summary of Water Balance- Pre-Development and Post-Development

Development Stage	Unit	Infiltration	Runoff	Evaporation/AET
Pre-Development	m^3/year	23,147	20,394	62,788
Post-Development (No mitigation)	m^3/year	17,480	36,643	52,205
Change (Pre- to Post-Development)-No Mitigation	**Change- m^3/year**	**-5,666**	**+16,249**	**-10,583**
	% Change	**-25**	**+81**	**-18**

4.4.4 Water Balance- With Mitigation Measures

Based on the results of the site water balance, the overall infiltration deficit for the site is about 5,700 m^3/year. DS reviewed the latest Functional Servicing Report (FSR) prepared by Urbantech dated March 2023. As per the FSR report, low-impact development (LID) measures are proposed at the site to manage stormwater and minimize surface runoff and promote infiltration. The following LID measures are proposed to meet the water balance deficit.

- Biofiltration Facility
- Downspout Disconnection
- Grassed Swales
- Rain Barrels
- Additional Topsoil Depth

The proposed Biofiltration Facility (with liner) has been proposed and designed to retain and store 25 mm of rainfall events and enhance evaporation. The total provided storage volume of the biofiltration facility is 4,438 m^3. Furthermore, based on the water balance analysis, the roof area (impervious area) of about 16,700 m^2 for the proposed development will give about 12,435 m^3/year of the clean water source to eliminate the infiltration deficit. Also, it is proposed minimum of 200 mm of topsoil in the landscape area to increase infiltration and promote evaporation.

With the proposed mitigation measures, (redirecting of water to the pervious areas with increased topsoil depth), the infiltration deficit is expected to be reduced from 5,666 m^3/year to 1,618 m^3/year. A

summary of Pre-and Post water balance with mitigations is presented in **Table 4-5** and various inputs and outputs of the post-development model with mitigation are presented in **Table E-4, Appendix E.**

Table 4-4: Summary of Water Balance- Pre- and Post-Development with mitigation

Development Stage	Unit	Infiltration	Runoff
Pre-Development	**m^3/year**	23,147	20,394
Post-Development (No mitigation)	**m^3/year**	17,480	36,643
Change (Pre- to Post-Development)-No Mitigation	**Change- m^3/year**	**-5,666**	**16,249**
Post-Development -With Mitigation Measures	**m^3/year**	21,528	33,472
Change (Pre- to Post-Development)-With Mitigation Measures	**Change- m^3/year**	**-1618**	**+13,078**

It should be noted that due to the highly impervious nature of the post-development plan and the higher water level at the site, there are limited options to provide additional mitigation measures. As discussed in the FSR, there is a potential for infiltration through the biofiltration facility (no liner) subject to field determination of groundwater levels following the decommissioning of the on-site man-made pond which may lower groundwater levels. The post-development water balance with mitigation measures will be refined during detailed design.

5.0 CONSTRUCTION DEWATERING

5.1 Estimation of Flow Rates- Proposed Buildings and Site Servicing

A preliminary site and grading plans dated March 2023 were available for the proposed development at the time of drafting the report. Based on the available plans, the following assumptions were made to assess groundwater seepage/dewatering requirements during the construction period.

a. The construction of the proposed development will be phased.

b. A 60 m long and 30 m wide block comprised of 5-6 townhomes or 3-4 detached homes with one (1) level of basement will be excavated at any given time within the larger site development with a maximum excavation depth of 5 m.

c. A 30 m long and 2 m wide trench will be opened per day for the site servicing at any given time with a maximum excavation depth of 4 m.

d. A 200 m long and 20 m wide trench for the LID facility will be opened at any given time with a maximum excavation depth of 3 m.

The dewatering volume was estimated using the steady-state equation as below and **Table 4.1** presents the dewatering volume for the assumed blocks and site servicing at the site.

$Q = K * (H^2 – h^2) / 0.733 * Log (R/r_e)$

$Q = (pi * K (H^2 – h^2)) / ln (R/r_e) + 2 x (X * K * (H^2 – h^2 2)) / 2 x L$- where a/b>1.5

Where,

K – Hydraulic conductivity= 0.086 m/d

H – Distance from static water level to the bottom of an aquifer= 5.0

h – Depth of water in the well while pumping= 0.0

r_e – equivalent radius [m] = $((a*b) / \pi)^{0.5}$ where a and b are excavation dimensions

R – Radius of the cone of depression = $r_e + 3000 * (H – h) * K^{0.5}$

Table 4-1- Dewatering Rates and Zone of Influence during the Construction of Subdivision

Block/ Trench	Established Grade Elevation (masl)	Ground-water level (masl)	Flow Rate- Q(L/day)		Storm-water 10mm/24 hrs.(L/day)	Total Flow Rate (L/day)	Zone of Influence R-(m)
			Without a Safety Factor	With a safety factor of x1.5			
Block Area= 60 m x 30 m (townhomes/detached homes) *One level of basement with the deepest excavation to a depth of 5 m * K = 1.0 x 10^{-5} m/s, H = 4.5	134-131	129.6-127	84,000	126,000	18,000	144,000	67
Servicing Trench *Area= 30 m x 2 m with deepest excavation to a depth of 6 m * K = 1.0 x 10^{-5} m/s, H= 4	132.5-127		38,000	57,000	1,000	58,000	42
LID Blocks *Area= 200 m x 20 m with the deepest excavation to a depth of 4 m * K = 1.0 x 10^{-5} m/s, H= 4	130.5-128		134,000	201,000	40,000	241,000	74
Total			**256,000**	**384,000**	**59,000**	**443,000**	**Max. 74 m**

5.2 Total Estimation of Flow Rate (Short-Term/ Temporary Discharge)

The total estimated steady-state flow rate for an assumed low residential area/block and servicing trench at any given time is 256,000 L/day without a safety factor and 384,000 L/day with a safety factor of x1.5. However, the total dewatering flow rate for assumed block/areas and trench including

stormwater consideration is estimated at 443,000 L/day. The total estimated volume can vary depending on grading excavation depths, the permeable nature of soils, groundwater elevation, and any hydraulic connection of the existing pond to groundwater.

5.3 Permit Requirements

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

DS anticipates that the construction of the proposed construction will be phased. The total estimated dewatering rate of 443,000 L/day is based on the assumed blocks and trenches. If multiple blocks/trenches are excavated, additional dewatering may be required. Therefore, an EASR or PTTW requirement can be determined once the final design, revised dewatering rates, and construction sequences are available.

An Environmental Activity Sector Registration (EASR) is required to be submitted to the Ministry of the Environment, Conservation and Parks (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 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. The PTTW application is also an online registry and should be submitted to the MECP 90 days from the start of construction dewatering. Dewatering of up to 400,000 L/day is acceptable under an EASR registry. However, an EASR or a PTTW is not required for water taking less than 50,000 L/day.

5.3.2 Discharge Permits

A discharge permit will be required from the Halton Region/Town of Oakville if private water is to be sent to the sewer system for construction dewatering. Also, a permit from Conservation Halton may be needed if the water is discharged to Bronte Creek (BCT-1).

6.0 POTENTIAL IMPACTS

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

6.1 Local Groundwater Use

A water well survey is recommended within the study area to confirm the presence and use of any domestic wells identified within the MECP WWRs and to confirm the source of drinking water within the zone(s) of influence/study area.

6.2 Current PTTW Search

The MECP PTTW Open Data Catalogue was searched within a 1 km radius of the Site. The search indicated that there were five (5) active PTTWs within 1 km of the Site. Groundwater interferences may occur if multiple detached units and trench excavations are to occur at the same time for the proposed. It is recommended that the development be constructed in phases to minimize total dewatering requirements at the site. The PTTW Search is summarized in **Table 5-1** below.

Table 5-1: PTTWs within 1 km of the Site

Permit Number	Permit Holder Name	Purpose	Specific Purpose	Max Litres Per Day	Source Type	Distance from Site (km)
4682-B44HF8	Bronte Green Corporation	Dewatering Construction	Construction	175,200	Surface and Groundwater	0.20
4682-B44HF8	Bronte Green Corporation	Dewatering Construction	Construction	838,480	Surface and Groundwater	0.38
4682-B44HF8	Bronte Green Corporation	Dewatering Construction	Construction	78,000	Surface and Groundwater	0.44
4682-B44HF8	Bronte Green Corporation	Dewatering Construction	Construction	787,400	Surface and Groundwater	0.69
2443-A86Q9R	Deerfield Golf & Recreation Centre Ltd.	Commercial	Golf Course Irrigation	1,362,600	Surface Water	0.88

6.3 Source Protection Area

The site is located within the Halton Region Source Protection Area (SPA). Source Protection Plans contain policies aimed at protecting drinking water sources by reducing or eliminating significant threats to the source of municipal drinking water. The study area is serviced by municipal water or domestic wells. There are no municipal drinking water supply wells existing within the predicted zone of influence. Therefore, impacts that may occur to the drinking water supply within the zone(s) of influence are unlikely.

6.4 Highly Vulnerable Aquifer

The site is not located in a Highly Vulnerable Aquifer (HVA). HVAs are aquifers that are more susceptible to contamination consisting of granular material (i.e., sand & gravel, and fractured rock near the surface of the ground).

6.5 Wellhead Protection Area

The site and the study area are not located within a municipal Wellhead Protection Area (WHPA). WHPAs are used to identify locations of potential water quantity threats. There are two types of threats: those associated with water demand and those associated with a reduction in groundwater recharge.

6.6 Intake Protection Zone

The site and the study area are not located within an Intake Protection Zone (IPZ). IPZs depend on surface water for municipal water supply and include areas of land adjacent to streams and storm sewers where runoff water can quickly reach an intake.

6.7 Surface Water and Groundwater Recharge

There are artificial ponds located at the site and the nearest water feature is Bronte Creek located about 50 m from the western boundary of the development area. According to the previous owner, these ponds are groundwater-fed from a shallow sand unit at the site. The outlet from the pond directly flows to the channel or gully within the ravine area associated with Bronte Creek (BCT-1). It is DS's opinion that the water stored in the ponds is likely to be from a groundwater source. Considering surficial geology, most of the areas of the Site are characterized by coarse-textured glaciolacustrine deposits of sand and gravel which can be considered a source of water for the ponds. Evidence of groundwater seeps identified and observed near the outlet may be related to water stored in the ponds. The multiple seep zones located across the Bronte Creek valley are also groundwater-fed from a deeper and regional sand unit (**Figure 5**) and will not be impacted by development activities including pond removal from the upper sand unit.

It is proposed to remove the ponds at the site as part of the development. The groundwater varies within the pond area between 129.6 and 127 masl and the flow direction is inferred to be west towards Bronte Creek. The elevations of water in the ponds vary between 129.3 and 128.5 masl and are representative of groundwater levels and indicate groundwater-fed ponding conditions. Based on the grading plan, the approximate FFLs for the residential dwellings within the pond areas are between 133 to 132.5 masl and the expected lowest basement elevations are between 130.5-130 masl. An analysis of existing groundwater patterns and a review of the grading plan indicate that the seasonal high-water level will likely be below the basements and is not expected to intersect the basements. Also, any long-

term impacts on groundwater-derived seeps are not anticipated as a result of the removal of ponds due to the natural function of these seeps.

A water balance study was completed to maintain groundwater flow. A site-based water balance assessment using a Thornthwaite approach was completed which identified the infiltration deficit for the site because of the proposed development. Based on the results of the pre-development and post-development water balance completed, the proposed development without LID mitigation is expected to produce a decrease in annual infiltration of about 8,030m^3/year and an increase in annual runoff of about 24,839 m^3/year. The effects are the result of increased impervious areas, replacing pervious areas of the Site. Mitigation measures using Low Impact Development (LID) techniques will be used at the site to lessen the effect of impervious surfaces added because of development.

6.8 Point of Discharge and Water Quality

Groundwater quality analysis indicated that TSS exceeded the Halton Region sanitary and combined sewer criteria and that several parameters exceeded the Town of Oakville storm sewer criteria and PWQO. Therefore, groundwater at the development site is not suitable for discharge into the Halton Region sanitary and combined sewers, the Town of Oakville's storm sewers or overland without pre-treatment.

Surface water analysis indicated that all parameters met the Halton Region's and the Town of Oakville's sewer discharge criteria, but several parameters exceeded the PWQOs. Therefore, surface water at the development site is suitable for discharge into the Halton Region's or the Town of Oakville sewers system but not suitable for discharge to nearby water bodies without pre-treatment.

Treatment options include but are not limited to the settlement of suspended solids, filtration and oxidation followed by filtration to remove fines and associated metals. Discharge permits and agreements may be required from the Halton Region/Town of Oakville for short-term discharge. A surface water quality sample is recommended to be obtained from Bronte Creek (BCT-1) to assess baseline water quality if water is to be discharged to BCT1 during construction dewatering. Alternatively, if there are concerns with erosion along BCT-1, discharge may be directed to Bronte Creek through a hose to the base of BCT-1. In that case, a baseline water quality sample should be obtained from Bronte Creek.

7.0 MONITORING AND MITIGATION

Based on the findings of the hydrogeological investigation 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, Halton Region and Town of Oakville

- 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 because of dewatering including settlement.

- 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 conducted by a licensed water well contractor in accordance with Regulation 903 of the Ontario Water Resources Act.

8.0 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 provided in this report reflects DS' judgment considering 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 these documents or findings, conclusions, and recommendations represented herein are 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 contact the undersigned.

DS Consultants Ltd.

Prepared By:

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Pradeep Patel, M.Sc., P.Geo.
Hydrogeologist

PROFESSIONAL GEOSCIENTIST
P.P. Mar 28/2023
PRADEEPKUMAR A. PATEL
PRACTISING MEMBER
2710
ONTARIO

Reviewed By:

Martin Gedeon

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

9.0 CONSULTANT QUALIFICATIONS

Martin Gedeon, M.Sc., P.Geo., is a Professional Geoscientist (P.Geo.) with over 26 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.

Pradeep Patel, M.Sc., P.Geo. is a hydrogeologist at DS Consultants Ltd. and has more than 15 years of experience working in the environmental industry. He is involved in numerous Hydrogeological and Geotechnical investigation projects. His experience includes the preparation of construction dewatering activities and hydrogeological investigations in support of Environmental Activity and Sector Registry (EASR) and Permit to Take Water (PTTW) applications.

10.0 REFERENCES

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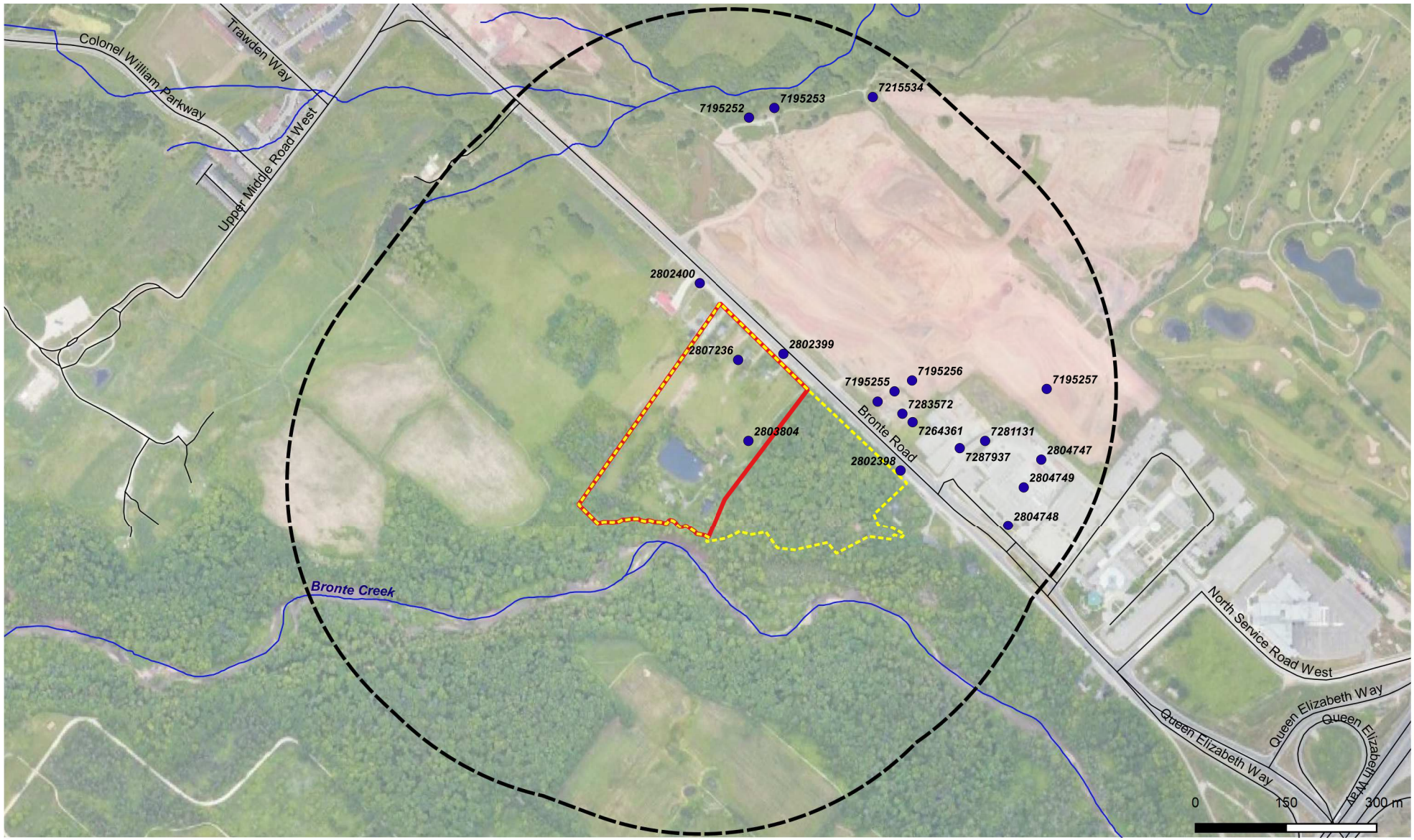
Figures

J:\-GIS\2020 PROJECTS\20-186-100 1326 Bronte Road\1-QGIS\HydroG\Figures with Total Site\Figure 1 – Site Location and MECP Well Records.qgs Mar-23 23:46



Legend

- Development Area
- Total Site
- 500m Buffer
- Registered Water Well (MECP WWR)

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Telephone: (905) 264-9393
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Project: HYDROGEOLOGICAL INVESTIGATION
1300, 1316, 1326, 1342 and 1350 Bronte Road, Oakville, ON

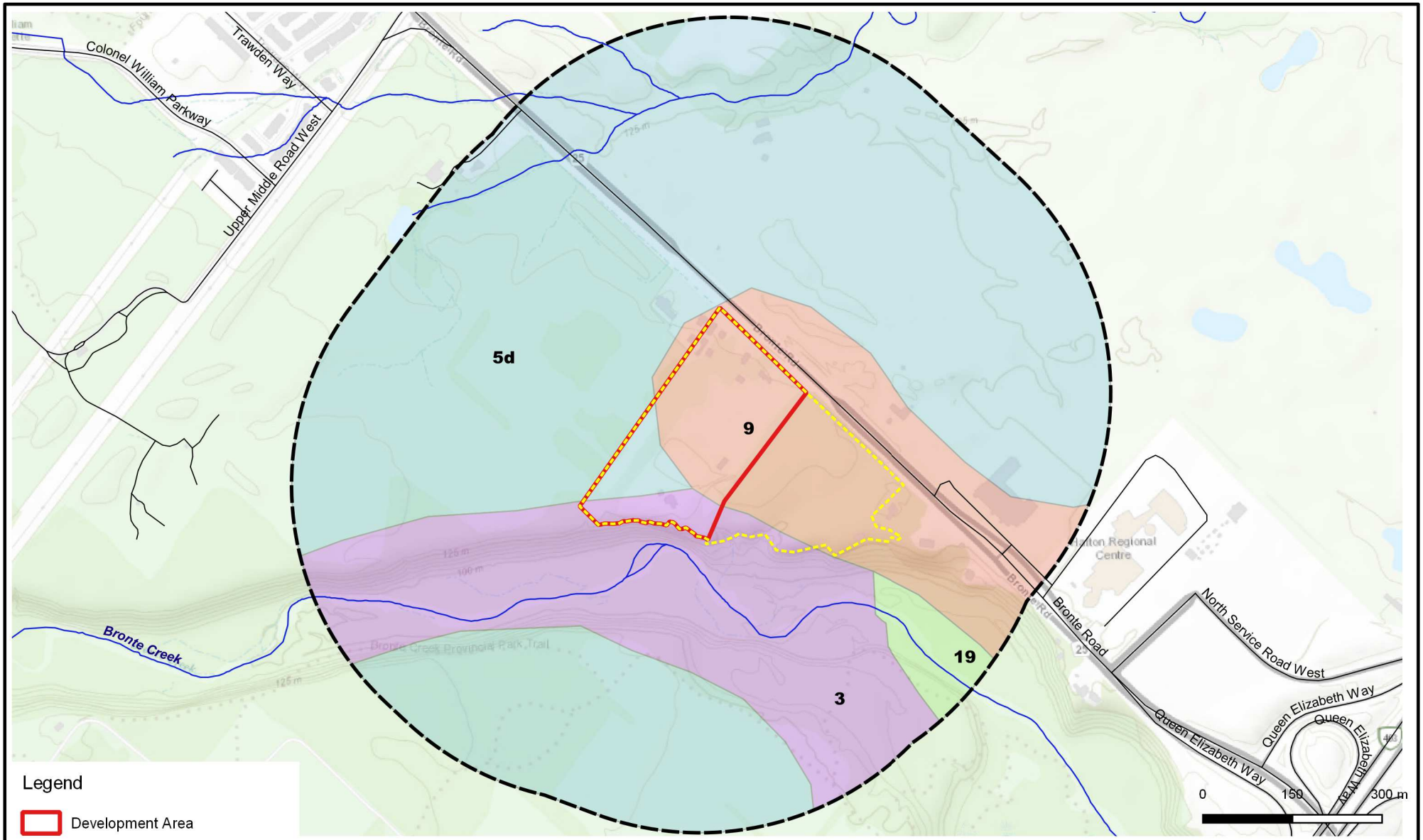
Title: **SITE LOCATION AND MECP WELL RECORDS**

Client: BRONTE RIVER LIMITED PARTNERSHIP

Size: 8.5 x 11	Approved By: D.G	Drawn By: S.Y	Date: March 2023
Rev: 0	Scale: As Shown	Project No.: 20-186-100	Figure No.: 1

Image/Map Source: *Google Satellite Image*

J:\-GIS\2020 PROJECTS\20-186-100 1326 Bronte Road\1-QGIS\HydroG\Figures with Total Site\Figure 2 – Surficial Geology Map.qgs Mar-23 23:48



Legend

- Development Area
- 500m Buffer
- Total Site
- 19 - Stream deposits
- 3 - Bedrock
- 5d - Till
- 9 - Lacustrine and outwash sand

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Project: HYDROGEOLOGICAL INVESTIGATION
1300, 1316, 1326, 1342 and 1350 Bronte Road, Oakville, ON

Title: **SURFICIAL GEOLOGY MAP**

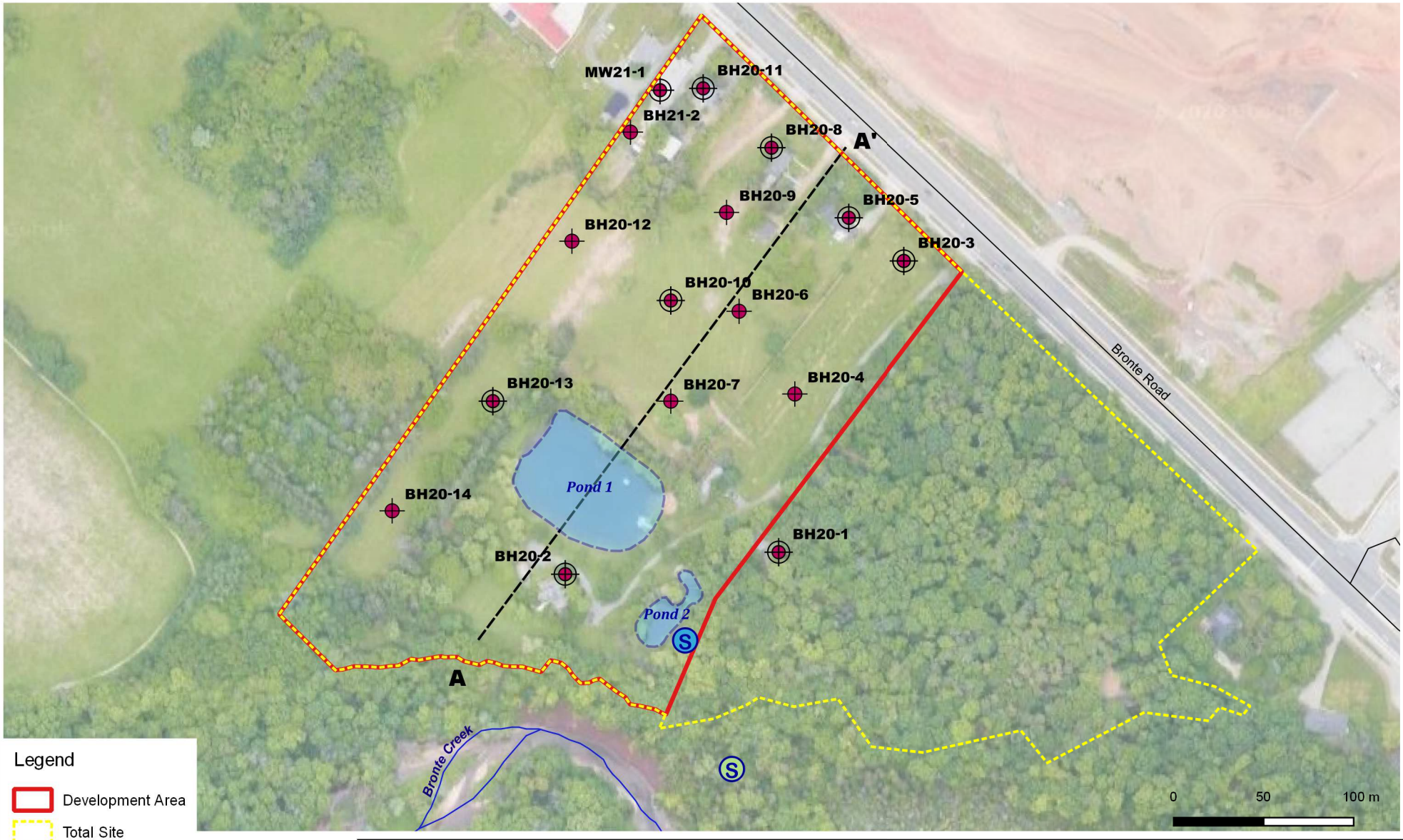
N

Client: BRONTE RIVER LIMITED PARTNERSHIP

Size: 8.5 x 11	Approved By: D.G	Drawn By: S.Y	Date: March 2023
Rev: 0	Scale: As Shown	Project No.: 20-186-100	Figure No.: 2

Image/Map Source: *Esri Topo Map*

J:\-GIS\2020 PROJECTS\20-186-100 1326 Bronte Road\1-QGIS\HydroG\Figures with Total Site\Figure 3 – Borehole and Monitoring Well Locations.qgs Mar-24 00:18



Legend

- Development Area
- Total Site
- Borehole
- Monitoring Well
- Cross Section
- Seep (Natural)
- Seep (Pond)

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Project: HYDROGEOLOGICAL INVESTIGATION
1300, 1316, 1326, 1342 and 1350 Bronte Road, Oakville, ON

