SUPPLEMENTAL HYDROGEOLOGICAL INVESTIGATION

3064 Trafalgar Road, Oakville, Ontario

Client

3064 Trafalgar Partnership
1-90 Wingold Avenue
Toronto, Ontario, M6B 1P5

Project Number

BIGC-GEO-397L

Prepared By:

B.I.G. Consulting Inc.
5500 Tomken Road, Unit 12
Mississauga, ON, L4W 2Z4
T: 416.214.4880
www.bigconsutlinginc.com

Date Submitted

April 17, 2024 (Revision 4)

Table of Contents

List of Figures

List of Appendices

Revision History

Date	**Revision**
November 26, 2021	Original
March 25, 2022	Revision 1
April 14, 2022	Revision 2
October 6, 2023	Revision 3

1 Introduction

1.1 Project Description

B.I.G. Consulting Inc. (BIG) was retained by 3064 Trafalgar Partnership (the Client) to provide a hydrogeological investigation to support the proposed development of the site located at 3064 Trafalgar Road, Oakville, Ontario (Site).

The Site is located north of Dundas Street West and west of Trafalgar Road in Oakville, Ontario. The Site location plan is shown on Figure 1. The Site measures approximately 7,500 m² in size and is currently vacant. The Site is covered with gravel, crushed rock, grass and shrubs.

Based on the A451.S, Section 1 N-S Tower B, prepared by BDP Quadrangle (BDP), dated March 26, 2024, the proposed development at the Site consists of six (6) levels of underground parking.

It should be noted that BIG previously conducted a *"Supplemental Hydrogeological Investigation, 3064 Trafalgar Road, Oakville, Ontario",* dated October 6, 2023, for five (5) levels of underground parking. Given the proposed development has been revised to six (6) levels of underground parking, this *Supplemental* Hydrogeological Investigation is updated to reflect the latest design.

Based on the Draft Site Plan Comments from Town of Oakville, dated November 22, 2021, the Conservation Halton requires discharge from the underground parking subdrain system be directed to the creek to mitigate potential groundwater impacts. Given the discharge is to the creek, a groundwater sample was collected and compared against Provincial Water Quality Objectives (PWQO).

The following investigations were previously completed by others and provided to BIG for review:

- Geotechnical Investigation Report, Proposed Residential Development, 3064 Trafalgar Road, Oakville, Ontario, prepared by Alston Associates Inc (Alston), dated November 17, 2017.
- Geotechnical Investigation, Proposed Residential Development, 3064 Trafalgar Road, Oakville, Ontario, prepared by Forward Engineering & Associates Inc. (Forward Engineering), dated September 10, 2018.
- Groundwater Study, 3064 Trafalgar Road, Oakville, Ontario, prepared by Insitu Contractors Inc. (Insitu), dated October 19, 2018.

This report addresses the hydrogeological aspects of the proposed project. Reports for the Geotechnical Investigation will be issued under separate cover. The field investigation for the geotechnical and hydrogeological investigations was carried out concurrently.

1.2 Project Objectives

The main objectives of the Hydrogeological Investigation were to:

a) Establish the subsurface geological and hydrogeological conditions at the expected foundation elevation;
b) Re-assess potential construction dewatering flow rates;
c) Re-assess foundation sub-drain discharge volumes, if applicable; and,
d) Prepare a Supplemental Hydrogeological Investigation Report.

1.3 Scope of Work

As part of the report titled *"Hydrogeological Investigation, 3064 Trafalgar Road, Oakville, Ontario",* dated September 23, 2020. BIG advanced six (6) borehole (BH101 to BH106) to maximum depth of 20.4 m below ground, installed six (6) monitoring wells (MW101 to MW106), installation of two (2) mini-piezometers

(SW1 and SW2) at the adjacent creek, utilizing monitoring wells (MW2 and MW6) installed by Alston in 2017 and pumping well (PW1) installed by Insitu in 2018, conducted single well response test (SWRT), collected a groundwater sample for laboratory testing and provided assessment of hydraulic connection between surface water and groundwater.

As part of the report titled *"Supplemental Hydrogeological Investigation, 3064 Trafalgar Road, Oakville, Ontario",* dated April 14, 2022. BIG advanced four (4) borehole (BH204 to B204) to maximum depth of 28.04 m below ground, installed four (4) monitoring wells (MW201 to MW204), conducted single well response test (SWRT), collected a groundwater sample for laboratory testing and compared against PWQO.

To achieve the investigation objectives, BIG proposed and initiated the following scope of work:

a) Background desktop review of pertinent geological and hydrogeological resources;
b) Evaluate the information collected during the field program, including borehole geological information, particle size distribution and groundwater level measurements;
c) Re-assessment of groundwater discharges during construction phases;
d) Re-assessment of foundation sub-drain discharge volumes; and,
e) The preparation of a Supplemental Hydrogeological Investigation Report.

1.4 Previous Report

1.4.1 Alston Geotechnical Investigation Report

A geotechnical investigation was conducted by Alston in 2017. The investigation consisted of advancement of six (6) boreholes, BH1, MW2, BH3 to BH5 and MW6 to depth ranges from 4.6 to 13.7 m bgs.

1.4.2 Forward Engineering Geotechnical Investigation Report

A geotechnical investigation was conducted by Forward Engineering in 2018. The investigation consisted of advancement of five (5) boreholes, BH101 to BH105 to depth ranges from 2.3 to 4.6 m bgs. It should be noted that BIG renamed the Forward Engineering boreholes to BHF-101 to BHF-105 in this report.

1.4.3 Insitu Groundwater Study

A groundwater study was conducted by Insitu in 2018. The investigation consisted of advancement of a pumping well (PW1) to approximately 12 m bgs, conducting a pumping test and estimation of discharge rates.

2 Regional Setting

2.1 Regional Physiography

The Ontario Geological Survey Map P. 2204, indicates the Site lies in the South Slope physiographic region of Southern Ontario known as the till plains (drumlinized). Figure 2 shows the physiographic regions of Southern Ontario around the Site.

The topography of the area is generally described as gradual downward slope towards Lake Ontario. The overburden immediately below ground surface within the South Slope generally consists of clayey silt till and silty clay till and at depth consists of alternating deposits of dense lacustrine sands and silts and over consolidated lacustrine clays and clay tills overlying the bedrock.

2.2 Regional Geology

The surficial geology of the immediate area around the Site is described as till consisting of clay to silt-textured till derived from glaciolacustrine deposits or shale. The surficial geology for the Site and surrounding areas is shown on Figure 3.

Bedrock of the region corresponds to the Queenston Formation consisting of shale, limestone, dolostone and siltstone. The contact between the bedrock and the overlying overburden is expected to fall at approximately 2.3 to 3 m bgs.

2.3 Regional Hydrogeology

Groundwater movement through the subsurface is controlled by hydraulic gradients, the physical characteristics of the sediments, and the interconnectedness of lithological formations. Fine grained sediments restrict lateral movement of groundwater and induce vertical infiltration, while coarse grained sediments allow vertical flow with increased transmissivity.

The Site is located within the Queenston Shale aquifer which is a poor aquifer due to their fine-grained nature and low permeability and is capable of providing only limited quantities of groundwater to water wells (Singer et al, 2003).

3 Site Setting

3.1 Site Topography and Drainage

The Site is rectangular in shape and has an area of approximately 7,500 m². The Site is currently vacant. The Site is covered with gravel, grass and shrubs. The topography of the Site is relatively flat and based on the borehole logs, the ground elevation ranges between 171.22 m and 169.72 m above sea level (asl). The land generally slopes upward towards the creek. Precipitation that falls on the Site is inferred to predominantly be directed to the nearby drainage ditch which is located to the east of the Site along Trafalgar Road and the adjacent creek located to the north.

3.2 Local Surface Water Features

The Site does not feature any surface water bodies on or immediately adjacent to the Site. The closest surface water body to the Site is Morrison Creek which is situated approximately 30 m north of the Site.

3.3 Ministry of Environment, Conservation and Parks Water Well Review

Well Records from the Ministry of Environment, Conservation and Parks (MECP) Water Well Record Database (WWR) were reviewed to determine the number of water wells and locations present within a 500 m radius of the Site boundaries.

The MECP WWR database indicated 88 well records within 500 m radius of the Site. All identified wells are shown on Figure 4. A summary of the Water Well Records is included in Appendix B, Table B-1. A review of the records indicated that the majority of the wells were classified for monitoring, test hole and observation well purposes for 500 m radius of the Site. Eleven (11) supply water wells were identified within 500 m. The wells are located within the areas where recent residential development and commercial areas exists. These areas are serviced by the municipal system and therefore no private well water user is expected.

3.4 Permit to Take Water and Environmental Activity and Sector Registry Search

The MECP also maintains a database of all active and expired Permit to Take Water (PTTW) and Environmental Activity and Sector Registry (EASR) items related to construction dewatering and pumping test. There are six (6) expired PTTW registrations and one (1) active EASR registration within 1 km of the Site and are summarized in Table B-2, Appendix B. The location for each registration is shown on Figure 5.

4 Field Program

4.1 Borehole and Monitoring Well Details

The following monitoring wells were previously installed at the Site:

a) Two (2) monitoring wells (MW2 and MW6) installed at the Site by Alston in 2017;
b) A pumping well (PW1) installed at the Site by Insitu in 2018;
c) Six (6) monitoring wells (MW101 to MW106) installed at the Site by BIG in 2020; and,
d) Four (4) monitoring wells (MW201 to MW204) installed at the Site by BIG in 2021.

Figure 6 is a detailed Borehole/Monitoring Well Location Map of the Site. The borehole logs are attached in Appendix A.

4.2 Site Specific Overburden Geology

The borehole locations are shown on Figure 6 and detailed subsurface conditions are presented on the borehole logs in Appendix A. The following table is provided in addition to the borehole descriptions to provide a general summary of the soil conditions. The soil descriptions are predominately based on BIG's investigation, however, where applicable soil conditions encountered during previous investigation by others are included. The soil boundaries indicated on the borehole logs and discussed herein are inferred from the visual observations and auger resistance and should not be regarded as exact planes of geological change.

The soil conditions encountered at the borehole locations are summarized below. A stratigraphic cross-section across the property as aligned on Figure 6 is included as Figure 7.

Table 4-1: Soil description

Layer	Description
Ground Cover	Borehole BH/MW201 was advanced through existing ground surface cover consisting approximately 80 mm thick surficial topsoil. Boreholes BH/MW202 to BH204 were advanced through the ground surface cover consisting of 80 to 150 mm thick granular material.
Fill	Below ground surface covers at all borehole locations, existing fills, predominantly consisted of crushed shale and clayey silt to silty clay were encountered that extended to depths varying from 0.8 to 1.8 m bgs. Existing fills soils also contained trace sand and trace gravel.
Clayey Silt Till	Below existing fills in all borehole locations, a native glacial deposit of clayey silt till was encountered that extended to depths varying between 3.1 and 4.6 mBGS. Clayey silt till deposit also contained trace sand, trace gravel and occasional shale fragments.
Shale Bedrock	Below the clayey silt till, a highly weathered to excellent quality of Queenston formation reddish-brown Shale bedrock was encountered in all boreholes..

4.3 Water Level Monitoring

Water levels at all monitoring well locations were recorded after installation. A summary of all available water level observations is included in Table 4-2. Groundwater was observed in all monitoring wells on November 9, 2021, and depths to the groundwater ranged from 1.81 m to 3.19 m bgs. Groundwater produces a continuous surface across the Site that is situated at an elevation between 168.53 m and 167.38 m asl.

Table 4-2: **Monitoring Well Details and Water Levels Elevations**

Well ID	Ground Elevation (m asl)	Well Depth (m bgs)	June 23, 2020		July 7, 2020		November 9, 2021	
			Water Level (m bgs)	Elevation (m asl)	Water Level (m bgs)	Elevation (m asl)	Water Level (m bgs)	Elevation (m asl)
BH/MW101	169.74	7.6	1.95	167.79	2.10	167.64	2.00	167.74
BH/MW102	170.53	7.6	3.14	167.39	3.49	167.04	3.15	167.38
BH/MW103	170.34	14.3	1.83	168.51	2.02	168.32	1.81	168.53
BH/MW104	169.25	14.3	1.36	167.89	1.56	167.69	N/A	N/A
BH/MW105	169.72	16.2	2.15	167.57	2.21	167.51	2.08	167.64
BH/MW106	170.57	13.7	2.93	167.64	3.07	167.50	3.12	167.45
MW6	171.22	10.7	3.07	168.15	3.25	167.97	3.19	168.03
MW2	169.78	10.7	2.30	167.48	2.44	167.34	2.34	167.44
PW1	171.1	12	2.96	168.14	3.14	167.96	3.09	168.01
MW201	170.65	25.9	-	-	-	-	3.07	167.58
MW202	170.88	21.3	-	-	-	-	3.07	167.81
MW203	170.46	19.8	-	-	-	-	2.69	167.77
MW204	170.12	19.8	-	-	-	-	2.65	167.47

Notes: N/A – Not accessible

An interpreted groundwater contour map for the water level measurements in the deep bedrock recorded on November 11, 2021, is included as Figure 8. Based on the water level measurements obtained, the inferred direction of groundwater flow across the Site is interpreted to be to the northeast direction.

Seasonal variability can produce significant changes to the static water level. It has been observed that groundwater can rise and lower in response to changing weather and climate. It is also likely that some wells may take prolonged periods of time to equilibrate and provide true representative groundwater levels.

4.4 Hydraulic Conductivity Testing

The hydraulic conductivity test was completed to estimate the saturated hydraulic conductivity (K) of the soil at the well screen depth at selected monitoring well locations.

In advance of performing SWRT, the monitoring well was developed to remove the potential presence of fine sediments. The development process involved purging of the monitoring wells to induce the flow of fresh formation water through the screen. The monitoring well water level was permitted to fully recover prior to performing SWRTs.

During the SWRT, a slug of water was instantaneously removed from the well and the response to the water level is recorded. The Hydraulic Conductivity values for each of the tested wells were calculated from the SWRT data using Aqtesolv Software and the Hvorslev solution for unconfined conditions. The semi-log plots for normalized drawdown versus time are included in Appendix C.

The summary of the hydraulic conductivity (K) values estimated from the SWRTs are provided below in Table 4-3:

Table 4-3: Summary of Hydraulic Conductivity (K) Testing Results

Monitoring Well	Well Depth (m bgs)	Hydraulic Conductivity (m/s)
BH/MW101	7.6	1.03×10^{-6}
BH/MW102	7.6	3.94×10^{-7}
BH/MW103	14.3	6.90×10^{-7}

Monitoring Well	Well Depth (m bgs)	Hydraulic Conductivity (m/s)
BH/MW104	14.3	5.36×10^{-6}
BH/MW105	16.2	1.19×10^{-7}
BH/MW106	13.7	1.17×10^{-6}
PW1	12	7.16×10^{-6}
MW201	25.90	1.02×10^{-7}
MW202	21.30	3.65×10^{-6}
MW203	19.8	2.07×10^{-8}
MW204	19.8	5.31×10^{-6}
	Geometric mean K value	**7.75×10^{-7}**

The SWRT provides an estimate of K for the geological formation in the immediate media zone surrounding the well screen and may not be representative of bulk formation hydraulic conductivities.

4.5 Groundwater Sampling

4.5.1 Region of Halton Sanitary or Town of Oakville Storm Sewer Use By-Law

To assess the suitability for discharge of pumped groundwater to the Region of Halton Sanitary or Town of Oakville Storm Sewer during dewatering activities, a groundwater sample was collected from BH/MW101 on June 23, 2020.

Prior to collection of the samples, approximately three (3) standing well volumes of groundwater were purged from the well. The sample was collected and placed into pre-cleaned laboratory-supplied vials and/or bottles provided with analytical test group specific preservatives, as required.

The sample was not field filtered. Dedicated nitrile gloves were used during sample handling. The groundwater sample was submitted to an independent laboratory, Bureau Veritas Laboratories, of Mississauga, Ontario, for analysis.

For the assessment purposes, the analytical results were compared to Table 1 – Limits for Sanitary and Combined Sewer Discharge (By-Law No. 2-03) of the Regional Municipality of Halton; and Table 2 – Limits for Storm Sewer Discharge (By-Law No 2009-031) of the Corporation of the Town of Oakville.

The laboratory Certificate of Analysis (CofAs) and chain of custody are enclosed in Appendix D.

The laboratory CofAs show that there were no exceedances against the Table 1 – Limits for Sanitary and Combined Sewer Discharge.

When compared against the more stringent Table 2 – Limits for Storm Sewer Discharge, the sample indicated exceedance for total suspended solids (TSS) and total manganese. A summary of the exceedance is provided in Table 4-4.

Table 4-4: Summary of Analytical Results

Parameter	Table 1- Limits for Sanitary and Combined Sewer Discharge (mg/L) (Table 1)	Table 2- Limits for Storm Sewer Discharge (mg/L) (Table 2)	Concentration for BH/MW101 (mg/L) (June 23, 2020)
Total Suspended Solids (TSS)	350	15	**78**
Total Manganese (Mn)	5	0.05	**0.220**

*Notes: **Bold** indicates concentration exceeds the Storm Sewer Discharge Limit.*

4.5.2 Groundwater Analytical Results - PWQO

Based on the Draft Site Plan Comments from Town of Oakville, dated November 22, 2021, the Conservation Halton requires discharge from the underground parking subdrain system be directed to the creek to mitigate potential groundwater impacts. Given the discharge is to the creek, a groundwater sample was collected and compared against PWQO. A groundwater sample was collected from BH/MW101 on December 20, 2021.

Prior to collection of the samples, approximately three (3) standing well volumes of groundwater were purged from the well. The sample was collected and placed into 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 sample was submitted to an independent laboratory, Bureau Veritas Laboratories, of Mississauga, Ontario, for analysis.

For the assessment purposes, the analytical results were compared to Ontario PWQO.

The laboratory Certificate of Analysis (CofAs) and chain of custody are enclosed in Appendix D.

The laboratory CofA indicates there are exceedances for sulphide, total phosphorus, boron, cobalt and iron. It should be noted that the detection limit for anthracene, benzo(a)anthracene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene and fluoranthene exceeds the PWQO standard. Given the PWQO standard for PAH is extremely stringent, the elevated detection limits for benzo(a)anthracene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene and fluoranthene do not consider as exceedances. A summary of the exceedance is provided in Table 4-5.

Table 4-5: Summary of Analytical Results

Parameter	Ontario Provincial Water Quality Objectives (mg/L)	Concentration for BH/MW101 (mg/L) (November 22, 2021)
Sulphide	0.002	**0.013**
Total Phosphorus	0.01	**0.12**
Total Boron	0.2	**1.1**
Total Cobalt	0.0009	**0.0014**
Total Lead	0.3	**1.8**
Anthracene	0.0000008	**<0.00001**
Benzo(a)anthracene	0.0000004	**<0.00001**
Benzo(g,h,i)perylene	0.00000002	**<0.00001**
Benzo(k)fluoranthene	0.0000002	**<0.00001**
Chrysene	0.0000001	**<0.00001**
Dibenzo(a,h)anthracene	0.000002	**<0.00001**
Fluoranthene	0.0000008	**<0.00001**

*Notes: **Bold** indicates concentration exceeds the PWQO.*

If the groundwater encountered during the construction and long-term is discharged to the creek, a treatment system will be required to meet the PWQO requirements for the discharge water.

5 Temporary Construction Dewatering

5.1 Construction Dewatering Requirements

Based on the drawing A451.S, Section 1 N-S Tower B, prepared by BDP, dated March 26, 2024 , the proposed development at the Site will consist of six (6) levels of underground parking with P6 finished floor elevation (FFE) at 150.25 m asl. The footing elevation is assumed approximately 2 m below P6 FFE.

The stabilized groundwater level measurements, observed on November 9, 2021 were found to be varying between elevations of 168.53 m and 167.38 m asl. Considering the conditions of the recovered soil and rock core samples, their laboratory moisture measurements, screen intervals in monitoring wells, and fracture patterns observed on rock core samples, BIG is of the opinion that there is a water bearing zone exhibiting artesian condition. During the construction dewatering phase, the dewatering contractor should consider these conditions to ensure the water table can be sufficiently suppressed for constructing the lowest basement. For conservative purposes, the construction dewatering calculation is based on an open cut excavation at the present time. To excavate under dry conditions, the water level is anticipated to be lowered at least to a minimum of approximately 1.0 m below the footing elevation.