Title: **BOREHOLE AND MONITORING WELL LOCATIONS**

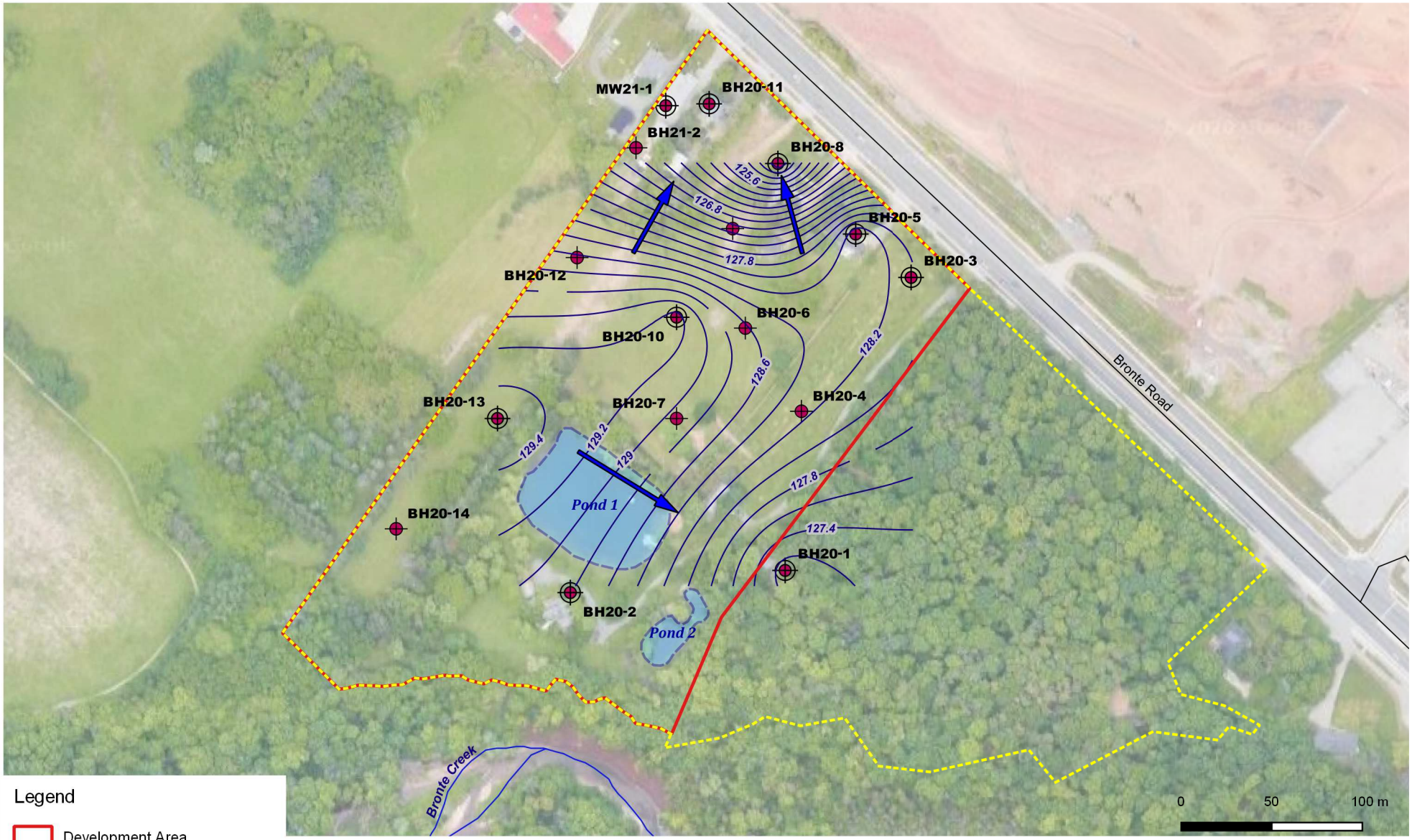
N

Client: BRONTE RIVER LIMITED PARTNERSHIP

Size: 8.5 x 11	Approved By: D.G	Drawn By: S.Y	Date: March 2023
Rev: 0	Scale: As Shown	Project No.: 20-186-100	Figure No.: 3

Image/Map Source: *Google Satellite Image*

J:\-GIS\2020 PROJECTS\20-186-100 1326 Bronte Road\1-QGIS\HydroG\Figures with Total Site\Figure 4 - Groundwater Elevation Contours and Flow Direction.qgs Mar-24 00:17



Legend

- Development Area
- Total Site
- Monitoring Well
- Borehole
- Groundwater Flow Direction
- Groundwater Elevation Contour (June 21, 2021)

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Project: HYDROGEOLOGICAL INVESTIGATION
1300, 1316, 1326, 1342 and 1350 Bronte Road, Oakville, ON

Title: **GROUNDWATER ELEVATION CONTOURS AND FLOW DIRECTION**

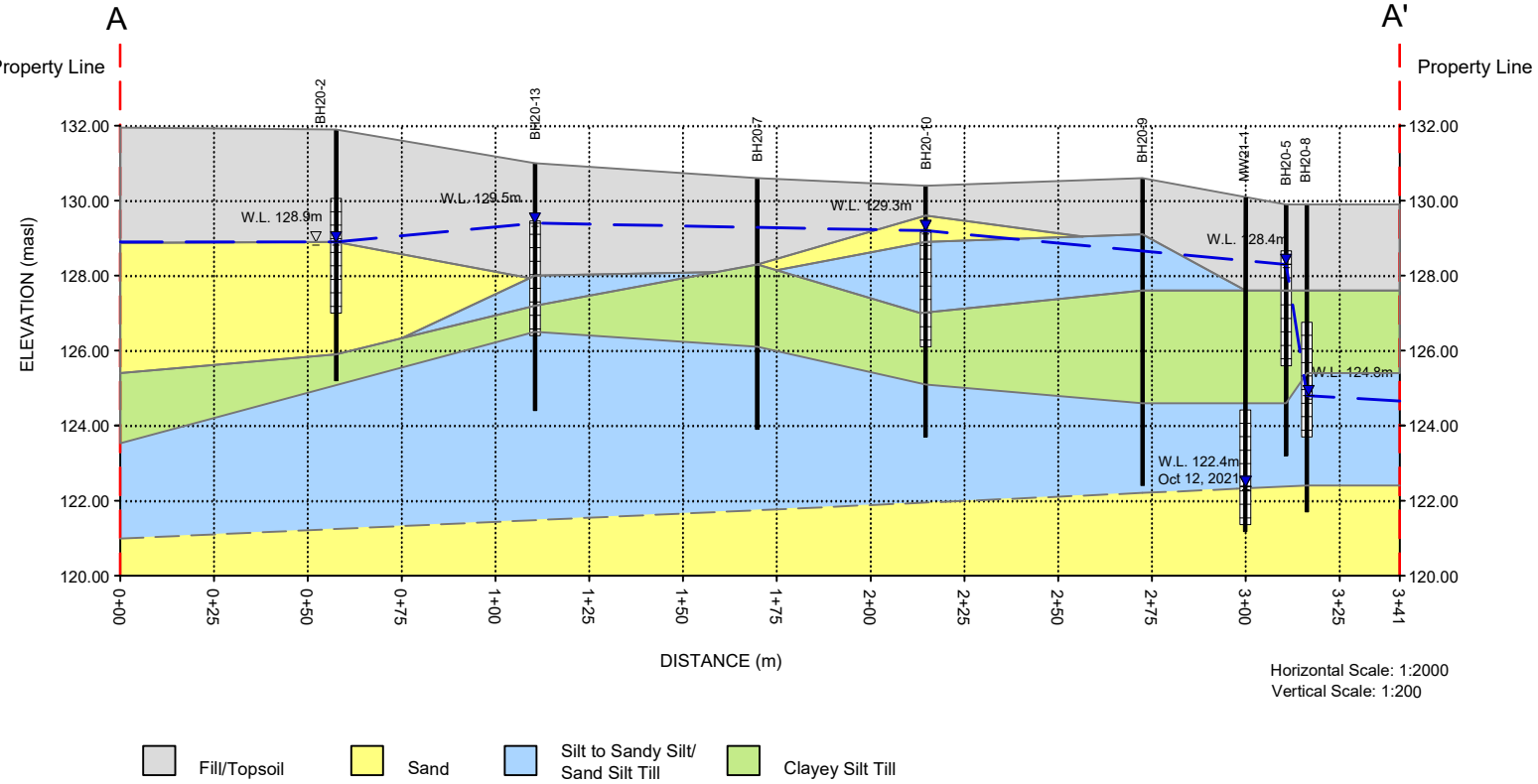
N

Client: BRONTE RIVER LIMITED PARTNERSHIP

Size: 8.5 x 11	Approved By: D.G	Drawn By: S.Y	Date: March 2023
Rev: 0	Scale: As Shown	Project No.: 20-186-100	Figure No.: 4

Image/Map Source: *Google Satellite Image*

Path:j:\-gis\2020 projects\20-186-100 1326 bronte road\7-misc\cad\geological cross section - 20-186.dwg



Groundwater Elevation (21 June 2021)

Well

Screen

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Project: HYDROGEOLOGICAL INVESTIGATION
1300, 1316, 1326, 1342 and 1350 Bronte Road, Oakville, ON

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

Client: BRONTE RIVER LIMITED PARTNERSHIP

Size:	Approved By:	Drawn By:	Date:
8.5 x 11	D.G	S.Y	March 2023
Rev.	Scale: As Shown	Project No: 20-186-100	Figure No. 5

J:\-GIS\2020 PROJECTS\20-186-100 1326 Bronte Road\1-QGIS\HydroG\Figures with Total Site\Figure 6A – Pre-Development Landuse.qgs Mar-24 07:48

Legend

- Development Area
- Total Site
- House
- Walkway/Driveway
- Pond
- Wooded Area (NHS)
- Open Space/Landscape

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Client: BRONTE RIVER LIMITED PARTNERSHIP

Project: HYDROGEOLOGICAL INVESTIGATION
1300, 1316, 1326, 1342 and 1350 Bronte Road, Oakville, ON

Title: **PRE-DEVELOPMENT LAND USE**

N

Size: 8.5 x 11	Approved By: D.G	Drawn By: S.Y	Date: March 2023
Rev: 0	Scale: As Shown	Project No.: 20-186-100	Figure No.: **6A**

Image/Map Source: *Google Satellite Image*

J:\-GIS\2020 PROJECTS\20-186-100 1326 Bronte Road\1-QGIS\HydroG\Figures with Total Site\Figure 6B – Post-Development Landuse.qgs Apr-03 10:56

Legend

- Total Site
- Development Area
- House (Singles/Townhouses)
- Road/Walkway/Driveway
- Wooded Area (NHS)
- Open Space/Landscape
- LID

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Client: BRONTE RIVER LIMITED PARTNERSHIP

Project: HYDROGEOLOGICAL INVESTIGATION
1300, 1316, 1326, 1342 and 1350 Bronte Road, Oakville, ON

Title: **POST-DEVELOPMENT LAND USE**

N

Size: 8.5 x 11	Approved By: D.G	Drawn By: S.Y	Date: April 2023
Rev: 0	Scale: As Shown	Project No.: 20-186-100	Figure No.: **6B**

Image/Map Source: *Google Satellite Image*

Appendix A

DS CONSULTANTS LTD.
Geotechnical ◆ Environmental ◆ Materials ◆ Hydrogeology

LOG OF BOREHOLE BH20-1

PROJECT: Preliminary Geotechnical Investigation - proposed Subdivision
CLIENT: Argo Development
PROJECT LOCATION: 1326 Bronte Road, Oakville, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4807732.72 E 601031.73

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Aug/13/2020

REF. NO.: 20-186-100
ENCL NO.: 2

(m) ELEV / DEPTH	DESCRIPTION	NUMBER	TYPE	BLOWS 0.3 m "N"	ELEVATION	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
129.0 / 0.0	**TOPSOIL:** 150mm					
0.2 / 128.8	**FILL:** sandy silt, trace organics, brown, moist, loose	1	SS	4		
0.8 / 128.2	**FILL:** silty sand, trace clay, trace gravel, brown, moist, loose	2	SS	7	128 Bentonite	
1.5 / 127.5	**FILL:** sand, trace gravel, brown, wet, very loose	3	SS	3	W. L. 127.1 m Jun 10, 2021	
2.3 / 126.7	**SANDY SILT:** trace clay, brown, wet, dense	4	SS	31		
2.6 / 126.4	**SILTY CLAY:** trace sand, brown, moist, hard					
3.0 / 126.0	**SILT TO SANDY SILT:** trace clay, brown, wet, compact	5	SS	12	126	0 15 78 7
		6	SS	14	125 Filter Pack Slotted Pipe	
		7	SS	16	124	
5.3 / 123.7	**CLAYEY SILT TILL:** sandy, trace gravel, occasional cobble, reddish brown to grey, moist, stiff to very stiff	8	SS	18	123	8 29 48 15
		9	SS	13	Bentonite: Bottom of hole	
6.7 / 122.3	**END OF BOREHOLE:**					

Notes:
1) Water depth at 1.5m below grade during drilling.
2) 50mm dia. monitoring well installed upon completion.
3) Water level Reading:

Date:	Water Level (mbgl):
Aug 18, 2020	2.0
Mar. 16, 2021	1.9
Jun. 10, 2021	1.9

SOIL PROFILE | STRATA PLOT | SAMPLES | 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)

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 BH20-10

PROJECT: Preliminary Geotechnical Investigation - proposed Subdivision
CLIENT: Argo Development
PROJECT LOCATION: 1326 Bronte Road, Oakville, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4807872.68 E 600971.17

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Aug/12/2020

REF. NO.: 20-186-100
ENCL NO.: 11

(m) ELEV / DEPTH	DESCRIPTION	NUMBER	TYPE	BLOWS / 0.3 m ("N")	ELEVATION	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
130.4 / 0.0	**TOPSOIL:** 300mm					
130.1 / 0.3	**FILL:** silty sand, trace topsoil, brown, moist, loose	1	SS	5	Bentonite	
129.6 / 0.8	**SAND:** trace silt, trace clay, grey, wet, compact	2	SS	13	130 W. L. 129.3 m Jun 10, 2021	
128.9 / 1.5	**SILTY SAND:** trace clay, brown, wet, compact	3	SS	10	129	
128.1 / 2.3	**SILT TO SANDY SILT:** trace clay, brown, wet, compact	4	SS	17	Filter Pack Slotted Pipe	0 12 81 7
127.0 / 3.4	**SILTY CLAY:** grey, moist, very stiff	5	SS	15	127	
126.6 / 3.8	**CLAYEY SILT TILL:** sandy, trace gravel, occasional cobble/ boulder, brown, moist, very stiff to hard	6	SS	17	126	
125.1 / 5.3	**SANDY SILT TILL:** trace clay, trace gravel, occasional cobble/ boulder, brown, moist, very dense	7	SS	20	125 Bentonite: Bottom of hole	
		8	SS	50/ 125mm		
		9	SS	50/ 150mm	124	
123.7 / 6.7	**END OF BOREHOLE:**					

Notes:
1) Water depth at 0.8m below grade during drilling.
2) 50mm dia. monitoring well installed upon completion.
3) Water level Reading:

Date:	Water Level (mbgl):
Aug 18, 2020	1.2
Mar. 16, 2021	1.0
Jun. 10, 2021	1.1

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)

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 BH20-11

PROJECT: Preliminary Geotechnical Investigation - proposed Subdivision
CLIENT: Argo Development
PROJECT LOCATION: 1326 Bronte Road, Oakville, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4807990.65 E 600989.21

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Aug/19/2020

REF. NO.: 20-186-100
ENCL NO.: 12

(m) ELEV / DEPTH	DESCRIPTION	NUMBER	TYPE	BLOWS 0.3 m "N"	ELEVATION
129.7 / 0.0	**TOPSOIL:** 125mm				
0.1	**FILL:** silty sand, mixed with topsoil, brown, moist, loose	1	SS	7	Bentonite
128.9 / 0.8	**SILTY SAND:** sandy silt, brown, wet, loose	2	SS	7	129
128.2 / 1.5	**FILL:** clayey silt to silty clay, brown, wet, firm	3	SS	6	128
127.2 / 2.5	**CLAYEY SILT TILL:** trace sand, trace gravel, grey, very moist, firm to stiff occasional cobble/ boulder below 3m	4	SS	7	Filter Pack Slotted Pipe
		5	SS	11	126
125.2 / 4.5	**SANDY SILT TILL:** trace clay, trace gravel, occasional cobble/ boulder, brown, moist, very dense	6	SS	50/ 125mm	125
					Bentonite: Bottom of hole
					124
123.5 / 6.2	**END OF BOREHOLE:**	7	SS	50/ 100mm	

Notes:
1) Water depth at 0.8m below grade during drilling.
2) 50mm dia. monitoring well installed upon completion.
3) Water level Reading:

Date:	Water Level (mbgl):
Aug 18, 2020	Dry

GROUND WATER CONDITIONS

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)
NATURAL UNIT WT (kN/m³)

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

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

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

DS CONSULTANTS LTD.
Geotechnical ◆ Environmental ◆ Materials ◆ Hydrogeology

LOG OF BOREHOLE BH20-12

PROJECT: Preliminary Geotechnical Investigation - proposed Subdivision
CLIENT: Argo Development
PROJECT LOCATION: 1326 Bronte Road, Oakville, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4807905.67 E 600916.81

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Aug/14/2020

REF. NO.: 20-186-100
ENCL NO.: 13

(m) ELEV / DEPTH	DESCRIPTION	NUMBER	TYPE	BLOWS / 0.3 m "N"	ELEVATION
131.5					
0.0 / 131.2	**TOPSOIL:** 300mm				
0.3 / 130.7	**FILL:** sandy silt, some gravel/ cobble, trace rootlets, brown, moist, loose	1	SS	7	131
0.8 / 130.0	**FILL:** sand and gravel, some silt, trace clay, brown, moist, loose	2	SS	7	130
1.5 / 129.2	**SAND:** sand, trace silt, trace gravel, brown, wet, compact	3	SS	10	
2.3 / 128.5	**SAND AND GRAGEL:** silt seams, brown, wet, loose	4	SS	8	129
3.0	**CLAYEY SILT TILL:** sandy, trace gravel, occasional cobble/ boulder, brown, moist, stiff to hard	5	SS	9	128
		7	SS	35	127
125.5					126
6.0 / 124.8	**SANDY SILT TILL:** trace clay, trace gravel, occasional cobble/ boulder, brown, wet, very dense	9	SS	50/ 90mm	125
6.7	**END OF BOREHOLE:** Notes: 1) Water depth at 1.5m below grade during drilling.				

GROUND WATER CONDITIONS

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)

NATURAL UNIT WT (kN/m³)

REMARKS 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

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LOG OF BOREHOLE BH20-13

PROJECT: Preliminary Geotechnical Investigation - proposed Subdivision
CLIENT: Argo Development
PROJECT LOCATION: 1326 Bronte Road, Oakville, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4807816.25 E 600872.96

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Aug/14/2020

REF. NO.: 20-186-100
ENCL NO.: 14

(m) ELEV / DEPTH	DESCRIPTION	NUMBER	TYPE	BLOWS / 0.3 m "N"	ELEVATION	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
131.0						
0.0 / 130.8	**TOPSOIL:** 200mm					
0.2 / 130.2	**FILL:** silty sand, trace gravel, trace orgaics, brown, moist, very loose	1	SS	3	Bentonite	
0.8 / 129.5	**FILL:** sand and gravel, silty, brown, moist, loose	2	SS	6	130	
1.5 / 128.7	**FILL:** sand and gravel, trace silt, trace clay, wet, loose	3	SS	7	W. L. 129.5 m Jun 10, 2021; 129	
2.3 / 128.4	**FILL:** clayey silt, brown, very moist, loose	4	SS	8		
2.6 / 128.0	**FILL:** sandy silt, brown, wet, loose				Filter Pack; Slotted Pipe	
3.0 / 127.2	**SILT:** trace sand, trace clay, brown, wet, compact	5	SS	15		1 9 82 8
3.8 / 126.5	**CLAYEY SILT TILL:** sandy, trace gravel, occasional cobble/ boulder, brown, moist, very stiff	6	SS	18	127	
4.5	**SANDY SILT TILL:** trace clay, trace gravel, occasional cobble/ boulder, brown, moist to very moist, very dense	7	SS	50/ 140mm	126	
		8	SS	50/ 125mm	Bentonite: Bottom of hole	
		9	SS	50/ 140mm	125	
124.4						
6.6	**END OF BOREHOLE:**					

Notes:
1) Water depth at 1.5m below grade during drilling.
2) 50mm dia. monitoring well installed upon completion.
3) Water level Reading:

Date:	Water Level (mbgl):
Aug 18, 2020	1.6
Mar. 16, 2021	1.6
Jun. 10, 2021	1.5

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

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

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

DS SOIL LOG-2021-FINAL 20-186-100 1326 BRONTE ROAD_ARGO DEVELOPMENT.GPJ DS.GDT 3/14/23

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LOG OF BOREHOLE BH20-14

PROJECT: Preliminary Geotechnical Investigation - proposed Subdivision
CLIENT: Argo Development
PROJECT LOCATION: 1326 Bronte Road, Oakville, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4807755.92 E 600816.81

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Aug/13/2020

REF. NO.: 20-186-100
ENCL NO.: 15

(m) ELEV / DEPTH	DESCRIPTION	NUMBER	TYPE	BLOWS / 0.3 m "N"	ELEVATION
130.6 / 0.0	**TOPSOIL:** 200mm				
130.4 / 0.2	**FILL:** sandy silt, brown, moist, loose	1	SS	5	130
129.8 / 0.8	**FILL:** silty sand, brown, wet, loose to very loose	2	SS	2	
	silt seams at 1.7m	3	SS	5	129
128.3 / 2.3	**SANDY SILT:** some clay, brown, wet, compact	4	SS	10	128
127.6 / 3.0	**SILTY CLAY:** trace gravel, grey, very moist, firm	5	SS	7	127
126.1 / 4.5	**SANDY SILT TILL:** trace clay, trace gravel, occasional cobble/ boulder, brown, moist, very dense	6	SS	75	126
124.6 / 6.0	**SAND AND GRAVEL:** brown, moist, very dense	7	SS	66	125
123.9 / 6.7	**END OF BOREHOLE:** Notes: 1) Water depth at 0.8m below grade during drilling.				124

GROUND WATER CONDITIONS

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)

NATURAL UNIT WT (kN/m³)

REMARKS 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 CONSULTANTS LTD.
Geotechnical ◆ Environmental ◆ Materials ◆ Hydrogeology

LOG OF BOREHOLE BH20-2

PROJECT: Preliminary Geotechnical Investigation - proposed Subdivision
CLIENT: Argo Development
PROJECT LOCATION: 1326 Bronte Road, Oakville, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4807723.7 E 600908.24

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Aug/13/2020

REF. NO.: 20-186-100
ENCL NO.: 3

(m) ELEV / DEPTH	DESCRIPTION	NUMBER	TYPE	BLOWS / 0.3 m ("N")	ELEVATION	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
131.9 / 0.0	**TOPSOIL:** 75mm					
131.8 / 0.1	**FILL:** sand and gravel, trace organics, brown, moist, compact	1	SS	14	Concrete	
131.1 / 0.8	**FILL:** sandy silt, trace clay, trace gravel, brown, moist, compact	2	SS	14	Bentonite	
		3	SS	13		
129.6 / 2.3	**FILL:** silty sand, trace organics, trace wood pieces, brown, wet, loose	4	SS	5		
128.9 / 3.0	**SAND:** trace silt, trace clay, reddish brown, wet, loose	5	SS	6	W. L. 128.9 m Jun 10, 2021; Slotted Pipe	
		6	SS	8	Bentonite: Bottom of hole	
125.9 / 6.0	**CLAYEY SILT TILL:** sandy, trace gravel, occasional cobble/ boulder, reddish brown to grey, moist, stiff	7	SS	11		
125.2 / 6.7	**END OF BOREHOLE:**					

Notes:
1) Water depth at 2.3m below grade during drilling.
2) 50mm dia. monitoring well installed upon completion.
3) Water level Reading:

Date:	Water Level (mbgl):
Aug 18, 2020	3.1
Mar. 16, 2021	3.2
Jun. 10, 2021	3.0

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)

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

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

DS CONSULTANTS LTD.
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LOG OF BOREHOLE BH20-3

PROJECT: Preliminary Geotechnical Investigation - proposed Subdivision
CLIENT: Argo Development
PROJECT LOCATION: 1326 Bronte Road, Oakville, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4807894.84 E 601101.6

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Aug/13/2020

REF. NO.: 20-186-100
ENCL NO.: 4

(m) ELEV / DEPTH	DESCRIPTION	NUMBER	TYPE	BLOWS / 0.3 m "N"	ELEVATION	Dynamic Cone Penetration Resistance (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)	Remarks and Grain Size Distribution (%) GR SA SI CL
130.2 / 0.0	**TOPSOIL:** 75mm										
0.1	**FILL:** sand and gravel, trace organics, brown, moist, very loose	1	SS	3	130						
129.4 / 0.8	**FILL:** sandy silt, trace clay, trace to some gravel, brown, moist, compact	2	SS	10	129						
		3	SS	22							
127.9 / 2.3	**SILTY SAND:** trace clay, brown, wet, compact	4	SS	10							
127.2 / 3.0	**SILT:** some sand, some clay, trace gravel, brown, wet, disturbed	5	SS disturbed		127						2 13 72 13
126.4 / 3.8	**SAND:** trace silt, brown, wet, compact	6	SS	16	126						
		7	SS	26							
	very dense below 5.4m	8	SS	50/ 140mm	125						
124.2 / 6.0	**CLAYEY SILT TILL:** sandy, trace gravel, occasional cobble/ boulder, reddish brown to grey, moist, hard	9	SS	50/ 140mm	124						
123.5 / 6.7	**END OF BOREHOLE:**										

Bentonite
W. L. 128.0 m Jun 10, 2021
Filter Pack
Slotted Pipe
Bentonite: Bottom of hole

Notes:
1) Water depth at 2.3m below grade during drilling.
2) 50mm dia. monitoring well installed upon completion.
3) Water level Reading:

Date:	Water Level (mbgl):
Aug 18, 2020	2.5
Mar. 16, 2021	2.0
Jun. 10, 2021	2.2

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

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

DS CONSULTANTS LTD.
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LOG OF BOREHOLE BH20-4

PROJECT: Preliminary Geotechnical Investigation - proposed Subdivision
CLIENT: Argo Development
PROJECT LOCATION: 1326 Bronte Road, Oakville, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4807820.2 E 601040.5

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Aug/13/2020

REF. NO.: 20-186-100
ENCL NO.: 5

(m) ELEV / DEPTH	DESCRIPTION	NUMBER	TYPE	BLOWS / 0.3 m "N"	ELEVATION
130.9 / 0.0	**TOPSOIL:** 100mm				
130.8 / 0.1	**FILL:** sandy silt, trace gravel, brown, moist, loose	1	SS	4	
130.1 / 0.8	**FILL:** silty sand, some gravel, brown, moist, compact	2	SS	10	130
129.6 / 1.3	**SILTY SAND:** trace clay, trace gravel, brown, wet, compact to dense	3	SS	19	129
		4	SS	31	128
		5	SS	29	127
126.4 / 4.5	**SILTY CLAY TILL:** sandy, trace gravel, occasional cobble/ boulder, grey, very moist, very stiff	6	SS	15	126
124.9 / 6.0	**SANDY SILT TILL:** trace clay, trace gravel, occasional cobble/ boulder, grey, moist, very dense	7	SS	52	125
124.2 / 6.7	**END OF BOREHOLE:** Notes: 1) Water depth at 1.3m below grade during drilling.				

SOIL PROFILE | SAMPLES | GROUND WATER CONDITIONS | ELEVATION

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) | NATURAL UNIT WT (kN/m³) | REMARKS 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

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LOG OF BOREHOLE BH20-5

PROJECT: Preliminary Geotechnical Investigation - proposed Subdivision
CLIENT: Argo Development
PROJECT LOCATION: 1326 Bronte Road, Oakville, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4807918.06 E 601070.76

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Aug/14/2020

REF. NO.: 20-186-100
ENCL NO.: 6

(m) ELEV / DEPTH	DESCRIPTION	NUMBER	TYPE	BLOWS / 0.3 m ("N")	ELEVATION
129.9 / 0.0	**TOPSOIL:** 100mm				
129.8 / 0.1	**FILL:** sandy silt, trace gravel, brown, moist, loose	1	SS	4	Bentonite
129.1 / 0.8	**FILL:** clayey silt, sand seams, trace to some organics, brown to grey, wet, very loose	2	SS	3	129
128.4 / 1.5	**FILL:** sandy silt, trace gravel, brown, wet, loose	3	SS	8	W. L. 128.4 m Jun 10, 2021; 128
127.6 / 2.3	**SILTY CLAY TILL:** sandy, trace gravel, occasional cobble/ boulder, brown to grey, moist, firm (weathered/ disturbed)	4	SS	7	Filter Pack; Slotted Pipe
126.9 / 3.0	**CLAYEY SILT TILL:** sandy, trace gravel, occasional cobble/ boulder, grey, moist, very stiff to hard	5	SS	20	
		6	SS	20	126
	grey to reddish brown below 4.5m	7	SS	37	125
124.6 / 5.3	**SANDY SILT TILL:** trace clay, trace gravel, occasional cobble/ boulder, reddish brown, moist, very dense	8	SS	92/ 280mm	Bentonite: Bottom of hole
					124
123.2 / 6.7	**END OF BOREHOLE:**	9	SS	87	

Notes:
1) Water depth at 1.5m below grade during drilling.
2) 50mm dia. monitoring well installed upon completion.
3) Water level Reading:

Date:	Water Level (mbgl):
Aug 18, 2020	1.6
Mar. 16, 2021	1.2
Jun. 10, 2021	1.5

SOIL PROFILE | SAMPLES | GROUND WATER CONDITIONS | 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) | REMARKS 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

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LOG OF BOREHOLE BH20-6

PROJECT: Preliminary Geotechnical Investigation - proposed Subdivision
CLIENT: Argo Development
PROJECT LOCATION: 1326 Bronte Road, Oakville, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4807866.75 E 601009.6

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Aug/14/2020

REF. NO.: 20-186-100
ENCL NO.: 7

(m) ELEV / DEPTH	DESCRIPTION	NUMBER	TYPE	BLOWS / 0.3 m ("N")	ELEVATION	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR	SA	SI	CL
130.5									
130.4 / 0.1	**TOPSOIL:** 100mm								
	FILL: sandy silt, some clay, trace gravel, trace organics, brown, moist, loose	1	SS	5	130				
129.7 / 0.8	**FILL:** silty sand, trace gravel, brown, wet, compact to loose	2	SS	10					
		3	SS	6	129				
128.2 / 2.3	**FILL:** silt to sandy silt, trace gravel, occasional cobble/ boulder, brown to grey, wet, loose	4	SS	5	128	1	18	74	7
127.5 / 3.0	**CLAYEY SILT TILL:** sandy, trace gravel, occasional cobble/ boulder, brown, moist, stiff to hard	5	SS	11	127				
	grey to reddish brown below 4.5m	6	SS	30	126				
124.5 / 6.0	**SANDY SILT TILL:** trace clay, trace gravel, occasional cobble/ boulder, brown, moist, very dense	7	SS	50/ 150mm	125				
123.8 / 6.7	**END OF BOREHOLE:** Notes: 1) Water depth at 0.8m below grade during drilling.				124				

STRATA PLOT

GROUND WATER CONDITIONS

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)

NATURAL UNIT WT (kN/m³)

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

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

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LOG OF BOREHOLE BH20-7

PROJECT: Preliminary Geotechnical Investigation - proposed Subdivision
CLIENT: Argo Development
PROJECT LOCATION: 1326 Bronte Road, Oakville, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4807816.61 E 600971.29

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Aug/12/2020

REF. NO.: 20-186-100
ENCL NO.: 8

(m) ELEV / DEPTH	DESCRIPTION	NUMBER	TYPE	BLOWS / 0.3 m "N"	ELEVATION
130.6 / 0.0	**TOPSOIL:** 100mm				
130.4 / 0.2	**FILL:** sandy silt, some clay, trace gravel, trace organics, brown, moist, loose	1	SS	5	130
129.8 / 0.8	**FILL:** sand and gravel, trace silt, trace clay, reddish brown, wet, loose	2	SS	7	129
128.8 / 1.8	**FILL:** silt, some clay, brown, wet, loose	3	SS	8	
128.3 / 2.3	**CLAYEY SILT TILL:** sandy, trace gravel, occasional cobble/ boulder, brown, moist, stiff to very stiff	4	SS	18	128
		5	SS	12	127
126.1 / 4.5	**SANDY SILT TILL:** trace clay, trace gravel, occasional cobble/ boulder, brown to grey, moist, dense to very dense	6	SS	34	126
		7	SS	66	125
123.9 / 6.7	**END OF BOREHOLE:** Notes: 1) Water depth at 0.8m below grade during drilling.				124

GROUND WATER CONDITIONS

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)

NATURAL UNIT WT (kN/m³)

REMARKS 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-2021-FINAL 20-186-100 1326 BRONTE ROAD_ARGO DEVELOPMENT.GPJ DS.GDT 3/14/23

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Geotechnical ◆ Environmental ◆ Materials ◆ Hydrogeology

LOG OF BOREHOLE BH20-8

PROJECT: Preliminary Geotechnical Investigation - proposed Subdivision
CLIENT: Argo Development
PROJECT LOCATION: 1326 Bronte Road, Oakville, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4807957.17 E 601027.93

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Aug/12/2020

REF. NO.: 20-186-100
ENCL NO.: 9

(m) ELEV / DEPTH	DESCRIPTION	NUMBER	TYPE	BLOWS / 0.3 m ("N")	ELEVATION	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
129.9 / 0.0	**FILL:** sandy silt, mixed with topsoil, brown, moist, loose	1	SS	4		
129.1 / 0.8	**FILL:** silty sand, clay seams, brown, wet, loose to compact	2	SS	4	129	
		3	SS	9	128	
127.6 / 2.3	**CLAYEY SILT TILL:** sandy, trace gravel, occasional cobble/ boulder, brown, moist, stiff to hard	4	SS	10	127	
		5	SS	12		
		6	SS	47	126	
125.4 / 4.5	**SANDY SILT TILL:** trace clay, trace gravel, occasional cobble/ boulder, brown, moist, very dense	7	SS	50/ 140mm	125	
		8	SS	99/ 290mm	124	
		9	SS	58	123	
122.4 / 7.5	**GRAVELLY SAND:** some silt, trace clay, brown, wet, very dense	10	SS	90	122	25 57 14 4
121.7 / 8.2	**END OF BOREHOLE:**					

Bentonite
Filter Pack
Slotted Pipe
W. L. 124.8 m Jun 10, 2021
Bentonite: Bottom of hole

Notes:
1) Water depth at 0.8m below grade during drilling.
2) 50mm dia. monitoring well installed upon completion.
3) Water level Reading:

Date:	Water Level (mbgl):
Aug 18, 2020	4.6
Mar. 16, 2021	dry
Jun. 10, 2021	5.1

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

GROUNDWATER ELEVATIONS
Measurement: 1st 2nd 3rd 4th

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

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LOG OF BOREHOLE BH20-9

PROJECT: Preliminary Geotechnical Investigation - proposed Subdivision
CLIENT: Argo Development
PROJECT LOCATION: 1326 Bronte Road, Oakville, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4807921.2 E 601002.49

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Aug/12/2020

REF. NO.: 20-186-100
ENCL NO.: 10

(m) ELEV / DEPTH	DESCRIPTION	NUMBER	TYPE	BLOWS / 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION
130.6						
130.0 / 0.1	**TOPSOIL:** 100mm					
	FILL: silty sand, trace topsoil, trace rootlets, brown, moist, loose	1	SS	5		130
129.8 / 0.8	**FILL:** sand, trace silt, trace clay, reddish brown, wet, loose	2	SS	5		
129.1 / 1.5	**SILT:** trace clay, trace sand, brown, wet, loose to compact	3	SS	8		129
	grey below 2.3m	4	SS	12		128
127.6 / 3.0	**CLAYEY SILT TILL:** sandy, trace gravel, occasional cobble/ boulder, brown, moist, stiff to hard	5	SS	12		127
		6	SS	55		126
124.6 / 6.0	**SANDY SILT TILL:** trace clay, trace gravel, occasional cobble/ boulder, brown, moist, very dense	7	SS	50/ 140mm		125
		8	SS	98/ 280mm		124
122.4 / 8.2	**END OF BOREHOLE:** Notes: 1) Water depth at 0.8m below grade during drilling.					123

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)

REMARKS 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

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LOG OF BOREHOLE BH21-1

PROJECT: Preliminary Geotechnical Investigation - proposed Subdivision
CLIENT: Argo Development
PROJECT LOCATION: 1326 Bronte Road, Oakville, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4807988.96 E 600965.02

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Oct/07/2021

REF. NO.: 20-186-100
ENCL NO.: 16

(m) ELEV / DEPTH	DESCRIPTION	NUMBER	TYPE	BLOWS 0.3 m "N"	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
130.1					
130.0 / 0.1	**CONCRETE:** 100mm				
129.9 / 0.2	**GRANULAR BASE:** sand and gravel, trace cobbles, 100mm	1	SS	6	
129.3 / 0.8	**FILL:** clayey silt, trace organics, trace sand, trace cobbles, brown, very moist, firm				
128.9	**FILL:** silty sand, trace clay, trace gravel, reddish brown, wet, loose	2	SS	8	
128.6 / 1.2	**SILTY CLAY TILL:** sandy, trace gravel, trace shale fragments, brown, moist, stiff (weathered)				
1.5	**SILTY CLAY TILL:** sandy, trace gravel, brown, moist, very stiff	3	SS	18	
	grey below 2.3m	4	SS	18	6 25 48 21
		5	SS	24	
125.5 / 4.6	**SILTY SAND TO SANDY SILT TILL:** trace clay, trace to some gravel, greyish brown, moist, very dense	6	SS	50/ 130mm	
		7	SS	50/ 25mm	11 51 31 7
122.5 / 7.6	**SAND AND GRAVEL:** trace silt, trace cobbles, brown, wet, very dense	8	SS	87	
121.2 / 8.9		9	SS	50/ 100mm	
	END OF BOREHOLE: Notes: 1) 50mm dia. monitoring well installed upon completion. 2) Water Level Readings: Date: Water Level(mbgl): Oct. 12, 2021 7.7				

GROUND WATER CONDITIONS: W. L. 122.4 m, Oct 12, 2021

ELEVATION: 130, 129, 128, 127, 126, 125, 124, 123, 122

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)

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

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

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LOG OF BOREHOLE BH21-2

PROJECT: Preliminary Geotechnical Investigation - proposed Subdivision
CLIENT: Argo Development
PROJECT LOCATION: 1326 Bronte Road, Oakville, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4807965.68 E 600948.56

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Oct/07/2021

REF. NO.: 20-186-100
ENCL NO.: 17

(m) ELEV / DEPTH	DESCRIPTION	NUMBER	TYPE	BLOWS / 0.3 m "N"	ELEVATION
130.6 / 0.0	**TOPSOIL:** 180mm				
130.4 / 0.2	**FILL:** silty sand, trace clay, trace rootlets,trace gravel, brown, wet, loose	1	SS	4	130
129.8 / 0.8	**FILL:** sand, trace silt, brown, wet, very loose	2	SS	3	
129.1 / 1.5	**SILT TO SANDY SILT:** some clay, brown, wet, compact	3	SS	13	129
128.8 / 1.8	**SILTY CLAY TILL:** sandy, trace gravel, occasional cobble, greyish brown, moist, stiff to hard	4	SS	19	128
	grey below 3.1m	5	SS	64	127
126.0 / 4.6	**SILTY SAND TO SANDY SILT TILL:** trace clay, trace gravel/cobble, brown, moist, very dense	6	SS	50/ 50mm	126
	reddish brown below 6.1m	7	SS	50/ 50mm	125
123.0 / 7.6	**GRAVELLY SAND:** trace silt, reddish brown, wet, very dense	8	SS	56	124
122.4 / 8.2	**END OF BOREHOLE:** Notes: 1) Water at depth of 7.6m during drilling.				123

GROUND WATER CONDITIONS

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)
NATURAL UNIT WT (kN/m³)

REMARKS 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

Appendix B

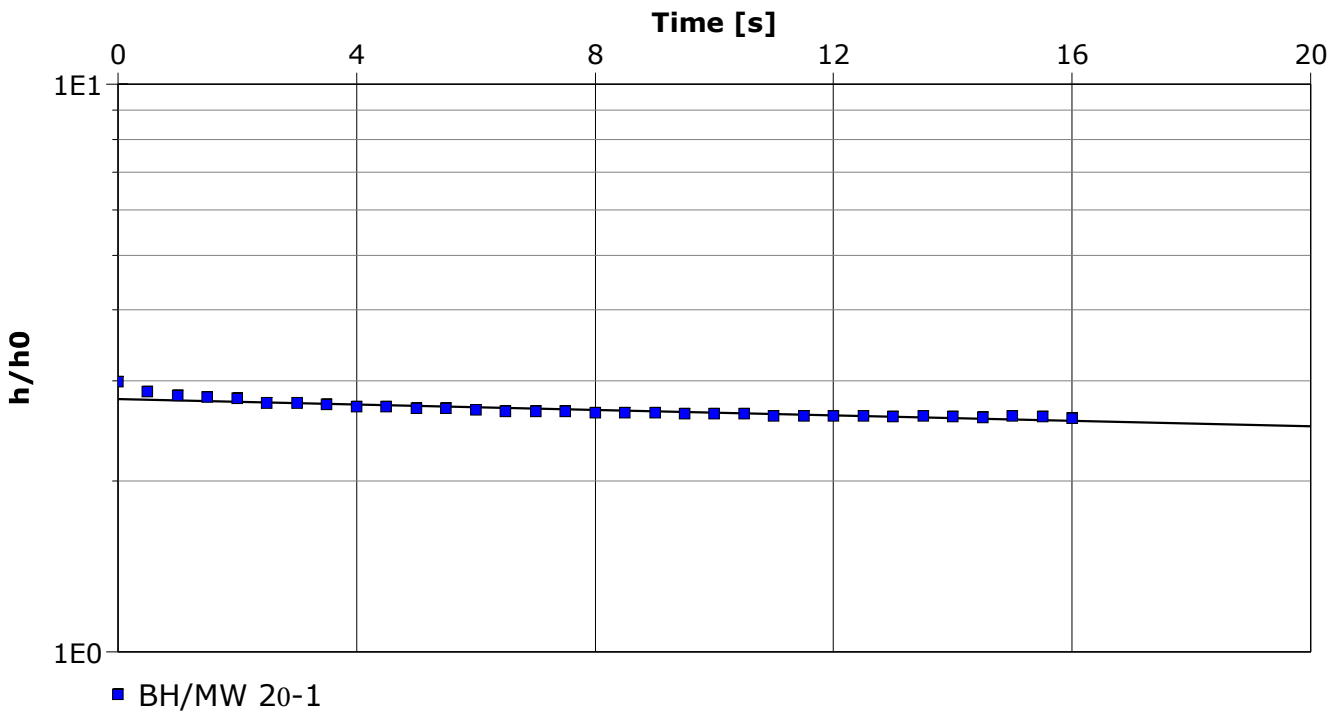
1300, 1316, 1326 and 1342 Bronte Road, Oakville- MECP Water Well Records

TOWNSHIP	UTM	E	N	DATE CNTR	CASING	WATER	PUMP TEST	WELL USE	SCREEN	WELL	WELL TAG	FORMATION
OAKVILLE TOWN	17 W	601290	4807848	016/12 7230						7283572	(C35899) A217099 P	
OAKVILLE TOWN	17 W	601427	4807803	016/10 7247						7281131	(Z247216) A199702	BRWN SAND SLTY TILL 0004
OAKVILLE TOWN	17 W	601529	4807889	012/12 724	2			TH	0004 10	7195257	(Z164469) A142618	BRWN LOAM LOOS 0001 BRWN SILT SAND LOOS 0006 RED SHLE DNSE 0014
OAKVILLE TOWN	17 W	601306	4807903	012/12 724	1.5			TH	0005 10	7195256	(Z164470) A142619	BRWN GRVL SAND LOOS 0001 BRWN SILT SAND LOOS 0014 GREY SILT SAND LOOS 0015
OAKVILLE TOWN	17 W	601277	4807885	012/12 724	1.5			MO	0005 10	7195255	(Z164471) A142688	BRWN GRVL SAND LOOS 0001 BRWN SILT SAND LOOS 0014 GREY SILT SAND LOOS 0015
OAKVILLE TOWN	17 W	601249	4807868	012/12 724	1.5			TH	0005 10	7195254	(Z164472) A142689	BRWN GRVL SAND LOOS 0001 BRWN SILT SAND LOOS 0014 GREY SILT SAND LOOS 0015
OAKVILLE TOWN	17 W	601078	4808354	012/12 724	2			TH	0015 10	7195253	(Z164473) A142690	BLCK 0000 BRWN SILT SAND DNSE 0016 BRWN SAND GRVL DNSE 0018 BRWN SILT SAND DNSE 0025
OAKVILLE TOWN	17 W	601036	4808338	012/12 724	2			TH	0014 10	7195252	(Z164468) A142621	BLCK 0000 BRWN SILT SAND 0019 BRWN SAND GRVL 0022 BRWN SILT SAND 0024
OAKVILLE TOWN	17 W	601385	4807791	016/09 724	2	UT 0021		TH MO	0012 10	7287937	(Z254689) A187682	SAND TILL 0004 SILT TILL 0012 CLAY TILL 0021 SAND MSND CSND 0022
OAKVILLE TOWN DS S 02 030	17 W	601520	4807772	975/05 130	30	FR 0034	20//1/1:0	DO		2804747		BRWN LOAM 0022 RED SHLE 0034
OAKVILLE TOWN DS S 02 030	17 W	601465	4807662	975/05 130	30	FR 0034	24//4/1:0	ST DO		2804748		BRWN LOAM SAND 0020 RED CLAY SAND GRVL 0032 GRVL 0034
OAKVILLE TOWN DS S 02 030	17 W	601491	4807726	975/06 130	30	FR 0011	5//6/1:0	DO		2804749		BRWN LOAM SAND 0011 SAND GRVL 0015
OAKVILLE TOWN DS S 02 030	17 W	601241	4808372	014/01 714	2.4	FR 0019		MO	0010 10	7215534	(Z180516) A149690	BRWN SAND GRVL FILL 0010 BRWN SAND SILT 0020
OAKVILLE TOWN DS S 02 030	17 W	601307	4807834	016/05 714	35.4 35.4	UT 0012				7264361	(Z228020) A	
OAKVILLE TOWN DS S 02 031	17 W	601287	4807754	952/05 164	6	FR 0041	30//8/:	DO		2802398		CLAY 0041
OAKVILLE TOWN DS S 02 031	17 W	601035	4807803	971/11 363	27 30	0011 FR 00	8/27//1:0	DO		2803804		PRDR 0010 GREY CLAY 0013 GREY SAND 0016 BLUE CLAY 0027 GREY GRVL 0029
OAKVILLE TOWN DS S 02 031	17 W	600954	4808064	963/10 460	6	FR 0037	27/37/14/1:0	DO		2802400		LOAM MSND 0004 BRWN CLAY 0015 GREY CLAY 0033 GRVL CLAY 0043
OAKVILLE TOWN DS S 02 031	17 W	601093	4807947	955/12 230	6	SA 0050	50///:	NU		2802399		CLAY 0035 GRVL 0060
OAKVILLE TOWN DS S 02 031	17 W	601018	4807937	989/03 400	6	UK 0042	29/30/24/2:0	DO IR	0042 3	2807236		BRWN CSND LOOS 0009 BRWN CSND GRVL LOOS 0016 GREY CLAY GRVL LOOS 0019 BRWN SAND CLAY GRVL 0033 GREY CLAY GRVL LOOS 0039 GREY GRVL SAND PCKD 0047 BRWN GRVL SAND PCKD 0055 GREY CLAY GRVL PCKD 0063 BRWN CLAY GRVL PCKD 0071 RED SHLE HARD 0083

Appendix C

	Slug Test Analysis Report
	Project: Hydrogelological Investigation
	Number: 20-186-100
	Client: Argo Development Corporation

Location: 1326 Bronte Road, Oakville, ON	Slug Test: BH/MW 20-1	Test Well: BH/MW 20-1
Test Conducted by: PP		Test Date: 11/18/2021
Analysis Performed by: PP	Bouwer & Rice	Analysis Date: 11/18/2021
Aquifer Thickness: 4.21 m		

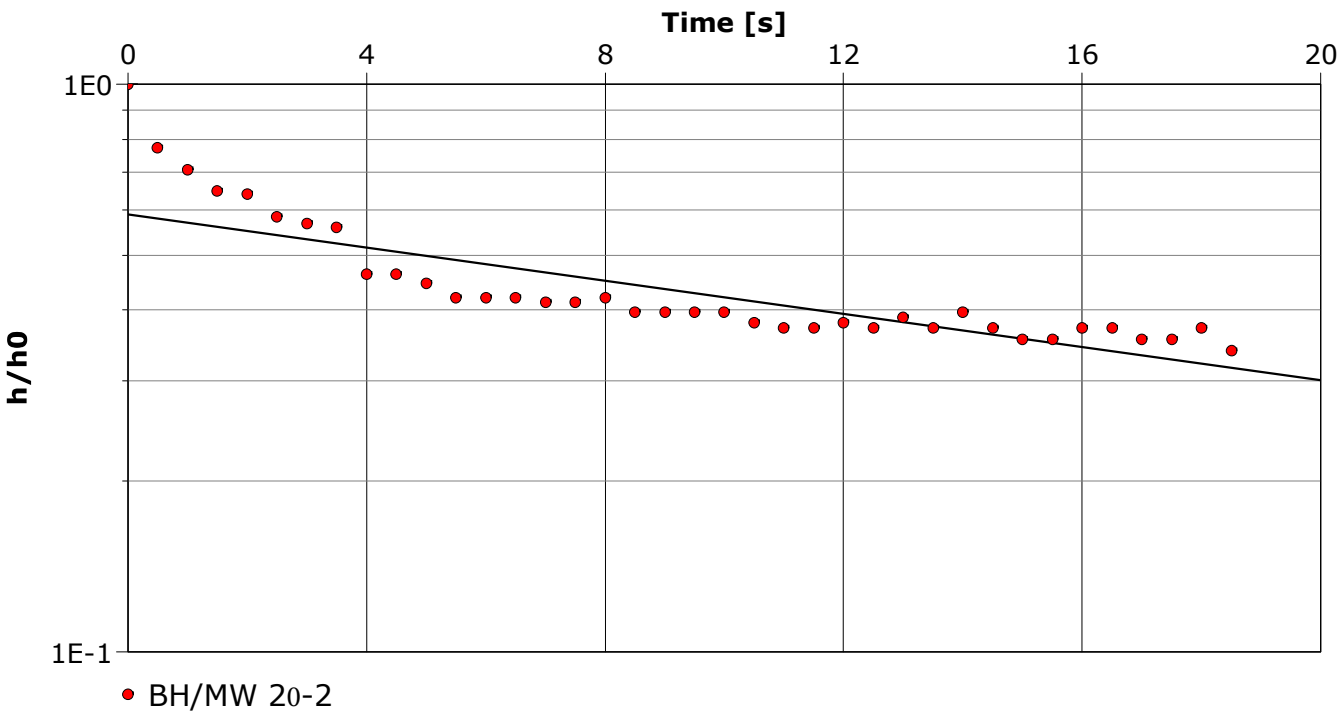


Calculation using Bouwer & Rice

Observation Well	Hydraulic Conductivity [m/s]	
BH/MW 20-1	2.08×10^{-6}	

	Slug Test Analysis Report
	Project: Hydrogelological Investigation
	Number: 20-186-100
	Client: Argo Development Corporation

Location: 1326 Bronte Road, Oakville, ON	Slug Test: BH/MW 20-2	Test Well: BH/MW 20-2
Test Conducted by: PP		Test Date: 11/18/2021
Analysis Performed by: PP	Bouwer & Rice	Analysis Date: 11/18/2021
Aquifer Thickness: 1.61 m		

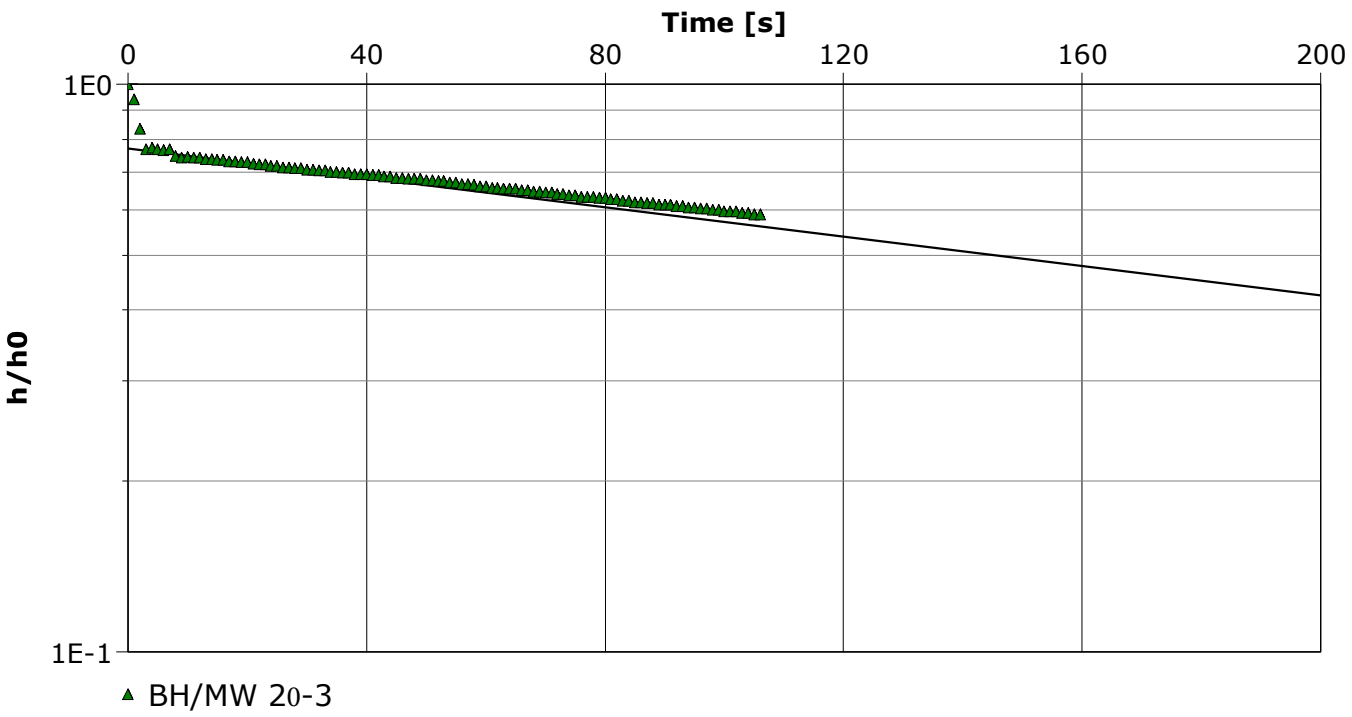


Calculation using Bouwer & Rice

Observation Well	Hydraulic Conductivity [m/s]	
BH/MW 20-2	1.03×10^{-5}	

	Slug Test Analysis Report
	Project: Hydrogelological Investigation
	Number: 20-186-100
	Client: Argo Development Corporation

Location: 1326 Bronte Road, Oakville, ON	Slug Test: BH/MW 20-3	Test Well: BH/MW 20-3
Test Conducted by:		Test Date: 11/18/2021
Analysis Performed by:	Bouwer& Rice	Analysis Date: 11/18/2021
Aquifer Thickness: 2.81 m		

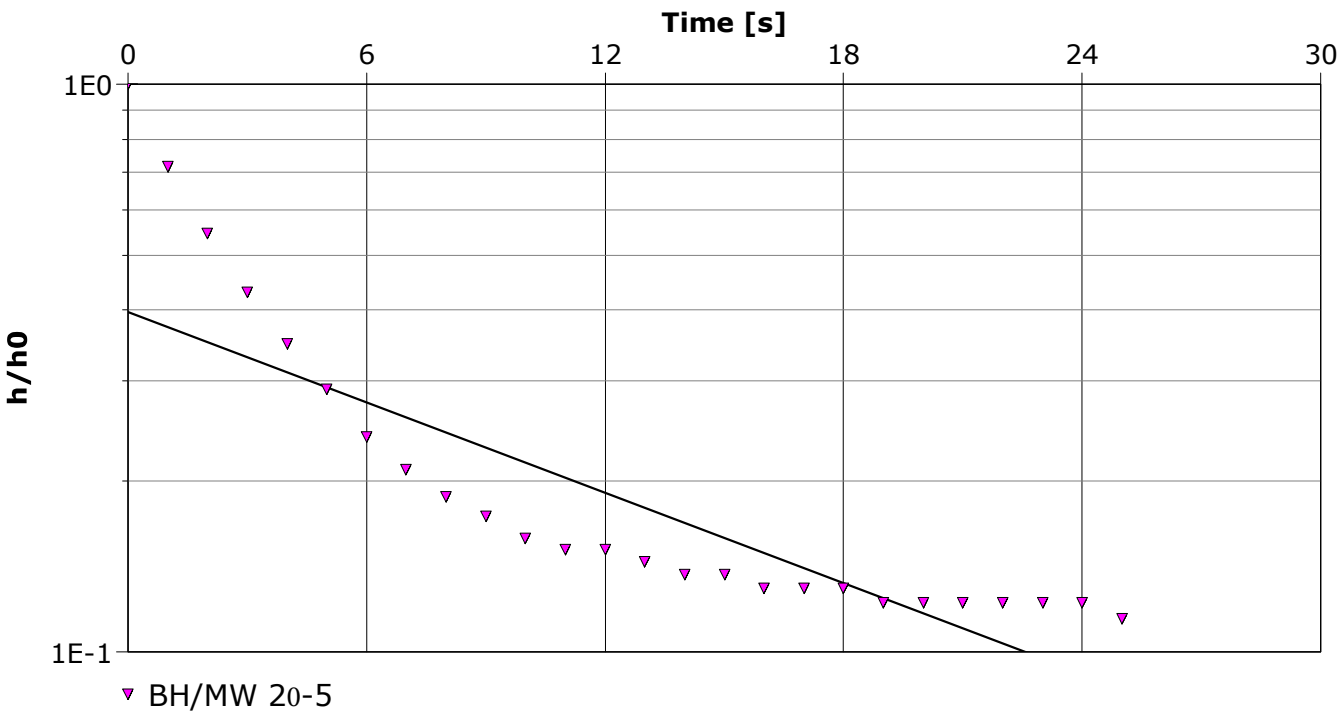


Calculation using Bouwer & Rice

Observation Well	Hydraulic Conductivity [m/s]	
BH/MW 20-3	1.03×10^{-6}	

	Slug Test Analysis Report
	Project: Hydrogelological Investigation
	Number: 20-186-100
	Client: Argo Development Corporation