Additional dewatering capacity may be required to maintain dry conditions within the excavation during and following significant precipitation events. It should be noted that the dewatering estimates provided in this report are based on the conceptual building information available at this time. If design details are changed (including any changes to excavation depth), the dewatering estimates must be revised to include the final layout of the development.

5.2 Construction Dewatering Flow Rate Assumptions

The assumptions used for the calculation of the dewatering rate for the proposed excavation for the blocks are presented in Table 5-1.

Table 5-1 Dewatering Estimate Assumptions

Input Parameter	Values	Notes
Proposed Surface Elevation (m asl)	169.00	Based on A451.S, Section 1 N-S Tower B, prepared by BDP, dated March 26, 2024
Basement Elevation (m asl)	150.25	P6 FFE is 150.25 m asl based on drawing A451.S, Section 1 N-S Tower B, prepared by BDP, dated March 26, 2024
Footing Elevation (m asl)	148.25	Assumed 2 m below P6 FFE
Dewatered Elevation Target (m asl)	147.25	Approximate 1 m below footing elevation
Groundwater Elevation (m asl)	168.53	Highest groundwater elevation measurement (November 9, 2021)
Estimated Excavation Area	94 m x 69 m	Based on drawing A152.S, P5 Underground, prepared by BDP, dated March 26, 2024
Hydraulic Conductivity (m/s)	7.75×10^{-7}	Geometric mean K

5.3 Dewatering Flow Rate Equation

The Dupuit equation for steady flow from a liner source of an excavation through an unconfined aquifer resting on a horizontal impervious surface was used to obtain a flow rate estimate, and is expressed as follows:

$$Q_w = \frac{K(x + a)(H^2 - h^2)}{Lo}$$

Where:

Q_w = Rate of pumping (m^3/s)
x = Length of excavation (m)
a = Width of excavation (m)
K = Hydraulic conductivity (m/s)
H = Head beyond the influence of pumping (static groundwater elevation) (m)
h = Head above base of aquifer at the excavation (m)
Lo = Distance to Line Source (m)

It is expected that the initial dewatering rate will be higher in order to remove groundwater from within the overburden formation. The dewatering rates are expected to decrease once the target water level is achieved in the excavation footprint as groundwater will have been removed locally from storage resulting in lower seepage rates into the excavation. Additionally, the use of a continuous caisson shoring system will further reduce groundwater migration into the excavation reducing the ongoing seepage rate.

5.4 Radius of Influence

The Radius of Influence (ROI) for the construction dewatering is based on the empirical Sichardt Equation. This equation is used to predict the distance at which the drawdown resulting from pumping is negligible. This equation is empirical and was developed to provide representative flow rates using the steady state flow dewatering equations, as discussed below.

It is noted that in steady state conditions, the radius of influence of pumping will extend until boundary flow conditions are reached and provide sufficient water inputs to the aquifer, such as recharge and surface water bodies.

The ROI of pumping (dewatering) for linear flow is calculated based on the Sichardt equation, which is described as follows:

$$\mathrm{Lo} = 1750\ (\mathrm{H} - \mathrm{h})\sqrt{\mathrm{K}}$$

Where:

K = Hydraulic conductivity (m/s)
H = Static Saturated Head (m)
h = Dynamic Saturated Head (m)

Based on the Sichardt equation and the highest K value, the ROI is approximately 32.8 m from the side the excavation for linear flow (Lo=Ro/2). The ROI calculation is provided in Appendix F.

The ROI calculation is a conservative methodology and is calculated based on the assumption of active pumping. However, the dewatering estimate is based on the entire zone is in saturated condition and the ROI can be developed only in saturated conditions.

5.5 Results of Construction Dewatering Flow Rate Estimates

Based on the assumptions provided in this report, the results of the dewatering rate estimate are as follows:

Table 5-2 Summary of Construction Dewatering Flow Rate Estimate

Location	Construction Dewatering Flow Rate Without Safety Factor (L/day)	Peak Construction Dewatering Flow Rate Including Safety Factor of 2.5 (L/day)
Excavation area	151,000	377,500

Construction dewatering flow rate estimates are provided in Table E-1, in Appendix E.

The total peak construction dewatering flow rates includes a factor of safety of 2.5 to account for accumulation of precipitation, seasonal fluctuations in the groundwater table, flow from beddings of existing sewers, and variation in hydrogeological properties beyond those encountered during the course of this study. This total dewatering flow rate also provides additional capacity for the dewatering contractors. Given that the predicted dewatering volumes exceeds the 50,000 L/day limit, an EASR for construction dewatering is required.

Based on the drawing A152.S, P5 Underground, prepared by BDP, dated March 26, 2024, there are two (2) elevator pits in the western and eastern portions of the Site. Additional dewatering capacity or localized dewatering may be required to maintain dry conditions for construction of elevator pits.

It should be noted that if caisson wall shoring system is considered for the subject Site, reduction in groundwater quantities can be anticipated.

Please note that it is the responsibility of the contractor to ensure dry conditions are maintained within the excavation at all times. The dewatering contractor should ensure that silt removal or replacement from subsoil be eliminated and monitored during construction dewatering at all times.

Additional pumping capacity may be required to maintain dry conditions within the excavation during and following significant precipitation events. Additionally, the presence of near-surface fill material could hold significant groundwater.

The maximum flow calculation is intended to provide a conservative estimate to account for unforeseeable conditions that may arise during construction. It should be noted that the dewatering estimate provided in this report are based on the proposed development information available at this time. If changes to the design are implemented (e.g., increase to planned excavation depths, widening of excavations, etc.), the dewatering estimates must be revised to include and reflect future changes.

6 Long Term Discharge Estimate

6.1 Long-Term Dewatering Assumptions

Given that the groundwater level is above foundation depths for the development, a permanent foundation sub-drain is recommended. It is assumed that the below grade structure will feature a perimeter drain and sub-drain system installed at approximately 0.5 m below the basement elevation. Table 6-1 presents the assumptions used to calculate the long-term drainage rate estimates.

Table 6-1 Dewatering Estimate Assumptions

Input Parameter	Values	Notes
Surface Elevation (m asl)	169.00	Based on drawing A451.S, Section 1 N-S Tower B, prepared by BDP, dated March 26, 2024
Basement elevation (m asl)	150.25	P6 FFE is 150.25 m asl based on drawing A451.S, Section 1 N-S Tower B, prepared by BDP, dated March 26, 2024
Groundwater Elevation (m asl)	168.53	Highest groundwater elevation measurement (November 9, 2021)
Foundation Elevation / Sub-drain Elevation Target (m asl)	149.75	Assumed 0.5 m below the basement elevation
Drainage Dimensions	94 m x 69 m	Based on drawing A152.S, P5 Underground, prepared by BDP, dated March 26, 2024
Hydraulic Conductivity (m/s)	7.75×10^{-7}	Geometric mean K

6.2 Radius of Influence

The Radius of Influence (ROI) for the long-term dewatering is based on the empirical Weber Equation. This equation is used to predict the distance at which the drawdown resulting from pumping is negligible. This equation is empirical and was developed to provide representative flow rates using the steady state flow dewatering equations, as discussed below.

It is noted that in steady state conditions, the radius of influence of pumping will extend until boundary flow conditions are reached and provide sufficient water inputs to the aquifer, such as recharge and surface water bodies. As a result, the distance of influence calculated using Weber equation is used to provide a representative flow rate calculation, but it is not precise in determining the actual radius influenced by pumping.

The ROI of pumping (dewatering) for linear flow is calculated based on the Weber equation, which is described as follows:

$$\mathrm{Ro} = 2.45 \left(\frac{\mathrm{HKt}}{\mathrm{s}}\right)^{0.5}$$

Where:

K = Hydraulic conductivity (m/s)
H = Static Saturated Head in m
t = time in number of days
s = Storage coefficient (unitless)

Based on the Weber equation and the geometric mean K value, the ROI is approximately 48.2 m from the side of the excavation for linear flow. The ROI calculation is provided in Table F-1, Appendix F.

The ROI calculation is a conservative methodology and is calculated based on the assumption of active pumping during long-term dewatering. However, the dewatering estimate is based on the entire zone is in saturated condition and the ROI can be developed only in saturated conditions.

During the post-construction stage, the long-term dewatering in fractured bedrock would flow primarily via vertical drains. Therefore, the actual radius of influence will be less than the predicted distance of 48.2 m.

6.3 Long-Term Perimeter Drain Flow Rate Estimate

Based on the assumptions provided in this report (outlined in Section 6.1), the results of the long-term discharge volume estimate are summarized below:

Table 6-2 Summary of Long-Term Discharge Flow Rate

Location	Long-Term Peak Flow Rate (L/day)	Notes
Flow into sub-drain after initial dewatering stages	126,000	Long term sub-drain flow value rounded based on Dupuit's equation including flow from all sides. Safety factor of 1.5 was used.

The results for the estimate are available in Appendix G, Table G-1. The maximum flow rate estimates represent short term events and are not indicative of long-term continuous contributions to the drainage system. Intermittent cycling of sump pumps and seasonal fluctuation in groundwater regimes should be considered for pump specifications. Given that the predicted dewatering volumes exceeds the 50,000 L/day limit, it is necessary to apply a PTTW.

As the elevator pits to be constructed below the groundwater table, it is recommended that the elevator pits to be constructed as watertight.

It should be noted that the dewatering estimates provided in this report are based on the proposed building information available at this time.

If the groundwater encountered during long-term is discharged to the creek, a treatment system will be required to meet the PWQO requirements for the discharge water.

In the event that the long-term foundation drainage is not allowed to discharge into the City's sewer system, the proposed building may be designed and supported by "tanked" water-proofed continuous raft foundation without permanent dewatering (i.e. avoiding permanent perimeter and under-floor drainage system).

7 Potential Groundwater Impacts

7.1 Impacts to Nearby Groundwater Users

The Site lies within a sub-urban area of Oakville, based on the MECP WWR database, eleven (11) supply water wells were identified within 500 m. The wells are located within recently developed residential and commercial areas. Potable water is supplied via the municipal system. Therefore, no private well water user is expected. There are no potential impacts to nearby groundwater users due to construction dewatering or long-term dewatering is expected.

7.2 Impacts Due to Construction Dewatering

As discussed in Section 5, Temporary Construction Dewatering, the groundwater levels were observed above the foundation elevation and therefore short-term construction dewatering is required for excavation. The radius of influence developed during construction dewatering was conservatively estimated at 32.8 m from the edge of the excavation. Given the groundwater encountered during construction will be discharged to the creek, potential impact on the creek or to the surrounding features will be negligible.

7.3 Impacts Due to Long-Term Foundation Drain Dewatering

As discussed in Section 6, given that the groundwater level is above foundation depths for the development, a permanent foundation sub-drain is recommended. It is assumed that the below grade structure will feature a perimeter drain and sub-drain system installed at approximately 0.5 m below the basement elevation. Given the groundwater encountered during long-term dewatering will be discharged to the creek, potential impact on the creek or to the surrounding features will be negligible.

7.4 Impacts to Provincially Significant Wetland (PSW)

It is understood that a PSW is located to the west of the subject Site. A map prepared by Savanta and is included in their report titled, *"3064 Trafalgar Road, Natural Heritage and Tree Preservation Plan"* dated August 2019, (attached in Appendix H) shows the location of the PSW in relation to the subject Site. Given the groundwater encountered during construction and long-term will be discharged to the creek, no potential impacts to PSW are anticipated.

8 Water Taking and Discharge Permits

8.1 EASR

During the active construction dewatering phase, the volume of water expected to be pumped exceeds the daily limit on groundwater taking under the Ontario Water Resources Act (50,000 L/day). Therefore, it is necessary to register the construction dewatering under the EASR guidelines, the peak construction discharge rate for is 377,500 L/day. The limit for water taking under an EASR is 400,000 L/day.

Given that the predicted dewatering volume for long-term dewatering is 126,000 L/day and this volume exceeds the 50,000 L/day limit, it is necessary to apply for a PTTW.

9 Conclusions

Based on the findings of the Hydrogeological Investigation, the following summary of conclusions are provided:

a) Based on the drawing A451.S, Section 1 N-S Tower B, prepared by BDP, dated March 26, 2024, the proposed development at the Site consists of six (6) levels of underground parking;
b) The Site is located within a physiographic region within the South Slope known as the till plains (drumlinized);
c) The surficial geology around the Site is comprised of till consisting of clay to silt-textured till derived from glaciolacustrine deposits or shale;
d) The MECP WWR database indicate that there are 88 well records registered with the database within 500 m of the Site;
e) Eleven (11) supply water wells were identified within 500 m. The wells are located within residential development and commercial areas, no private well water user is expected;
f) Groundwater produces a continuous surface across the Site and ranges between 168.53 m and 167.38 m asl (November 9, 2021 readings);
g) Based on the water level measurements obtained, the inferred direction of groundwater flow across the Site is interpreted to be to the northeast direction;
h) The estimated hydraulic conductivity of the soil ranges from 7.16×10^{-6} m/s to 2.07×10^{-8} m/s with geometric mean of 7.75×10^{-7} m/s;
i) Based on the assumptions outlined in this report, the estimated peak construction dewatering flow rate for the proposed construction activity is 377,500 L/day;
j) Given that the predicted dewatering volumes exceeds the 50,000 L/day limit, an EASR for construction dewatering is required;
k) Based on the assumptions outlined in this report, the total discharge volume after construction for long-term peak flow rate is 126,000 L/day;
l) Given that the predicted dewatering volume exceeds the 50,000 L/day limit, it is necessary to apply a PTTW;
m) Based on the Draft Site Plan Comments from Town of Oakville, dated November 22, 2021, the Conservation Halton requires discharge from the underground parking subdrain system be directed to the creek to mitigate potential groundwater impacts. Given the discharge is to the creek, a groundwater sample was collected and compared against Provincial Water Quality Objectives (PWQO);
n) The laboratory certificate of analysis indicates there are exceedances for sulphide, total phosphorus, boron, cobalt and iron;
o) If the groundwater encountered during the construction and long-term is discharged to the creek, a treatment system will be required to meet the PWQO requirements for the discharge water;
p) Given the groundwater encountered during construction and long-term dewatering will be discharged to the creek, potential impact on the creek or to the surrounding features will be negligible; and,
q) Given the groundwater encountered during construction and long-term will be discharged to the creek, no potential impacts to Provincial Significant Wetland are anticipated.

It should be noted that the comments and recommendations in this report are based on the assumption that the present design concept described throughout the report will proceed to construction. Any changes to the design concept may result in a modification to the recommendations provided in this report. It is noted that these conclusions and recommendations should be read in conjunction with the entirety of the report.

10 Limitations

This report is based on a limited investigation designed to provide information to support an assessment of the current hydrogeological conditions within the study area. The conclusion and recommendations presented within this report reflect Site conditions existing at the time of the assessment. BIG must be contacted immediately if any unforeseen Site conditions are experienced during the dewatering activities. This will allow BIG to review the new findings and provide appropriate recommendations to allow the construction to proceed in a timely and cost-effective manner.

Our undertaking at BIG, therefore, is to perform our work within limits prescribed by our clients, with the usual thoroughness and competence of the geoscience profession. No other warranty or presentation, either expressed or implied, is included or intended in this report.

We trust that this information is satisfactory for your purposes. Should you have any questions or comments, please do not hesitate to contact our office.

Yours truly,

B.I.G. Consulting Inc.

Peilin (Eileen) Liu, M.Env.Sc., P.Geo.
Manager, Hydrogeology Services

Prem Manicks, P.Geo.
Partner

11 References

Alston Associates Inc. (2017). Geotechnical Investigation Report, Proposed Residential Development, 3064 Trafalgar Road, Oakville, Ontario. dated November 17, 2017.

Cashman, P. M. (2013). *Groundwater Lowering in Construction: A Practical Guide to Dewatering (Second Ed.).*

Chapman, L., & Putnam, D. (2007). Physiography of Southern Ontario. *Miscellaneous Release, Data 228 ISBN 978-1-4249-5158-1*. Ontario Geological Survey.

Forward Engineering &Associates Inc. (2018). Geotechnical Investigation, Proposed Residential Development, 3064 Trafalgar Road, Oakville, Ontario. Dated September 10, 2018.

Insitu Contractors Inc. (2018). Groundwater Study, 3064 Trafalgar Road, Oakville, Ontario. Dated October 19, 2018.

Ministry of Environment, Conservation and Parks. (2017). Ontario Water Resources Act.

Ontario Water Resources Act, Ontario Regulation 387/04, as amended. (2016). *Water Taking and Transfer*.

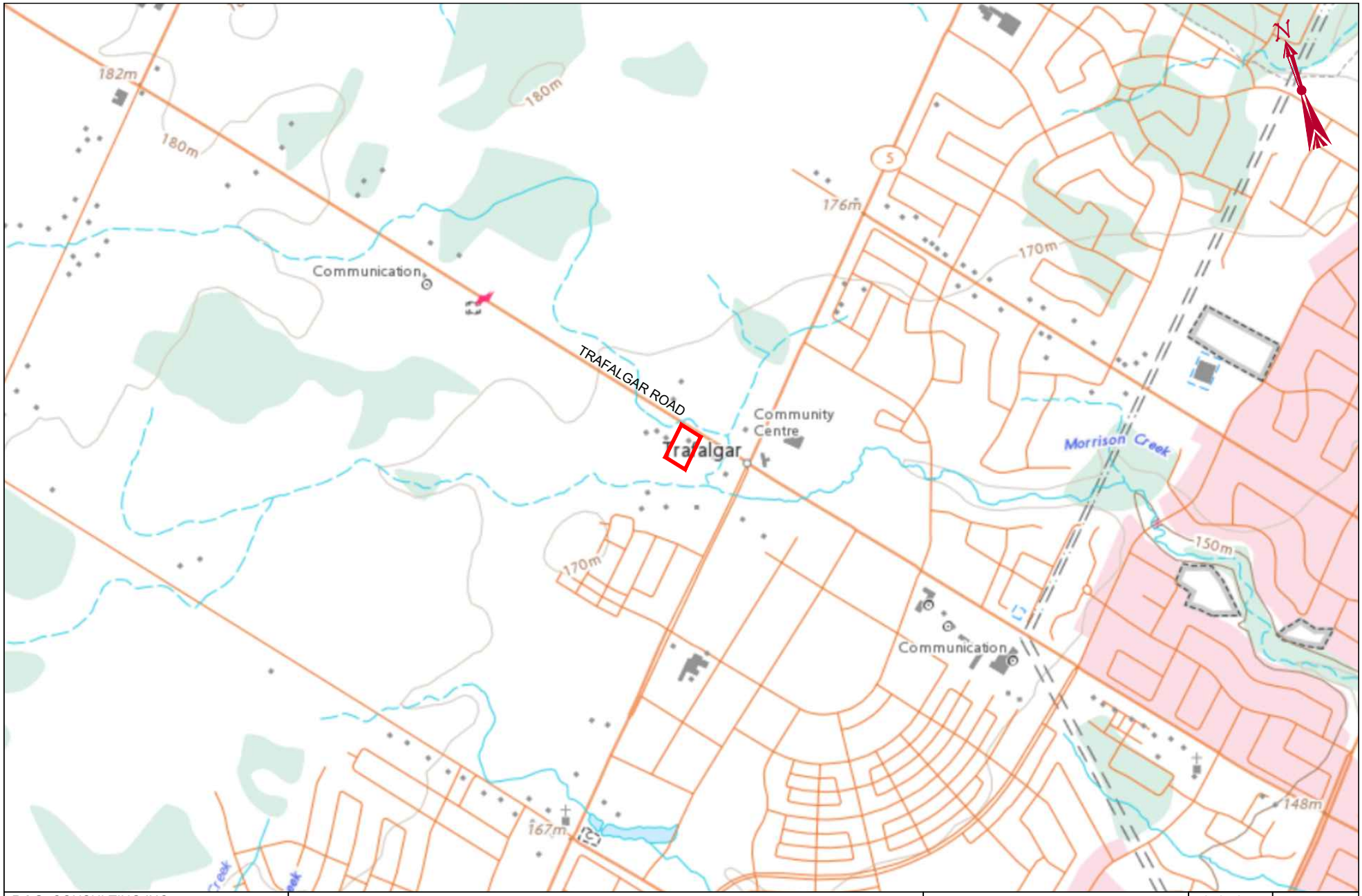
Ontario Ministry of Environment, Conservation and Parks, Map: Well Records, 2018. Accessed online at https://www.ontario.ca/environment-and-energy/map-well-records

Singer, S.N., Cheng, C.K., and Scafe, M.G. (2003). The Hydrogeology of Southern Ontario, 2nd Edition. Environmental Monitoring and Reporting Branch, Ontario Ministry of Environment.