Location: 1326 Bronte Road, Oakville, ON	Slug Test: BH/MW 20-5	Test Well: BH/MW 20-5
Test Conducted by: PP		Test Date: 11/18/2021
Analysis Performed by:	Bouwer & Rice	Analysis Date: 11/18/2021
Aquifer Thickness: 3.51 m		

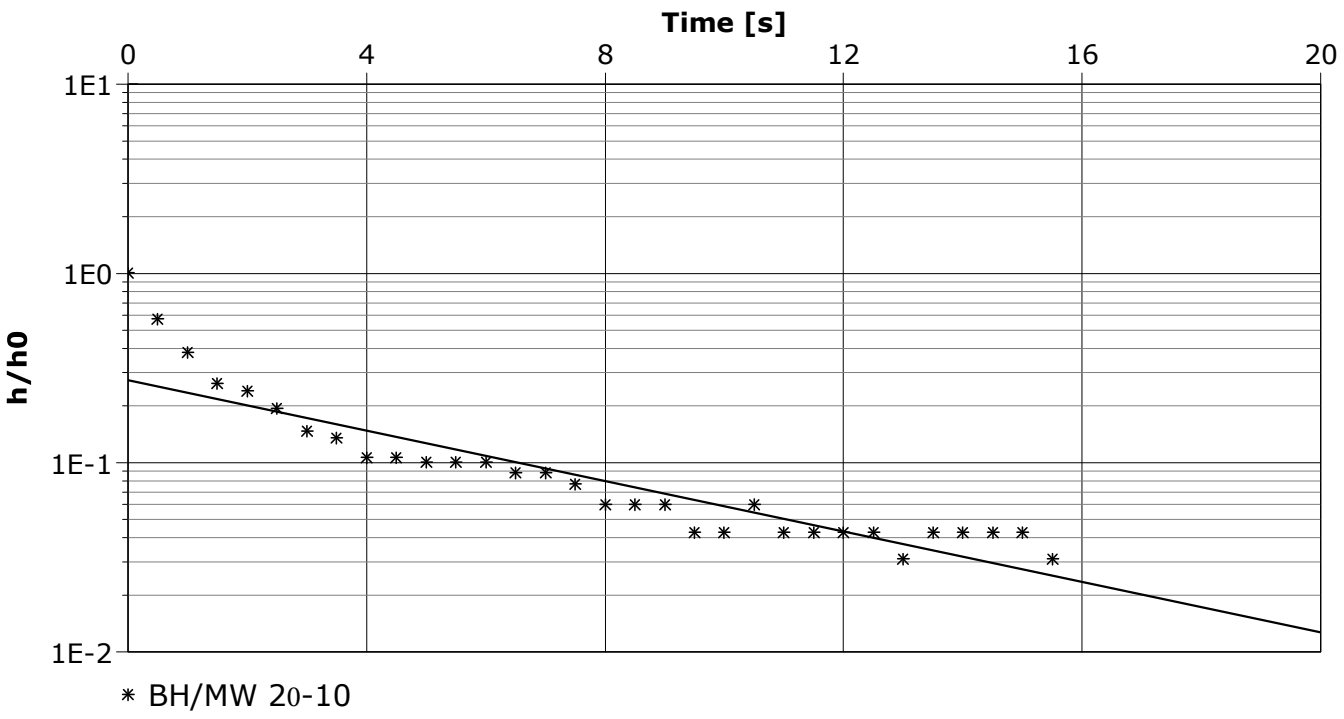


Calculation using Bouwer & Rice

Observation Well	Hydraulic Conductivity [m/s]	
BH/MW 20-5	2.22×10^{-5}	

	Slug Test Analysis Report
	Project: Hydrogelological Investigation
	Number: 20-186-100
	Client: Argo Development Corporation

Location: 1326 Bronte Road, Oakville, ON	Slug Test: BH/MW 20-10	Test Well: BH/MW 20-10
Test Conducted by: PP		Test Date: 11/18/2021
Analysis Performed by: PP	Bouwer & Rice	Analysis Date: 11/18/2021
Aquifer Thickness: 3.71 m		



Calculation using Bouwer & Rice

Observation Well	Hydraulic Conductivity [m/s]	
BH/MW 20-10	5.61×10^{-5}	

Appendix D

FINAL REPORT

CA15892-MAY21 R1

20-186-100, 1326 Bronte Road, Oakville

Prepared for

DS Consultants

FINAL REPORT

CA15892-MAY21 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	Pradeep Patel	Telephone	2165
Telephone	647-332-3482	Facsimile	705-652-6365
Facsimile	905-264-2685	Email	jill.campbell@sgs.com
Email	pradeep.patel@dsconsultants.ca	SGS Reference	CA15892-MAY21
Project	20-186-100, 1326 Bronte Road, Oakville	Received	05/27/2021
Order Number		Approved	06/07/2021
Samples	Ground Water (1)	Report Number	CA15892-MAY21 R1
		Date Reported	06/07/2021

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:022085

Elevated result of <5cfu/100mL reported for Ecoli due to sample matrix.

SIGNATORIES

Jill Campbell, B.Sc.,GISAS

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Client: DS Consultants
Project: 20-186-100, 1326 Bronte Road, Oakville
Project Manager: Pradeep Patel
Samplers: Pardeep Patel

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

L1 = SANSEW / WATER / - - Halton Sewer Discharge By Law - Sanitary and Combined Sewer Discharge - BL_2_03

L2 = SANSEW / WATER / - - Oakville - Storm Sewer Discharge - BL_2009_031

Sample Number	8
Sample Name	BH20-10
Sample Matrix	Ground Water
Sample Date	27/05/2021

Parameter	Units	RL	L1	L2	Result
Chlorophenols					
Pentachlorophenol	mg/L	0.001		0.002	< 0.001

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

L1 = SANSEW / WATER / - - Halton Sewer Discharge By Law - Sanitary and Combined Sewer Discharge - BL_2_03

L2 = SANSEW / WATER / - - Oakville - Storm Sewer Discharge - BL_2009_031

Sample Number	8
Sample Name	BH20-10
Sample Matrix	Ground Water
Sample Date	27/05/2021

Parameter	Units	RL	L1	L2	Result
General Chemistry					
Biochemical Oxygen Demand (BOD5)	mg/L	2	300	15	< 4 ↑
Total Suspended Solids	mg/L	2	350	15	791
Total Kjeldahl Nitrogen	as N mg/L	0.5	100		< 0.5

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

L1 = SANSEW / WATER / - - Halton Sewer Discharge By Law - Sanitary and Combined Sewer Discharge - BL_2_03

L2 = SANSEW / WATER / - - Oakville - Storm Sewer Discharge - BL_2009_031

Sample Number	8
Sample Name	BH20-10
Sample Matrix	Ground Water
Sample Date	27/05/2021

Parameter	Units	RL	L1	L2	Result
Metals and Inorganics					
Cyanide (total)	mg/L	0.01	2	0.02	< 0.01

FINAL REPORT

CA15892-MAY21 R1

Client: DS Consultants
Project: 20-186-100, 1326 Bronte Road, Oakville
Project Manager: Pradeep Patel
Samplers: Pardeep Patel

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

L1 = SANSEW / WATER / - - Halton Sewer Discharge By Law - Sanitary and Combined Sewer Discharge - BL_2_03

L2 = SANSEW / WATER / - - Oakville - Storm Sewer Discharge - BL_2009_031

Sample Number	8
Sample Name	BH20-10
Sample Matrix	Ground Water
Sample Date	27/05/2021

Parameter	Units	RL	L1	L2	Result
Metals and Inorganics (continued)					
Fluoride	mg/L	0.06	10		0.06
Sulphate	mg/L	0.2	1500		16
Aluminum (total)	mg/L	0.001	50		21.6
Aluminum (0.2µm)	mg/L	0.001			0.005
Antimony (total)	mg/L	0.0009	5		< 0.0009
Arsenic (total)	mg/L	0.0002	1	0.02	0.0093
Beryllium (total)	mg/L	0.000007	5		0.00113
Cadmium (total)	mg/L	0.000003	1	0.008	0.000268
Chromium (total)	mg/L	0.00008	3	0.08	0.0284
Cobalt (total)	mg/L	0.000004	5		0.0180
Copper (total)	mg/L	0.0002	3	0.04	0.0545
Iron (total)	mg/L	0.007	50		34.3
Lead (total)	mg/L	0.00009	3	0.12	0.0282
Manganese (total)	mg/L	0.00001	5	0.05	1.28
Molybdenum (total)	mg/L	0.00004	5		0.00075
Nickel (total)	mg/L	0.0001	3	0.08	0.0363
Phosphorus (total)	mg/L	0.003	10	0.4	0.773
Selenium (total)	mg/L	0.00004	5	0.02	0.00020
Silver (total)	mg/L	0.00005	5	0.12	0.00007

Client: DS Consultants
Project: 20-186-100, 1326 Bronte Road, Oakville
Project Manager: Pradeep Patel
Samplers: Pardeep Patel

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

L1 = SANSEW / WATER / - - Halton Sewer Discharge By Law - Sanitary and Combined Sewer Discharge - BL_2_03

L2 = SANSEW / WATER / - - Oakville - Storm Sewer Discharge - BL_2009_031

Sample Number	8
Sample Name	BH20-10
Sample Matrix	Ground Water
Sample Date	27/05/2021

Parameter	Units	RL	L1	L2	Result
Metals and Inorganics (continued)					
Tin (total)	mg/L	0.00006	5		0.00083
Titanium (total)	mg/L	0.00005	5		0.121
Zinc (total)	mg/L	0.002	3	0.04	0.110

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

L1 = SANSEW / WATER / - - Halton Sewer Discharge By Law - Sanitary and Combined Sewer Discharge - BL_2_03

L2 = SANSEW / WATER / - - Oakville - Storm Sewer Discharge - BL_2009_031

Sample Number	8
Sample Name	BH20-10
Sample Matrix	Ground Water
Sample Date	27/05/2021

Parameter	Units	RL	L1	L2	Result
Microbiology					
E. Coli	cfu/100mL	-		200	< 5↑

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

L1 = SANSEW / WATER / - - Halton Sewer Discharge By Law - Sanitary and Combined Sewer Discharge - BL_2_03

L2 = SANSEW / WATER / - - Oakville - Storm Sewer Discharge - BL_2009_031

Sample Number	8
Sample Name	BH20-10
Sample Matrix	Ground Water
Sample Date	27/05/2021

Parameter	Units	RL	L1	L2	Result
Nonylphenol and Ethoxylates					
Nonylphenol	mg/L	0.001		0.001	< 0.001

Client: DS Consultants
Project: 20-186-100, 1326 Bronte Road, Oakville
Project Manager: Pradeep Patel
Samplers: Pardeep Patel

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

L1 = SANSEW / WATER / - - Halton Sewer Discharge By Law - Sanitary and Combined Sewer Discharge - BL_2_03

L2 = SANSEW / WATER / - - Oakville - Storm Sewer Discharge - BL_2009_031

Sample Number	8
Sample Name	BH20-10
Sample Matrix	Ground Water
Sample Date	27/05/2021

Parameter	Units	RL	L1	L2	Result
Nonylphenol and Ethoxylates (continued)					
Nonylphenol Ethoxylates	mg/L	0.01		0.01	< 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 / - - Halton Sewer Discharge By Law - Sanitary and Combined Sewer Discharge - BL_2_03

L2 = SANSEW / WATER / - - Oakville - Storm Sewer Discharge - BL_2009_031

Sample Number	8
Sample Name	BH20-10
Sample Matrix	Ground Water
Sample Date	27/05/2021

Parameter	Units	RL	L1	L2	Result
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

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

L1 = SANSEW / WATER / - - Halton Sewer Discharge By Law - Sanitary and Combined Sewer Discharge - BL_2_03

L2 = SANSEW / WATER / - - Oakville - Storm Sewer Discharge - BL_2009_031

Sample Number	8
Sample Name	BH20-10
Sample Matrix	Ground Water
Sample Date	27/05/2021

Parameter	Units	RL	L1	L2	Result
Other (ORP)					
pH	No unit	0.05	10	8.5	7.48

Client: DS Consultants
Project: 20-186-100, 1326 Bronte Road, Oakville
Project Manager: Pradeep Patel
Samplers: Pardeep Patel

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

L1 = SANSEW / WATER / - - Halton Sewer Discharge By Law - Sanitary and Combined Sewer Discharge - BL_2_03

L2 = SANSEW / WATER / - - Oakville - Storm Sewer Discharge - BL_2009_031

Sample Number	8
Sample Name	BH20-10
Sample Matrix	Ground Water
Sample Date	27/05/2021

Parameter	Units	RL	L1	L2	Result
Other (ORP) (continued)					
Chromium VI	µg/L	0.2		40	< 0.2
Mercury (total)	mg/L	0.00001	0.05	0.0004	0.00001

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

L1 = SANSEW / WATER / - - Halton Sewer Discharge By Law - Sanitary and Combined Sewer Discharge - BL_2_03

L2 = SANSEW / WATER / - - Oakville - Storm Sewer Discharge - BL_2009_031

Sample Number	8
Sample Name	BH20-10
Sample Matrix	Ground Water
Sample Date	27/05/2021

Parameter	Units	RL	L1	L2	Result
PAHs					
Benzo(b+j)fluoranthene	mg/L	0.0001			< 0.0001

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

L1 = SANSEW / WATER / - - Halton Sewer Discharge By Law - Sanitary and Combined Sewer Discharge - BL_2_03

L2 = SANSEW / WATER / - - Oakville - Storm Sewer Discharge - BL_2009_031

Sample Number	8
Sample Name	BH20-10
Sample Matrix	Ground Water
Sample Date	27/05/2021

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

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

Sample Number	8
Sample Name	BH20-10

Client: DS Consultants
Project: 20-186-100, 1326 Bronte Road, Oakville
Project Manager: Pradeep Patel
Samplers: Pardeep Patel

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

L1 = SANSEW / WATER / - - Halton Sewer Discharge By Law - Sanitary and Combined Sewer Discharge - BL_2_03

L2 = SANSEW / WATER / - - Oakville - Storm Sewer Discharge - BL_2009_031

Sample Number	8
Sample Name	BH20-10
Sample Matrix	Ground Water
Sample Date	27/05/2021

Parameter	Units	RL	L1	L2	Result
Pesticides					
Hexachlorocyclohexane	mg/L	0.001		0.04	< 0.001
Aldrin + Dieldrin	mg/L	0.00002		8e-005	< 0.00002
Aldrin	mg/L	0.00002			< 0.00002
Dieldrin	mg/L	0.00002			< 0.00002
Chlordane (total)	mg/L	0.001		0.04	< 0.001
DDT+Metabolites	mg/L	0.00004			< 0.00004
Mirex	mg/L	0.001		0.04	< 0.001

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

L1 = SANSEW / WATER / - - Halton Sewer Discharge By Law - Sanitary and Combined Sewer Discharge - BL_2_03

L2 = SANSEW / WATER / - - Oakville - Storm Sewer Discharge - BL_2009_031

Sample Number	8
Sample Name	BH20-10
Sample Matrix	Ground Water
Sample Date	27/05/2021

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

Client: DS Consultants
Project: 20-186-100, 1326 Bronte Road, Oakville
Project Manager: Pradeep Patel
Samplers: Pardeep Patel

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

L1 = SANSEW / WATER / - - Halton Sewer Discharge By Law - Sanitary and Combined Sewer Discharge - BL_2_03

L2 = SANSEW / WATER / - - Oakville - Storm Sewer Discharge - BL_2009_031

Sample Number	8
Sample Name	BH20-10
Sample Matrix	Ground Water
Sample Date	27/05/2021

Parameter	Units	RL	L1	L2	Result
SVOCs					
PAHs (Total)	mg/L	-		0.002	< 0.001
di-n-Butyl Phthalate	mg/L	0.002		0.015	< 0.002
Bis(2-ethylhexyl)phthalate	mg/L	0.002		0.0088	< 0.002
3,3-Dichlorobenzidine	mg/L	0.0005		0.0008	< 0.0005
Hexachlorobenzene	mg/L	0.00001		4e-005	< 0.0001↑

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

L1 = SANSEW / WATER / - - Halton Sewer Discharge By Law - Sanitary and Combined Sewer Discharge - BL_2_03

L2 = SANSEW / WATER / - - Oakville - Storm Sewer Discharge - BL_2009_031

Sample Number	8
Sample Name	BH20-10
Sample Matrix	Ground Water
Sample Date	27/05/2021

Parameter	Units	RL	L1	L2	Result
SVOCs - PAHs					
Naphthalene	mg/L	0.0005	0.14		< 0.0005
Anthracene	mg/L	0.0001			< 0.0001
Benzo(a)anthracene	mg/L	0.0001			< 0.0001
Benzo(a)pyrene	mg/L	0.0001			< 0.0001
Benzo(ghi)perylene	mg/L	0.0002			< 0.0002
Benzo(k)fluoranthene	mg/L	0.0001			< 0.0001
Chrysene	mg/L	0.0001			< 0.0001
Dibenzo(a,h)anthracene	mg/L	0.0001			< 0.0001
Fluoranthene	mg/L	0.0001			< 0.0001
Indeno(1,2,3-cd)pyrene	mg/L	0.0002			< 0.0002

Client: DS Consultants
Project: 20-186-100, 1326 Bronte Road, Oakville
Project Manager: Pradeep Patel
Samplers: Pardeep Patel

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

L1 = SANSEW / WATER / - - Halton Sewer Discharge By Law - Sanitary and Combined Sewer Discharge - BL_2_03

L2 = SANSEW / WATER / - - Oakville - Storm Sewer Discharge - BL_2009_031

Sample Number	8
Sample Name	BH20-10
Sample Matrix	Ground Water
Sample Date	27/05/2021

Parameter	Units	RL	L1	L2	Result
SVOCs - PAHs (continued)					
Phenanthrene	mg/L	0.0001			< 0.0001
Pyrene	mg/L	0.0001			< 0.0001

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

L1 = SANSEW / WATER / - - Halton Sewer Discharge By Law - Sanitary and Combined Sewer Discharge - BL_2_03

L2 = SANSEW / WATER / - - Oakville - Storm Sewer Discharge - BL_2009_031

Sample Number	8
Sample Name	BH20-10
Sample Matrix	Ground Water
Sample Date	27/05/2021

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		0.0056	< 0.0005
1,4-Dichlorobenzene	mg/L	0.0005	0.08	0.0068	< 0.0005
cis-1,2-Dichloroethylene	mg/L	0.0005		0.0056	< 0.0005
trans-1,3-Dichloropropene	mg/L	0.0005		0.0056	< 0.0005
Methylene Chloride	mg/L	0.0005	2	0.0052	< 0.0005
Tetrachloroethylene (perchloroethylene)	mg/L	0.0005	1	0.0044	< 0.0005
1,1,2,2-Tetrachloroethane	mg/L	0.0005		0.017	< 0.0005
Trichloroethylene	mg/L	0.0005	0.4	0.0076	< 0.0005

FINAL REPORT

CA15892-MAY21 R1

Client: DS Consultants
Project: 20-186-100, 1326 Bronte Road, Oakville
Project Manager: Pradeep Patel
Samplers: Pardeep Patel

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

L1 = SANSEW / WATER / - - Halton Sewer Discharge By Law - Sanitary and Combined Sewer Discharge - BL_2_03

L2 = SANSEW / WATER / - - Oakville - Storm Sewer Discharge - BL_2009_031

Sample Number	8
Sample Name	BH20-10
Sample Matrix	Ground Water
Sample Date	27/05/2021

Parameter	Units	RL	L1	L2	Result
VOCs - BTEX					
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	0.016	0.002	< 0.0005
Xylene (total)	mg/L	0.0005			< 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 / - - Halton Sewer Discharge By Law - Sanitary and Combined Sewer Discharge - BL_2_03 L1	SANSEW / WATER / - - Oakville - Storm Sewer Discharge - BL_2009_031 L2
BH20-10					
Hexachlorobenzene	EPA 3510C/8270D	mg/L	< 0.0001		4e-005
Total Suspended Solids	SM 2540D	mg/L	791	350	15
Copper	SM 3030/EPA 200.8	mg/L	0.0545		0.04
Manganese	SM 3030/EPA 200.8	mg/L	1.28		0.05
Phosphorus	SM 3030/EPA 200.8	mg/L	0.773		0.4
Zinc	SM 3030/EPA 200.8	mg/L	0.110		0.04

QC SUMMARY

Anions by IC

Method: EPA300/MA300-Ions1.3 | Internal ref.: ME-CA-IENVIIC-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
Sulphate	DIO0566-MAY21	mg/L	0.2	<0.2	17	20	93	80	120	124	75	125

Biochemical Oxygen Demand

Method: SM 5210 | Internal ref.: ME-CA-IENVIEWL-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)	BOD0064-MAY21	mg/L	2	< 2	12	30	113	70	130	NV	70	130

Chlorophenols and Phenoxyacid Herbicides

Method: EPA 515.1 | Internal ref.: ME-CA-IENVIGC-LAK-AN-003

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
Pentachlorophenol	GCM0013-JUN21	mg/L	0.001	< 0.001	ND	30	92	50	140	94	50	140

QC SUMMARY

Cyanide by SFA

Method: SM 4500 I Internal ref.: ME-CA-IENVISFA-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)	SKA0283-MAY21	mg/L	0.01	<0.01	ND	10	90	90	110	NV	75	125

Fluoride by Specific Ion Electrode

Method: SM 4500 I Internal ref.: ME-CA-IENVIEWL-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	EWL0542-MAY21	mg/L	0.06	<0.06	ND	10	106	90	110	103	75	125

Hexavalent Chromium by SFA

Method: EPA218.6/EPA3060A I Internal ref.: ME-CA-IENVISKA-LAK-AN-012

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
Chromium VI	SKA0282-MAY21	ug/L	0.2	<0.2	ND	20	104	80	120	96	75	125

QC SUMMARY

Mercury by CVAAS

Method: EPA 7471A/SM 3112B | 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)	EHG0029-MAY21	mg/L	0.00001	< 0.00001	ND	20	101	80	120	115	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)	EMS0150-MAY21	mg/L	0.00005	<0.00005	ND	20	106	90	110	118	70	130
Aluminum (total)	EMS0150-MAY21	mg/L	0.001	<0.001	2	20	103	90	110	115	70	130
Aluminum (0.2µm)	EMS0150-MAY21	mg/L	0.001	<0.001	2	20	103	90	110	115	70	130
Arsenic (total)	EMS0150-MAY21	mg/L	0.0002	<0.0002	5	20	105	90	110	108	70	130
Beryllium (total)	EMS0150-MAY21	mg/L	0.000007	<0.00007	ND	20	93	90	110	102	70	130
Cadmium (total)	EMS0150-MAY21	mg/L	0.000003	<0.000003	6	20	101	90	110	96	70	130
Cobalt (total)	EMS0150-MAY21	mg/L	0.000004	<0.000004	8	20	104	90	110	89	70	130
Chromium (total)	EMS0150-MAY21	mg/L	0.00008	<0.00008	ND	20	104	90	110	115	70	130
Copper (total)	EMS0150-MAY21	mg/L	0.0002	<0.0002	3	20	100	90	110	120	70	130
Iron (total)	EMS0150-MAY21	mg/L	0.007	<0.007	0	20	93	90	110	125	70	130
Manganese (total)	EMS0150-MAY21	mg/L	0.00001	<0.00001	6	20	103	90	110	103	70	130
Molybdenum (total)	EMS0150-MAY21	mg/L	0.00004	<0.00004	18	20	100	90	110	107	70	130
Nickel (total)	EMS0150-MAY21	mg/L	0.0001	<0.0001	8	20	98	90	110	94	70	130
Lead (total)	EMS0150-MAY21	mg/L	0.00009	<0.00001	ND	20	109	90	110	117	70	130
Phosphorus (total)	EMS0150-MAY21	mg/L	0.003	<0.003	0	20	94	90	110	NV	70	130
Antimony (total)	EMS0150-MAY21	mg/L	0.0009	<0.0009	ND	20	103	90	110	113	70	130
Selenium (total)	EMS0150-MAY21	mg/L	0.00004	<0.00004	8	20	100	90	110	125	70	130
Tin (total)	EMS0150-MAY21	mg/L	0.00006	<0.00006	10	20	104	90	110	NV	70	130
Titanium (total)	EMS0150-MAY21	mg/L	0.00005	<0.00005	14	20	102	90	110	NV	70	130
Zinc (total)	EMS0150-MAY21	mg/L	0.002	<0.002	8	20	98	90	110	114	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	BAC9483-MAY21	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	GCM0480-MAY21	mg/L	0.01	<0.01			93	55	120			
Nonylphenol Ethoxylates	GCM0480-MAY21	mg/L	0.01	< 0.01								
Nonylphenol monoethoxylate	GCM0480-MAY21	mg/L	0.01	<0.01			94	55	120			
Nonylphenol	GCM0480-MAY21	mg/L	0.001	<0.001			90	55	120			

QC SUMMARY

Oil & Grease

Method: MOE E3401 | Internal ref.: ME-CA-IENVIGC-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)	GCM0505-MAY21	mg/L	2	<2	NSS	20	105	75	125			

Oil & Grease-AV/MS

Method: MOE E3401/SM 5520F | Internal ref.: ME-CA-IENVIGC-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)	GCM0505-MAY21	mg/L	4	< 4	NSS	20	NA	70	130			
Oil & Grease (mineral/synthetic)	GCM0505-MAY21	mg/L	4	< 4	NSS	20	NA	70	130			

QC SUMMARY

Pesticides

Method: EPA 3510C/8270D | Internal ref.: ME-CA-[ENV]GC-LAK-AN-018

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
Aldrin	GCM0496-MAY21	mg/L	0.00002	< 0.00002	ND	30	91	50	140	96	50	140
Dieldrin	GCM0496-MAY21	mg/L	0.00002	< 0.00002	ND	30	98	50	140	105	50	140
Hexachlorocyclohexane	GCM0496-MAY21	mg/L	0.001	< 0.001	ND	30	93	50	140	92	50	140
Mirex	GCM0496-MAY21	mg/L	0.001	< 0.001	ND	30	97	50	140	106	50	140

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	EWL0539-MAY21	No unit	0.05	NA	0		99			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	SKA0018-JUN21	mg/L	0.002	<0.002	ND	10	103	80	120	107	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	GCM0043-JUN21	mg/L	0.0001	<0.0001	ND	30	98	60	140	113	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
3,3-Dichlorobenzidine	GCM0471-MAY21	mg/L	0.0005	< 0.0005	NSS	30	88	30	130	NSS	30	130
Anthracene	GCM0472-MAY21	mg/L	0.0001	< 0.0001	NSS	30	90	50	140	NSS	50	140
Benzo(a)anthracene	GCM0472-MAY21	mg/L	0.0001	< 0.0001	NSS	30	97	50	140	NSS	50	140
Benzo(a)pyrene	GCM0472-MAY21	mg/L	0.0001	< 0.0001	NSS	30	97	50	140	NSS	50	140
Benzo(b+j)fluoranthene	GCM0472-MAY21	mg/L	0.0001	< 0.0001	NSS	30	100	50	140	NSS	50	140
Benzo(ghi)perylene	GCM0472-MAY21	mg/L	0.0002	< 0.0002	NSS	30	96	50	140	NSS	50	140
Benzo(k)fluoranthene	GCM0472-MAY21	mg/L	0.0001	< 0.0001	NSS	30	102	50	140	NSS	50	140
Bis(2-ethylhexyl)phthalate	GCM0472-MAY21	mg/L	0.002	< 0.002	NSS	30	103	50	140	NSS	50	140
Chrysene	GCM0472-MAY21	mg/L	0.0001	< 0.0001	NSS	30	101	50	140	NSS	50	140
di-n-Butyl Phthalate	GCM0472-MAY21	mg/L	0.002	< 0.002	NSS	30	111	50	140	NSS	50	140
Dibenzo(a,h)anthracene	GCM0472-MAY21	mg/L	0.0001	< 0.0001	NSS	30	96	50	140	NSS	50	140
Fluoranthene	GCM0472-MAY21	mg/L	0.0001	< 0.0001	NSS	30	97	50	140	NSS	50	140
Hexachlorobenzene	GCM0472-MAY21	mg/L	0.00001	< 0.0001	NSS	30	86	50	140	NSS	50	140
Indeno(1,2,3-cd)pyrene	GCM0472-MAY21	mg/L	0.0002	< 0.0002	NSS	30	96	50	140	NSS	50	140
Naphthalene	GCM0472-MAY21	mg/L	0.0005	< 0.0005	NSS	30	80	50	140	NSS	50	140
Phenanthrene	GCM0472-MAY21	mg/L	0.0001	< 0.0001	NSS	30	90	50	140	NSS	50	140
Pyrene	GCM0472-MAY21	mg/L	0.0001	< 0.0001	NSS	30	98	50	140	NSS	50	140

QC SUMMARY

Suspended Solids

Method: SM 2540D | Internal ref.: ME-CA-IENVIEWL-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	EWL0567-MAY21	mg/L	2	< 2	0	10	97	90	110	NA		

Total Nitrogen

Method: SM 4500-N C/4500-NO3- F | Internal ref.: ME-CA-IENVISFA-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	SKA0289-MAY21	as N mg/L	0.5	<0.5	5	10	103	90	110	88	75	125

QC SUMMARY

Volatile Organics

Method: EPA 5030B/8260C | Internal ref.: ME-CA-IENVIGC-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	GCM0008-JUN21	mg/L	0.0005	<0.0005	ND	30	87	60	130	84	50	140
1,2-Dichlorobenzene	GCM0008-JUN21	mg/L	0.0005	<0.0005	ND	30	96	60	130	94	50	140
1,4-Dichlorobenzene	GCM0008-JUN21	mg/L	0.0005	<0.0005	ND	30	97	60	130	95	50	140
Benzene	GCM0008-JUN21	mg/L	0.0005	<0.0005	ND	30	113	60	130	110	50	140
Chloroform	GCM0008-JUN21	mg/L	0.0005	<0.0005	ND	30	108	60	130	104	50	140
cis-1,2-Dichloroethylene	GCM0008-JUN21	mg/L	0.0005	<0.0005	ND	30	110	60	130	109	50	140
Ethylbenzene	GCM0008-JUN21	mg/L	0.0005	<0.0005	ND	30	103	60	130	102	50	140
m-p-xylene	GCM0008-JUN21	mg/L	0.0005	<0.0005	ND	30	104	60	130	103	50	140
Methylene Chloride	GCM0008-JUN21	mg/L	0.0005	<0.0005	ND	30	106	60	130	100	50	140
o-xylene	GCM0008-JUN21	mg/L	0.0005	<0.0005	ND	30	102	60	130	101	50	140
Tetrachloroethylene (perchloroethylene)	GCM0008-JUN21	mg/L	0.0005	<0.0005	ND	30	108	60	130	106	50	140
Toluene	GCM0008-JUN21	mg/L	0.0005	<0.0005	ND	30	106	60	130	106	50	140
trans-1,3-Dichloropropene	GCM0008-JUN21	mg/L	0.0005	<0.0005	ND	30	99	60	130	96	50	140
Trichloroethylene	GCM0008-JUN21	mg/L	0.0005	<0.0005	ND	30	110	60	130	107	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.

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-- 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: 022085

Page 1 of 1

Laboratory Information Section - Lab use only

Received By: Sean
Received Date: 05/27/2021 (mm/dd/yy)
Received Time: 16:30 (hr : min)
Received By (signature): S
Custody Seal Present: Yes ☑ No ☐
Custody Seal Intact: Yes ☑ No ☐
Cooling Agent Present: Yes ☑ No ☐ Type: Ice
Temperature Upon Receipt (°C) 2.2 2.2
LAB LIMS #: CA 15892-MAY21

REPORT INFORMATION

Company: DS Consultants Ltd.
Contact: Pradeep Patel
Address: ~~6224~~ 6221 Hwy 7 Unit 16, Vaughan ON
Phone: 647 332 3842
Fax:
Email: pradeep.patel@dsconsultants.ca

INVOICE INFORMATION

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

Quotation #:
Project #: 20-186-100
P.O. #:
Site Location/ID: 1326 Bronte Road, Oakville

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:
☐ Table 2 ☐ Ind/Com ☐ Coarse
☐ Table 3 ☐ Agri/Other ☐ Medium/Fine
☐ Table ____
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: Oakville

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): Oakville Sewer Use & Storm & Sanitary	Other	Other	Other	Appendix 2: 406/19 Leachate Screening Levels Table : ____	Sewer Use: Specify pkg:	Water Characterization Pkg General ☐ Extended ☐	TCLP: Specify TCLP tests ☐ M&I ☐ VOC ☐ PCB ☐ B(a)P ☐ ABN ☐ Ignit.	COMMENTS:
1	BH 20-10	May 27/21	p.m.	20	GW	X												✓								non filtered sample
2																										
3																										
4																										
5																										
6																										
7																										
8																										
9																										
10																										
11																										
12																										

Observations/Comments/Special Instructions: Also compare the results against PWQO

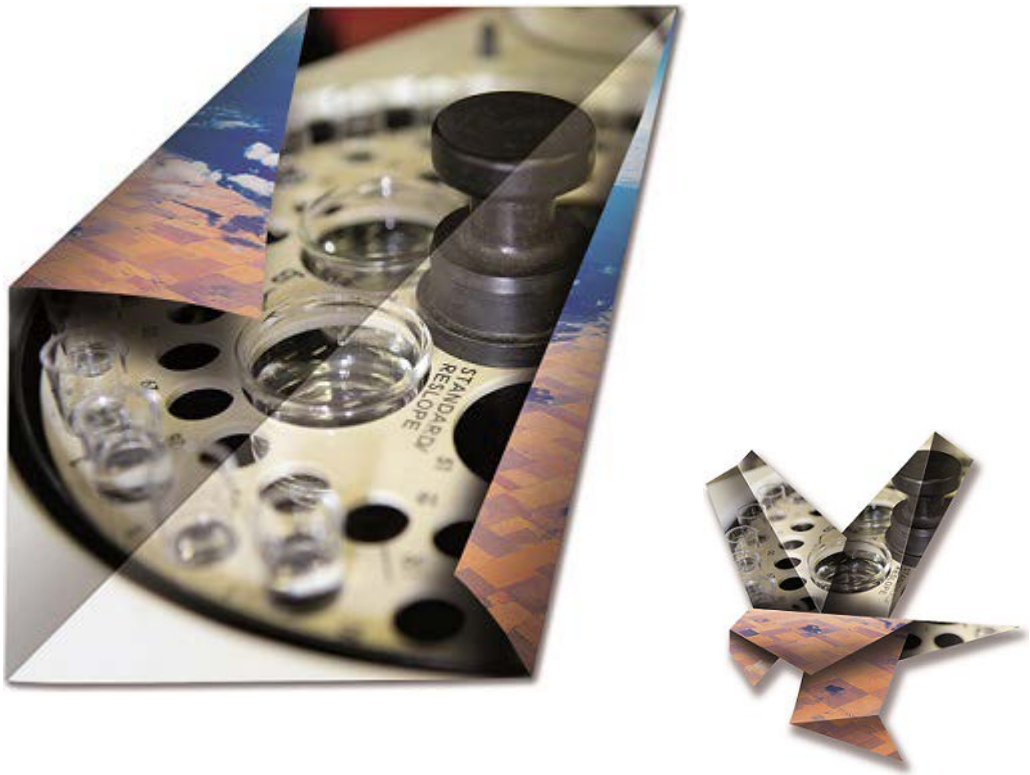
Sampled By (NAME): Pradeep Patel
Signature: P. A. Patel
Date: May 27, 2021 (mm/dd/yy) 4:15 pm

Relinquished by (NAME): Pradeep Patel
Signature: P. A. Patel
Date: May 27, 2021 (mm/dd/yy) 4:15 pm

Pink Copy - Client
Yellow & White Copy - SGS

Revision #: 1.4
Date of Issue: 22 May. 2020

Note: Submission of samples to SGS is acknowledgement that you have been provided direction on sample collection/handling and transportation of samples. {2} Submission of samples to SGS is considered authorization for completion of work. Signatures may appear on this form or be retained on file in the contract, or in an alternative format (e.g. shipping documents). {3} Results may be sent by email to an unlimited number of addresses for no additional cost. Fax is available upon request. This document is issued by the Company under its General Conditions of Service accessible at http://www.sgs.com/terms_and_conditions.htm. (Printed copies are available upon request.) Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.



FINAL REPORT

CA15892-MAY21 R1

20-186-100, 1326 Bronte Road, Oakville

Prepared for

DS Consultants

FINAL REPORT

CA15892-MAY21 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	Pradeep Patel	Telephone	2165
Telephone	647-332-3482	Facsimile	705-652-6365
Facsimile	905-264-2685	Email	jill.campbell@sgs.com
Email	pradeep.patel@dsconsultants.ca	SGS Reference	CA15892-MAY21
Project	20-186-100, 1326 Bronte Road, Oakville	Received	05/27/2021
Order Number		Approved	06/07/2021
Samples	Ground Water (1)	Report Number	CA15892-MAY21 R1
		Date Reported	08/16/2021

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:022085

Elevated result of <5cfu/100mL reported for Ecoli due to sample matrix.

SIGNATORIES

Jill Campbell, B.Sc.,GISAS

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FINAL REPORT

CA15892-MAY21 R1

Client: DS Consultants
Project: 20-186-100, 1326 Bronte Road, Oakville
Project Manager: Pradeep Patel
Samplers: Pardeep Patel

PACKAGE: **Chlorophenols** (WATER)

L1 = PWQO_L / WATER / - - Table 2 - General - July 1999 PIBS 3303E

Sample Number	8
Sample Name	BH20-10
Sample Matrix	Ground Water
Sample Date	27/05/2021

Parameter	Units	RL	L1	Result
Chlorophenols				
Pentachlorophenol	mg/L	0.001		< 0.001
General Chemistry				
Biochemical Oxygen Demand (BOD5)	mg/L	2		< 4 ↑
Total Suspended Solids	mg/L	2		791
Total Kjeldahl Nitrogen	as N mg/L	0.5		< 0.5
Metals and Inorganics				
Cyanide (total)	mg/L	0.01		< 0.01
Fluoride	mg/L	0.06		0.06
Sulphate	mg/L	0.2		16
Aluminum (total)	mg/L	0.001	0.075	21.6
Aluminum (0.2µm)	mg/L	0.001	0.015	0.005
Antimony (total)	mg/L	0.0009	0.02	< 0.0009
Arsenic (total)	mg/L	0.0002	0.005	0.0093
Beryllium (total)	mg/L	0.000007	0.011	0.00113
Cadmium (total)	mg/L	0.000003	0.0001	0.000268
Chromium (total)	mg/L	0.00008	0.1	0.0284
Cobalt (total)	mg/L	0.000004	0.0009	0.0180
Copper (total)	mg/L	0.0002	0.001	0.0545
Iron (total)	mg/L	0.007	0.3	34.3
Lead (total)	mg/L	0.00009	0.011	0.0282

FINAL REPORT

CA15892-MAY21 R1

Client: DS Consultants
Project: 20-186-100, 1326 Bronte Road, Oakville
Project Manager: Pradeep Patel
Samplers: Pardeep Patel

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

L1 = PWQO_L / WATER / - - Table 2 - General - July 1999 PIBS 3303E

Sample Number	8
Sample Name	BH20-10
Sample Matrix	Ground Water
Sample Date	27/05/2021

Parameter	Units	RL	L1	Result
Metals and Inorganics (continued)				
Manganese (total)	mg/L	0.00001		1.28
Molybdenum (total)	mg/L	0.00004	0.04	0.00075
Nickel (total)	mg/L	0.0001	0.025	0.0363
Phosphorus (total)	mg/L	0.003	0.01	0.773
Selenium (total)	mg/L	0.00004	0.1	0.00020
Silver (total)	mg/L	0.00005	0.0001	0.00007
Tin (total)	mg/L	0.00006		0.00083
Titanium (total)	mg/L	0.00005		0.121
Zinc (total)	mg/L	0.002	0.02	0.110
Microbiology				
E. Coli	cfu/100mL	0	100	< 5↑
Nonylphenol and Ethoxylates				
Nonylphenol	mg/L	0.001		< 0.001
Nonylphenol Ethoxylates	mg/L	0.01		< 0.01
Nonylphenol diethoxylate	mg/L	0.01		< 0.01
Nonylphenol monoethoxylate	mg/L	0.01		< 0.01

FINAL REPORT

CA15892-MAY21 R1

Client: DS Consultants
Project: 20-186-100, 1326 Bronte Road, Oakville
Project Manager: Pradeep Patel
Samplers: Pardeep Patel

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

L1 = PWQO_L / WATER / - - Table 2 - General - July 1999 PIBS 3303E

Sample Number	8
Sample Name	BH20-10
Sample Matrix	Ground Water
Sample Date	27/05/2021

Parameter	Units	RL	L1	Result
Oil and Grease				
Oil & Grease (total)	mg/L	2		< 2
Oil & Grease (animal/vegetable)	mg/L	4		< 4
Oil & Grease (mineral/synthetic)	mg/L	4		< 4
Other (ORP)				
pH	No unit	0.05	8.6	7.48
Chromium VI	µg/L	0.2	1	< 0.2
Mercury (total)	mg/L	0.00001	0.0002	0.00001
PAHs				
Benzo(b+j)fluoranthene	mg/L	0.0001		< 0.0001
PCBs				
Polychlorinated Biphenyls (PCBs) - Total	mg/L	0.0001		< 0.0001
Pesticides				
Hexachlorocyclohexane	mg/L	0.001		< 0.001
Aldrin + Dieldrin	mg/L	0.00002	1e-006	< 0.00002
Aldrin	mg/L	0.00002		< 0.00002
Dieldrin	mg/L	0.00002		< 0.00002
Chlordane (total)	mg/L	0.001	6e-005	< 0.001
DDT+Metabolites	mg/L	0.00004	3e-006	< 0.00004
Mirex	mg/L	0.001		< 0.001

FINAL REPORT

CA15892-MAY21 R1

Client: DS Consultants
Project: 20-186-100, 1326 Bronte Road, Oakville
Project Manager: Pradeep Patel
Samplers: Pardeep Patel

PACKAGE: **Phenols** (WATER)

L1 = PWQO_L / WATER / - - Table 2 - General - July 1999 PIBS 3303E

Sample Number	8
Sample Name	BH20-10
Sample Matrix	Ground Water
Sample Date	27/05/2021

Parameter	Units	RL	L1	Result
Phenols				
4AAP-Phenolics	mg/L	0.002	0.001	< 0.002
SVOCs				
PAHs (Total)	mg/L			< 0.001
di-n-Butyl Phthalate	mg/L	0.002		< 0.002
Bis(2-ethylhexyl)phthalate	mg/L	0.002		< 0.002
3,3-Dichlorobenzidine	mg/L	0.0005		< 0.0005
Hexachlorobenzene	mg/L	0.00001	6.5e-006	< 0.0001↑
SVOCs - PAHs				
Naphthalene	mg/L	0.0005	0.007	< 0.0005
Anthracene	mg/L	0.0001	8e-007	< 0.0001
Benzo(a)anthracene	mg/L	0.0001	4e-007	< 0.0001
Benzo(a)pyrene	mg/L	0.0001		< 0.0001
Benzo(ghi)perylene	mg/L	0.0002	2e-008	< 0.0002
Benzo(k)fluoranthene	mg/L	0.0001	2e-007	< 0.0001
Chrysene	mg/L	0.0001	1e-007	< 0.0001
Dibenzo(a,h)anthracene	mg/L	0.0001	2e-006	< 0.0001
Fluoranthene	mg/L	0.0001	8e-007	< 0.0001
Indeno(1,2,3-cd)pyrene	mg/L	0.0002		< 0.0002
Phenanthrene	mg/L	0.0001	3e-005	< 0.0001
Pyrene	mg/L	0.0001		< 0.0001

FINAL REPORT

CA15892-MAY21 R1

Client: DS Consultants
Project: 20-186-100, 1326 Bronte Road, Oakville
Project Manager: Pradeep Patel
Samplers: Pardeep Patel

PACKAGE: **VOCs** (WATER)

L1 = PWQO_L / WATER / - - Table 2 - General - July 1999 PIBS 3303E

Sample Number	8
Sample Name	BH20-10
Sample Matrix	Ground Water
Sample Date	27/05/2021

Parameter	Units	RL	L1	Result
VOCs				
Chloroform	mg/L	0.0005		< 0.0005
1,2-Dichlorobenzene	mg/L	0.0005		< 0.0005
1,4-Dichlorobenzene	mg/L	0.0005		< 0.0005
cis-1,2-Dichloroethylene	mg/L	0.0005		< 0.0005
trans-1,3-Dichloropropene	mg/L	0.0005		< 0.0005
Methylene Chloride	mg/L	0.0005	0.1	< 0.0005
Tetrachloroethylene (perchloroethylene)	mg/L	0.0005	0.05	< 0.0005
1,1,2,2-Tetrachloroethane	mg/L	0.0005	0.07	< 0.0005
Trichloroethylene	mg/L	0.0005	0.02	< 0.0005
VOCs - BTEX				
Benzene	mg/L	0.0005	0.1	< 0.0005
Ethylbenzene	mg/L	0.0005	0.008	< 0.0005
Toluene	mg/L	0.0005	0.0008	< 0.0005
Xylene (total)	mg/L	0.0005		< 0.0005
m-p-xylene	mg/L	0.0005	0.002	< 0.0005
o-xylene	mg/L	0.0005	0.04	< 0.0005

EXCEEDANCE SUMMARY

Parameter	Method	Units	Result	PWQO_L / WATER / - - Table 2 - General - July 1999 PIBS 3303E L1
BH20-10				
Aldrin + Dieldrin	EPA 3510C/8270D	mg/L	< 0.00002	1e-006
Anthracene	EPA 3510C/8270D	mg/L	< 0.0001	8e-007
Benz(a)anthracene	EPA 3510C/8270D	mg/L	< 0.0001	4e-007
Benzo(g,h,i)perylene	EPA 3510C/8270D	mg/L	< 0.0002	2e-008
Benzo(k)fluoranthene	EPA 3510C/8270D	mg/L	< 0.0001	2e-007
Chlordane	EPA 3510C/8270D	mg/L	< 0.001	6e-005
Chrysene	EPA 3510C/8270D	mg/L	< 0.0001	1e-007
DDT+Metabolites	EPA 3510C/8270D	mg/L	< 0.00004	3e-006
Dibenz(a,h)anthracene	EPA 3510C/8270D	mg/L	< 0.0001	2e-006
Fluoranthene	EPA 3510C/8270D	mg/L	< 0.0001	8e-007
Hexachlorobenzene	EPA 3510C/8270D	mg/L	< 0.0001	6.5e-006
Phenanthrene	EPA 3510C/8270D	mg/L	< 0.0001	3e-005
Aluminum	SM 3030/EPA 200.8	mg/L	21.6	0.075
Arsenic	SM 3030/EPA 200.8	mg/L	0.0093	0.005
Cadmium	SM 3030/EPA 200.8	mg/L	0.000268	0.0001
Cobalt	SM 3030/EPA 200.8	mg/L	0.0180	0.0009
Copper	SM 3030/EPA 200.8	mg/L	0.0545	0.001
Iron	SM 3030/EPA 200.8	mg/L	34.3	0.3
Lead	SM 3030/EPA 200.8	mg/L	0.0282	0.011
Nickel	SM 3030/EPA 200.8	mg/L	0.0363	0.025
Phosphorus	SM 3030/EPA 200.8	mg/L	0.773	0.01
Zinc	SM 3030/EPA 200.8	mg/L	0.110	0.02
4AAP-Phenolics	SM 5530B-D	mg/L	< 0.002	0.001

QC SUMMARY

Anions by IC

Method: EPA300/MA300-Ions1.3 | Internal ref.: ME-CA-IENVIIC-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
Sulphate	DIO0566-MAY21	mg/L	0.2	<0.2	17	20	93	90	110	124	75	125

Biochemical Oxygen Demand

Method: SM 5210 | Internal ref.: ME-CA-IENVIEWL-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)	BOD0064-MAY21	mg/L	2	< 2	12	30	113	70	130	NV	70	130

Chlorophenols and Phenoxyacid Herbicides

Method: EPA 515.1 | Internal ref.: ME-CA-IENVIGC-LAK-AN-003

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
Pentachlorophenol	GCM0013-JUN21	mg/L	0.001	< 0.001	ND	30	92	50	140	94	50	140

QC SUMMARY

Cyanide by SFA

Method: SM 4500 I Internal ref.: ME-CA-IENVISFA-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)	SKA0283-MAY21	mg/L	0.01	<0.01	ND	10	90	90	110	NV	75	125

Fluoride by Specific Ion Electrode

Method: SM 4500 I Internal ref.: ME-CA-IENVIEWL-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	EWL0542-MAY21	mg/L	0.06	<0.06	ND	10	106	90	110	103	75	125

Hexavalent Chromium by SFA

Method: EPA218.6/EPA3060A I Internal ref.: ME-CA-IENVISKA-LAK-AN-012

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
Chromium VI	SKA0282-MAY21	ug/L	0.2	<0.2	ND	20	104	80	120	96	75	125

QC SUMMARY

Mercury by CVAAS

Method: EPA 7471A/SM 3112B | 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)	EHG0029-MAY21	mg/L	0.00001	< 0.00001	ND	20	101	80	120	115	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)	EMS0150-MAY21	mg/L	0.00005	<0.00005	ND	20	106	90	110	118	70	130
Aluminum (total)	EMS0150-MAY21	mg/L	0.001	<0.001	2	20	103	90	110	115	70	130
Aluminum (0.2µm)	EMS0150-MAY21	mg/L	0.001	<1	2	20	103	90	110	115	70	130
Arsenic (total)	EMS0150-MAY21	mg/L	0.0002	<0.0002	5	20	105	90	110	108	70	130
Beryllium (total)	EMS0150-MAY21	mg/L	0.000007	<0.00007	ND	20	93	90	110	102	70	130
Cadmium (total)	EMS0150-MAY21	mg/L	0.000003	<0.000003	6	20	101	90	110	96	70	130
Cobalt (total)	EMS0150-MAY21	mg/L	0.000004	<0.000004	8	20	104	90	110	89	70	130
Chromium (total)	EMS0150-MAY21	mg/L	0.00008	<0.00008	ND	20	104	90	110	115	70	130
Copper (total)	EMS0150-MAY21	mg/L	0.0002	<0.0002	3	20	100	90	110	120	70	130
Iron (total)	EMS0150-MAY21	mg/L	0.007	<0.007	0	20	93	90	110	125	70	130
Manganese (total)	EMS0150-MAY21	mg/L	0.00001	<0.00001	6	20	103	90	110	103	70	130
Molybdenum (total)	EMS0150-MAY21	mg/L	0.00004	<0.00004	18	20	100	90	110	107	70	130
Nickel (total)	EMS0150-MAY21	mg/L	0.0001	<0.0001	8	20	98	90	110	94	70	130
Lead (total)	EMS0150-MAY21	mg/L	0.00009	<0.00001	ND	20	109	90	110	117	70	130
Phosphorus (total)	EMS0150-MAY21	mg/L	0.003	<0.003	0	20	94	90	110	NV	70	130
Antimony (total)	EMS0150-MAY21	mg/L	0.0009	<0.0009	ND	20	103	90	110	113	70	130
Selenium (total)	EMS0150-MAY21	mg/L	0.00004	<0.00004	8	20	100	90	110	125	70	130
Tin (total)	EMS0150-MAY21	mg/L	0.00006	<0.00006	10	20	104	90	110	NV	70	130
Titanium (total)	EMS0150-MAY21	mg/L	0.00005	<0.00005	14	20	102	90	110	NV	70	130
Zinc (total)	EMS0150-MAY21	mg/L	0.002	<0.002	8	20	98	90	110	114	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	BAC9483-MAY21	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	GCM0480-MAY21	mg/L	0.01	<0.01			93	55	120			
Nonylphenol Ethoxylates	GCM0480-MAY21	mg/L	0.01	< 0.01								
Nonylphenol monoethoxylate	GCM0480-MAY21	mg/L	0.01	<0.01			94	55	120			
Nonylphenol	GCM0480-MAY21	mg/L	0.001	<0.001			90	55	120			

QC SUMMARY

Oil & Grease

Method: MOE E3401 | Internal ref.: ME-CA-IENVIGC-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)	GCM0505-MAY21	mg/L	2	<2	NSS	20	105	75	125			

Oil & Grease-AV/MS

Method: MOE E3401/SM 5520F | Internal ref.: ME-CA-IENVIGC-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)	GCM0505-MAY21	mg/L	4	< 4	NSS	20	NA	70	130			
Oil & Grease (mineral/synthetic)	GCM0505-MAY21	mg/L	4	< 4	NSS	20	NA	70	130			

QC SUMMARY

Pesticides

Method: EPA 3510C/8270D | Internal ref.: ME-CA-[ENV]GC-LAK-AN-018

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
Aldrin	GCM0496-MAY21	mg/L	0.00002	< 0.00002	ND	30	91	50	140	96	50	140
Dieldrin	GCM0496-MAY21	mg/L	0.00002	< 0.00002	ND	30	98	50	140	105	50	140
Hexachlorocyclohexane	GCM0496-MAY21	mg/L	0.001	< 0.001	ND	30	93	50	140	92	50	140
Mirex	GCM0496-MAY21	mg/L	0.001	< 0.001	ND	30	97	50	140	106	50	140

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	EWL0539-MAY21	No unit	0.05	NA	0		99			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	SKA0018-JUN21	mg/L	0.002	<0.002	ND	10	103	80	120	107	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	GCM0043-JUN21	mg/L	0.0001	<0.0001	ND	30	98	60	140	113	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
3,3-Dichlorobenzidine	GCM0471-MAY21	mg/L	0.0005	< 0.0005	NSS	30	88	30	130	NSS	30	130
Anthracene	GCM0472-MAY21	mg/L	0.0001	< 0.0001	NSS	30	90	50	140	NSS	50	140
Benzo(a)anthracene	GCM0472-MAY21	mg/L	0.0001	< 0.0001	NSS	30	97	50	140	NSS	50	140
Benzo(a)pyrene	GCM0472-MAY21	mg/L	0.0001	< 0.0001	NSS	30	97	50	140	NSS	50	140
Benzo(b+j)fluoranthene	GCM0472-MAY21	mg/L	0.0001	< 0.0001	NSS	30	100	50	140	NSS	50	140
Benzo(ghi)perylene	GCM0472-MAY21	mg/L	0.0002	< 0.0002	NSS	30	96	50	140	NSS	50	140
Benzo(k)fluoranthene	GCM0472-MAY21	mg/L	0.0001	< 0.0001	NSS	30	102	50	140	NSS	50	140
Bis(2-ethylhexyl)phthalate	GCM0472-MAY21	mg/L	0.002	< 0.002	NSS	30	103	50	140	NSS	50	140
Chrysene	GCM0472-MAY21	mg/L	0.0001	< 0.0001	NSS	30	101	50	140	NSS	50	140
di-n-Butyl Phthalate	GCM0472-MAY21	mg/L	0.002	< 0.002	NSS	30	111	50	140	NSS	50	140
Dibenzo(a,h)anthracene	GCM0472-MAY21	mg/L	0.0001	< 0.0001	NSS	30	96	50	140	NSS	50	140
Fluoranthene	GCM0472-MAY21	mg/L	0.0001	< 0.0001	NSS	30	97	50	140	NSS	50	140
Hexachlorobenzene	GCM0472-MAY21	mg/L	0.00001	< 0.0001	NSS	30	86	50	140	NSS	50	140
Indeno(1,2,3-cd)pyrene	GCM0472-MAY21	mg/L	0.0002	< 0.0002	NSS	30	96	50	140	NSS	50	140
Naphthalene	GCM0472-MAY21	mg/L	0.0005	< 0.0005	NSS	30	80	50	140	NSS	50	140
Phenanthrene	GCM0472-MAY21	mg/L	0.0001	< 0.0001	NSS	30	90	50	140	NSS	50	140
Pyrene	GCM0472-MAY21	mg/L	0.0001	< 0.0001	NSS	30	98	50	140	NSS	50	140

QC SUMMARY

Suspended Solids

Method: SM 2540D | Internal ref.: ME-CA-IENVIEWL-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	EWL0567-MAY21	mg/L	2	< 2	0	10	97	90	110	NA		

Total Nitrogen

Method: SM 4500-N C/4500-NO3- F | Internal ref.: ME-CA-IENVISFA-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	SKA0289-MAY21	as N mg/L	0.5	<0.5	5	10	103	90	110	88	75	125

QC SUMMARY

Volatile Organics

Method: EPA 5030B/8260C | Internal ref.: ME-CA-IENVIGC-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	GCM0008-JUN21	mg/L	0.0005	<0.0005	ND	30	87	60	130	84	50	140
1,2-Dichlorobenzene	GCM0008-JUN21	mg/L	0.0005	<0.0005	ND	30	96	60	130	94	50	140
1,4-Dichlorobenzene	GCM0008-JUN21	mg/L	0.0005	<0.0005	ND	30	97	60	130	95	50	140
Benzene	GCM0008-JUN21	mg/L	0.0005	<0.0005	ND	30	113	60	130	110	50	140
Chloroform	GCM0008-JUN21	mg/L	0.0005	<0.0005	ND	30	108	60	130	104	50	140
cis-1,2-Dichloroethylene	GCM0008-JUN21	mg/L	0.0005	<0.0005	ND	30	110	60	130	109	50	140
Ethylbenzene	GCM0008-JUN21	mg/L	0.0005	<0.0005	ND	30	103	60	130	102	50	140
m-p-xylene	GCM0008-JUN21	mg/L	0.0005	<0.0005	ND	30	104	60	130	103	50	140
Methylene Chloride	GCM0008-JUN21	mg/L	0.0005	<0.0005	ND	30	106	60	130	100	50	140
o-xylene	GCM0008-JUN21	mg/L	0.0005	<0.0005	ND	30	102	60	130	101	50	140
Tetrachloroethylene (perchloroethylene)	GCM0008-JUN21	mg/L	0.0005	<0.0005	ND	30	108	60	130	106	50	140
Toluene	GCM0008-JUN21	mg/L	0.0005	<0.0005	ND	30	106	60	130	106	50	140
trans-1,3-Dichloropropene	GCM0008-JUN21	mg/L	0.0005	<0.0005	ND	30	99	60	130	96	50	140
Trichloroethylene	GCM0008-JUN21	mg/L	0.0005	<0.0005	ND	30	110	60	130	107	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.