The Corporation of te Town of Oakville (2009). *By-Law Number 2009-031 – A By-law to Regulate the Use of Municipal Storm Sewers and to repeal and replace By-law 2008-041.*

The Regional Municipality of Halton (2001). By-Law No.2-03

FIGURES



B.I.G. CONSULTING INC.

t: (416) 214 - 4880 f: (416) 551 - 2633
12-5500 Tomken Rd.
Misissauga, ON L4W 2Z4
Canada

bigconsultinginc.com

LEGEND

APPROXIMATE SITE BOUNDARY

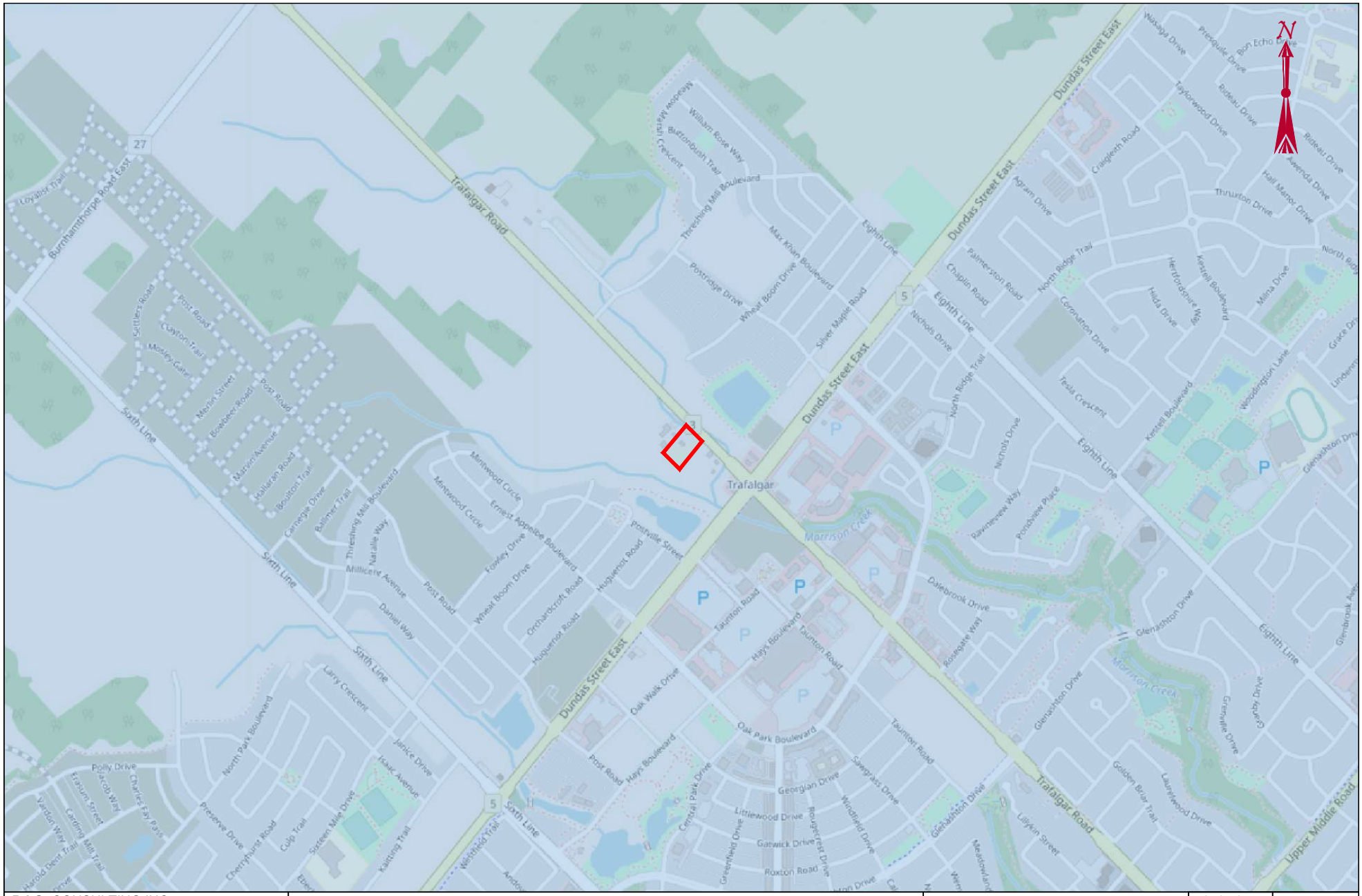
SCALE

100m 0m 100m 200m 300m 400m 500m

TITLE AND LOCATION

SITE LOCATION MAP
SUPPLEMENTAL HYDROGEOLOGICAL INVESTIGATION
3064 TRAFALGAR ROAD,
OAKVILLE, ONTARIO

PROJECT NO.	DWN.
BIGC-GEO-397G	O.A.
SCALE	CK.
AS NOTED	E.L.
DATE	FIG NO.
NOVEMBER 2021	1



B.I.G. CONSULTING INC.

t: (416) 214 - 4880 f: (416) 551 - 2633
12-5500 Tomken Rd.
Misissauga, ON L4W 2Z4
Canada

bigconsultinginc.com

LEGEND

APPROXIMATE SITE BOUNDARY

SOUTH SLOPE

SCALE

100m 0m 100m 200m 300m 400m 500m

NOTES:

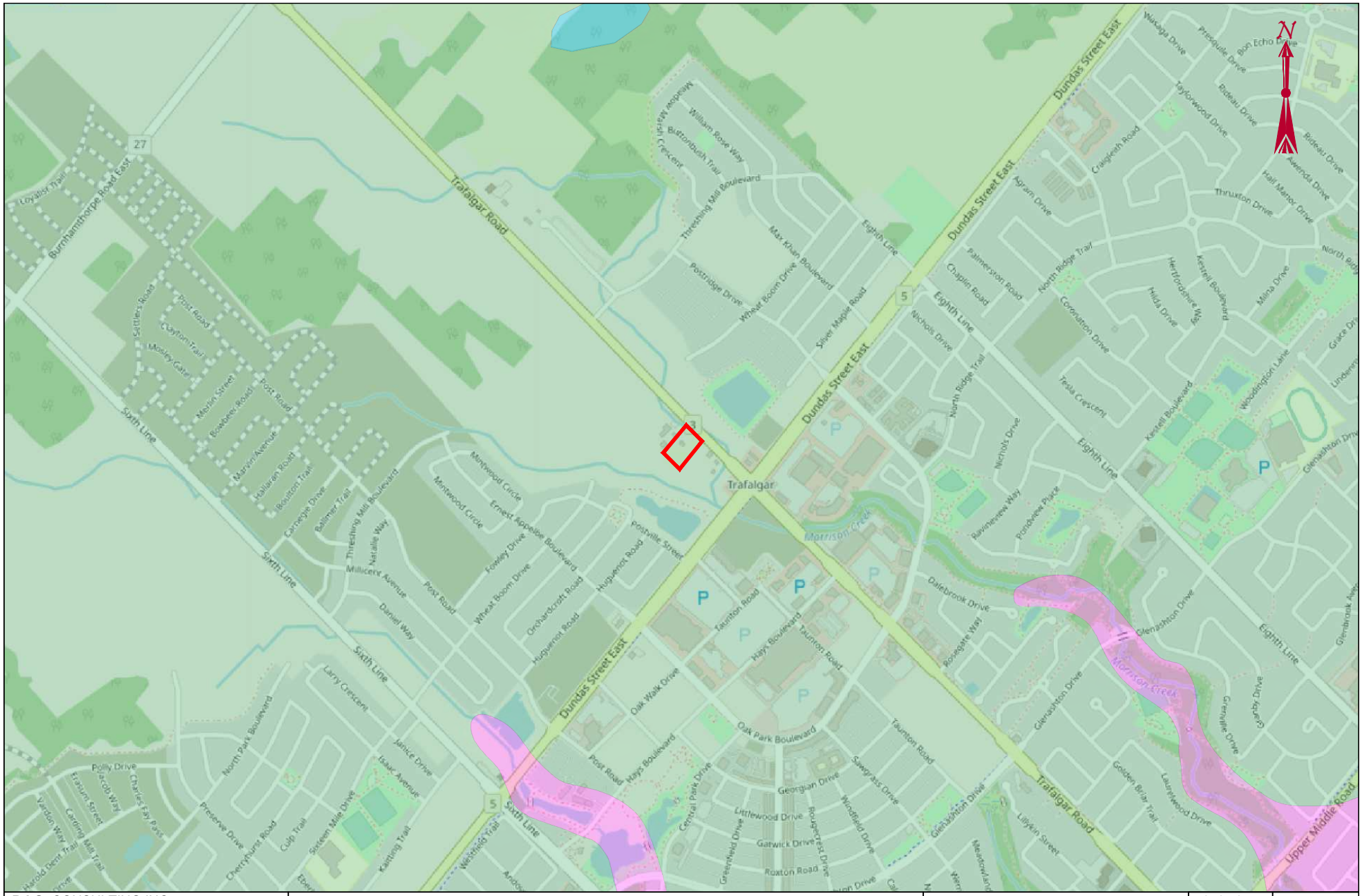
1. PHYISIOGRAPHIC REGIONS PRODUCED BY MINISTRY OF ENERGY, NORTHERN DEVELOPMENT AND MINES, 2012
2. IMAGERY OBTAINED FROM OPENSTREETMAP, 2016

TITLE AND LOCATION

PHYSIOGRAPHIC REGIONS OF SOUTHERN ONTARIO SUPPLEMENTAL HYDROGEOLOGICAL INVESTIGATION

3064 TRAFALGAR ROAD, OAKVILLE, ONTARIO

PROJECT NO.	DWN.
BIGC-GEO-397G	O.A.
SCALE	CK.
AS NOTED	E.L.
DATE	FIG NO.
NOVEMBER 2021	2



B.I.G. CONSULTING INC.

t: (416) 214 - 4880 f: (416) 551 - 2633
12-5500 Tomken Rd.
Misissauga, ON L4W 2Z4
Canada

bigconsultinginc.com

LEGEND

- APPROXIMATE SITE BOUNDARY
- TILL
- PALEOZOIC BEDROCK
- MODERN ALLUVIAL DEPOSITS
- FINE-TEXTURED GLACIOLACUSTRINE DEPOSITS

SCALE

100m 0m 100m 200m 300m 400m 500m

NOTES:

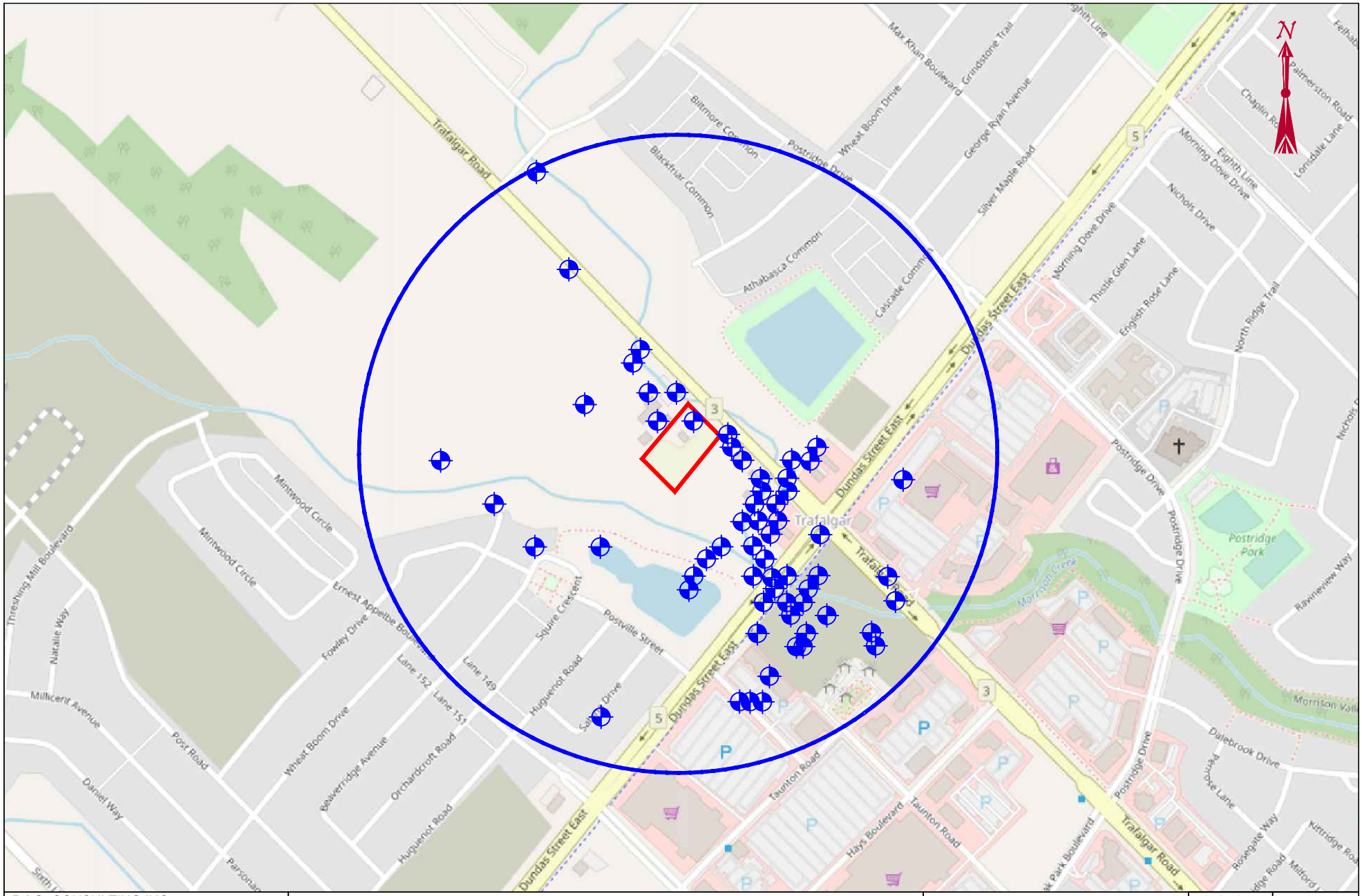
1. SURFICIAL GEOLOGY PRODUCED BY MINISTRY OF ENERGY, NORTHERN DEVELOPMENT AND MINES, 2012
2. IMAGERY OBTAINED FROM OPENSTREETMAP, 2016

TITLE AND LOCATION

SURFICIAL GEOLOGY OF SOUTHERN ONTARIO SUPPLEMENTAL HYDROGEOLOGICAL INVESTIGATION

3064 TRAFALGAR ROAD, OAKVILLE, ONTARIO

PROJECT NO.	DWN.
BIGC-GEO-397G	O.A.
SCALE	CK.
AS NOTED	E.L.
DATE	FIG NO.
NOVEMBER 2021	3



B.I.G. CONSULTING INC.

t: (416) 214 - 4880 f: (416) 551 - 2633
12-5500 Tomken Rd.
Misissauga, ON L4W 2Z4
Canada

bigconsultinginc.com

LEGEND

- APPROXIMATE SITE BOUNDARY
- WELL RECORD STUDY AREA BOUNDARY
- WELL RECORD LOCATION (2020)

SCALE

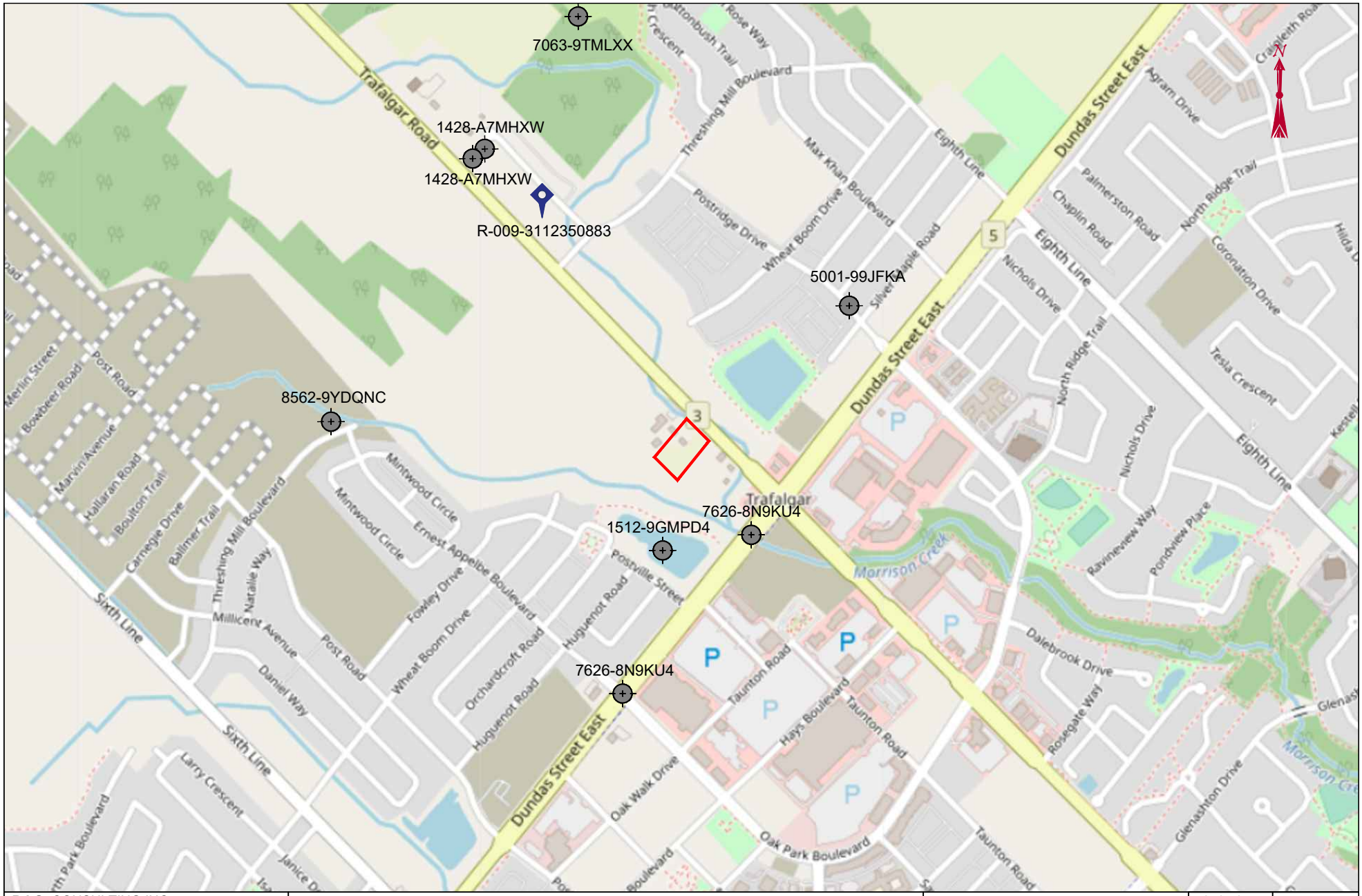
100m 0m 100m 200m 300m 400m 500m

IMAGERY OBTAINED FROM OPENSTREETMAP, 2016

TITLE AND LOCATION

MECP WATER WELL RECORD LOCATIONS
SUPPLEMENTAL HYDROGEOLOGICAL INVESTIGATION
3064 TRAFALGAR ROAD, OAKVILLE, ONTARIO

PROJECT NO.	DWN.
BIGC-GEO-397G	O.A.
SCALE	CK.
AS NOTED	E.L.
DATE	FIG NO.
NOVEMBER 2021	4



B.I.G. CONSULTING INC.

t: (416) 214 - 4880 f: (416) 551 - 2633
12-5500 Tomken Rd.
Misissauga, ON L4W 2Z4
Canada

bigconsultinginc.com

LEGEND

APPROXIMATE SITE BOUNDARY

APPROXIMATE LOCATION OF PTTW RECORD

APPROXIMATE LOCATION OF EASR RECORD

SCALE

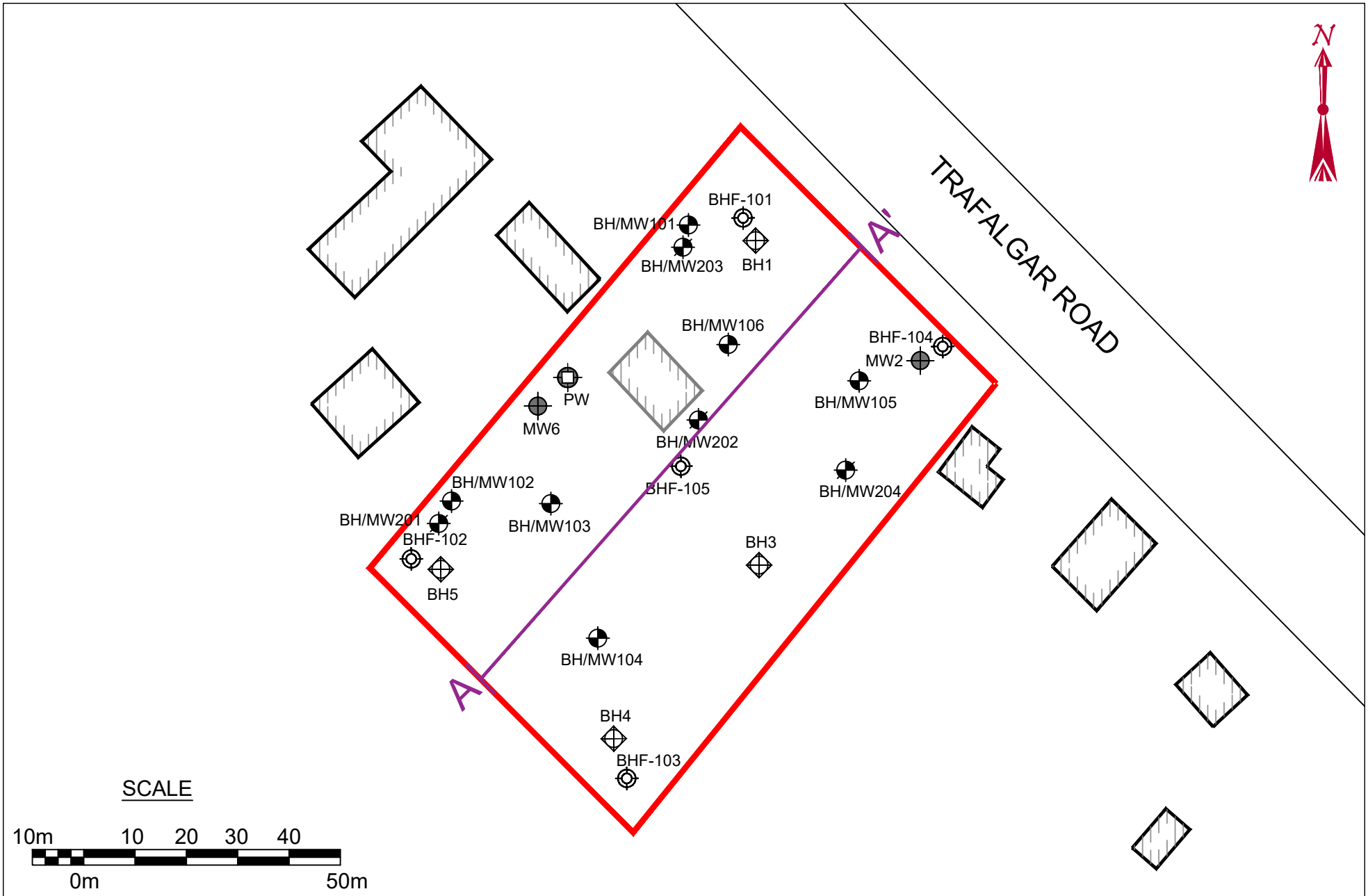
100m 0m 100m 200m 300m 400m 500m

IMAGERY OBTAINED FROM OPENSTREETMAP, 2016

TITLE AND LOCATION

PTTW AND EASR RECORD LOCATIONS
SUPPLEMENTAL HYDROGEOLOGICAL INVESTIGATION
3064 TRAFALGAR ROAD, OAKVILLE, ONTARIO

PROJECT NO.	DWN.
BIGC-GEO-397G	O.A.
SCALE	CK.
AS NOTED	E.L.
DATE	FIG NO.
NOVEMBER 2021	5



B.I.G. CONSULTING INC.

t: (416) 214 - 4880 f: (416) 551 - 2633
12-5500 Tomken Rd.
Misissauga, ON L4W 2Z4
Canada

bigconsultinginc.com

LEGEND

- APPROXIMATE SITE BOUNDARY
- FORMER BUILDING FOOTPRINT
- APPROXIMATE LOCATION OF BOREHOLE/MONITORING WELL (BIG 2020)
- APPROXIMATE LOCATION OF BOREHOLE/MONITORING WELL (BIG 2021)
- APPROXIMATE LOCATION OF SURFACE WATER MONITORING WELL (BIG 2020)
- APPROXIMATE LOCATION OF PUMPING WELL (INSITU 2018)
- APPROXIMATE LOCATION OF MONITORING WELL (ALSTON 2017)
- APPROXIMATE LOCATION OF BOREHOLE (ALSTON 2017)
- A A' GEOLOGICAL CROSS SECTION (SEE FIGURE 7)

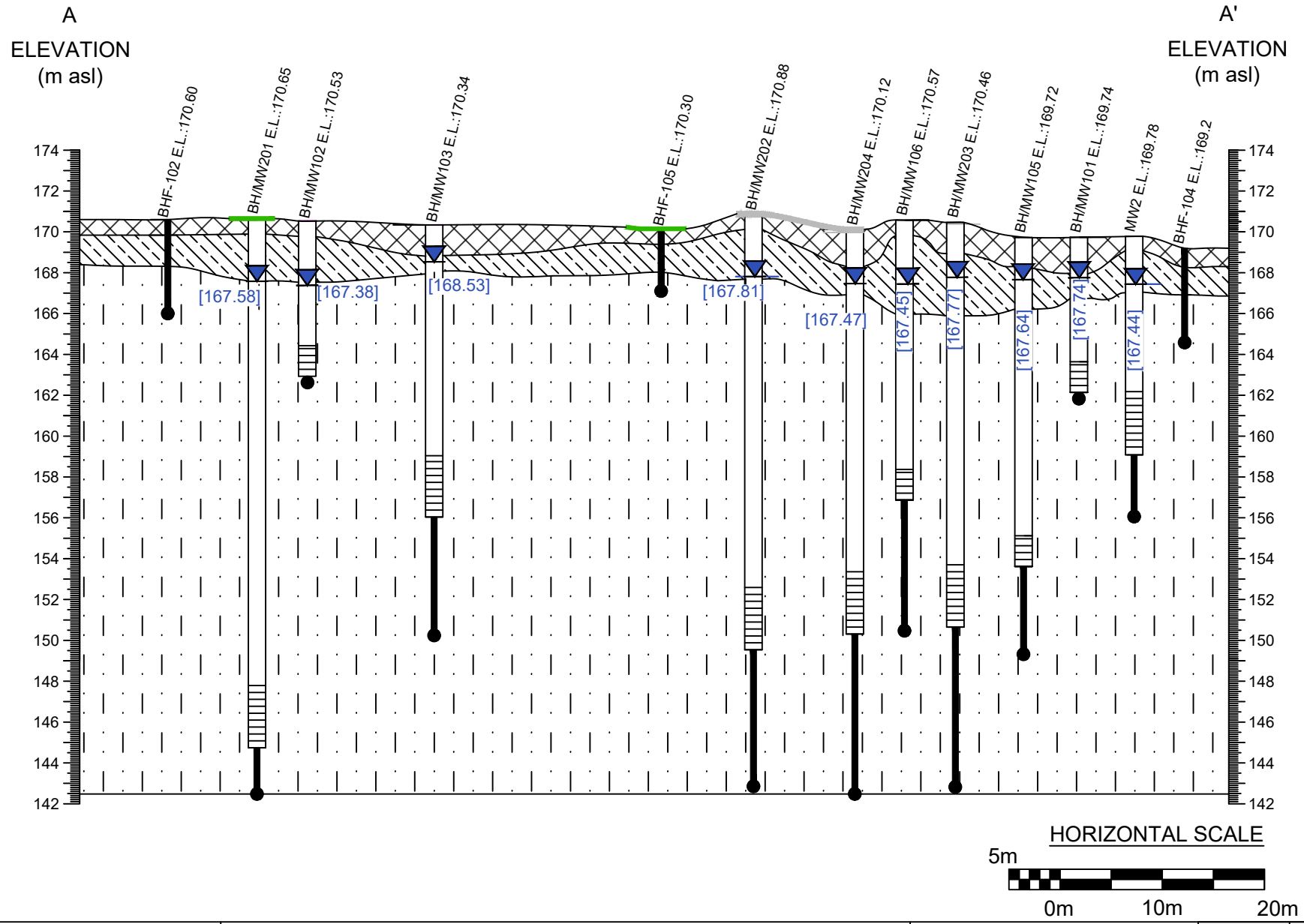
BASE MAP SOURCED FROM J.D.BARNES, DATED NOVEMBER 2017

TITLE AND LOCATION

BOREHOLE/MONITORING WELL LOCATION PLAN SUPPLEMENTAL HYDROGEOLOGICAL INVESTIGATION

3064 TRAFALGAR ROAD, OAKVILLE, ONTARIO

PROJECT NO.	DWN.
BIGC-GEO-397G	L.C.K.
SCALE	CK.
AS NOTED	E.L.
DATE	FIG NO.
NOVEMBER 2021	6



B.I.G. CONSULTING INC.

t: (416) 214 - 4880 f: (416) 551 - 2633
12-5500 Tomken Rd.
Misissauga, ON L4W 2Z4
Canada

bigconsultinginc.com

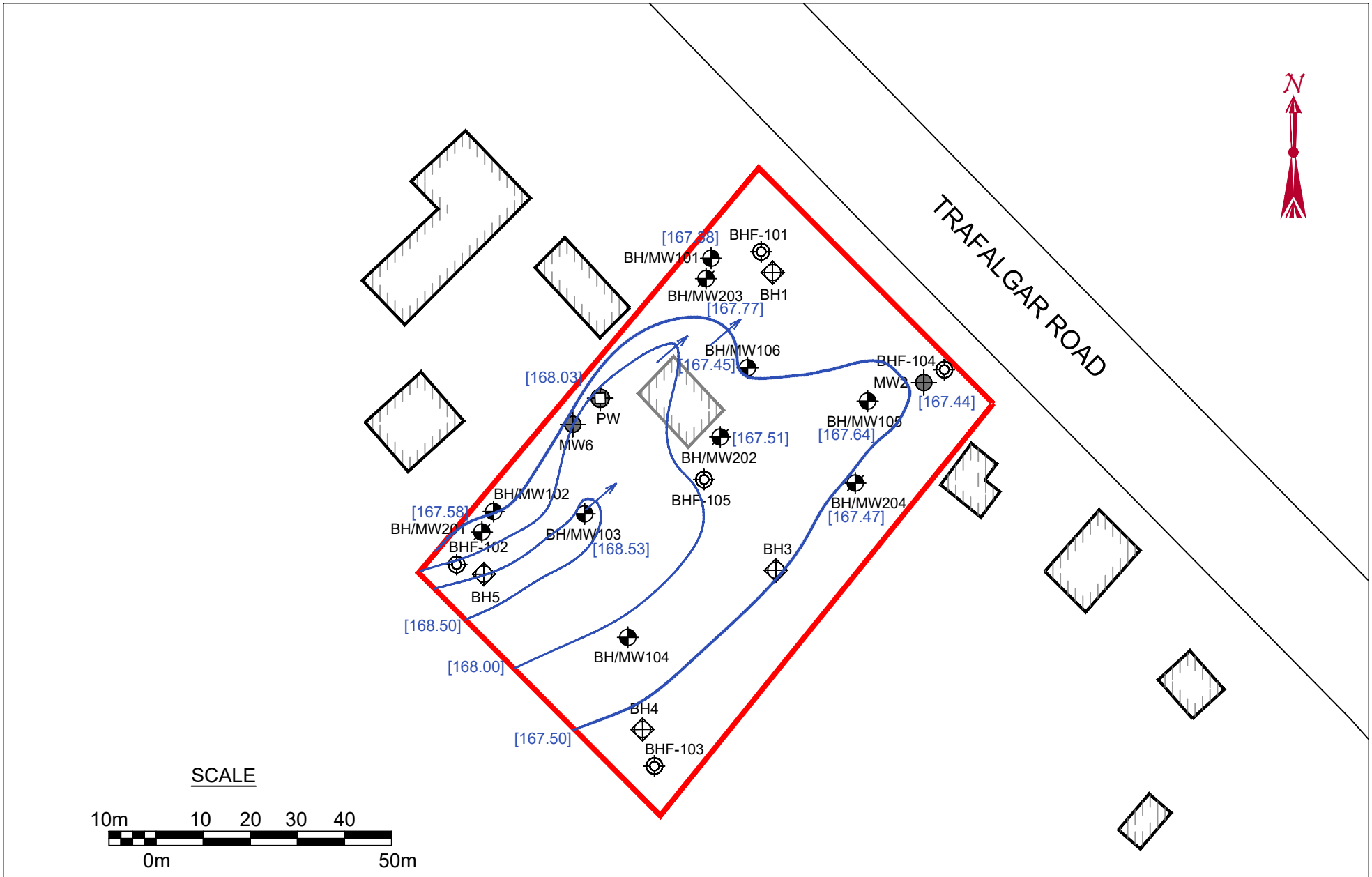
LEGEND

- TOPSOIL
- GRAVEL
- FILL
- CLAYEY SILT TILL
- SHALE/TILL COMPLEX
- SHALE BEDROCK
- WATER LEVEL
- [xx.xx] GROUND WATER ELEVATION (m asl) (NOVEMBER 9, 2021)

TITLE AND LOCATION

GEOLOGICAL CROSS SECTION A-A'
SUPPLEMENTAL HYDROGEOLOGICAL INVESTIGATION
3064 TRAFALGAR ROAD,
OAKVILLE, ONTARIO

PROJECT NO.	DWN.
BIGC-GEO-397G	L.C.K.
SCALE	CK.
AS NOTED	E.L.
DATE	FIG NO.
NOVEMBER 2021	7



B.I.G. CONSULTING INC.

t: (416) 214 - 4880 f: (416) 551 - 2633
12-5500 Tomken Rd.
Misissauga, ON L4W 2Z4
Canada

bigconsultinginc.com

LEGEND

- APPROXIMATE SITE BOUNDARY
- FORMER BUILDING FOOTPRINT
- APPROXIMATE LOCATION OF BOREHOLE/MONITORING WELL (BIG 2020)
- APPROXIMATE LOCATION OF BOREHOLE/MONITORING WELL (BIG 2021)
- APPROXIMATE LOCATION OF SURFACE WATER MONITORING WELL (BIG 2020)
- APPROXIMATE LOCATION OF BOREHOLE (FORWARD 2018)
- APPROXIMATE LOCATION OF PUMPING WELL (INSITU 2018)
- APPROXIMATE LOCATION OF MONITORING WELL (ALSTON 2017)
- APPROXIMATE LOCATION OF BOREHOLE (ALSTON 2017)
- [XX.XX] WATER LEVEL MEASUREMENT (NOVEMBER 9,2021)
- GROUNDWATER CONTOUR
- INTERPRETED DIRECTION OF GROUNDWATER FLOW

BASE MAP SOURCED FROM J.D.BARNES, DATED NOVEMBER 2017

TITLE AND LOCATION

GROUNDWATER CONTOUR MAP SUPPLEMENTAL HYDROGEOLOGICAL INVESTIGATION

3064 TRAFALGAR ROAD, OAKVILLE, ONTARIO

PROJECT NO.	DWN.
BIGC-GEO-397G	L.C.K.
SCALE	CK.
AS NOTED	E.L.
DATE	FIG NO.
NOVEMBER 2021	8

APPENDIX A: BOREHOLE LOGS

RECORD OF BOREHOLE No. BH/MW201

Project Number:	BIGC-ENV-397G	Drilling Location:	See Borehole Location Plan	Logged by:	MV
Project Client:	3064 Trafalgar Rd. Inc.	Drilling Method:	100 mm Solid Stem Augering/Rock Coring	Compiled by:	MV
Project Name:	Updated Geotechnical Investigation	Drilling Machine:	Truck Mounted Drill	Reviewed by:	SS
Project Location:	3064 Trafalgar Road, Oakville	Date Started:	3 Nov 21	Date Completed: 4 Nov 21	Revision No.: 0, 19/11/21

Lithology Plot	DESCRIPTION	Sample Type	Sample Number	Recovery (%)	SPT 'N' Value/RQD%	DEPTH (m)	ELEVATION (m)	FIELD TESTING: Penetration Testing (SPT ○ / DCPT ●); MTO Vane* (Intact △ / Remould ▲); Nilcon Vane* (Intact ◇ / Remould ◆); * Undrained Shear Strength (kPa) 20 40 60 80	LAB TESTING: Rinse pH Values 2 4 6 8 10 12; Soil Vapour Reading (parts per million (ppm)) 100 200 300 400; Lower Explosive Limit (LEL) W_P W W_L; Plastic 20 40 60 80 Liquid	INSTRUMENTATION INSTALLATION	COMMENTS
	Geodetic Ground Surface Elevation: 170.65 m										
	TOPSOIL: 80mm 170.57										
	FILL: clayey silt to silty clay, trace gravel, trace sand, pale brown, damp, firm 169.89	SS	1	70	5		170	○	23		
	CLAYEY SILT TILL: trace sand, trace gravel, occasional shale fragments, trace rootlets, brown, moist, very stiff to hard 0.8	SS	2	95	29	1		○	14		
		SS	3	100	32	2	169	○	12		
		SS	4	92	41		168	○	17		
	167.60	SS	5	100	50/8	3		50/8	5		
	BEDROCK: Shale, highly weathered to excellent quality, occasional limestone layers, reddish brown to pale grey, moist to damp 3.1					4	167				
		SS	6	100	50/5	5	166	50/5			
						6	165				
		AU	7				164				
	- 1st water strike @ 7.3 m bgs					7					
		AU	8			8	163				
							162				
		AU	9			9					
						10	161				
		AU	10			11	160				
	ROCK CORE BEGINS at 13.39 m						159				
	- Poor Quality	RC	1	100	43	12					
							158				
						13					
		RC	2	100	78	14	157	○			
							156		○		
						15					

B.I.G. Consulting Inc.
12-5500 Tomken Rd.
Mississauga, ON L4W 2Z4
Canada
T: 416-214-4880
F: 416-551-2633

▽ Groundwater depth on completion of drilling: Not measured m.

▼ Groundwater depth observed on 09/11/2021 at a depth of: 3.07 m.

Borehole details as presented, do not constitute a thorough understanding of all potential conditions present and requires interpretative assistance from a qualified Geotechnical Engineer. Also, borehole information should be read in conjunction with the geotechnical report for which it was commisioned and the accompanying'Notes to Record of Boreholes'.