This report must not be reproduced, except in full. This report supersedes all previous versions.

-- 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: 022085

Page 1 of 1

Laboratory Information Section - Lab use only

Received By: Sean
Received Date: 05/27/2021 (mm/dd/yy)
Received Time: 16:30 (hr : min)
Received By (signature): S
Custody Seal Present: Yes ☑ No ☐
Custody Seal Intact: Yes ☑ No ☐
Cooling Agent Present: Yes ☑ No ☐ Type: Ice
Temperature Upon Receipt (°C) 2.2 2.2
LAB LIMS #: CA 15892-MAY21

REPORT INFORMATION

Company: DS Consultants Ltd.
Contact: Pradeep Patel
Address: ~~6224~~ 6221 Hwy 7 Unit 16, Vaughan ON
Phone: 647 332 3842
Fax:
Email: pradeep.patel@dsconsultants.ca

INVOICE INFORMATION

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

Quotation #:
Project #: 20-186-100
P.O. #:
Site Location/ID: 1326 Bronte Road, Oakville

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:
☐ Table 2 ☐ Ind/Com ☐ Coarse
☐ Table 3 ☐ Agri/Other ☐ Medium/Fine
☐ Table ____
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: Oakville

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): Oakville Sewer Use & Storm & Sanitary	Other	Other	Other	Appendix 2: 406/19 Leachate Screening Levels Table : ____	Sewer Use: Specify pkg:	Water Characterization Pkg General ☐ Extended ☐	TCLP: Specify TCLP tests ☐ M&I ☐ VOC ☐ PCB ☐ B(a)P ☐ ABN ☐ Ignit.	COMMENTS:
1	BH 20-10	May 27/21	p.m.	20	GW	X												✓								non filtered sample
2																										
3																										
4																										
5																										
6																										
7																										
8																										
9																										
10																										
11																										
12																										

Observations/Comments/Special Instructions: Also compare the results against PWQO

Sampled By (NAME): Pradeep Patel
Signature: P. A. Patel
Date: May 27, 2021 (mm/dd/yy) 4:15 pm

Relinquished by (NAME): Pradeep Patel
Signature: P. A. Patel
Date: May 27, 2021 (mm/dd/yy) 4:15 pm

Pink Copy - Client
Yellow & White Copy - SGS

Revision #: 1.4
Date of Issue: 22 May. 2020

Note: Submission of samples to SGS is acknowledgement that you have been provided direction on sample collection/handling and transportation of samples. {2} Submission of samples to SGS is considered authorization for completion of work. Signatures may appear on this form or be retained on file in the contract, or in an alternative format (e.g. shipping documents). {3} Results may be sent by email to an unlimited number of addresses for no additional cost. Fax is available upon request. This document is issued by the Company under its General Conditions of Service accessible at http://www.sgs.com/terms_and_conditions.htm. (Printed copies are available upon request.) Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

PRELIMINARY REPORT

CA40134-MAR23 R1

20-186-101, 1300 Bronte Rd, Oakville ON

Prepared for

DS Consultants

PRELIMINARY REPORT

First Page

CLIENT DETAILS

Client	DS Consultants
Address	6221 Highway 7 Unit 16 Vaughan, Ontario L4H 0K8. Canada
Contact	Pradeep Patel
Telephone	647-332-3482
Facsimile	905-264-2685
Email	pradeep.patel@dsconsultants.ca
Project	20-186-101, 1300 Bronte Rd, Oakville ON
Order Number	
Samples	Ground Water (1)

LABORATORY DETAILS

Project Specialist	Jill Campbell, B.Sc.,GISAS
Laboratory	SGS Canada Inc.
Address	185 Concession St., Lakefield ON, K0L 2H0
Telephone	2165
Facsimile	705-652-6365
Email	jill.campbell@sgs.com
SGS Reference	CA40134-MAR23
Received	03/13/2023
Approved	01/01/1970
Report Number	CA40134-MAR23 R1
Date Reported	03/15/2023

COMMENTS

RL - SGS Reporting Limit

Temperature of Sample upon Receipt: 4
Cooling Agent Present: Yes
Custody Seal Present: Yes

Chain of Custody Number: 029248

SIGNATORIES

The signatories will be applied on the final report.

Jill Campbell, B.Sc.,GISAS

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PRELIMINARY REPORT

CA40134-MAR23 R1

Client: DS Consultants
Project: 20-186-101, 1300 Bronte Rd, Oakville ON
Project Manager: Pradeep Patel
Samplers: Abdul Qadir

MATRIX: WATER

L1 = SANSEW / WATER / - - Halton Sewer Use ByLaw - Sanitary and Combined Sewer Discharge - BL_2_03

L2 = SANSEW / WATER / - - Oakville Sewer Use By Law - Storm Sewer Discharge - BL_2009_031

Sample Number	7
Sample Name	PO1
Sample Matrix	Ground Water
Sample Date	13/03/2023

Parameter	Units	RL	L1	L2	Result
General Chemistry					
Biochemical Oxygen Demand (BOD5)	mg/L	2			NVL
Carbonaceous Biochemical Oxygen Demand	mg/L	2			NVL
Total Suspended Solids	mg/L	2	350	15	3
Total Kjeldahl Nitrogen	as N mg/L	0.5	100		< 0.5
Metals and Inorganics					
Cyanide (total)	mg/L	0.01	2	0.02	< 0.01
Fluoride	mg/L	0.06	10		< 0.06
Sulphate	mg/L	2	1500		69
Aluminum (total)	mg/L	0.001	50		0.005
Antimony (total)	mg/L	0.0009	5		< 0.0009
Arsenic (total)	mg/L	0.0002	1	0.02	0.0003
Beryllium (total)	mg/L	0.000007	5		0.000007
Cadmium (total)	mg/L	0.000003	1	0.008	0.000015
Chromium (total)	mg/L	0.00008	3	0.08	0.00019
Copper (total)	mg/L	0.0002	3	0.04	0.0055
Cobalt (total)	mg/L	0.000004	5		0.000030
Iron (total)	mg/L	0.007	50		0.019
Lead (total)	mg/L	0.00009	3	0.12	0.00055
Manganese (total)	mg/L	0.00001	5	0.05	0.0103
Molybdenum (total)	mg/L	0.00004	5		0.00024

PRELIMINARY REPORT

CA40134-MAR23 R1

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L2 = SANSEW / WATER / - - Oakville Sewer Use By Law - Storm Sewer Discharge - BL_2009_031

Sample Number	7
Sample Name	PO1
Sample Matrix	Ground Water
Sample Date	13/03/2023

Parameter	Units	RL	L1	L2	Result
Metals and Inorganics (continued)					
Nickel (total)	mg/L	0.0001	3	0.08	0.0004
Phosphorus (total)	mg/L	0.003	10	0.4	0.014
Selenium (total)	mg/L	0.00004	5	0.02	0.00032
Silver (total)	mg/L	0.00005	5	0.12	< 0.00005
Tin (total)	mg/L	0.00006	5		0.00019
Titanium (total)	mg/L	0.00005	5		0.00051
Zinc (total)	mg/L	0.002	3	0.04	0.006
Microbiology					
E. Coli	cfu/100mL	0		200	0
Nonylphenol and Ethoxylates					
Nonylphenol	mg/L	0.001		0.001	< 0.001
Nonylphenol Ethoxylates	mg/L	0.01		0.01	< 0.01
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

PRELIMINARY REPORT

CA40134-MAR23 R1

Client: DS Consultants
Project: 20-186-101, 1300 Bronte Rd, Oakville ON
Project Manager: Pradeep Patel
Samplers: Abdul Qadir

MATRIX: WATER

L1 = SANSEW / WATER / - - Halton Sewer Use ByLaw - Sanitary and Combined Sewer Discharge - BL_2_03

L2 = SANSEW / WATER / - - Oakville Sewer Use By Law - Storm Sewer Discharge - BL_2009_031

Sample Number	7
Sample Name	PO1
Sample Matrix	Ground Water
Sample Date	13/03/2023

Parameter	Units	RL	L1	L2	Result
Organochlorine Pests (OCs)					
Hexachlorobenzene	mg/L	0.00001		0.00004	< 0.00001
Other (ORP)					
pH	No unit	0.05	10	8.5	8.25
Chromium VI	µg/L	0.2		40	< 0.2
Mercury (total)	mg/L	0.00001	0.05	0.0004	< 0.00001
PAHs					
Benzo(b+j)fluoranthene	mg/L	0.0001			< 0.0001
PCBs					
Polychlorinated Biphenyls (PCBs) - Total	mg/L	0.0001		0.0004	< 0.0001
Pesticides					
Aldrin + Dieldrin	mg/L	0.00002		0.00008	< 0.00002
Chlordane (total)	mg/L	0.001		0.04	< 0.001
DDT+Metabolites	mg/L	0.00004			< 0.00004
op-DDT	mg/L	0.00002			< 0.00002
pp-DDD	mg/L	0.00002			< 0.00002
pp-DDE	mg/L	0.00001			< 0.00001
pp-DDT	mg/L	0.00002			< 0.00002
o,p-DDD	mg/L	0.00002			< 0.00002
o,p-DDE	mg/L	0.00001			< 0.00001
Mirex	mg/L	0.001		0.04	< 0.001
Hexachlorocyclohexane	mg/L	0.001		0.04	< 0.001

PRELIMINARY REPORT

CA40134-MAR23 R1

Client: DS Consultants
Project: 20-186-101, 1300 Bronte Rd, Oakville ON
Project Manager: Pradeep Patel
Samplers: Abdul Qadir

MATRIX: WATER

L1 = SANSEW / WATER / - - Halton Sewer Use ByLaw - Sanitary and Combined Sewer Discharge - BL_2_03

L2 = SANSEW / WATER / - - Oakville Sewer Use By Law - Storm Sewer Discharge - BL_2009_031

Sample Number	7
Sample Name	PO1
Sample Matrix	Ground Water
Sample Date	13/03/2023

Parameter	Units	RL	L1	L2	Result
Phenols					
4AAP-Phenolics	mg/L	0.002	1	0.008	< 0.002
SVOCs					
PAHs (Total)	mg/L			0.002	< 0.001
Perylene	mg/L	0.0005			< 0.0005
di-n-Butyl Phthalate	mg/L	0.002		0.015	< 0.002
Bis(2-ethylhexyl)phthalate	mg/L	0.002		0.0088	< 0.002
3,3-Dichlorobenzidine	mg/L	0.0005		0.0008	< 0.0005
Pentachlorophenol	mg/L	0.0005		0.002	< 0.0005
SVOCs - PAHs					
Naphthalene	mg/L	0.0005	0.14		< 0.0005
7Hdibenzo(c,g)carbazole	mg/L	0.0001			< 0.0001
Anthracene	mg/L	0.0001			< 0.0001
Benzo(a)anthracene	mg/L	0.0001			< 0.0001
Benzo(a)pyrene	mg/L	0.0001			< 0.0001
Benzo(e)pyrene	mg/L	0.0001			< 0.0001
Benzo(ghi)perylene	mg/L	0.0002			< 0.0002
Benzo(k)fluoranthene	mg/L	0.0001			< 0.0001
Chrysene	mg/L	0.0001			< 0.0001
Dibenzo(a,h)anthracene	mg/L	0.0001			< 0.0001
Dibenzo(a,i)pyrene	mg/L	0.0001			< 0.0001
Dibenzo(a,j)acridine	mg/L	0.0001			< 0.0001

PRELIMINARY REPORT

CA40134-MAR23 R1

Client: DS Consultants
Project: 20-186-101, 1300 Bronte Rd, Oakville ON
Project Manager: Pradeep Patel
Samplers: Abdul Qadir

MATRIX: WATER

L1 = SANSEW / WATER / - - Halton Sewer Use ByLaw - Sanitary and Combined Sewer Discharge - BL_2_03

L2 = SANSEW / WATER / - - Oakville Sewer Use By Law - Storm Sewer Discharge - BL_2009_031

Sample Number	7
Sample Name	PO1
Sample Matrix	Ground Water
Sample Date	13/03/2023

Parameter	Units	RL	L1	L2	Result
SVOCs - PAHs (continued)					
Fluoranthene	mg/L	0.0001			< 0.0001
Indeno(1,2,3-cd)pyrene	mg/L	0.0002			< 0.0002
Phenanthrene	mg/L	0.0001			< 0.0001
Pyrene	mg/L	0.0001			< 0.0001
VOCs					
Chloroform	mg/L	0.0005	0.04	0.002	< 0.0005
1,2-Dichlorobenzene	mg/L	0.0005		0.0056	< 0.0005
1,4-Dichlorobenzene	mg/L	0.0005	0.08	0.0068	< 0.0005
cis-1,2-Dichloroethylene	mg/L	0.0005		0.0056	< 0.0005
trans-1,3-Dichloropropene	mg/L	0.0005		0.0056	< 0.0005
Methylene Chloride	mg/L	0.0005	2	0.0052	< 0.0005
Tetrachloroethylene (perchloroethylene)	mg/L	0.0005	1	0.0044	< 0.0005
Trichloroethylene	mg/L	0.0005	0.4	0.0076	< 0.0005
1,1,2,2-Tetrachloroethane	mg/L	0.0005		0.017	< 0.0005

PRELIMINARY REPORT

CA40134-MAR23 R1

Client: DS Consultants
Project: 20-186-101, 1300 Bronte Rd, Oakville ON
Project Manager: Pradeep Patel
Samplers: Abdul Qadir

MATRIX: WATER

L1 = SANSEW / WATER / - - Halton Sewer Use ByLaw - Sanitary and Combined Sewer Discharge - BL_2_03

L2 = SANSEW / WATER / - - Oakville Sewer Use By Law - Storm Sewer Discharge - BL_2009_031

Sample Number	7
Sample Name	PO1
Sample Matrix	Ground Water
Sample Date	13/03/2023

Parameter	Units	RL	L1	L2	Result
VOCs - BTEX					
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	0.016	0.002	< 0.0005
Xylene (total)	mg/L	0.0005			< 0.0005
m-p-xylene	mg/L	0.0005			< 0.0005
o-xylene	mg/L	0.0005			< 0.0005

EXCEEDANCE SUMMARY

No exceedances are present above the regulatory limit(s) indicated

QC SUMMARY

Anions by discrete analyzer

Method: US EPA 375.4 | Internal ref.: ME-CA-IENVIEWL-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	DIO5052-MAR23	mg/L	2	<2	4	20	106	80	120	110	75	125

Cyanide by SFA

Method: SM 4500 | Internal ref.: ME-CA-IENVISFA-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)	SKA0122-MAR23	mg/L	0.01	<0.01	ND	10	92	90	110	106	75	125

Fluoride by Specific Ion Electrode

Method: SM 4500 | Internal ref.: ME-CA-IENVIEWL-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	EWL0238-MAR23	mg/L	0.06	<0.06	2	10	100	90	110	91	75	125

QC SUMMARY

Hexavalent Chromium by SFA

Method: EPA218.6/EPA3060A | Internal ref.: ME-CA-IENVISKA-LAK-AN-012

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
Chromium VI	SKA0132-MAR23	ug/L	0.2	<0.2	2	20	101	80	120	NV	75	125

Mercury by CVAAS

Method: EPA 7471A/SM 3112B | Internal ref.: ME-CA-IENVISPE-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)	EHG0022-MAR23	mg/L	0.00001	< 0.00001	0	20	114	80	120	116	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)	EMS0108-MAR23	mg/L	0.00005	<0.00005	ND	20	106	90	110	98	70	130
Aluminum (total)	EMS0108-MAR23	mg/L	0.001	<0.001	ND	20	107	90	110	114	70	130
Arsenic (total)	EMS0108-MAR23	mg/L	0.0002	<0.0002	12	20	101	90	110	99	70	130
Beryllium (total)	EMS0108-MAR23	mg/L	0.000007	<0.000007	0	20	100	90	110	87	70	130
Cadmium (total)	EMS0108-MAR23	mg/L	0.000003	<0.000003	ND	20	105	90	110	109	70	130
Cobalt (total)	EMS0108-MAR23	mg/L	0.000004	<0.000004	ND	20	106	90	110	99	70	130
Chromium (total)	EMS0108-MAR23	mg/L	0.00008	<0.00008	ND	20	109	90	110	109	70	130
Copper (total)	EMS0108-MAR23	mg/L	0.0002	<0.0002	5	20	106	90	110	108	70	130
Iron (total)	EMS0108-MAR23	mg/L	0.007	<0.007	ND	20	101	90	110	100	70	130
Manganese (total)	EMS0108-MAR23	mg/L	0.00001	<0.00001	6	20	102	90	110	98	70	130
Molybdenum (total)	EMS0108-MAR23	mg/L	0.00004	<0.00004	7	20	104	90	110	104	70	130
Nickel (total)	EMS0108-MAR23	mg/L	0.0001	<0.0001	9	20	108	90	110	101	70	130
Lead (total)	EMS0108-MAR23	mg/L	0.00009	<0.00001	ND	20	93	90	110	91	70	130
Phosphorus (total)	EMS0108-MAR23	mg/L	0.003	<0.003	13	20	94	90	110	NV	70	130
Antimony (total)	EMS0108-MAR23	mg/L	0.0009	<0.0009	ND	20	101	90	110	109	70	130
Selenium (total)	EMS0108-MAR23	mg/L	0.00004	<0.00004	ND	20	106	90	110	101	70	130
Tin (total)	EMS0108-MAR23	mg/L	0.00006	<0.00006	ND	20	100	90	110	NV	70	130
Titanium (total)	EMS0108-MAR23	mg/L	0.00005	<0.00005	13	20	101	90	110	NV	70	130
Zinc (total)	EMS0108-MAR23	mg/L	0.002	<0.002	10	20	109	90	110	76	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	BAC9175-MAR23	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 Ethoxylates	GCM0172-MAR23	mg/L	0.01	< 0.01								
Nonylphenol	GCM0172-MAR23	mg/L	0.001	<0.001			69	55	120			

QC SUMMARY

Oil & Grease

Method: MOE E3401 | Internal ref.: ME-CA-IENVIGC-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)	GCM0183-MAR23	mg/L	2	<2	NSS	20	100	75	125			

Oil & Grease-AV/MS

Method: MOE E3401/SM 5520F | Internal ref.: ME-CA-IENVIGC-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)	GCM0183-MAR23	mg/L	4	< 4	NSS	20	NA	70	130			
Oil & Grease (mineral/synthetic)	GCM0183-MAR23	mg/L	4	< 4	NSS	20	NA	70	130			

QC SUMMARY

Pesticides

Method: EPA 3510C/8270D | Internal ref.: ME-CA-IENVIGC-LAK-AN-018

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
Hexachlorobenzene	GCM0194-MAR23	mg/L	0.00001	< 0.00001	ND	30	90	50	140	90	50	140
Hexachlorocyclohexane	GCM0194-MAR23	mg/L	0.001	< 0.001	ND	30	100	50	140	97	50	140
Mirex	GCM0194-MAR23	mg/L	0.001	< 0.001	ND	30	99	50	140	113	50	140
o,p-DDD	GCM0194-MAR23	mg/L	0.00002	< 0.00002	ND	30	96	50	140	105	50	140
o,p-DDE	GCM0194-MAR23	mg/L	0.00001	< 0.00001	ND	30	102	50	140	111	50	140
op-DDT	GCM0194-MAR23	mg/L	0.00002	< 0.00002	ND	30	103	50	140	119	50	140
pp-DDD	GCM0194-MAR23	mg/L	0.00002	< 0.00002	ND	30	105	50	140	117	50	140
pp-DDE	GCM0194-MAR23	mg/L	0.00001	< 0.00001	ND	30	98	50	140	108	50	140
pp-DDT	GCM0194-MAR23	mg/L	0.00002	< 0.00002	ND	30	111	50	140	133	50	140

pH

Method: SM 4500 | Internal ref.: ME-CA-IENVIEWL-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	EWL0233-MAR23	No unit	0.05	NA	0		101			NA		

QC SUMMARY

Phenols by SFA

Method: SM 5530B-D | Internal ref.: ME-CA-IENVISFA-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	SKA0120-MAR23	mg/L	0.002	<0.002	ND	10	102	80	120	101	75	125

Polychlorinated Biphenyls

Method: MOE E3400/EPA 8082A | Internal ref.: ME-CA-IENVIGC-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	GCM0176-MAR23	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
3,3-Dichlorobenzidine	GCM0181-MAR23	mg/L	0.0005	< 0.0005	NSS	30	106	30	130	NSS	30	130
7Hdibenzo(c,g)carbazole	GCM0182-MAR23	mg/L	0.0001	< 0.0001	NSS	30	129	50	140	NSS	50	140
Anthracene	GCM0182-MAR23	mg/L	0.0001	< 0.0001	NSS	30	107	50	140	NSS	50	140
Benzo(a)anthracene	GCM0182-MAR23	mg/L	0.0001	< 0.0001	NSS	30	108	50	140	NSS	50	140
Benzo(a)pyrene	GCM0182-MAR23	mg/L	0.0001	< 0.0001	NSS	30	113	50	140	NSS	50	140
Benzo(b+j)fluoranthene	GCM0182-MAR23	mg/L	0.0001	< 0.0001	NSS	30	119	50	140	NSS	50	140
Benzo(e)pyrene	GCM0182-MAR23	mg/L	0.0001	< 0.0001	NSS	30	107	50	140	NSS	50	140
Benzo(ghi)perylene	GCM0182-MAR23	mg/L	0.0002	< 0.0002	NSS	30	111	50	140	NSS	50	140
Benzo(k)fluoranthene	GCM0182-MAR23	mg/L	0.0001	< 0.0001	NSS	30	107	50	140	NSS	50	140
Bis(2-ethylhexyl)phthalate	GCM0182-MAR23	mg/L	0.002	< 0.002	NSS	30	117	50	140	NSS	50	140
Chrysene	GCM0182-MAR23	mg/L	0.0001	< 0.0001	NSS	30	106	50	140	NSS	50	140
di-n-Butyl Phthalate	GCM0182-MAR23	mg/L	0.002	< 0.002	NSS	30	117	50	140	NSS	50	140
Dibenzo(a,h)anthracene	GCM0182-MAR23	mg/L	0.0001	< 0.0001	NSS	30	110	50	140	NSS	50	140
Dibenzo(a,i)pyrene	GCM0182-MAR23	mg/L	0.0001	< 0.0001	NSS	30	116	50	140	NSS	50	140
Dibenzo(a,j)acridine	GCM0182-MAR23	mg/L	0.0001	< 0.0001	NSS	30	113	50	140	NSS	50	140
Fluoranthene	GCM0182-MAR23	mg/L	0.0001	< 0.0001	NSS	30	112	50	140	NSS	50	140
Indeno(1,2,3-cd)pyrene	GCM0182-MAR23	mg/L	0.0002	< 0.0002	NSS	30	109	50	140	NSS	50	140
Naphthalene	GCM0182-MAR23	mg/L	0.0005	< 0.0005	NSS	30	91	50	140	NSS	50	140
Pentachlorophenol	GCM0182-MAR23	mg/L	0.0005	< 0.0005	NSS	30	117	50	140	NSS	50	140
Perylene	GCM0182-MAR23	mg/L	0.0005	< 0.0005	NSS	30	109	50	140	NSS	50	140

QC SUMMARY

Semi-Volatile Organics (continued)

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
Phenanthrene	GCM0182-MAR23	mg/L	0.0001	< 0.0001	NSS	30	107	50	140	NSS	50	140
Pyrene	GCM0182-MAR23	mg/L	0.0001	< 0.0001	NSS	30	109	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-MAR23	mg/L	2	< 2	1	10	97	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	SKA0118-MAR23	as N mg/L	0.5	<0.5	1	10	102	90	110	101	75	125

QC SUMMARY

Volatile Organics

Method: EPA 5030B/8260C | Internal ref.: ME-CA-IENVIGC-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	GCM0186-MAR23	mg/L	0.0005	<0.0005	ND	30	117	60	130	98	50	140
1,2-Dichlorobenzene	GCM0186-MAR23	mg/L	0.0005	<0.0005	ND	30	109	60	130	101	50	140
1,4-Dichlorobenzene	GCM0186-MAR23	mg/L	0.0005	<0.0005	ND	30	107	60	130	100	50	140
Benzene	GCM0186-MAR23	mg/L	0.0005	<0.0005	ND	30	108	60	130	92	50	140
Chloroform	GCM0186-MAR23	mg/L	0.0005	<0.0005	ND	30	105	60	130	94	50	140
cis-1,2-Dichloroethylene	GCM0186-MAR23	mg/L	0.0005	<0.0005	ND	30	107	60	130	91	50	140
Ethylbenzene	GCM0186-MAR23	mg/L	0.0005	<0.0005	ND	30	109	60	130	102	50	140
m-p-xylene	GCM0186-MAR23	mg/L	0.0005	<0.0005	ND	30	109	60	130	102	50	140
Methylene Chloride	GCM0186-MAR23	mg/L	0.0005	<0.0005	ND	30	104	60	130	79	50	140
o-xylene	GCM0186-MAR23	mg/L	0.0005	<0.0005	ND	30	108	60	130	102	50	140
Tetrachloroethylene (perchloroethylene)	GCM0186-MAR23	mg/L	0.0005	<0.0005	ND	30	107	60	130	99	50	140
Toluene	GCM0186-MAR23	mg/L	0.0005	<0.0005	ND	30	107	60	130	99	50	140
trans-1,3-Dichloropropene	GCM0186-MAR23	mg/L	0.0005	<0.0005	ND	30	121	60	130	100	50	140
Trichloroethylene	GCM0186-MAR23	mg/L	0.0005	<0.0005	ND	30	106	60	130	95	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

Results relate only to the sample tested.
Data reported represent the sample as submitted to SGS. 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 and Excess Soil Quality" 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.

SGS Canada Inc. statement of conformity decision rule does not consider uncertainty when analytical results are compared to a specified standard or regulation.
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This report supersedes all previous versions.