Scale: 1 : 79

Continued on Next Page

RECORD OF BOREHOLE No. BH/MW201

Project Number: **BIGC-ENV-397G** Drilling Location: **See Borehole Location Plan** Logged by: **MV**

Lithology Plot	DESCRIPTION	Sample Type	Sample Number	Recovery (%)	SPT 'N' Value/RQD%	DEPTH (m)	ELEVATION (m)	FIELD TESTING: Penetration Testing (○ SPT ● DCPT; MTO Vane* △ Intact ▲ Remould; Nilcon Vane* ◇ Intact ◆ Remould; * Undrained Shear Strength (kPa) 20 40 60 80)	LAB TESTING: ★ Rinse pH Values 2 4 6 8 10 12; △ Soil Vapour Reading parts per million (ppm) 100 200 300 400; ▲ Lower Explosive Limit (LEL) W_P W W_L Plastic Liquid 20 40 60 80	INSTRUMENTATION INSTALLATION	COMMENTS
	- Good Quality **BEDROCK:** Shale, highly weathered to excellent quality, occasional limestone layers, reddish brown to pale grey, moist to damp										
	- Excellent Quality	RC	3	98	96	16	155	○			
	- Excellent Quality	RC	4	100	97	17	154	○			
	- Excellent Quality	RC	5	100	95	18	153	○			
	- Good Quality	RC	6	99	86	19	152	○			
	- Good Quality	RC	7	100	89	20	151	○			
	- Fair Quality Broken zones with some clay infill from 23.47 to 24.51 m	RC	8	100	59	21	150	○			
	- Fair Quality Some soft zones between 24.90 to 25.85 m	RC	9	100	63	22	149	○			
	- Fair Quality 142.96	RC	10	98	63	23	148	○			
	End of Borehole 27.7					24	147				
	Notes: 1. Borehole open upon completion of drilling. 2. Groundwater level reading not measured upon completion of drilling due to introduced drilling water. 3. Groundwater level reading at 3.07 m bgs on November 9, 2021.					25	146				
						26	145				
						27	144				
							143				

Borehole details as presented, do not constitute a thorough understanding of all potential conditions present and requires interpretative assistance from a qualified Geotechnical Engineer. Also, borehole information should be read in conjunction with the geotechnical report for which it was commisioned and the accompanying'Notes to Record of Boreholes'.

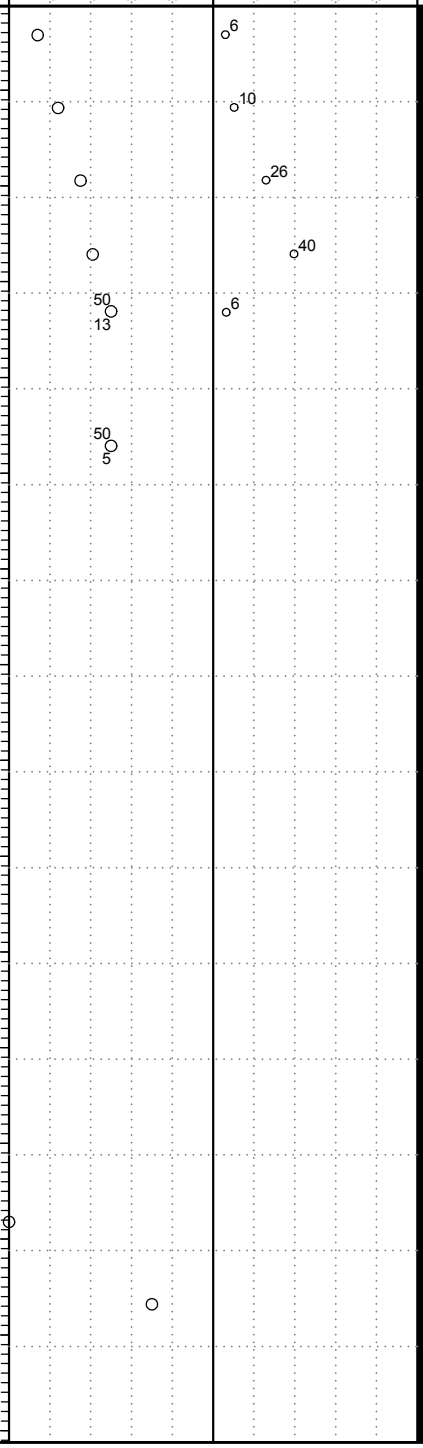
Scale: 1 : 79

RECORD OF BOREHOLE No. BM/MW202

Project Number:	BIGC-ENV-397G	Drilling Location:	See Borehole Location Plan	Logged by:	MV
Project Client:	3064 Trafalgar Rd. Inc.	Drilling Method:	100 mm Solid Stem Augering/Rock Coring	Compiled by:	MV
Project Name:	Updated Geotechnical Investigation	Drilling Machine:	Truck Mounted Drill	Reviewed by:	SS
Project Location:	3064 Trafalgar Road, Oakville	Date Started:	18 Oct 21	Date Completed: 19 Oct 21	Revision No.: 0, 19/11/21

Geodetic Ground Surface Elevation: 170.88 m

DESCRIPTION	Sample Type	Sample Number	Recovery (%)	SPT 'N' Value/RQD%	DEPTH (m)	ELEVATION (m)
GRAVEL: 150mm (170.73)						
FILL: crushed shale backfill, some clay, reddish brown, damp, stiff (0.2 / 170.12)	SS	1	67	14		
CLAYEY SILT TILL: trace sand, trace gravel, occasional shale fragments, brown, moist, very stiff to hard (0.8)	SS	2	100	24	1	170
	SS	3	100	35	2	169
	SS	4	100	41		
- 1st water strike @ 2.9 m bgs (167.68)	SS	5	100	50/13	3	168
BEDROCK: Shale, highly weathered to excellent quality, occasional limetone layers, reddish brown to pale grey, damp to moist (3.2)	SS	6	100	50/5	4	167
	AU	7			5	166
	AU	8			6	165
	AU	9			7	164
	AU	10			8	163
					9	162
					10	161
					11	160
ROCK CORE BEGINS at 12.60 m - Very Poor Quality	RC	1	100	0	12	159
- Fair Quality soft broken zone with clay infill from 13.31 to13.34 m, 13.96 to 14 m and 14.13 to 14.15 m	RC	2	100	70	13	158
					14	157
					15	156



INSTRUMENTATION INSTALLATION

COMMENTS

B.I.G. Consulting Inc.
12-5500 Tomken Rd.
Mississauga, ON L4W 2Z4
Canada
T: 416-214-4880
F: 416-551-2633

Groundwater depth on completion of drilling: Not measured m.

Groundwater depth observed on 09/11/2021 at a depth of: 3.07 m.

Borehole details as presented, do not constitute a thorough understanding of all potential conditions present and requires interpretative assistance from a qualified Geotechnical Engineer. Also, borehole information should be read in conjunction with the geotechnical report for which it was commisioned and the accompanying'Notes to Record of Boreholes'.

Scale: 1 : 79

Continued on Next Page

RECORD OF BOREHOLE No. BM/MW202

Project Number: **BIGC-ENV-397G** Drilling Location: **See Borehole Location Plan** Logged by: **MV**

Lithology Plot	DESCRIPTION	Sample Type	Sample Number	Recovery (%)	SPT 'N' Value/RQD%	DEPTH (m)	ELEVATION (m)	FIELD TESTING: Penetration Testing (○ SPT ● DCPT); MTO Vane* (△ Intact ▲ Remould); Nilcon Vane* (◇ Intact ◆ Remould); * Undrained Shear Strength (kPa) 20 40 60 80	LAB TESTING: ★ Rinse pH Values 2 4 6 8 10 12; Soil Vapour Reading △ parts per million (ppm) 100 200 300 400; ▲ Lower Explosive Limit (LEL) W_P W W_L Plastic Liquid 20 40 60 80	INSTRUMENTATION INSTALLATION	COMMENTS
	BEDROCK: Shale, highly weathered to excellent quality, occasional limetone layers, reddish brown to pale grey, damp to moist - Good Quality soft broken zone with clay infill from 14.93 to 15.02 m and 15.5 to 15.52 m	RC	3	105	80	16	155	○			
	- Poor Quality soft broken zone with clay infill from 15.97 to 16.40m and 17.12 to 17.16m	RC	4	100	44	17	154	○			
	- Fair Quality	RC	5	100	74	18	153	○			
	- Good Quality soft broken zone with clay infill from 19.21 to 19.25m and 20.16 to 20.19m	RC	6	99	89	19	152	○			
	- Fair Quality small fractured zone from 21.14 to 21.18m	RC	7	101	72	20	151	○			
	- Good Quality some oxidised laminae at 16.92 m	RC	8	101	84	21	150	○			
	- Excellent Quality	RC	9	101	95	22	149	○			
	- Excellent Quality	RC	10	100	100	23	148	○			
	- Good Quality 142.84	RC	11	93	84	24	147	○			
	End of Borehole 28.0 Notes: 1. Borehole open upon completion of drilling. 2. Groundwater level reading not measured upon completion of drilling due to introduced drilling water. 3. Groundwater level reading at 3.07 m bgs on November 9, 2021.					25	146				
						26	145		○		
						27	144				
						28	143				

Borehole details as presented, do not constitute a thorough understanding of all potential conditions present and requires interpretative assistance from a qualified Geotechnical Engineer. Also, borehole information should be read in conjunction with the geotechnical report for which it was commisioned and the accompanying'Notes to Record of Boreholes'.

Scale: 1 : 79

RECORD OF BOREHOLE No. BM/MW203

Project Number:	BIGC-ENV-397G	Drilling Location:	See Borehole Location Plan	Logged by:	MV
Project Client:	3064 Trafalgar Rd. Inc.	Drilling Method:	100 mm Solid Stem Augering/Rock Coring	Compiled by:	MV
Project Name:	Updated Geotechnical Investigation	Drilling Machine:	Truck Mounted Drill	Reviewed by:	SS
Project Location:	3064 Trafalgar Road, Oakville	Date Started:	1 Nov 21	Date Completed: 2 Nov 21	Revision No.: 0, 19/11/21

LITHOLOGY PROFILE		SOIL SAMPLING						FIELD TESTING	LAB TESTING		
Lithology Plot	DESCRIPTION Geodetic Ground Surface Elevation: 170.46 m	Sample Type	Sample Number	Recovery (%)	SPT 'N' Value/RQD%	DEPTH (m)	ELEVATION (m)	Penetration Testing: ○ SPT ● DCPT; MTO Vane* △ Intact ▲ Remould; Nilcon Vane* ◇ Intact ◆ Remould; * Undrained Shear Strength (kPa) 20 40 60 80	★ Rinse pH Values 2 4 6 8 10 12; Soil Vapour Reading △ parts per million (ppm) 100 200 300 400; ▲ Lower Explosive Limit (LEL) W_P W W_L Plastic Liquid 20 40 60 80	INSTRUMENTATION INSTALLATION	COMMENTS
	GRAVEL: 80mm 170.38										
	FILL: crushed shale backfill, some clay, reddish brown, moist, stiff	SS	1	70	12				15		
	silty clay to clayey silt, trace gravel, mottled brown, damp, reworked, stiff 168.94	SS	2	62	9	1	170		12		
	CLAYEY SILT T?ILL: trace sand, trace gravel, occasional shale fragments, brown, moist, hard 1.5	SS	3	100	31	2	169		12		
		SS	4	62	37/8	3	168	37 8	12		
		SS	5	182	64	4	167		11		
	165.89	SS	6	100	50/5	5	166	50 5			
	BEDROCK: Shale, highly weathered to excellent quality, occasional limetone layers, reddish brown to pale grey, moist to damp 4.6					6	165				
		AU	7			7	164				
	- 1st water strike @ 7.6 m bgs	AU	8			8	163				
		AU	9			9	162				
		AU	10			10	161				
	ROCK CORE BEGINS at 13.44 m	RC	1	86	84	11	160				
	- Good Quality					12	159				
		RC	2	97	43	13	158				
						14	157				
						15	156				

B.I.G. Consulting Inc.
12-5500 Tomken Rd.
Mississauga, ON L4W 2Z4
Canada
T: 416-214-4880
F: 416-551-2633

▽ Groundwater depth on completion of drilling: Not measured m.

▼ Groundwater depth observed on 09/11/2021 at a depth of: 2.69 m.

Borehole details as presented, do not constitute a thorough understanding of all potential conditions present and requires interpretative assistance from a qualified Geotechnical Engineer. Also, borehole information should be read in conjunction with the geotechnical report for which it was commisioned and the accompanying'Notes to Record of Boreholes'.

Scale: 1 : 79

Continued on Next Page

RECORD OF BOREHOLE No. BM/MW203

Project Number: **BIGC-ENV-397G** Drilling Location: **See Borehole Location Plan** Logged by: **MV**

Lithology Plot	DESCRIPTION	Sample Type	Sample Number	Recovery (%)	SPT 'N' Value/RQD%	DEPTH (m)	ELEVATION (m)	FIELD TESTING: Penetration Testing (○ SPT ● DCPT; MTO Vane* △ Intact ▲ Remould; Nilcon Vane* ◇ Intact ◆ Remould; * Undrained Shear Strength (kPa) 20 40 60 80)	LAB TESTING: ★ Rinse pH Values 2 4 6 8 10 12; Soil Vapour Reading △ parts per million (ppm) 100 200 300 400; ▲ Lower Explosive Limit (LEL) W_P W W_L Plastic Liquid 20 40 60 80	INSTRUMENTATION INSTALLATION	COMMENTS
	- Poor Quality Highly fractured throughout **BEDROCK:** Shale, highly weathered to excellent quality, occasional limetone layers, reddish brown to pale grey, moist to damp										
	- Excellent Quality	RC	3	100	99	16	155				
	- Good Quality bedding plane fractures between 17.78 to 17.98 m	RC	4	97	77	17	154				
	- Excellent Quality	RC	5	98	91	18	153				
	- Excellent Quality	RC	6	100	100	19	152				
	- Good Quality	RC	7	100	86	20	151				
	- Excellent Quality	RC	8	100	100	21	150				
	- Excellent Quality	RC	9	100	100	22	149				
	- Excellent Quality	RC	10	100	100	23	148				
	142.82					24	147				
	End of Borehole 27.6					25	146				
	Notes: 1. Borehole open upon completion of drilling. 2. Groundwater level reading not measured upon completion of drilling due to introduced drilling water. 3. Groundwater level reading at 2.69 m bgs on November 9, 2021.					26	145				
						27	144				
							143				

Borehole details as presented, do not constitute a thorough understanding of all potential conditions present and requires interpretative assistance from a qualified Geotechnical Engineer. Also, borehole information should be read in conjunction with the geotechnical report for which it was commisioned and the accompanying'Notes to Record of Boreholes'.

Scale: 1 : 79

RECORD OF BOREHOLE No. BM/MW204

Project Number:	BIGC-ENV-397G	Drilling Location:	See Borehole Location Plan	Logged by:	MV
Project Client:	3064 Trafalgar Rd. Inc.	Drilling Method:	100 mm Solid Stem Augering/Rock Coring	Compiled by:	MV
Project Name:	Updated Geotechnical Investigation	Drilling Machine:	Truck Mounted Drill	Reviewed by:	SS
Project Location:	3064 Trafalgar Road, Oakville	Date Started:	20 Oct 21	Date Completed: 29 Oct 21	Revision No.: 0, 19/11/21

Geodetic Ground Surface Elevation: 170.12 m

Lithology Plot	DESCRIPTION	Sample Type	Sample Number	Recovery (%)	SPT 'N' Value/RQD%	DEPTH (m)	ELEVATION (m)
	GRAVEL: 150mm (169.97)						
	FILL: crushed shale backfill, some clay, reddish brown, damp, firm (0.2)	SS	1	70	7		
	reworked clayey silt to silty clay, trace gravel, mottled reddish brown, damp, firm to very stiff	SS	2	100	23	1	169
	some sandy laminae below 1.07 m						
	(168.30)	SS	3	100	42	2	168
	CLAYEY SILT TILL: trace sand, trace gravel, occasional shale fragments, brown, moist, hard (1.8)	SS	4	75	74		
	(166.92)	SS	5	100	50/15	3	167
	BEDROCK: Shale, highly weathered to excellent quality, occasional limetone layers, reddish brown to pale grey, moist to damp (3.2)	SS	6	100	50/8	4	166
		AU	7			5	165
		AU	8			6	164
		AU	9			7	163
		AU	10			8	162
	ROCK CORE BEGINS at 13.38 m	RC	1	100	69	9	161
	- Fair Quality					10	160
		RC	2	100	65	11	159
						12	158
						13	157
						14	156
						15	

FIELD TESTING

Penetration Testing: ○ SPT ● DCPT

MTO Vane*: △ Intact ▲ Remould

Nilcon Vane*: ◇ Intact ◆ Remould

* Undrained Shear Strength (kPa): 20 40 60 80

LAB TESTING

★ Rinse pH Values: 2 4 6 8 10 12

Soil Vapour Reading: △ parts per million (ppm): 100 200 300 400

▲ Lower Explosive Limit (LEL): W_P W W_L

Plastic Liquid: 20 40 60 80

INSTRUMENTATION INSTALLATION

COMMENTS

B.I.G. Consulting Inc.
12-5500 Tomken Rd.
Mississauga, ON L4W 2Z4
Canada
T: 416-214-4880
F: 416-551-2633

▽ Groundwater depth on completion of drilling: Not measured m.

▼ Groundwater depth observed on 09/11/2021 at a depth of: 2.65 m.

Borehole details as presented, do not constitute a thorough understanding of all potential conditions present and requires interpretative assistance from a qualified Geotechnical Engineer. Also, borehole information should be read in conjunction with the geotechnical report for which it was commisioned and the accompanying'Notes to Record of Boreholes'.

Scale: 1 : 79

Continued on Next Page

RECORD OF BOREHOLE No. BM/MW204

Project Number: **BIGC-ENV-397G** Drilling Location: **See Borehole Location Plan** Logged by: **MV**

Lithology Plot	DESCRIPTION	Sample Type	Sample Number	Recovery (%)	SPT 'N' Value/RQD%	DEPTH (m)	ELEVATION (m)	FIELD TESTING: Penetration Testing (○ SPT ● DCPT; MTO Vane* △ Intact ▲ Remould; Nilcon Vane* ◇ Intact ◆ Remould; * Undrained Shear Strength (kPa) 20 40 60 80)	LAB TESTING: ★ Rinse pH Values 2 4 6 8 10 12; Soil Vapour Reading △ parts per million (ppm) 100 200 300 400; ▲ Lower Explosive Limit (LEL) W_P W W_L Plastic Liquid 20 40 60 80	INSTRUMENTATION INSTALLATION	COMMENTS
	- Fair Quality Some soft broken zones from 14.37 to 14.76 m Some broken zones with clay infill from 14.44 to 15.08 m **BEDROCK:** Shale, highly weathered to excellent quality, occasional limetone layers, reddish brown to pale grey, moist to damp - Poor Quality Highly factured throughout	RC	3	96	39	16	154	○			
	- Fair Quality Some soft broken zones from 17.39 to 17.72 m	RC	4	100	63	17 18	153 152	○			
	- Fair Quality Some fracture zones with clay infil from 18.67 to 19.25m	RC	5	99	72	19	151	○			
	- Excellent Quality	RC	6	100	94	20 21	150 149	○			
	- Fair Quality	RC	7	97	72	22	148	○			
	- Excellent Quality	RC	8	100	95	23 24	147 146	○			
	- Excellent Quality	RC	9	99	94	25	145	○			
	- Excellent Quality	RC	10	97	97	26 27	144 143	○			
	142.48 **End of Borehole** 27.6 Notes: 1. Borehole open upon completion of drilling. 2. Groundwater level reading not measured upon completion of drilling due to introduced drilling water. 3. Groundwater level reading at 2.65 m bgs on November 9, 2021.										

Borehole details as presented, do not constitute a thorough understanding of all potential conditions present and requires interpretative assistance from a qualified Geotechnical Engineer. Also, borehole information should be read in conjunction with the geotechnical report for which it was commisioned and the accompanying'Notes to Record of Boreholes'.

Scale: 1 : 79

B.I.G. Consulting Inc.
12-5500 Tomken Road
Mississauga, ON L4W 2Z4
www.bigconsultinginc.com

RECORD OF TESTPIT No. BH/MW101

METRIC 1 OF 1

PROJ. NO. BIGC-ENV-397A | LOCATION 3064 Trafalgar Road, Oakville | ORIGINATED BY A.B

DATUM Geotedic | BOREHOLE TYPE SSA | COMPILED BY M.V

PROJ. NAME Geotechnical Investigation | DATE 2020.06.11 - 2020.06.11 | CHECKED BY VB

ELEV / DEPTH	DESCRIPTION	STRAT PLOT	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: "N" VALUES	GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH kPa: ○ UNCONFINED, ● QUICK TRIAXIAL, + FIELD VANE, × LAB VANE (20 40 60 80 100)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L — WATER CONTENT (%) (20 40 60)	UNIT WEIGHT γ kN/m³	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
169.74											
0.0	**FILL:** sand and gravel, trace rootlets, brown, moist, dense --- asphalt 380 mm --- clayey silt, trace sand, trace gravel, trace rootlets, brown, moist, firm --- sand, black, moist, loose ---		1	SS	32				○		
			2	SS	5				○		
167.9			3	SS	17	▼			○		
1.8	**CLAYEY SILT TILL:** trace sand, trace gravel, occasional shale fragments, brown, moist, very stiff to hard		4	SS	40				○		2, 14, 64, 20
166.7											
3.0	**BEDROCK:** Shale, highly weathered, occasional Limestone fragments, reddishbrown, moist to damp, hard		5	SS	50/ 10cm				○		
			6	SS	50/ 5cm				○		
	- wet		7	SS	50/ 7.5cm	▽			○		
162.0			8	SS	50/ 5cm				○		
7.7	**End of Borehole** Notes: 1. Borehole open to 7.7 m bgs upon completion of drilling. 2. Ground water leve reading measured at 6.7 m bgs upon completion of drilling. 3. Water level reading at 1.95 m bgs on June 23, 2020.										

$+^3$, $\times^3$: Numbers refer to Sensitivity ○ 3% STRAIN AT FAILURE

B.I.G. Consulting Inc.
12-5500 Tomken Road
Mississauga, ON L4W 2Z4
www.bigconsultinginc.com

RECORD OF TESTPIT No. BH/MW102

METRIC 1 OF 1

PROJ. NO. BIGC-ENV-397A | LOCATION 3064 Trafalgar Road, Oakville | ORIGINATED BY A.B

DATUM Geotedic | BOREHOLE TYPE SSA | COMPILED BY M.V

PROJ. NAME Geotechnical Investigation | DATE 2020.06.17 - 2020.06.17 | CHECKED BY VB

ELEV / DEPTH	DESCRIPTION	STRAT PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" VALUES	GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH kPa (○ UNCONFINED, ● QUICK TRIAXIAL, + FIELD VANE, × LAB VANE) (20 40 60 80 100)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L — WATER CONTENT (%) (20 40 60)	UNIT WEIGHT γ kN/m³	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
170.53											
0.0	**FILL:** clayey silt, trace sand, trace gravel, trace rootlets, trace organics, brown, moist, firm		1	SS	7				○		
169.8											
0.8	**CLAYEY SILT TILL:** trace sand, trace gravel, occasional shale fragments, brown, moist, very stiff to hard		2	SS	22				○		
			3	SS	29				○		
			4	SS	35				○		
167.5											
3.0	**BEDROCK:** Shale, highly weathered, occasional Limestone fragments, reddishbrown, moist to damp, hard		5	SS	50/ 10cm	▼			○		
			6	SS	50/ 3cm				○		
			7	SS	50/ 5cm				○		
162.8			8	SS	50/ 5cm				○		
7.7	**End of Borehole** Notes: 1. Borehole open to 7.7 m bgs upon completion of drilling. 2. Ground water leve reading measured at 6.7 m bgs upon completion of drilling. 3. Water level reading at 3.14 m bgs on June 23, 2020.										

+ ³, × ³: Numbers refer to Sensitivity ○ 3% STRAIN AT FAILURE

B.I.G. Consulting Inc.
12-5500 Tomken Road
Mississauga, ON L4W 2Z4
www.bigconsultinginc.com

RECORD OF TESTPIT No. BH/MW103

METRIC 1 OF 2

PROJ. NO. BIGC-ENV-397A | LOCATION 3064 Trafalgar Road, Oakville | ORIGINATED BY A.B

DATUM Geotedic | BOREHOLE TYPE SSA+ NQ size Rock Coring | COMPILED BY M.V

PROJ. NAME Geotechnical Investigation | DATE 2020.06.17 - 2020.06.18 | CHECKED BY VB

ELEV / DEPTH	DESCRIPTION	STRAT PLOT	SAMPLES NUMBER	TYPE	"N" VALUES	GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 / SHEAR STRENGTH kPa ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE × LAB VANE 20 40 60 80 100	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L WATER CONTENT (%) 20 40 60	UNIT WEIGHT γ kN/m³	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
170.34											
0.0	**FILL:** clayey silt, trace sand, trace gravel, trace rootlets, brown, moist, soft to very stiff		1	SS	3						
			2	SS	16						
168.8											
1.5	**CLAYEY SILT TILL:** trace sand, trace gravel, brown, moist, very stiff		3	SS	23	▼					
167.9											
2.4	**BEDROCK:** Shale, highly weathered to excellent conditions, occasional Limestone layers, reddishbrown, moist to damp, hard		4	SS	24						
			5	SS	50/ 10cm						
			6	SS	50/ 5cm	▽					
			7	SS	50/ 3cm						
	- 1st water strike		8	SS	50/ 3cm						
			9	SS	50/ 3cm						
			10	SS	50/ 8cm						

Continued Next Page

$+^3$, $\times^3$: Numbers refer to Sensitivity ○ 3% STRAIN AT FAILURE

B.I.G. Consulting Inc.
12-5500 Tomken Road
Mississauga, ON L4W 2Z4
www.bigconsultinginc.com

RECORD OF TESTPIT No. BH/MW103

METRIC 2 OF 2

PROJ. NO. BIGC-ENV-397A | LOCATION 3064 Trafalgar Road, Oakville | ORIGINATED BY A.B

DATUM Geotedic | BOREHOLE TYPE SSA+ NQ size Rock Coring | COMPILED BY M.V

PROJ. NAME Geotechnical Investigation | DATE 2020.06.17 - 2020.06.18 | CHECKED BY VB

ELEV / DEPTH	DESCRIPTION	STRAT PLOT	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: "N" VALUES	GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH kPa (○ UNCONFINED, ● QUICK TRIAXIAL, + FIELD VANE, × LAB VANE) (20 40 60 80 100)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L / WATER CONTENT (%) (20 40 60)	UNIT WEIGHT γ kN/m³	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
	BEDROCK: Shale, highly weathered to excellent conditions, occasional Limestone layers, reddishbrown, moist to damp, hard *(continued)*										
	- wet sand seam		11	SS	50/ 3cm				○		
	ROCK-CORE STARTS - Poor Quality (Recovery 44%, RQD 33%)		RC-1	NQ							
	highly weathered 125 mm		RC-2	NQ							
	- Fair Quality (Recovery 92%, RQD 70%)										
	- Excellent Quality (Recovery 96%, RQD 92%)		RC-3	NQ							
	- Excellent Quality (Recovery 98%, RQD 93%)		RC-4	NQ							
	- Excellent Quality (Recovery 98%, RQD 95%)		RC-5	NQ							
	- Excellent Quality (Recovery 100%, RQD 96%)		RC-6	NQ							
150.2											
20.1	**End of Borehole** Notes: 1. Borehole open to 20.1 m bgs upon completion of drilling. 2. Water level reading at 1.83 m bgs on June 23, 2020.										

$+^3$, $\times^3$: Numbers refer to Sensitivity ○ 3% STRAIN AT FAILURE

B.I.G. Consulting Inc.
12-5500 Tomken Road
Mississauga, ON L4W 2Z4
www.bigconsultinginc.com

RECORD OF TESTPIT No. BH/MW104

METRIC

PROJ. NO. BIGC-ENV-397A | LOCATION 3064 Trafalgar Road, Oakville | ORIGINATED BY A.B
DATUM Geotedic | BOREHOLE TYPE SSA+ NQ size Rock Coring | COMPILED BY M.V
PROJ. NAME Geotechnical Investigation | DATE 2020.06.16 - 2020.06.16 | CHECKED BY VB

ELEV / DEPTH	DESCRIPTION	STRAT PLOT	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: "N" VALUES	GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH kPa: ○ UNCONFINED, ● QUICK TRIAXIAL, + FIELD VANE, × LAB VANE (20 40 60 80 100)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L — WATER CONTENT (%) (20 40 60)	UNIT WEIGHT γ kN/m³	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
169.25											
0.0	**FILL:** clayey silt, trace sand, trace gravel, trace rootlets, brown, moist, firm		1	SS	5				○		
			2	SS	7				○		
167.6											
1.7	**CLAYEY SILT TILL:** trace sand, trace gravel, brown, moist, firm to hard		3	SS	20				○		
			4	SS	57				○		0, 5, 79, 16
166.3											
3.0	**BEDROCK:** Shale, highly weathered to excellent conditions, occasional Limestone layers, reddishbrown, moist to damp, hard		5	SS	50/ 5cm				○		
			6	SS	50/ 5cm				○		
			7	SS	50/ 3cm				○		
			8	SS	50/ 3cm				○		
			9	SS	50/ 3cm				○		
			10	SS	50/ 3cm				○		

Continued Next Page

$+^3$, $\times^3$: Numbers refer to Sensitivity ○ 3% STRAIN AT FAILURE

B.I.G. Consulting Inc.
12-5500 Tomken Road
Mississauga, ON L4W 2Z4
www.bigconsultinginc.com

RECORD OF TESTPIT No. BH/MW104

METRIC 2 OF 2

PROJ. NO. BIGC-ENV-397A | LOCATION 3064 Trafalgar Road, Oakville | ORIGINATED BY A.B

DATUM Geotedic | BOREHOLE TYPE SSA+ NQ size Rock Coring | COMPILED BY M.V

PROJ. NAME Geotechnical Investigation | DATE 2020.06.16 - 2020.06.16 | CHECKED BY VB

ELEV / DEPTH	DESCRIPTION	STRAT PLOT	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: "N" VALUES	GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH kPa: ○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL × LAB VANE (20 40 60 80 100)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L / WATER CONTENT (%) (20 40 60)	UNIT WEIGHT γ kN/m³	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
	BEDROCK: Shale, highly weathered to excellent conditions, occasional Limestone layers, reddishbrown, moist to damp, hard *(continued)*										
	ROCK-CORE STARTS - Fair Quality (Recovery 67%, RQD 64%)		RC-1	NQ					○		
	- Fair Quality (Recovery 97%, RQD 60%) --- highly weathered 150 mm ---		RC-2	NQ							
	- Good Quality (Recovery 97%, RQD 87%)		RC-3	NQ							
	- Good Quality (Recovery 98%, RQD 85%)		RC-4	NQ							
	- Good Quality (Recovery 97%, RQD 83%)		RC-5	NQ							
149.5	- Excellent Quality (Recovery 100%, RQD 98%)		RC-6	NQ							
19.8	**End of Borehole** Notes: 1. Borehole open to 19.6 m bgs upon completion of drilling. 2. Water level reading at 1.36 m bgs on June 23, 2020.										

$+^3$, $\times^3$: Numbers refer to Sensitivity ○ 3% STRAIN AT FAILURE

B.I.G. Consulting Inc.
12-5500 Tomken Road
Mississauga, ON L4W 2Z4
www.bigconsultinginc.com

RECORD OF TESTPIT No. BH/MW105

METRIC

PROJ. NO. BIGC-ENV-397A | LOCATION 3064 Trafalgar Road, Oakville | ORIGINATED BY A.B

DATUM Geotedic | BOREHOLE TYPE SSA+ NQ size Rock Coring | COMPILED BY M.V

PROJ. NAME Geotechnical Investigation | DATE 2020.06.15 - 2020.06.15 | CHECKED BY VB

ELEV / DEPTH	DESCRIPTION	STRAT PLOT	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: "N" VALUES	GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH kPa: ○ UNCONFINED, ● QUICK TRIAXIAL, + FIELD VANE, × LAB VANE (20 40 60 80 100)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L — WATER CONTENT (%) (20 40 60)	UNIT WEIGHT γ kN/m³	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
169.72											
0.0	**FILL:** clayey silt, trace sand, trace gravel, trace rootlets, brown, moist, firm		1	SS	7				○		
			2	SS	8				○		
168.2											
1.5	**CLAYEY SILT TILL:** trace sand, trace gravel, occasional shale fragments, brown, moist, hard		3	SS	31				○		
			4	SS	46				○		
	------- sand seam -------		5	SS	67/ 28cm				○		
166.2											
3.5	**BEDROCK:** Shale, highly weathered to excellent conditions, occasional Limestone layers, reddishbrown, moist to damp, hard		6	SS	50/ 5cm				○		
			7	SS	50/ 3cm				○		
			8	SS	50/ 15cm				○		
	- 1st water strike, spoon wet		9	SS	50/ 5cm				○		
	- spoon wet		10	SS	50/ 13cm				○		

Continued Next Page

+ 3, × 3: Numbers refer to Sensitivity ○ 3% STRAIN AT FAILURE

B.I.G. Consulting Inc.
12-5500 Tomken Road
Mississauga, ON L4W 2Z4
www.bigconsultinginc.com

RECORD OF TESTPIT No. BH/MW105

METRIC 2 OF 2

PROJ. NO. BIGC-ENV-397A | LOCATION 3064 Trafalgar Road, Oakville | ORIGINATED BY A.B

DATUM Geotedic | BOREHOLE TYPE SSA+ NQ size Rock Coring | COMPILED BY M.V

PROJ. NAME Geotechnical Investigation | DATE 2020.06.15 - 2020.06.15 | CHECKED BY VB

ELEV / DEPTH	DESCRIPTION	STRAT PLOT	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: "N" VALUES	GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH kPa (20 40 60 80 100): ○ UNCONFINED, ● QUICK TRIAXIAL, + FIELD VANE, × LAB VANE	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L / WATER CONTENT (%) (20 40 60)	UNIT WEIGHT γ kN/m³	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
	BEDROCK: Shale, highly weathered to excellent conditions, occasional Limestone layers, reddishbrown, moist to damp, hard *(continued)*										
	- spon wet		11	SS	50/ 5cm				○		
	ROCK-CORE STARTS - pebble rocks - Poor Quality (Recovery 58%, RQD 39%)		RC-1	NQ							
	- Good Quality (Recovery 98%, RQD 88%)		RC-2	NQ							
	- Excellent Quality (Recovery 98%, RQD 95%)		RC-3	NQ							
	- Excellent Quality (Recovery 98%, RQD 98%)		RC-4	NQ							
	- Good Quality (Recovery 97%, RQD 82%)		RC-5	NQ							
	- Good Quality (Recovery 81%, RQD 80%)		RC-6	NQ							
149.3											
20.4	**End of Borehole** Notes: 1. Borehole open to 20.1 m bgs upon completion of drilling. 2. Water level reading at 2.15 m bgs on June 23, 2020.										

$+^3$, $\times^3$: Numbers refer to Sensitivity ○ 3% STRAIN AT FAILURE

B.I.G. Consulting Inc.
12-5500 Tomken Road
Mississauga, ON L4W 2Z4
www.bigconsultinginc.com

RECORD OF TESTPIT No. BH/MW106

METRIC 1 OF 2

PROJ. NO. BIGC-ENV-397A | LOCATION 3064 Trafalgar Road, Oakville | ORIGINATED BY A.B

DATUM Geotedic | BOREHOLE TYPE SSA+ NQ size Rock Coring | COMPILED BY M.V

PROJ. NAME Geotechnical Investigation | DATE 2020.06.11 - 2020.06.12 | CHECKED BY VB

ELEV / DEPTH	DESCRIPTION	STRAT PLOT	SAMPLES: NUMBER	TYPE	"N" VALUES	GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH kPa: ○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL × LAB VANE (20 40 60 80 100)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L — WATER CONTENT (%) (20 40 60)	UNIT WEIGHT γ kN/m³	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
170.57										
0.0	**FILL:** sand and gravel, brown, moist, loose --- clayey silt, trace sand, trace gravel, trace rootlets, brown, moist, firm		1	SS	7				○	
169.8										
0.8	**CLAYEY SILT TILL:** trace sand, trace gravel, occasional shale fragments, brown, moist, very stiff to hard		2	SS	24				○	
			3	SS	34				○	
			4	SS	42	▼			○	
			5	SS	58				○	
166.0										
4.6	**BEDROCK:** Shale, highly weathered to excellent conditions, occasional Limestone layers, reddishbrown, moist to damp, hard		6	SS	50/ 8cm				○	
	- spoon wet		7	SS	50/ 5cm				○	
			8	SS	50/ 5cm				○	
			9	SS	50/ 5cm				○	
			10	SS	50/ 5cm				○	

Continued Next Page

$+^3$, $\times^3$: Numbers refer to Sensitivity ○ 3% STRAIN AT FAILURE

B.I.G. Consulting Inc.
12-5500 Tomken Road
Mississauga, ON L4W 2Z4
www.bigconsultinginc.com

RECORD OF TESTPIT No. BH/MW106

METRIC 2 OF 2

PROJ. NO. BIGC-ENV-397A | LOCATION 3064 Trafalgar Road, Oakville | ORIGINATED BY A.B

DATUM Geotedic | BOREHOLE TYPE SSA+ NQ size Rock Coring | COMPILED BY M.V

PROJ. NAME Geotechnical Investigation | DATE 2020.06.11 - 2020.06.12 | CHECKED BY VB

ELEV / DEPTH	DESCRIPTION	STRAT PLOT	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: "N" VALUES	GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH kPa (20 40 60 80 100): ○ UNCONFINED, ● QUICK TRIAXIAL, + FIELD VANE, × LAB VANE	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L / WATER CONTENT (%) (20 40 60)	UNIT WEIGHT γ kN/m³	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
	BEDROCK: Shale, highly weathered to excellent conditions, occasional Limestone layers, reddishbrown, moist to damp, hard *(continued)*										
	ROCK-CORE STARTS		11	SS	50/5cm				○		
	- Poor Quality (Recovery 96%, RQD 38%)		RC-1	NQ							
	- Good Quality (Recovery 98%, RQD 84%)		RC-2	NQ							
	highly weathered 200 mm		RC-3	NQ							
	- Fair Quality (Recovery 96%, RQD 61%)										
	- Excellent Quality (Recovery 93%, RQD 93%)		RC-4	NQ							
	- Excellent Quality (Recovery 98%, RQD 93%)		RC-5	NQ							
150.5	- Excellent Quality (Recovery 95%, RQD 93%)		RC-6	NQ							
20.1	**End of Borehole** Notes: 1. Borehole open to 20.1 m bgs upon completion of drilling. 2. Water level reading at 2.93 m bgs on June 23, 2020.										