-- End of Analytical Report --

SGS

Request for Laboratory Services and CHAIN OF CUSTODY

Industries & Environment - 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: 029248
Page 1 of 1

Laboratory Information Section - Lab use only

Received By: Nicole Brigant
Received Date: Mar. 13, 23 (mm/dd/yy)
Received Time: 16 : 30 (hr : min)
Received By (signature): [signature]
Custody Seal Present: Yes ☑ No ☐
Custody Seal Intact: Yes ☑ No ☐
Cooling Agent Present: Yes ☑ No ☐ Type: Ice
Temperature Upon Receipt (°C) 4.4 4
LAB LIMS #: CA40134-MAR23

REPORT INFORMATION

Company: DS Consultants
Contact: Pradeep Patel
Address: 6221 Hwy 7, Unit 16, Vaughan, ON
Phone: 204-951-8164
Fax:
Email: pradeep.patel@dsconsultants-ca

INVOICE INFORMATION

☒ (same as Report Information)
Company: Accounting
Contact:
Address:
Phone:
Email:

Quotation #:
P.O. #:
Project #: 20-186-101
Site Location/ID: 1300 Bronte Rd, Oakville, ON

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: Oakville & Halton

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,Se,Ag,Tl,U,V,Zn	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): Oakville storm	Other: Halton sanitary	Other	Other	Sewer Use: Oakville & Halton Specify pkg:	Water Characterization Pkg ☐ General ☐ Extended	SPLP Specify tests ☐ Metals ☐ VOC ☐ 1,4-Dioxane ☐ OCP ☐ ABN	TCLP Specify tests ☐ M&I ☐ VOC ☐ PCB ☐ B(a)P ☐ ABN ☐ Ignit.	COMMENTS:
1	P01	13/Mar/2023	11:00	19	GW	N												✓	✓			✓				Nonfiltered
2																										
3																										
4																										
5																										
6																										
7																										
8																										
9																										
10																										
11																										
12																										

Observations/Comments/Special Instructions

Sampled By (NAME): Abdul Qadir
Signature: [signature]
Date: 03 13 23 (mm/dd/yy)
Relinquished by (NAME): Abdul Qadir
Signature: [signature]
Date: 03 13 23 (mm/dd/yy)

Pink Copy - Client
Yellow & White Copy - SGS

Revision #: 1.6
Date of Issue: 02 May 2022

Note: Submission of samples to SGS is acknowledgement that you have been provided direction on sample collection/handling and transportation of samples. {2} Submission of samples to SGS is considered authorization for completion of work. Signatures may appear on this form or be retained on file in the contract, or in an alternative format (e.g. shipping documents). {3} Results may be sent by email to an unlimited number of addresses for no additional cost. Fax is available upon request. This document is issued by the Company under its General Conditions of Service accessible at http://www.sgs.com/terms_and_conditions.htm. (Printed copies are available upon request.) Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

PRELIMINARY REPORT

CA40134-MAR23 R1

20-186-101, 1300 Bronte Rd, Oakville ON

Prepared for

DS Consultants

PRELIMINARY REPORT

First Page

CLIENT DETAILS

Client	DS Consultants
Address	6221 Highway 7 Unit 16 Vaughan, Ontario L4H 0K8. Canada
Contact	Pradeep Patel
Telephone	647-332-3482
Facsimile	905-264-2685
Email	pradeep.patel@dsconsultants.ca
Project	20-186-101, 1300 Bronte Rd, Oakville ON
Order Number	
Samples	Ground Water (1)

LABORATORY DETAILS

Project Specialist	Jill Campbell, B.Sc.,GISAS
Laboratory	SGS Canada Inc.
Address	185 Concession St., Lakefield ON, K0L 2H0
Telephone	2165
Facsimile	705-652-6365
Email	jill.campbell@sgs.com
SGS Reference	CA40134-MAR23
Received	03/13/2023
Approved	01/01/1970
Report Number	CA40134-MAR23 R1
Date Reported	03/16/2023

COMMENTS

RL - SGS Reporting Limit

Temperature of Sample upon Receipt: 4
Cooling Agent Present: Yes
Custody Seal Present: Yes

Chain of Custody Number: 029248

SIGNATORIES

The signatories will be applied on the final report.

Jill Campbell, B.Sc.,GISAS

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PRELIMINARY REPORT

CA40134-MAR23 R1

Client: DS Consultants
Project: 20-186-101, 1300 Bronte Rd, Oakville ON
Project Manager: Pradeep Patel
Samplers: Abdul Qadir

MATRIX: WATER

L1 = PWQO_L / WATER / - - Table 2 - General - July 1999 PIBS 3303E

Sample Number	7
Sample Name	PO1
Sample Matrix	Ground Water
Sample Date	13/03/2023

Parameter	Units	RL	L1	Result
General Chemistry				
Biochemical Oxygen Demand (BOD5)	mg/L	2		NVL
Carbonaceous Biochemical Oxygen Demand	mg/L	2		NVL
Total Suspended Solids	mg/L	2		3
Total Kjeldahl Nitrogen	as N mg/L	0.5		< 0.5
Metals and Inorganics				
Cyanide (total)	mg/L	0.01		< 0.01
Fluoride	mg/L	0.06		< 0.06
Sulphate	mg/L	2		69
Aluminum (total)	mg/L	0.001		0.005
Antimony (total)	mg/L	0.0009	0.02	< 0.0009
Arsenic (total)	mg/L	0.0002	0.005	0.0003
Beryllium (total)	mg/L	0.000007	0.011	0.000007
Cadmium (total)	mg/L	0.000003	0.0001	0.000015
Chromium (total)	mg/L	0.00008	0.1	0.00019
Copper (total)	mg/L	0.0002	0.001	0.0055
Cobalt (total)	mg/L	0.000004	0.0009	0.000030
Iron (total)	mg/L	0.007	0.3	0.019
Lead (total)	mg/L	0.00009	0.005	0.00055
Manganese (total)	mg/L	0.00001		0.0103
Molybdenum (total)	mg/L	0.00004	0.04	0.00024
Nickel (total)	mg/L	0.0001	0.025	0.0004

PRELIMINARY REPORT

CA40134-MAR23 R1

Client: DS Consultants
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Project Manager: Pradeep Patel
Samplers: Abdul Qadir

MATRIX: WATER

L1 = PWQO_L / WATER / - - Table 2 - General - July 1999 PIBS 3303E

Sample Number	7
Sample Name	PO1
Sample Matrix	Ground Water
Sample Date	13/03/2023

Parameter	Units	RL	L1	Result
Metals and Inorganics (continued)				
Phosphorus (total)	mg/L	0.003	0.01	0.014
Selenium (total)	mg/L	0.00004	0.1	0.00032
Silver (total)	mg/L	0.00005	0.0001	< 0.00005
Tin (total)	mg/L	0.00006		0.00019
Titanium (total)	mg/L	0.00005		0.00051
Zinc (total)	mg/L	0.002	0.02	0.006
Microbiology				
E. Coli	cfu/100mL	0	100	0
Nonylphenol and Ethoxylates				
Nonylphenol	mg/L	0.001		< 0.001
Nonylphenol Ethoxylates	mg/L	0.01		< 0.01
Oil and Grease				
Oil & Grease (total)	mg/L	2		< 2
Oil & Grease (animal/vegetable)	mg/L	4		< 4
Oil & Grease (mineral/synthetic)	mg/L	4		< 4

PRELIMINARY REPORT

CA40134-MAR23 R1

Client: DS Consultants
Project: 20-186-101, 1300 Bronte Rd, Oakville ON
Project Manager: Pradeep Patel
Samplers: Abdul Qadir

MATRIX: WATER

L1 = PWQO_L / WATER / - - Table 2 - General - July 1999 PIBS 3303E

Sample Number	7
Sample Name	PO1
Sample Matrix	Ground Water
Sample Date	13/03/2023

Parameter	Units	RL	L1	Result
Organochlorine Pests (OCs)				
Hexachlorobenzene	mg/L	0.00001	0.00000 65	< 0.00001
Other (ORP)				
pH	No unit	0.05	8.6	8.25
Chromium VI	µg/L	0.2	1	< 0.2
Mercury (total)	mg/L	0.00001	0.0002	< 0.00001
PAHs				
Benzo(b+j)fluoranthene	mg/L	0.0001		< 0.0001
PCBs				
Polychlorinated Biphenyls (PCBs) - Total	mg/L	0.0001		< 0.0001
Pesticides				
Aldrin + Dieldrin	mg/L	0.00002	0.00000 1	< 0.00002
Chlordane (total)	mg/L	0.001	0.00006	< 0.001
DDT+Metabolites	mg/L	0.00004	0.00000 3	< 0.00004
op-DDT	mg/L	0.00002		< 0.00002
pp-DDD	mg/L	0.00002		< 0.00002
pp-DDE	mg/L	0.00001		< 0.00001
pp-DDT	mg/L	0.00002		< 0.00002
o,p-DDD	mg/L	0.00002		< 0.00002
o,p-DDE	mg/L	0.00001		< 0.00001

PRELIMINARY REPORT

CA40134-MAR23 R1

Client: DS Consultants
Project: 20-186-101, 1300 Bronte Rd, Oakville ON
Project Manager: Pradeep Patel
Samplers: Abdul Qadir

MATRIX: WATER

L1 = PWQO_L / WATER / - - Table 2 - General - July 1999 PIBS 3303E

Sample Number	7
Sample Name	PO1
Sample Matrix	Ground Water
Sample Date	13/03/2023

Parameter	Units	RL	L1	Result
Pesticides (continued)				
Mirex	mg/L	0.001		< 0.001
Hexachlorocyclohexane	mg/L	0.001		< 0.001
Phenols				
4AAP-Phenolics	mg/L	0.002	0.001	< 0.002
SVOCs				
PAHs (Total)	mg/L			< 0.001
Perylene	mg/L	0.0005	0.00000007	< 0.0005
di-n-Butyl Phthalate	mg/L	0.002		< 0.002
Bis(2-ethylhexyl)phthalate	mg/L	0.002		< 0.002
3,3-Dichlorobenzidine	mg/L	0.0005		< 0.0005
Pentachlorophenol	mg/L	0.0005		< 0.0005
SVOCs - PAHs				
Naphthalene	mg/L	0.0005	0.007	< 0.0005
7Hdibenzo(c,g)carbazole	mg/L	0.0001		< 0.0001
Anthracene	mg/L	0.0001	0.0000008	< 0.0001
Benzo(a)anthracene	mg/L	0.0001	0.0000004	< 0.0001
Benzo(a)pyrene	mg/L	0.0001		< 0.0001
Benzo(e)pyrene	mg/L	0.0001		< 0.0001
Benzo(ghi)perylene	mg/L	0.0002	0.00000002	< 0.0002

PRELIMINARY REPORT

CA40134-MAR23 R1

Client: DS Consultants
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Project Manager: Pradeep Patel
Samplers: Abdul Qadir

MATRIX: WATER

L1 = PWQO_L / WATER / - - Table 2 - General - July 1999 PIBS 3303E

Sample Number	7
Sample Name	PO1
Sample Matrix	Ground Water
Sample Date	13/03/2023

Parameter	Units	RL	L1	Result
SVOCs - PAHs (continued)				
Benzo(k)fluoranthene	mg/L	0.0001	0.0000002	< 0.0001
Chrysene	mg/L	0.0001	0.0000001	< 0.0001
Dibenzo(a,h)anthracene	mg/L	0.0001	0.00000 2	< 0.0001
Dibenzo(a,i)pyrene	mg/L	0.0001		< 0.0001
Dibenzo(a,j)acridine	mg/L	0.0001		< 0.0001
Fluoranthene	mg/L	0.0001	0.0000008	< 0.0001
Indeno(1,2,3-cd)pyrene	mg/L	0.0002		< 0.0002
Phenanthrene	mg/L	0.0001	0.00003	< 0.0001
Pyrene	mg/L	0.0001		< 0.0001
VOCs				
Chloroform	mg/L	0.0005		< 0.0005
1,2-Dichlorobenzene	mg/L	0.0005		< 0.0005
1,4-Dichlorobenzene	mg/L	0.0005		< 0.0005
cis-1,2-Dichloroethylene	mg/L	0.0005		< 0.0005
trans-1,3-Dichloropropene	mg/L	0.0005		< 0.0005
Methylene Chloride	mg/L	0.0005	0.1	< 0.0005
Tetrachloroethylene (perchloroethylene)	mg/L	0.0005	0.05	< 0.0005
Trichloroethylene	mg/L	0.0005	0.02	< 0.0005
1,1,2,2-Tetrachloroethane	mg/L	0.0005	0.07	< 0.0005

PRELIMINARY REPORT

CA40134-MAR23 R1

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Project Manager: Pradeep Patel
Samplers: Abdul Qadir

MATRIX: WATER

L1 = PWQO_L / WATER / - - Table 2 - General - July 1999 PIBS 3303E

Sample Number	7
Sample Name	PO1
Sample Matrix	Ground Water
Sample Date	13/03/2023

Parameter	Units	RL	L1	Result
VOCs - BTEX				
Benzene	mg/L	0.0005	0.1	< 0.0005
Ethylbenzene	mg/L	0.0005	0.008	< 0.0005
Toluene	mg/L	0.0005	0.0008	< 0.0005
Xylene (total)	mg/L	0.0005		< 0.0005
m-p-xylene	mg/L	0.0005	0.002	< 0.0005
o-xylene	mg/L	0.0005	0.04	< 0.0005

EXCEEDANCE SUMMARY

Parameter	Method	Units	Result	PWQO_L / WATER / - - Table 2 - General - July 1999 PIBS 3303E L1
PO1				
Aldrin + Dieldrin	EPA 3510C/8270D	mg/L	< 0.00002	0.000001
Anthracene	EPA 3510C/8270D	mg/L	< 0.0001	0.0000008
Benz(a)anthracene	EPA 3510C/8270D	mg/L	< 0.0001	0.0000004
Benzo(g,h,i)perylene	EPA 3510C/8270D	mg/L	< 0.0002	0.00000002
Benzo(k)fluoranthene	EPA 3510C/8270D	mg/L	< 0.0001	0.0000002
Chlordane	EPA 3510C/8270D	mg/L	< 0.001	0.00006
Chrysene	EPA 3510C/8270D	mg/L	< 0.0001	0.0000001
DDT+Metabolites	EPA 3510C/8270D	mg/L	< 0.00004	0.000003
Dibenz(a,h)anthracene	EPA 3510C/8270D	mg/L	< 0.0001	0.000002
Fluoranthene	EPA 3510C/8270D	mg/L	< 0.0001	0.0000008
Hexachlorobenzene	EPA 3510C/8270D	mg/L	< 0.00001	0.0000065
Perylene	EPA 3510C/8270D	mg/L	< 0.0005	0.00000007
Phenanthrene	EPA 3510C/8270D	mg/L	< 0.0001	0.00003
Copper	SM 3030/EPA 200.8	mg/L	0.0055	0.001
Phosphorus	SM 3030/EPA 200.8	mg/L	0.014	0.01
4AAP-Phenolics	SM 5530B-D	mg/L	< 0.002	0.001

QC SUMMARY

Anions by discrete analyzer

Method: US EPA 375.4 | Internal ref.: ME-CA-IENVIEWL-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	DIO5052-MAR23	mg/L	2	<2	4	20	106	80	120	110	75	125

Cyanide by SFA

Method: SM 4500 | Internal ref.: ME-CA-IENVISFA-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)	SKA0122-MAR23	mg/L	0.01	<0.01	ND	10	92	90	110	106	75	125

Fluoride by Specific Ion Electrode

Method: SM 4500 | Internal ref.: ME-CA-IENVIEWL-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	EWL0238-MAR23	mg/L	0.06	<0.06	2	10	100	90	110	91	75	125

QC SUMMARY

Hexavalent Chromium by SFA

Method: EPA218.6/EPA3060A | Internal ref.: ME-CA-IENVISKA-LAK-AN-012

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
Chromium VI	SKA0132-MAR23	ug/L	0.2	<0.2	2	20	101	80	120	NV	75	125

Mercury by CVAAS

Method: EPA 7471A/SM 3112B | Internal ref.: ME-CA-IENVISPE-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)	EHG0022-MAR23	mg/L	0.00001	< 0.00001	0	20	114	80	120	116	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)	EMS0108-MAR23	mg/L	0.00005	<0.00005	ND	20	106	90	110	98	70	130
Aluminum (total)	EMS0108-MAR23	mg/L	0.001	<0.001	ND	20	107	90	110	114	70	130
Arsenic (total)	EMS0108-MAR23	mg/L	0.0002	<0.0002	12	20	101	90	110	99	70	130
Beryllium (total)	EMS0108-MAR23	mg/L	0.000007	<0.000007	0	20	100	90	110	87	70	130
Cadmium (total)	EMS0108-MAR23	mg/L	0.000003	<0.000003	ND	20	105	90	110	109	70	130
Cobalt (total)	EMS0108-MAR23	mg/L	0.000004	<0.000004	ND	20	106	90	110	99	70	130
Chromium (total)	EMS0108-MAR23	mg/L	0.00008	<0.00008	ND	20	109	90	110	109	70	130
Copper (total)	EMS0108-MAR23	mg/L	0.0002	<0.0002	5	20	106	90	110	108	70	130
Iron (total)	EMS0108-MAR23	mg/L	0.007	<0.007	ND	20	101	90	110	100	70	130
Manganese (total)	EMS0108-MAR23	mg/L	0.00001	<0.00001	6	20	102	90	110	98	70	130
Molybdenum (total)	EMS0108-MAR23	mg/L	0.00004	<0.00004	7	20	104	90	110	104	70	130
Nickel (total)	EMS0108-MAR23	mg/L	0.0001	<0.0001	9	20	108	90	110	101	70	130
Lead (total)	EMS0108-MAR23	mg/L	0.00009	<0.00001	ND	20	93	90	110	91	70	130
Phosphorus (total)	EMS0108-MAR23	mg/L	0.003	<0.003	13	20	94	90	110	NV	70	130
Antimony (total)	EMS0108-MAR23	mg/L	0.0009	<0.0009	ND	20	101	90	110	109	70	130
Selenium (total)	EMS0108-MAR23	mg/L	0.00004	<0.00004	ND	20	106	90	110	101	70	130
Tin (total)	EMS0108-MAR23	mg/L	0.00006	<0.00006	ND	20	100	90	110	NV	70	130
Titanium (total)	EMS0108-MAR23	mg/L	0.00005	<0.00005	13	20	101	90	110	NV	70	130
Zinc (total)	EMS0108-MAR23	mg/L	0.002	<0.002	10	20	109	90	110	76	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	BAC9175-MAR23	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 Ethoxylates	GCM0172-MAR23	mg/L	0.01	< 0.01								
Nonylphenol	GCM0172-MAR23	mg/L	0.001	<0.001			69	55	120			

QC SUMMARY

Oil & Grease

Method: MOE E3401 | Internal ref.: ME-CA-IENVIGC-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)	GCM0183-MAR23	mg/L	2	<2	NSS	20	100	75	125			

Oil & Grease-AV/MS

Method: MOE E3401/SM 5520F | Internal ref.: ME-CA-IENVIGC-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)	GCM0183-MAR23	mg/L	4	< 4	NSS	20	NA	70	130			
Oil & Grease (mineral/synthetic)	GCM0183-MAR23	mg/L	4	< 4	NSS	20	NA	70	130			

QC SUMMARY

Pesticides

Method: EPA 3510C/8270D | Internal ref.: ME-CA-IENVIGC-LAK-AN-018

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
Hexachlorobenzene	GCM0194-MAR23	mg/L	0.00001	< 0.00001	ND	30	90	50	140	90	50	140
Hexachlorocyclohexane	GCM0194-MAR23	mg/L	0.001	< 0.001	ND	30	100	50	140	97	50	140
Mirex	GCM0194-MAR23	mg/L	0.001	< 0.001	ND	30	99	50	140	113	50	140
o,p-DDD	GCM0194-MAR23	mg/L	0.00002	< 0.00002	ND	30	96	50	140	105	50	140
o,p-DDE	GCM0194-MAR23	mg/L	0.00001	< 0.00001	ND	30	102	50	140	111	50	140
op-DDT	GCM0194-MAR23	mg/L	0.00002	< 0.00002	ND	30	103	50	140	119	50	140
pp-DDD	GCM0194-MAR23	mg/L	0.00002	< 0.00002	ND	30	105	50	140	117	50	140
pp-DDE	GCM0194-MAR23	mg/L	0.00001	< 0.00001	ND	30	98	50	140	108	50	140
pp-DDT	GCM0194-MAR23	mg/L	0.00002	< 0.00002	ND	30	111	50	140	133	50	140

pH

Method: SM 4500 | Internal ref.: ME-CA-IENVIEWL-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	EWL0233-MAR23	No unit	0.05	NA	0		101			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	SKA0120-MAR23	mg/L	0.002	<0.002	ND	10	102	80	120	101	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	GCM0176-MAR23	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
3,3-Dichlorobenzidine	GCM0181-MAR23	mg/L	0.0005	< 0.0005	NSS	30	106	30	130	NSS	30	130
7Hdibenzo(c,g)carbazole	GCM0182-MAR23	mg/L	0.0001	< 0.0001	NSS	30	129	50	140	NSS	50	140
Anthracene	GCM0182-MAR23	mg/L	0.0001	< 0.0001	NSS	30	107	50	140	NSS	50	140
Benzo(a)anthracene	GCM0182-MAR23	mg/L	0.0001	< 0.0001	NSS	30	108	50	140	NSS	50	140
Benzo(a)pyrene	GCM0182-MAR23	mg/L	0.0001	< 0.0001	NSS	30	113	50	140	NSS	50	140
Benzo(b+j)fluoranthene	GCM0182-MAR23	mg/L	0.0001	< 0.0001	NSS	30	119	50	140	NSS	50	140
Benzo(e)pyrene	GCM0182-MAR23	mg/L	0.0001	< 0.0001	NSS	30	107	50	140	NSS	50	140
Benzo(ghi)perylene	GCM0182-MAR23	mg/L	0.0002	< 0.0002	NSS	30	111	50	140	NSS	50	140
Benzo(k)fluoranthene	GCM0182-MAR23	mg/L	0.0001	< 0.0001	NSS	30	107	50	140	NSS	50	140
Bis(2-ethylhexyl)phthalate	GCM0182-MAR23	mg/L	0.002	< 0.002	NSS	30	117	50	140	NSS	50	140
Chrysene	GCM0182-MAR23	mg/L	0.0001	< 0.0001	NSS	30	106	50	140	NSS	50	140
di-n-Butyl Phthalate	GCM0182-MAR23	mg/L	0.002	< 0.002	NSS	30	117	50	140	NSS	50	140
Dibenzo(a,h)anthracene	GCM0182-MAR23	mg/L	0.0001	< 0.0001	NSS	30	110	50	140	NSS	50	140
Dibenzo(a,i)pyrene	GCM0182-MAR23	mg/L	0.0001	< 0.0001	NSS	30	116	50	140	NSS	50	140
Dibenzo(a,j)acridine	GCM0182-MAR23	mg/L	0.0001	< 0.0001	NSS	30	113	50	140	NSS	50	140
Fluoranthene	GCM0182-MAR23	mg/L	0.0001	< 0.0001	NSS	30	112	50	140	NSS	50	140
Indeno(1,2,3-cd)pyrene	GCM0182-MAR23	mg/L	0.0002	< 0.0002	NSS	30	109	50	140	NSS	50	140
Naphthalene	GCM0182-MAR23	mg/L	0.0005	< 0.0005	NSS	30	91	50	140	NSS	50	140
Pentachlorophenol	GCM0182-MAR23	mg/L	0.0005	< 0.0005	NSS	30	117	50	140	NSS	50	140
Perylene	GCM0182-MAR23	mg/L	0.0005	< 0.0005	NSS	30	109	50	140	NSS	50	140

QC SUMMARY

Semi-Volatile Organics (continued)

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
Phenanthrene	GCM0182-MAR23	mg/L	0.0001	< 0.0001	NSS	30	107	50	140	NSS	50	140
Pyrene	GCM0182-MAR23	mg/L	0.0001	< 0.0001	NSS	30	109	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-MAR23	mg/L	2	< 2	1	10	97	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	SKA0118-MAR23	as N mg/L	0.5	<0.5	1	10	102	90	110	101	75	125

QC SUMMARY

Volatile Organics

Method: EPA 5030B/8260C | Internal ref.: ME-CA-IENVIGC-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	GCM0186-MAR23	mg/L	0.0005	<0.0005	ND	30	117	60	130	98	50	140
1,2-Dichlorobenzene	GCM0186-MAR23	mg/L	0.0005	<0.0005	ND	30	109	60	130	101	50	140
1,4-Dichlorobenzene	GCM0186-MAR23	mg/L	0.0005	<0.0005	ND	30	107	60	130	100	50	140
Benzene	GCM0186-MAR23	mg/L	0.0005	<0.0005	ND	30	108	60	130	92	50	140
Chloroform	GCM0186-MAR23	mg/L	0.0005	<0.0005	ND	30	105	60	130	94	50	140
cis-1,2-Dichloroethylene	GCM0186-MAR23	mg/L	0.0005	<0.0005	ND	30	107	60	130	91	50	140
Ethylbenzene	GCM0186-MAR23	mg/L	0.0005	<0.0005	ND	30	109	60	130	102	50	140
m-p-xylene	GCM0186-MAR23	mg/L	0.0005	<0.0005	ND	30	109	60	130	102	50	140
Methylene Chloride	GCM0186-MAR23	mg/L	0.0005	<0.0005	ND	30	104	60	130	79	50	140
o-xylene	GCM0186-MAR23	mg/L	0.0005	<0.0005	ND	30	108	60	130	102	50	140
Tetrachloroethylene (perchloroethylene)	GCM0186-MAR23	mg/L	0.0005	<0.0005	ND	30	107	60	130	99	50	140
Toluene	GCM0186-MAR23	mg/L	0.0005	<0.0005	ND	30	107	60	130	99	50	140
trans-1,3-Dichloropropene	GCM0186-MAR23	mg/L	0.0005	<0.0005	ND	30	121	60	130	100	50	140
Trichloroethylene	GCM0186-MAR23	mg/L	0.0005	<0.0005	ND	30	106	60	130	95	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

Results relate only to the sample tested.
Data reported represent the sample as submitted to SGS. 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 and Excess Soil Quality" 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.

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This report supersedes all previous versions.