$+^3$, $\times^3$: Numbers refer to Sensitivity ○ 3% STRAIN AT FAILURE

CLIENT: Distrikt Development	METHOD: Augering and Split Spoon Sampling	**BH No.: BH1**
PROJECT: 3064 Trafalgar Road	PROJECT ENGINEER: VN / ELEV. (m) 101.34	
LOCATION: Oakville, ON	NORTHING: / EASTING:	PROJECT NO.: CT2616.00

SAMPLE TYPE: AUGER | DRIVEN | CORING | DYNAMIC CONE | SHELBY | SPLIT SPOON

GWL (m)	SOIL DESCRIPTION	DEPTH (m)	ELEVATION (m)	SAMPLE NO.	SAMPLE TYPE	SPT(N)	Well Construction	REMARKS
	200 mm TOPSOIL	0	101	1A		9		Borehole cave-in at 7.3 m and groundwater level at 3.7 m below ground surface on completion.
	stiff damp to moist dark brown to brown clayey silt trace gravel (FILL) trace organics wood pieces	0.5		1B				
		1	100.5	2		13		
		1.5	100	3A		15		
		2	99.5	3B				
	hard, moist reddish brown CLAYEY SILT (TILL) trace gravel trace sand	2.5	99	4A		32		
		3	98.5	4B				
		3.5	98	5A		61		
	SHALE/TILL complex	4	97.5	5B				
		4.5	97	6		50/75		
	wet, grey SHALE BEDROCK	5	96.5	7		50/25		
		5.5	96					
		6	95.5	8		66/200		
		6.5	95					
		7	94.5	9		50/2.5		
		7.5	94					
	END OF BOREHOLE							

Shear Strength (kPa) ● 40 80 120 160
N-Value (Blows/300mm) ▲ 20 40 60 80
Water Content (%) PL W.C. LL 20 40 60 80

CLIENT: Distrikt Development	METHOD: Augering and Split Spoon Sampling	**BH No.: MW2**
PROJECT: 3064 Trafalgar Road	PROJECT ENGINEER: VN / ELEV. (m) 100.77	
LOCATION: Oakville, ON	NORTHING: / EASTING:	PROJECT NO.: CT2616.00

SAMPLE TYPE: AUGER | DRIVEN | CORING | DYNAMIC CONE | SHELBY | SPLIT SPOON

GWL (m)	SOIL DESCRIPTION	DEPTH (m)	ELEVATION (m)	Shear Strength (kPa) / N-Value (Blows/300mm)	Water Content (%) PL W.C. LL	SAMPLE NO.	SAMPLE TYPE	SPT(N)	Well Construction	REMARKS
	firm, moist, brown clayey silt, trace gravel trace organics (FILL)	0 – 0.5	100.5	8		1		8		Groundwater measured as 4.0 m below ground surface on Novemebr 10, 2017.
	very stiff / moist CLAYEY SILT (TILL) trace gravel trace sand / brown	0.5 – 1	100	25		2		25		Bentonite
	hard / ------ / reddish brown	1 – 2.5	99.5 – 98.5	33; 73/175		3; 4		33; 73/175		
	SHALE/TILL Complex	2.5 – 3.5	98 – 97.5	50/100		5		50/100		
	red SHALE BEDROCK	3.5 – 7.5	97 – 93.5	50/75; 50/50; 50/10		6; 7; 8		50/75; 50/50; 50/10		Split spoon moist on retrieval of Sample 7
		7.5 – 9.5	93 – 91	50/20		9		50/20		Sand; Sand and Screen; Split spoon wet on retrieval of Sample 9

alston associates
geotechnical division of TERRAPEX

LOGGED BY: SA | DRILLING DATE: November 10, 2017
REVIEWED BY: VN | Page 1 of 2

CLIENT: Distrikt Development	METHOD: Augering and Split Spoon Sampling		**BH No.: MW2**
PROJECT: 3064 Trafalgar Road	PROJECT ENGINEER: VN	ELEV. (m) 100.77	
LOCATION: Oakville, ON	NORTHING:	EASTING:	PROJECT NO.: CT2616.00

SAMPLE TYPE: AUGER | DRIVEN | CORING | DYNAMIC CONE | SHELBY | SPLIT SPOON

GWL (m)	SOIL SYMBOL	SOIL DESCRIPTION	DEPTH (m)	ELEVATION (m)	Shear Strength (kPa) 40 80 120 160 / N-Value (Blows/300mm) 20 40 60 80	Water Content (%) PL W.C. LL 20 40 60 80	SAMPLE NO.	SAMPLE TYPE	SPT(N)	Well Construction	REMARKS
		red SHALE BEDROCK	10	90.5	50/20		10		50/20		Split spoon wet on retrieval of Sample 10
			10.5								
			11	90							
			11.5	89.5							
			12	89							
			12.5	88.5							
			13	88							
			13.5	87.5							
		END OF BOREHOLE			50/10		11		50/10		

CLIENT: Distrikt Development	METHOD: Augering and Split Spoon Sampling		**BH No.: BH3**
PROJECT: 3064 Trafalgar Road	PROJECT ENGINEER: VN	ELEV. (m) 100.66	
LOCATION: Oakville, ON	NORTHING:	EASTING:	PROJECT NO.: CT2616.00

SAMPLE TYPE: AUGER | DRIVEN | CORING | DYNAMIC CONE | SHELBY | SPLIT SPOON

GWL (m)	SOIL SYMBOL	SOIL DESCRIPTION	DEPTH (m)	ELEVATION (m)	Shear Strength (kPa) 40 80 120 160 / N-Value (Blows/300mm) 20 40 60 80	Water Content (%) PL W.C. LL 20 40 60 80	SAMPLE NO.	SAMPLE TYPE	SPT(N)	Well Construction	REMARKS
		damp, firm, dark brown to brown clayey silt, trace gravel trace organics (FILL)	0 – 0.5	100.5 – 100	8		1		8		Borehole dry and open on completeion.
		hard moist, brown CLAYEY SILT (TILL) trace gravel trace sand with occasional oxidization	0.5 – 2	100 – 98.5	32; 32		2; 3		32; 32		
		TILL/SHALE complex	2 – 3.5	98.5 – 97	50/125; 50/100		4; 5		50/125; 50/100		
		red SHALE BEDROCK	3.5 – 4.5	97 – 96.5	50/50; 50/10		6; 7		50/50; 50/10		
		END OF BOREHOLE									

alston associates
geotechnical division of TERRAPEX

LOGGED BY: SA | DRILLING DATE: November 9, 2017

REVIEWED BY: VN |

CLIENT: Distrikt Development	METHOD: Augering and Split Spoon Sampling		**BH No.: BH4**
PROJECT: 3064 Trafalgar Road	PROJECT ENGINEER: VN	ELEV. (m) 100.14	
LOCATION: Oakville, ON	NORTHING:	EASTING:	PROJECT NO.: CT2616.00

SAMPLE TYPE: AUGER | DRIVEN | CORING | DYNAMIC CONE | SHELBY | SPLIT SPOON

GWL (m)	SOIL DESCRIPTION	DEPTH (m)	ELEVATION (m)	Shear Strength (kPa) / N-Value (Blows/300mm)	Water Content (%) PL W.C. LL	SAMPLE NO.	SAMPLE TYPE	SPT(N)	Well Construction	REMARKS
	firm, moist, dark brown clayey silt, trcae gravel trace organics, FILL	0 – 0.5	100 – 99.5	7		1		7		Borehole cave-in at 13.4 m and groundwater level at 4.0 m below ground surface on completion.
	very stiff, moist reddish brown CLAYEY SILT (TILL) trace gravel, trace sand	0.5 – 1.5	99.5 – 98.5	23		2		23		
		1.5 – 2	98.5 – 98	68		3		68		
	SHALE/TILL complex	2 – 3.5	98 – 96.5	50/100		4		50/100		
		3 – 4	97 – 96	50/125		5		50/125		
▼		4	96	50/100		6		50/100		
	red SHALE BEDROCK	4 – 7	96 – 93	50/20		7		50/20		
		7 – 8	93 – 92	50/10		8		50/10		
		8 – 9.5	92 – 90.5	50/10		9		50/10		

alston associates geotechnical division of TERRAPEX	LOGGED BY: SA	DRILLING DATE: November 10, 2017
	REVIEWED BY: VN	Page 1 of 2

CLIENT: Distrikt Development	METHOD: Augering and Split Spoon Sampling	**BH No.: BH4**
PROJECT: 3064 Trafalgar Road	PROJECT ENGINEER: VN / ELEV. (m) 100.14	
LOCATION: Oakville, ON	NORTHING: / EASTING:	PROJECT NO.: CT2616.00

SAMPLE TYPE: AUGER | DRIVEN | CORING | DYNAMIC CONE | SHELBY | SPLIT SPOON

GWL (m)	SOIL SYMBOL	SOIL DESCRIPTION	DEPTH (m)	ELEVATION (m)	Shear Strength (kPa) 40 80 120 160 / N-Value (Blows/300mm) 20 40 60 80	Water Content (%) PL W.C. LL 20 40 60 80	SAMPLE NO.	SAMPLE TYPE	SPT(N)	Well Construction	REMARKS
		wet, red SHALE BEDROCK	10	90							
			10.5	89.5	50/10		10		50/10		
			11	89							
			11.5	88.5							
			12	88							
			12.5	87.5							
			13	87							
			13.5	86.5	50/10		11		50/10		
		END OF BOREHOLE									

alston associates
geotechnical division of TERRAPEX

LOGGED BY: SA	DRILLING DATE: November 10, 2017
REVIEWED BY: VN	Page 2 of 2

CLIENT: Distrikt Development	METHOD: Augering and Split Spoon Sampling	**BH No.: BH5**
PROJECT: 3064 Trafalgar Road	PROJECT ENGINEER: VN	ELEV. (m) 101.24
LOCATION: Oakville, ON	NORTHING:	EASTING: PROJECT NO.: CT2616.00

SAMPLE TYPE: AUGER | DRIVEN | CORING | DYNAMIC CONE | SHELBY | SPLIT SPOON

GWL (m)	SOIL SYMBOL	SOIL DESCRIPTION	DEPTH (m)	ELEVATION (m)	Shear Strength (kPa) / N-Value (Blows/300mm)	Water Content (%) PL W.C. LL	SAMPLE NO.	SAMPLE TYPE	SPT(N)	Well Construction	REMARKS
		stiff, moist, brown clayey silt (FILL) trace gravel, trace organics (FILL)	0 – 0.5	101	10		1		10		Borehole dry and open on completion.
		hard, moist, brown CLAYEY SILT (TILL) trace gravel trace sand with occasional oxidization	0.5 – 1	100.5	35		2		35		
			1 – 1.5	100							
			1.5 – 2	99.5	40		3		40		
		SHALE/TILL complex	2 – 2.5	99	80/225		4		80/225		
			2.5 – 3	98.5							
			3 – 3.5	98	50/125		5		50/125		
		red SHALE BEDROCK	3.5 – 4	97.5	50/50		6		50/50		
			4 – 4.5	97	50/10		7		50/10		
		END OF BOREHOLE									

alston associates
geotechnical division of TERRAPEX

LOGGED BY: SA | DRILLING DATE: November 9, 2017

REVIEWED BY: VN | Page 1 of 1

CLIENT: Distrikt Development	METHOD: Augering and Split Spoon Sampling	**BH No.: MW6**
PROJECT: 3064 Trafalgar Road	PROJECT ENGINEER: VN / ELEV. (m) 102.26	
LOCATION: Oakville, ON	NORTHING: / EASTING:	PROJECT NO.: CT2616.00

SAMPLE TYPE: AUGER | DRIVEN | CORING | DYNAMIC CONE | SHELBY | SPLIT SPOON

GWL (m)	SOIL SYMBOL	SOIL DESCRIPTION	DEPTH (m)	ELEVATION (m)	Shear Strength (kPa) / N-Value (Blows/300mm)	Water Content (%) PL W.C. LL	SAMPLE NO.	SAMPLE TYPE	SPT(N)	Well Construction	REMARKS
		stiff, moist, dark brown to brown clayey silt (FILL) trace gravel, trace sand	0 – 0.5	102 – 101.5	11		1		11		Groundwater measured as 1.86 m below ground surface on Novemebr 10, 2017
		hard moist, brown CLAYEY SILT (TILL) trace gravel trace sand woth occasional oxidization	0.5 – 3.5	101.5 – 98.5	37 / 39 / 48 / 48 / 50/150		2 / 3 / 4 / 5 / 6		37 / 39 / 48 / 48 / 50/ 150		Bentonite
		red SHALE BEDROCK	3.5 – 7.5	98.5 – 94.5	50/50 / 50/10 / 50/10		7 / 8 / 9		50/ 50 / 50/ 10 / 50/ 10		Sand / Sand and Screen

alston associates
geotechnical division of TERRAPEX

LOGGED BY: SA | DRILLING DATE: November 9, 2017

REVIEWED BY: VN |

CLIENT: Distrikt Development	METHOD: Augering and Split Spoon Sampling	**BH No.: MW6**
PROJECT: 3064 Trafalgar Road	PROJECT ENGINEER: VN / ELEV. (m) 102.26	
LOCATION: Oakville, ON	NORTHING: / EASTING:	PROJECT NO.: CT2616.00

SAMPLE TYPE: AUGER | DRIVEN | CORING | DYNAMIC CONE | SHELBY | SPLIT SPOON

GWL (m)	SOIL SYMBOL	SOIL DESCRIPTION	DEPTH (m)	ELEVATION (m)	Shear Strength (kPa) 40 80 120 160 / N-Value (Blows/300mm) 20 40 60 80	Water Content (%) PL W.C. LL 20 40 60 80	SAMPLE NO.	SAMPLE TYPE	SPT(N)	Well Construction	REMARKS
		wet, red SHALE BEDROCK	10	92							
			10.5	91.5	50/20		10		50/20		Split spoon wet on retrieval of Sample 10.
			11	91							
			11.5	90.5							
			12	90							
			12.5	89.5							
			13	89							
			13.5		50/20		11		50/20		
		END OF BOREHOLE									

alston associates
geotechnical division of TERRAPEX

LOGGED BY: SA | DRILLING DATE: November 9, 2017
REVIEWED BY: VN |

Project No: 6313

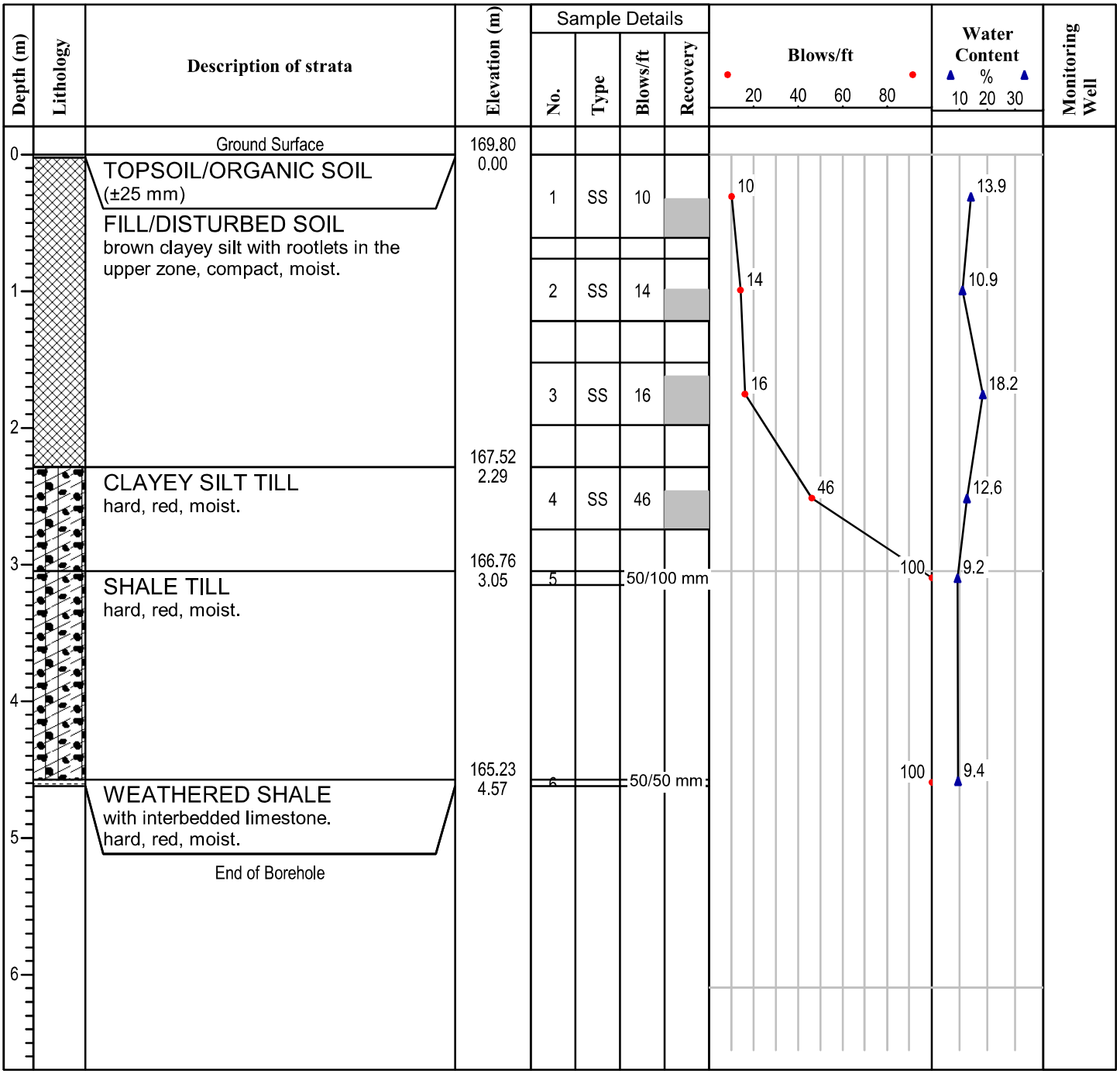
Log of Borehole BH-101

Project: PROPOSED RESIDENTIAL DEVELOPMENT

Client: DISTRIKT DEVELOPMENTS

Enclosure: 2

Location: 3064 TRAFALGAR ROAD, OAKVILLE, ON



Remarks Upon completion of drilling, the borehole was open and wet at the bottom.

Drill Method: 6313

Drill Date: JULY 04, 2018

Datum: GEODETIC

Engineer: MT

Checked by: GS

Sheet No. 1 of 1

FORWARD ENGINEERING & ASSOCIATES INC.
244 Brockport Drive, Unit 15, Toronto, Ontario, M9W 6X9

Project No: 6313

Log of Borehole BH-102

Project: PROPOSED RESIDENTIAL DEVELOPMENT

Client: DISTRIKT DEVELOPMENTS

Enclosure: 3

Location: 3064 TRAFALGAR ROAD, OAKVILLE, ON

Depth (m)	Description of strata	Elevation (m)	No.	Type	Blows/ft	Recovery
	Ground Surface	170.60				
0	**DISTURBED SOIL** brown clayey silt with traces of rootlets and stains of organics, compact, moist.	0.00	1	SS	11	
		169.83				
1	**CLAYEY SILT TILL** hard, red and whitish, moist.	0.76	2	SS	18	
2			3	SS	10	
	SHALE TILL with limestone fragments. hard, red, moist.	168.31	4	SS	75/200 mm	
3		2.29	5	SS	74/200 mm	
4						
	WEATHERED SHALE with interbedded limestone. hard, red, moist.	166.02			50/25 mm	
5	End of Borehole	4.57				
6						

Blows/ft: 20 40 60 80

Water Content %: 10 20 30

Blows/ft	Water Content %	Recovery
11	11.1	
18	14.1	
10	11.6	
100	9.1	
100	9.6	
100		

Monitoring Well

Remarks Upon completion of drilling, the borehole was open and dry.