-- End of Analytical Report --

SGS

Request for Laboratory Services and CHAIN OF CUSTODY

Industries & Environment - 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: 029248
Page 1 of 1

Laboratory Information Section - Lab use only

Received By: Nicole Brigant
Received Date: Mar. 13, 23 (mm/dd/yy)
Received Time: 16 : 30 (hr : min)
Received By (signature): [signature]
Custody Seal Present: Yes ☑ No ☐
Custody Seal Intact: Yes ☑ No ☐
Cooling Agent Present: Yes ☑ No ☐ Type: Ice
Temperature Upon Receipt (°C) 4.4 4
LAB LIMS #: CA40134-MAR23

REPORT INFORMATION

Company: DS Consultants
Contact: Pradeep Patel
Address: 6221 Hwy 7, Unit 16, Vaughan, ON
Phone: 204-951-8164
Fax:
Email: pradeep.patel@dsconsultants-ca

INVOICE INFORMATION

☒ (same as Report Information)
Company: Accounting
Contact:
Address:
Phone:
Email:

Quotation #:
P.O. #:
Project #: 20-186-101
Site Location/ID: 1300 Bronte Rd, Oakville, ON

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: Oakville & Halton

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,Se,Ag,Tl,U,V,Zn	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): Oakville storm	Other: Halton sanitary	Other	Other	Sewer Use: Oakville & Halton Specify pkg:	Water Characterization Pkg ☐ General ☐ Extended	SPLP Specify tests ☐ Metals ☐ VOC ☐ 1,4-Dioxane ☐ OCP ☐ ABN	TCLP Specify tests ☐ M&I ☐ VOC ☐ PCB ☐ B(a)P ☐ ABN ☐ Ignit.	COMMENTS:
1	P01	13/Mar/2023	11:00	19	GW	N												✓	✓			✓				Nonfiltered
2																										
3																										
4																										
5																										
6																										
7																										
8																										
9																										
10																										
11																										
12																										

Observations/Comments/Special Instructions

Sampled By (NAME): Abdul Qadir
Signature: [signature]
Date: 03 13 23 (mm/dd/yy)
Relinquished by (NAME): Abdul Qadir
Signature: [signature]
Date: 03 13 23 (mm/dd/yy)

Pink Copy - Client
Yellow & White Copy - SGS

Revision #: 1.6
Date of Issue: 02 May 2022

Note: Submission of samples to SGS is acknowledgement that you have been provided direction on sample collection/handling and transportation of samples. {2} Submission of samples to SGS is considered authorization for completion of work. Signatures may appear on this form or be retained on file in the contract, or in an alternative format (e.g. shipping documents). {3} Results may be sent by email to an unlimited number of addresses for no additional cost. Fax is available upon request. This document is issued by the Company under its General Conditions of Service accessible at http://www.sgs.com/terms_and_conditions.htm. (Printed copies are available upon request.) Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Appendix E

TABLE A-1

CLIMATE NORMALS 1981-2010 (GEORGETOWN WWTP, ONTARIO)

Water Balance -1300-1350 Bronte Road, Oakville

	Thornthwaite (1948)					
Month	Mean Temperature (°C)	Heat Index	Unadjusted Potential Evapotranspiration (mm)	Daylight Correction Value	Adjusted Potential Evapotranspiration (mm)	Total Precipitation (mm)
January	-6.3	0.0	0.0	0.81	0.0	67.8
February	-5.2	0.0	0.0	0.82	0.0	60.0
March	-0.9	0.0	0.0	1.02	0.0	57.2
April	6.0	1.3	28.0	1.13	31.6	76.5
May	12.3	3.9	59.7	1.27	75.8	79.3
June	17.4	6.6	86.1	1.29	111.1	74.8
July	20.0	8.2	99.8	1.30	129.7	73.5
August	19.0	7.5	94.5	1.20	113.4	79.3
September	14.8	5.2	72.6	1.04	75.5	86.2
October	8.4	2.2	39.9	0.95	37.9	68.3
November	2.8	0.4	12.5	0.8	10.0	88.5
December	-2.9	0.0	0.0	0.76	0.0	65.9
TOTALS		**35.3**	**493.2**		**585.2**	**877.3**

Notes: Daylight Correction values obtained from Instruction and Tables For Computing Potential Evapotranspiration and The Water Balance (Thornthwaite & Mather, 1957)

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

TABLE E-2

Post-development Water Balance

Water Balance -Water Balance -1300-1350 Bronte Road, Oakville

Catchments and Hydrologic Components			Month												Total
			March	April	May	June	July	August	September	October	November	December	January	February	
		PET - Adjusted Potential Evapotranspiration (mm)	0.00	31.63	75.85	111.10	129.70	113.41	75.51	37.94	10.02	0.00	0.00	0.00	**585.15**
		P - Total Precipitation (mm)	57.20	76.50	79.30	74.80	73.50	79.30	86.20	68.30	88.50	65.90	67.80	60.00	**877.30**
		P-PET (mm)	57.20	44.87	3.45	-36.30	-56.20	-34.11	10.69	30.36	78.48	65.90	67.80	60.00	-
		Soil Moisture Deficit (mm)	0.00	0.00	0.00	-36.30	-92.50	-126.61	-115.92	-85.55	-7.07	0.00	0.00	0.00	-
1300-1350 Bronte Road	Previous Area-grass area	**Soil Moisture Storage (mm)**	200.00	200.00	200.00	163.70	107.50	73.39	84.08	114.45	192.93	200.00	200.00	200.00	-
		Actual Potential Evapotranspiration (mm)	0.00	31.63	75.85	107.81	111.60	94.73	75.51	37.94	10.02	0.00	0.00	0.00	**545.08**
		P-AET (mm)	57.20	44.87	3.45	-33.01	-38.10	-15.43	10.69	30.36	78.48	65.90	67.80	60.00	-
		Actual Soil Moisture Deficit (mm)	0.00	0.00	0.00	-33.01	-71.11	-86.53	-75.84	-45.48	0.00	0.00	0.00	0.00	-
		Change in Soil Moisture Deficit (mm)	0.00	0.00	0.00	33.01	38.10	15.43	-10.69	-30.36	-45.48	0.00	0.00	0.00	-
		Precipitation Surplus (mm)	57.20	44.87	3.45	0.00	0.00	0.00	0.00	0.00	33.00	65.90	67.80	60.00	**332.22**
		MOECC Infiltration Factor	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	
		Run-Off Coefficient	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	-
		Infiltration (mm)	34.32	26.92	2.07	0.00	0.00	0.00	0.00	0.00	19.80	39.54	40.68	36.00	**199.33**
		Run-Off (mm)	22.88	17.95	1.38	0.00	0.00	0.00	0.00	0.00	13.20	26.36	27.12	24.00	**132.89**
		Catchment Area (m^2) = 51000.00					**Subcatchment Monthly Volumes**								
		Infiltration (m^3)	1750.32	1372.88	105.64	0.00	0.00	0.00	0.00	0.00	1009.92	2016.54	2074.68	1836.00	**10165.98**
		Run-Off (m^3)	1166.88	915.25	70.43	0.00	0.00	0.00	0.00	0.00	673.28	1344.36	1383.12	1224.00	**6777.32**
	Pervious Area-Wooded area	**Soil Moisture Storage (mm)**	400.00	400.00	400.00	363.70	307.50	273.39	284.08	314.45	392.93	400.00	400.00	400.00	-
		Actual Potential Evapotranspiration (mm)	0.00	31.63	75.85	109.46	120.65	104.07	75.51	37.94	10.02	0.00	0.00	0.00	**565.12**
		P-AET (mm)	57.20	44.87	3.45	-34.66	-47.15	-24.77	10.69	30.36	78.48	65.90	67.80	60.00	-
		Actual Soil Moisture Deficit (mm)	0.00	0.00	0.00	-34.66	-81.80	-106.57	-95.88	-65.51	0.00	0.00	0.00	0.00	-
		Change in Soil Moisture Deficit (mm)	0.00	0.00	0.00	34.66	47.15	24.77	-10.69	-30.36	-65.51	0.00	0.00	0.00	-
		Precipitation Surplus (mm)	57.20	44.87	3.45	0.00	0.00	0.00	0.00	0.00	12.97	65.90	67.80	60.00	**312.18**
		MOECC Infiltration Factor	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	
		Run-Off Coefficient	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	-
		Infiltration (mm)	40.04	31.41	2.42	0.00	0.00	0.00	0.00	0.00	9.08	46.13	47.46	42.00	**218.53**
		Run-Off (mm)	17.16	13.46	1.04	0.00	0.00	0.00	0.00	0.00	3.89	19.77	20.34	18.00	**93.66**
		Catchment Area (m^2) = 59400.00					**Subcatchment Monthly Volumes**								
		Infiltration (m^3)	2378.38	1865.50	143.54	0.00	0.00	0.00	0.00	0.00	539.15	2740.12	2819.12	2494.80	**12980.62**
		Run-Off (m^3)	1019.30	799.50	61.52	0.00	0.00	0.00	0.00	0.00	231.07	1174.34	1208.20	1069.20	**5563.12**
	Impervious Area-Roof Area to Grass Area(Assumed 30 % of total runoff from the roof infiltrates into the soil)	**Precipitation Surplus (mm)**	57.20	76.50	79.30	74.80	73.50	79.30	86.20	68.30	88.50	65.90	67.80	60.00	**877.30**
		Evaporation Factor	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	-
		Run-Off Coefficient	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	-
		Evaporation (mm)	8.58	11.48	11.90	11.22	11.03	11.90	12.93	10.25	13.28	9.89	10.17	9.00	**131.60**
		Run-Off (mm)	48.62	65.03	67.41	63.58	62.48	67.41	73.27	58.06	75.23	56.02	57.63	51.00	**745.71**
		Catchment Area (m^2) = 2500.00					**Subcatchment Monthly Volumes**								
		Evaporation (m^3)	21.45	28.69	29.74	28.05	27.56	29.74	32.33	25.61	33.19	24.71	25.43	22.50	**328.99**
		Run-Off (m^3)	121.55	162.56	168.51	158.95	156.19	168.51	183.18	145.14	188.06	140.04	144.08	127.50	**1864.26**

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TABLE E-2

Post-development Water Balance

Water Balance -Water Balance -1300-1350 Bronte Road, Oakville

Catchments and Hydrologic Components			Month												Total
			March	April	May	June	July	August	September	October	November	December	January	February	
PET - Adjusted Potential Evapotranspiration (mm)			0.00	31.63	75.85	111.10	129.70	113.41	75.51	37.94	10.02	0.00	0.00	0.00	**585.15**
P - Total Precipitation (mm)			57.20	76.50	79.30	74.80	73.50	79.30	86.20	68.30	88.50	65.90	67.80	60.00	**877.30**
P-PET (mm)			57.20	44.87	3.45	-36.30	-56.20	-34.11	10.69	30.36	78.48	65.90	67.80	60.00	-
Soil Moisture Deficit (mm)			0.00	0.00	0.00	-36.30	-92.50	-126.61	-115.92	-85.55	-7.07	0.00	0.00	0.00	-
	Impervious Area Driveway/ Road/ Paved Surface	**Precipitation Surplus (mm)**	57.20	76.50	79.30	74.80	73.50	79.30	86.20	68.30	88.50	65.90	67.80	60.00	**877.30**
		Evaporation Factor	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	-
		Run-Off Coefficient	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	-
		Evaporation (mm)	8.58	11.48	11.90	11.22	11.03	11.90	12.93	10.25	13.28	9.89	10.17	9.00	**131.60**
		Run-Off (mm)	48.62	65.03	67.41	63.58	62.48	67.41	73.27	58.06	75.23	56.02	57.63	51.00	**745.71**
		Catchment Area (m^2) = 8300.00					**Subcatchment Monthly Volumes**								
		Evaporation (m^3)	71.21	95.24	98.73	93.13	91.51	98.73	107.32	85.03	110.18	82.05	84.41	74.70	**1092.24**
		Run-Off (m^3)	403.55	539.71	559.46	527.71	518.54	559.46	608.14	481.86	624.37	464.92	478.33	423.30	**6189.35**
							Total Catchment Volumes								
	Total AET (m^3)		0.00	3492.47	8373.60	12000.06	12858.03	11012.58	8336.00	4188.08	1106.07	0.00	0.00	0.00	61366.88
	Total Evaporation (m^3)		92.66	123.93	128.47	121.18	119.07	128.47	139.64	110.65	143.37	106.76	109.84	97.20	1421.23
	Total Infiltration (m^3)		4128.70	3238.38	249.18	0.00	0.00	0.00	0.00	0.00	1549.08	4756.66	4893.80	4330.80	23146.60
	Total Runoff (m^3)		2711.28	2417.02	859.92	686.66	674.73	727.97	791.32	626.99	1716.78	3123.66	3213.72	2844.00	20394.06

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TABLE E-3
Post-development Water Balance
Water Balance -Water Balance -1300-1350 Bronte Road, Oakville

Catchments and Hydrologic Components			Month												Total
			March	April	May	June	July	August	September	October	November	December	January	February	
		PET - Adjusted Potential Evapotranspiration (mm)	0.00	31.63	75.85	111.10	129.70	113.41	75.51	37.94	10.02	0.00	0.00	0.00	**585.15**
		P - Total Precipitation (mm)	57.20	76.50	79.30	74.80	73.50	79.30	86.20	68.30	88.50	65.90	67.80	60.00	**877.30**
		P-PET (mm)	57.20	44.87	3.45	-36.30	-56.20	-34.11	10.69	30.36	78.48	65.90	67.80	60.00	-
		Soil Moisture Deficit (mm)	0.00	0.00	0.00	-36.30	-92.50	-126.61	-115.92	-85.55	-7.07	0.00	0.00	0.00	-
1300-1350 Bronte Road	Pervious Area-Landscape/Grass Areas	**Soil Moisture Storage (mm)**	200.00	200.00	200.00	163.70	107.50	73.39	84.08	114.45	192.93	200.00	200.00	200.00	-
		Actual Potential Evapotranspiration (mm)	0.00	31.63	75.85	107.81	111.60	94.73	75.51	37.94	10.02	0.00	0.00	0.00	**545.08**
		P-AET (mm)	57.20	44.87	3.45	-33.01	-38.10	-15.43	10.69	30.36	78.48	65.90	67.80	60.00	-
		Actual Soil Moisture Deficit (mm)	0.00	0.00	0.00	-33.01	-71.11	-86.53	-75.84	-45.48	0.00	0.00	0.00	0.00	-
		Change in Soil Moisture Deficit (mm)	0.00	0.00	0.00	33.01	38.10	15.43	-10.69	-30.36	-45.48	0.00	0.00	0.00	-
		Precipitation Surplus (mm)	57.20	44.87	3.45	0.00	0.00	0.00	0.00	0.00	33.00	65.90	67.80	60.00	**332.22**
		MOECC Infiltration Factor	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	
		Run-Off Coefficient	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	-
		Infiltration (mm)	28.60	22.43	1.73	0.00	0.00	0.00	0.00	0.00	16.50	32.95	33.90	30.00	**166.11**
		Run-Off (mm)	28.60	22.43	1.73	0.00	0.00	0.00	0.00	0.00	16.50	32.95	33.90	30.00	**166.11**
		Catchment Area (m^2) = 18800.00					**Subcatchment Monthly Volumes**								
		Infiltration (m^3)	537.68	421.73	32.45	0.00	0.00	0.00	0.00	0.00	310.24	619.46	637.32	564.00	**3122.88**
		Run-Off (m^3)	537.68	421.73	32.45	0.00	0.00	0.00	0.00	0.00	310.24	619.46	637.32	564.00	**3122.88**
	Pervious Area-Wooded Area including Buffer Area	**Soil Moisture Storage (mm)**	400.00	400.00	400.00	363.70	307.50	273.39	284.08	314.45	392.93	400.00	400.00	400.00	-
		Actual Potential Evapotranspiration (mm)	0.00	31.63	75.85	109.46	120.65	104.07	75.51	37.94	10.02	0.00	0.00	0.00	**565.12**
		P-AET (mm)	57.20	44.87	3.45	-34.66	-47.15	-24.77	10.69	30.36	78.48	65.90	67.80	60.00	-
		Actual Soil Moisture Deficit (mm)	0.00	0.00	0.00	-34.66	-81.80	-106.57	-95.88	-65.51	0.00	0.00	0.00	0.00	-
		Change in Soil Moisture Deficit (mm)	0.00	0.00	0.00	34.66	47.15	24.77	-10.69	-30.36	-65.51	0.00	0.00	0.00	-
		Precipitation Surplus (mm)	57.20	44.87	3.45	0.00	0.00	0.00	0.00	0.00	12.97	65.90	67.80	60.00	**312.18**
		MOECC Infiltration Factor	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	
		Run-Off Coefficient	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	-
		Infiltration (mm)	40.04	31.41	2.42	0.00	0.00	0.00	0.00	0.00	9.08	46.13	47.46	42.00	**218.53**
		Run-Off (mm)	17.16	13.46	1.04	0.00	0.00	0.00	0.00	0.00	3.89	19.77	20.34	18.00	**93.66**
		Catchment Area (m^2) = 65700.00					**Subcatchment Monthly Volumes**								
		Infiltration (m^3)	2630.63	2063.36	158.77	0.00	0.00	0.00	0.00	0.00	596.34	3030.74	3118.12	2759.40	**14357.35**
		Run-Off (m^3)	1127.41	884.30	68.04	0.00	0.00	0.00	0.00	0.00	255.57	1298.89	1336.34	1182.60	**6153.15**
	Impervious Area-Roof Area to Grass Area(Assumed 30 % of total runoff from the roof infiltrates into the soil)	**Precipitation Surplus (mm)**	57.20	76.50	79.30	74.80	73.50	79.30	86.20	68.30	88.50	65.90	67.80	60.00	**877.30**
		Evaporation Factor	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	-
		Run-Off Coefficient	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	-
		Evaporation (mm)	8.58	11.48	11.90	11.22	11.03	11.90	12.93	10.25	13.28	9.89	10.17	9.00	**131.60**
		Run-Off (mm)	48.62	65.03	67.41	63.58	62.48	67.41	73.27	58.06	75.23	56.02	57.63	51.00	**745.71**
		Catchment Area (m^2) = 16700.00					**Subcatchment Monthly Volumes**								
		Evaporation (m^3)	143.29	191.63	198.65	187.37	184.12	198.65	215.93	171.09	221.69	165.08	169.84	150.30	**2197.64**
		Run-Off (m^3)	811.95	1085.92	1125.66	1061.79	1043.33	1125.66	1223.61	969.52	1256.26	935.45	962.42	851.70	**12453.27**

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TABLE E-3

Post-development Water Balance

Water Balance -Water Balance -1300-1350 Bronte Road, Oakville

Catchments and Hydrologic Components			Month												Total
			March	April	May	June	July	August	September	October	November	December	January	February	
PET - Adjusted Potential Evapotranspiration (mm)			0.00	31.63	75.85	111.10	129.70	113.41	75.51	37.94	10.02	0.00	0.00	0.00	**585.15**
P - Total Precipitation (mm)			57.20	76.50	79.30	74.80	73.50	79.30	86.20	68.30	88.50	65.90	67.80	60.00	**877.30**
P-PET (mm)			57.20	44.87	3.45	-36.30	-56.20	-34.11	10.69	30.36	78.48	65.90	67.80	60.00	-
Soil Moisture Deficit (mm)			0.00	0.00	0.00	-36.30	-92.50	-126.61	-115.92	-85.55	-7.07	0.00	0.00	0.00	-
	Impervious Area Driveway/ Road/ Paved Surface/Walkway/LID	Precipitation Surplus (mm)	57.20	76.50	79.30	74.80	73.50	79.30	86.20	68.30	88.50	65.90	67.80	60.00	**877.30**
		Evaporation Factor	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	-
		Run-Off Coefficient	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	-
		Evaporation (mm)	8.58	11.48	11.90	11.22	11.03	11.90	12.93	10.25	13.28	9.89	10.17	9.00	**131.60**
		Run-Off (mm)	48.62	65.03	67.41	63.58	62.48	67.41	73.27	58.06	75.23	56.02	57.63	51.00	**745.71**
		Catchment Area (m^2) = 20000.00					Subcatchment Monthly Volumes								
		Evaporation (m^3)	171.60	229.50	237.90	224.40	220.50	237.90	258.60	204.90	265.50	197.70	203.40	180.00	**2631.90**
		Run-Off (m^3)	972.40	1300.50	1348.10	1271.60	1249.50	1348.10	1465.40	1161.10	1504.50	1120.30	1152.60	1020.00	**14914.10**
		36700.00					Total Catchment Volumes								
	Total AET (m^3)		0.00	2673.13	6409.14	9218.16	10024.60	8618.05	6380.36	3205.55	846.59	0.00	0.00	0.00	47375.58
	Total Evaporation (m^3)		314.89	421.13	436.55	411.77	404.62	436.55	474.53	375.99	487.19	362.78	373.24	330.30	4829.54
	Total Infiltration (m^3)		3168.31	2485.09	191.22	0.00	0.00	0.00	0.00	0.00	906.58	3650.20	3755.44	3323.40	17480.23
	Total Runoff (m^3)		3449.45	3692.45	2574.26	2333.39	2292.83	2473.76	2689.01	2130.62	3326.57	3974.10	4088.68	3618.30	36643.41

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TABLE E-4

Post-development Water Balance With Mitigation

Water Balance -Water Balance -1300-1350 Bronte Road, Oakville

Catchments and Hydrologic Components			Month												Total
			March	April	May	June	July	August	September	October	November	December	January	February	
		PET - Adjusted Potential Evapotranspiration (mm)	0.00	31.63	75.85	111.10	129.70	113.41	75.51	37.94	10.02	0.00	0.00	0.00	**585.15**
		P - Total Precipitation (mm)	57.20	76.50	79.30	74.80	73.50	79.30	86.20	68.30	88.50	65.90	67.80	60.00	**877.30**
		P-PET (mm)	57.20	44.87	3.45	-36.30	-56.20	-34.11	10.69	30.36	78.48	65.90	67.80	60.00	-
		Soil Moisture Deficit (mm)	0.00	0.00	0.00	-36.30	-92.50	-126.61	-115.92	-85.55	-7.07	0.00	0.00	0.00	-
1300-1350 Bronte Road	Pervious Area-Landscape/Grass (with Increased Topsoil of about 200 mm)	Soil Moisture Storage (mm)	200.00	200.00	200.00	163.70	107.50	73.39	84.08	114.45	192.93	200.00	200.00	200.00	-
		Actual Potential Evapotranspiration (mm)	0.00	31.63	75.85	107.81	111.60	94.73	75.51	37.94	10.02	0.00	0.00	0.00	**545.08**
		P-AET (mm)	57.20	44.87	3.45	-33.01	-38.10	-15.43	10.69	30.36	78.48	65.90	67.80	60.00	-
		Actual Soil Moisture Deficit (mm)	0.00	0.00	0.00	-33.01	-71.11	-86.53	-75.84	-45.48	0.00	0.00	0.00	0.00	-
		Change in Soil Moisture Deficit (mm)	0.00	0.00	0.00	33.01	38.10	15.43	-10.69	-30.36	-45.48	0.00	0.00	0.00	-
		Precipitation Surplus (mm)	57.20	44.87	3.45	0.00	0.00	0.00	0.00	0.00	33.00	65.90	67.80	60.00	**332.22**
		MOECC Infiltration Factor	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	
		Run-Off Coefficient	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	-
		Infiltration (mm)	31.46	24.68	1.90	0.00	0.00	0.00	0.00	0.00	18.15	36.25	37.29	33.00	**182.72**
		Run-Off (mm)	25.74	20.19	1.55	0.00	0.00	0.00	0.00	0.00	14.85	29.66	30.51	27.00	**149.50**
		Catchment Area (m^2) = 18800.00					Subcatchment Monthly Volumes								
		Infiltration (m^3)	591.45	463.91	35.70	0.00	0.00	0.00	0.00	0.00	341.26	681.41	701.05	620.40	**3435.17**
		Run-Off (m^3)	483.91	379.56	29.21	0.00	0.00	0.00	0.00	0.00	279.21	557.51	573.59	507.60	**2810.59**
	Pervious Area-Wooded area(NHL)including buffer	Soil Moisture Storage (mm)	400.00	400.00	400.00	363.70	307.50	273.39	284.08	314.45	392.93	400.00	400.00	400.00	-
		Actual Potential Evapotranspiration (mm)	0.00	31.63	75.85	109.46	120.65	104.07	75.51	37.94	10.02	0.00	0.00	0.00	**565.12**
		P-AET (mm)	57.20	44.87	3.45	-34.66	-47.15	-24.77	10.69	30.36	78.48	65.90	67.80	60.00	-
		Actual Soil Moisture Deficit (mm)	0.00	0.00	0.00	-34.66	-81.80	-106.57	-95.88	-65.51	0.00	0.00	0.00	0.00	-
		Change in Soil Moisture Deficit (mm)	0.00	0.00	0.00	34.66	47.15	24.77	-10.69	-30.36	-65.51	0.00	0.00	0.00	-
		Precipitation Surplus (mm)	57.20	44.87	3.45	0.00	0.00	0.00	0.00	0.00	12.97	65.90	67.80	60.00	**312.18**
		MOECC Infiltration Factor	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	
		Run-Off Coefficient	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	-
		Infiltration (mm)	40.04	31.41	2.42	0.00	0.00	0.00	0.00	0.00	9.08	46.13	47.46	42.00	**218.53**
		Run-Off (mm)	17.16	13.46	1.04	0.00	0.00	0.00	0.00	0.00	3.89	19.77	20.34	18.00	**93.66**
		Catchment Area (m^2) = 65700.00					Subcatchment Monthly Volumes								
		Infiltration (m^3)	2630.63	2063.36	158.77	0.00	0.00	0.00	0.00	0.00	596.34	3030.74	3118.12	2759.40	**14357.35**
		Run-Off (m^3)	1127.41	884.30	68.04	0.00	0.00	0.00	0.00	0.00	255.57	1298.89	1336.34	1182.60	**6153.15**
	Impervious Area-Roof Area to Grass Area with additional 200 mm topsoil	Precipitation Surplus (mm)	57.20	76.50	79.30	74.80	73.50	79.30	86.20	68.30	88.50	65.90	67.80	60.00	**877.30**
		Evaporation Factor	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	-
		Run-Off Coefficient	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	-
		Evaporation (mm)	8.58	11.48	11.90	11.22	11.03	11.90	12.93	10.25	13.28	9.89	10.17	9.00	**131.60**
		Run-Off (mm)	48.62	65.03	67.41	63.58	62.48	67.41	73.27	58.06	75.23	56.02	57.63	51.00	**745.71**
		Catchment Area (m^2) = 16700.00	0.30				Subcatchment Monthly Volumes								
		Evaporation (m^3)	143.29	191.63	198.65	187.37	184.12	198.65	215.93	171.09	221.69	165.08	169.84	150.30	**2197.64**
		Unmitigated Run-Off (m^3)	811.95	1085.92	1125.66	1061.79	1043.33	1125.66	1223.61	969.52	1256.26	935.45	962.42	851.70	**12453.27**
		Volume from the Roof and directed for infiltration (Assumed 30 % of total runoff from roof infiltration into the soil)	243.59	325.78	337.70	318.54	313.00	337.70	367.08	290.86	376.88	280.64	288.73	255.51	3735.98
		Runffo Reduction													**3735.98**

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TABLE E-4

Post-development Water Balance With Mitigation

Water Balance -Water Balance -1300-1350 Bronte Road, Oakville

Catchments and Hydrologic Components			Month												Total
			March	April	May	June	July	August	September	October	November	December	January	February	
PET - Adjusted Potential Evapotranspiration (mm)			0.00	31.63	75.85	111.10	129.70	113.41	75.51	37.94	10.02	0.00	0.00	0.00	**585.15**
P - Total Precipitation (mm)			57.20	76.50	79.30	74.80	73.50	79.30	86.20	68.30	88.50	65.90	67.80	60.00	**877.30**
P-PET (mm)			57.20	44.87	3.45	-36.30	-56.20	-34.11	10.69	30.36	78.48	65.90	67.80	60.00	-
Soil Moisture Deficit (mm)			0.00	0.00	0.00	-36.30	-92.50	-126.61	-115.92	-85.55	-7.07	0.00	0.00	0.00	-
	Impervious Area Driveway/ Road/ Paved Surface/Walkway/LID	**Precipitation Surplus (mm)**	57.20	76.50	79.30	74.80	73.50	79.30	86.20	68.30	88.50	65.90	67.80	60.00	**877.30**
		Evaporation Factor	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	-
		Run-Off Coefficient	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	-
		Evaporation (mm)	5.72	7.65	7.93	7.48	7.35	7.93	8.62	6.83	8.85	6.59	6.78	6.00	**87.73**
		Run-Off (mm)	51.48	68.85	71.37	67.32	66.15	71.37	77.58	61.47	79.65	59.31	61.02	54.00	**789.57**
		Catchment Area (m^2) = 20000.00					**Subcatchment Monthly Volumes**								
		Evaporation (m^3)	114.40	153.00	158.60	149.60	147.00	158.60	172.40	136.60	177.00	131.80	135.60	120.00	**1754.60**
		Run-Off (m^3)	1029.60	1377.00	1427.40	1346.40	1323.00	1427.40	1551.60	1229.40	1593.00	1186.20	1220.40	1080.00	**15791.40**
							Total Catchment Volumes								
	Total AET (m^3)		0.00	2673.13	6409.14	9218.16	10024.60	8618.05	6380.36	3205.55	846.59	0.00	0.00	0.00	47375.58
	Total Evaporation (m^3)		257.69	344.63	357.25	336.97	331.12	357.25	388.33	307.69	398.69	296.88	305.44	270.30	3952.24
	Total Infiltration (m^3)		3222.08	2527.26	194.46	0.00	0.00	0.00	0.00	0.00	937.60	3712.15	3819.17	3379.80	21528.50
	Total Runoff (m^3)		3452.88	3726.77	2650.31	2408.19	2366.33	2553.06	2775.21	2198.92	3384.05	3978.05	4092.75	3621.90	33472.44

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Appendix F- Groundwater Monitoring Data

Groundwater Levels- 1326 Bronte Road, Oakville

Date			18-Aug-20		16-Mar-21		01-Apr-21		23-Apr-21		07-May-21		27-May-21		10-Jun-21	
Well ID	Ground Level	Well Depth	Water Level	Water Level Elev.	Water Level	Water Level Elev.	Water Level	Water Level Elev.	Water Level	Water Level Elev.	Water Level	Water Level Elev.	Water Level	Water Level Elev.	Water Level	Water Level Elev.
		mbgs	(mbgs)	m	mbgs	m	(mbgs)	m	(mbgs)	m	(mbgs)	m	(mbgs)	m	(mbgs)	m
BH 20-1	129	6.2	2	127	1.9	127.1	1.86	127.14	1.87	127.13	1.86	127.14	1.92	127.08	1.91	127.09
BH 20-2	131.9	4.9	3.1	128.8	3.2	128.7	3.1	128.8	3.09	128.81	3.08	128.82	3.06	128.84	3.03	128.87
BH 20-3	130.2	4.3	2.5	127.7	2	128.2	1.8	128.4	1.99	128.21	2.04	128.16	2.07	128.13	2.18	128.02
BH 20-5	129.9	4.3	1.6	128.3	1.2	128.7	1.06	128.84	1.31	128.59	1.37	128.53	1.49	128.41	1.51	128.39
BH 20-8	129.9	5.2	4.6	125.3	Dry	n/a	4.98	124.92	5.02	124.88	5.06	124.84	Dry	n/a	5.07	124.83
BH 20-10	130.4	4.3	1.2	129.2	1.04	129.36	0.92	129.48	1.05	129.35	1.08	129.32	1.1	129.3	1.13	129.27
BH 20-13	131	4.7	1.6	129.4	1.6	129.4	1.53	129.47	1.49	129.51	1.45	129.55	1.41	129.59	1.46	129.54