Drill Method: 6313

Drill Date: JULY 04, 2018

Datum: GEODETIC

FORWARD ENGINEERING & ASSOCIATES INC.
244 Brockport Drive, Unit 15, Toronto, Ontario, M9W 6X9

Engineer: MT

Checked by: GS

Project No: 6313

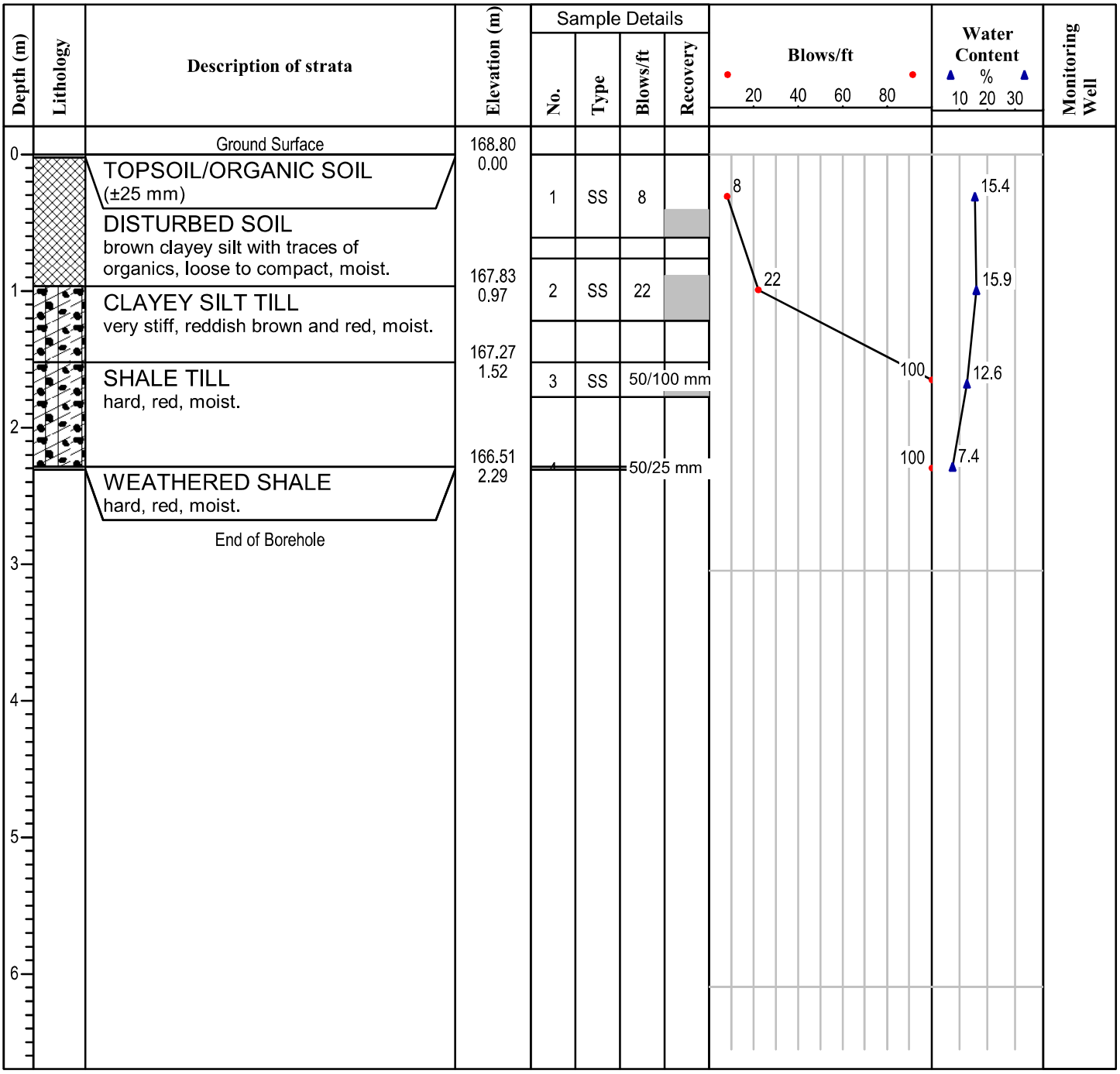
Log of Borehole BH-103

Project: PROPOSED RESIDENTIAL DEVELOPMENT

Client: DISTRIKT DEVELOPMENTS

Enclosure: 4

Location: 3064 TRAFALGAR ROAD, OAKVILLE, ON



Remarks Upon completion of drilling, the borehole was open and dry.

Drill Method: 6313

Drill Date: JULY 04, 2018

Datum: GEODETIC

FORWARD ENGINEERING & ASSOCIATES INC.
244 Brockport Drive, Unit 15, Toronto, Ontario, M9W 6X9

Engineer: MT

Checked by: GS

Sheet No. 1 of 1

Project No: 6313

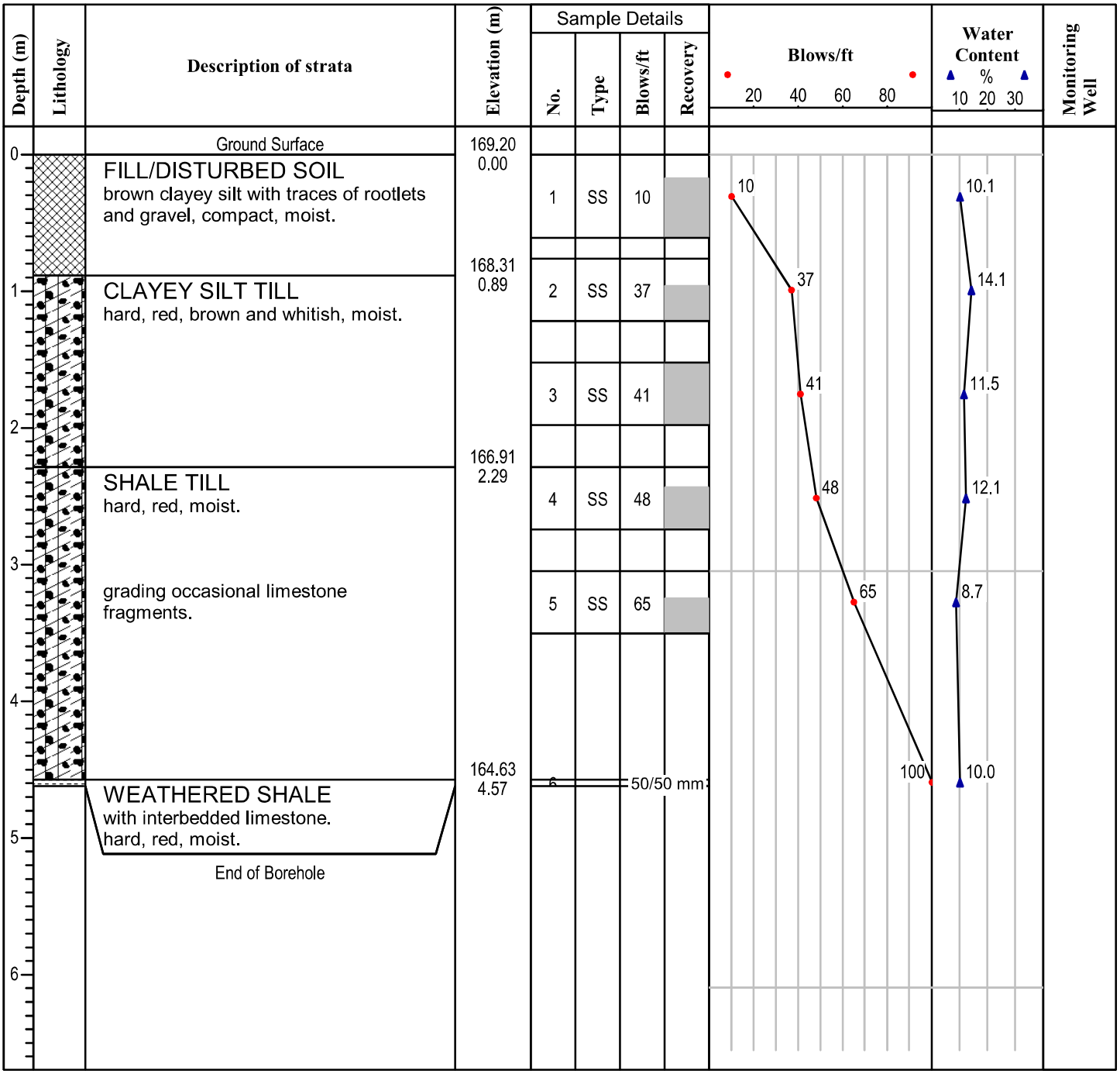
Log of Borehole BH-104

Project: PROPOSED RESIDENTIAL DEVELOPMENT

Client: DISTRIKT DEVELOPMENTS

Enclosure: 5

Location: 3064 TRAFALGAR ROAD, OAKVILLE, ON



Remarks Upon completion of drilling, the borehole was found open and water level was measured at 4.3 m below EGSL.

Drill Method: 6313

Drill Date: JULY 04, 2018

Datum: GEODETIC

FORWARD ENGINEERING & ASSOCIATES INC.
244 Brockport Drive, Unit 15, Toronto, Ontario, M9W 6X9

Engineer: MT

Checked by: GS

Sheet No. 1 of 1

Project No: 6313

Log of Borehole BH-105

Project: PROPOSED RESIDENTIAL DEVELOPMENT

Client: DISTRIKT DEVELOPMENTS

Enclosure: 6

Location: 3064 TRAFALGAR ROAD, OAKVILLE, ON

Depth (m)	Description of strata	Elevation (m)	Sample Details: No.	Type	Blows/ft	Recovery	Blows/ft (20 40 60 80)	Water Content % (10 20 30)	Monitoring Well
0	Ground Surface	170.30							
	TOPSOIL/ORGANIC SOIL (±50 mm)	0.00	1	SS	7		7	15.9	
	DISTURBED SOIL brown clayey silt with traces of rootlets, loose, moist.	169.54							
1	CLAYEY SILT TILL hard, reddish brown and red, moist.	0.76	2	SS	40		40	6.9	
			3	SS	45		45	11.5	
2	SHALE TILL hard, red, moist.	168.01 2.29	4	SS	78/180 mm		100	10.5	
3	WEATHERED SHALE with limestine fragements. hard, red, moist.	167.25 3.05	5		50/50 mm		100		
	End of Borehole								
4									
5									
6									

Remarks Upon completion of drilling, the borehole was open and dry.

Drill Method: 6313

Drill Date: JULY 04, 2018

Datum: GEODETIC

Engineer: MT

Checked by: GS

Sheet No. 1 of 1

FORWARD ENGINEERING & ASSOCIATES INC.
244 Brockport Drive, Unit 15, Toronto, Ontario, M9W 6X9

APPENDIX B: MECP WWR, PTTW AND EASR SUMMARY TABLES

Table B-1: MECP WWR Summary Table

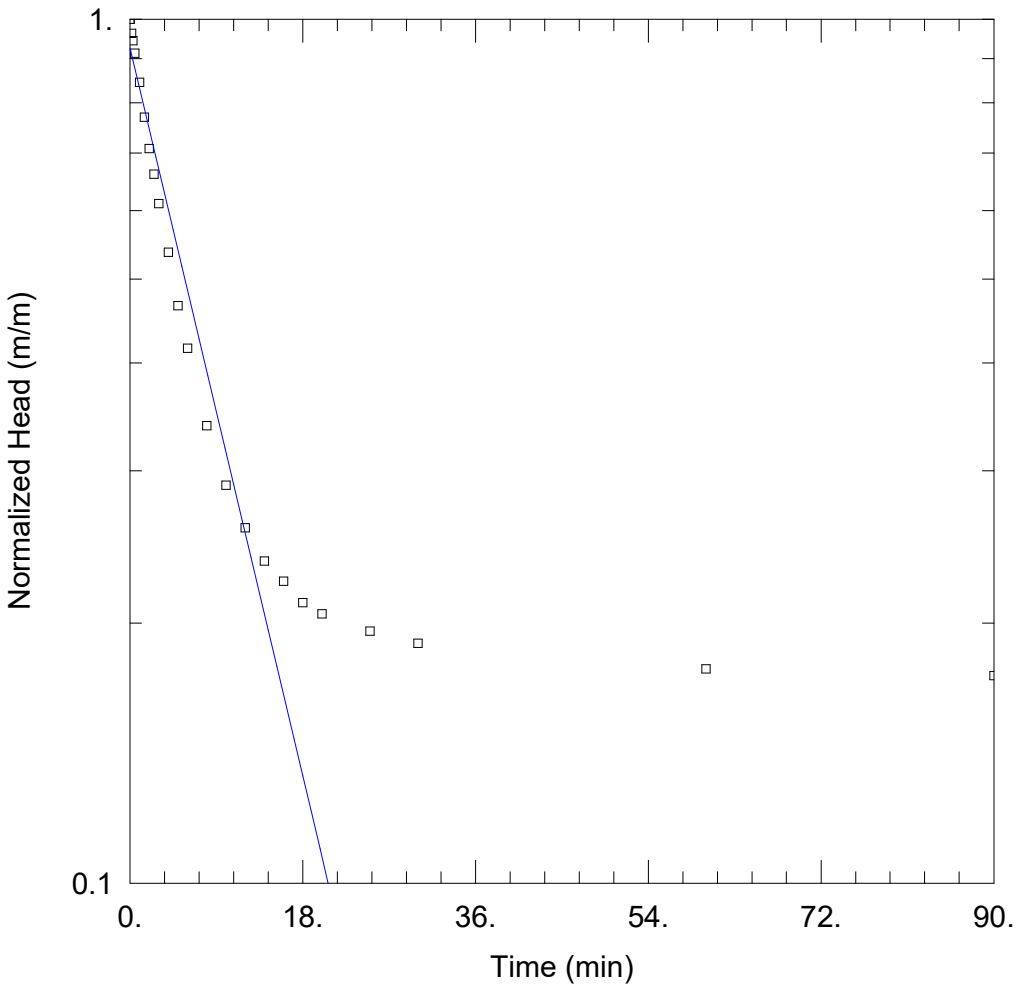
Count	Well ID	Date Completed	Depth (m)	Reported Water Level (m)	Status of Well
1.	2802109	07/24/1952	29	29.0	Abandoned
2.	2802110	07/31/1952	21.9	18.3	Abandoned
3.	2802111	09/29/1952	21.3	16.8	Abandoned
4.	2802113	08/01/1957	20.7	10.7	Water Supply
5.	2802114	09/29/1961	8.5	8.5	Water Supply
6.	2802115	12/13/1966	5.2	3.7	Water Supply
7.	2802116	08/26/1966	5.2	4.3	Water Supply
8.	2802117	11/18/1961	30.5	30.5	Water Supply
9.	2802303	09/28/1961	5.2	5.2	Water Supply
10.	2802304	10/12/1963	6.7	6.7	Water Supply
11.	2802305	12/16/1963	7.6	7.6	Water Supply
12.	2804186	09/12/1972	18.9	10.7	Water Supply
13.	2805423	07/18/1978	12.2	11.0	Water Supply
14.	2806420	07/24/1984	13.1	8.8	Water Supply
15.	2808557	07/10/1997	7.6	N/A	Abandoned
16.	2810317	07/04/2005	4.5	3	Observation well
17.	2810389	07/05/2005	4.6	2.8	Observation well
18.	2810390	07/06/2005	4.6	N/A	Observation well
19.	2810488	01/06/2006	7.5	6	Observation well
20.	2810489	01/04/2006	4.5	2.1	Observation well
21.	7046325	06/22/2007	6.7	N/A	Abandoned
22.	7046326	06/26/2007	N/A	N/A	Abandoned
23.	7046328	06/22/2007	3.4	N/A	Abandoned
24.	7054129	11/02/2007	15.2	N/A	Observation well
25.	7100748	10/29/2007	10	6	Monitoring
26.	7100748	10/29/2007	N/A	N/A	Monitoring
27.	7100748	10/29/2007	N/A	N/A	Monitoring
28.	7100748	10/29/2007	N/A	N/A	Monitoring
29.	7100748	10/29/2007	N/A	N/A	Monitoring
30.	7100748	10/25/2007	N/A	N/A	Monitoring
31.	7100748	10/25/2007	N/A	N/A	Monitoring
32.	7102055	N/A	N/A	N/A	Monitoring
33.	7102055	N/A	N/A	N/A	Monitoring
34.	7102055	N/A	N/A	N/A	Monitoring
35.	7102055	N/A	N/A	N/A	Monitoring
36.	7102055	11/20/2007	10.1	6	Monitoring
37.	7102055	N/A	N/A	N/A	Monitoring
38.	7102056	11/20/2007	N/A	N/A	Observation well
39.	7102056	11/20/2007	9.1	2.5	Observation well
40.	7102056	11/20/2007	N/A	N/A	Observation well
41.	7103280	N/A	N/A	N/A	Test hole
42.	7103280	N/A	N/A	N/A	Test hole
43.	7103280	01/15/2008	7.5	N/A	Test hole

Count	Well ID	Date Completed	Depth (m)	Reported Water Level (m)	Status of Well
44.	7103292	01/18/2008	8.8	6	Test hole
45.	7103292	01/18/2008	N/A	N/A	Test hole
46.	7111065	05/06/2008	N/A	N/A	Observation well
47.	7111065	05/05/2008	N/A	N/A	Observation well
48.	7111065	05/07/2008	N/A	N/A	Observation well
49.	7111065	05/07/2008	N/A	N/A	Observation well
50.	7111065	05/05/2008	N/A	N/A	Observation well
51.	7111065	05/06/2008	N/A	N/A	Observation well
52.	7111065	05/07/2008	N/A	N/A	Observation well
53.	7111065	05/06/2008	4.5	4	Observation well
54.	7111065	05/08/2008	N/A	N/A	Observation well
55.	7111065	05/05/2008	N/A	N/A	Observation well
56.	7111065	05/06/2008	N/A	N/A	Observation well
57.	7111065	05/08/2008	N/A	N/A	Observation well
58.	7111065	05/06/2008	N/A	N/A	Observation well
59.	7135066	10/30/2009	N/A	0.45	Abandoned
60.	7135079	10/30/2009	N/A	N/A	Abandoned
61.	7167064	06/28/2011	N/A	N/A	Abandoned
62.	7185195	01/20/2012	N/A	N/A	Abandoned
63.	7218609	09/03/2013	N/A	N/A	N/A
64.	7218621	09/03/2013	N/A	N/A	N/A
65.	7221399	05/21/2014	N/A	N/A	N/A
66.	7224935	06/25/2014	6.4	N/A	Observation well
67.	7224936	06/25/2014	7.2	N/A	Observation well
68.	7224937	06/25/2014	8.8	N/A	Observation well
69.	7224938	06/25/2014	7.9	N/A	Observation well
70.	7228678	08/26/2014	4.6	N/A	Monitoring
71.	7229637	07/30/2014	19.8	7.6	Observation well
72.	7239540	04/30/2014	N/A	N/A	N/A
73.	7258119	11/06/2015	4.6	N/A	Observation well
74.	7258120	11/05/2015	4.6	N/A	Observation well
75.	7258121	11/04/2015	9.1	N/A	Observation well
76.	7258122	11/04/2015	4.6	N/A	Observation well
77.	7258123	11/05/2015	9.1	N/A	Observation well
78.	7258124	11/05/2015	4.6	N/A	Observation well
79.	7258125	11/02/2015	12.2	N/A	Observation well
80.	7258126	11/02/2015	6.1	N/A	Observation well
81.	7258127	11/03/2015	9.1	N/A	Observation well
82.	7261314	08/15/2015	N/A	N/A	Abandoned
83.	7261315	08/15/2015	N/A	N/A	Abandoned
84.	7301813	11/08/2017	10.7	N/A	Observation well
85.	7301814	N/A	10.7	N/A	Observation well
86.	7306843	07/24/2017	N/A	N/A	N/A
87.	7315066	06/29/2018	12	3	Test hole
88.	7323168	09/28/2018	9.1	N/A	Observation well

Table B-2: MECP PTTW and EASR Summary Table

Permit Number	Purpose	Address	Municipality	Water Source	Maximum L/Day	Active
1428-A7MHXW	Dewatering construction	Part of Lot 12 Concession 1 North of Dundas	Oakville	Surface and Groundwater	216,000	No
1512-9GMPD4	Dewatering construction	North of Dundas	Oakville	Groundwater	55,106	No
5001-99JKFA	Dewatering construction	772 Winston Churchill Blvd	Oakville	Surface water	292,000	No
7063-9TMLXX	Dewatering construction	Part of Lot 12 Concession 1 North of Dundas	Oakville	Surface and Groundwater	216,000	No
7626-8N9KU4	Dewatering construction	Dundas Street (between Oak Park Blvd and Hwy 403, Town of Oakville, Region of Halton	Oakville	Surface and ground water	720,000	No
8562-9YDQNC	Dewatering construction	North of Dundas Street	Oakville	Groundwater	2,192,833	No
R-009-3112350883	Construction Dewatering	Lot No. 12, Concession No. 1 North of Dundas Street	Oakville	Groundwater	50,000 to 400,000	Yes

APPENDIX C: SWRT RESULTS



WELL TEST ANALYSIS

Data Set: C:\...\MW101.aqt
Date: 06/26/20 Time: 15:22:22

PROJECT INFORMATION

Company: B.I.G. Consulting Inc.
Client: Distrik Capital
Project: BIGC-GEO-397B
Location: 3064 Trafalgar Road, Oakville
Test Date: June 23, 2020

AQUIFER DATA

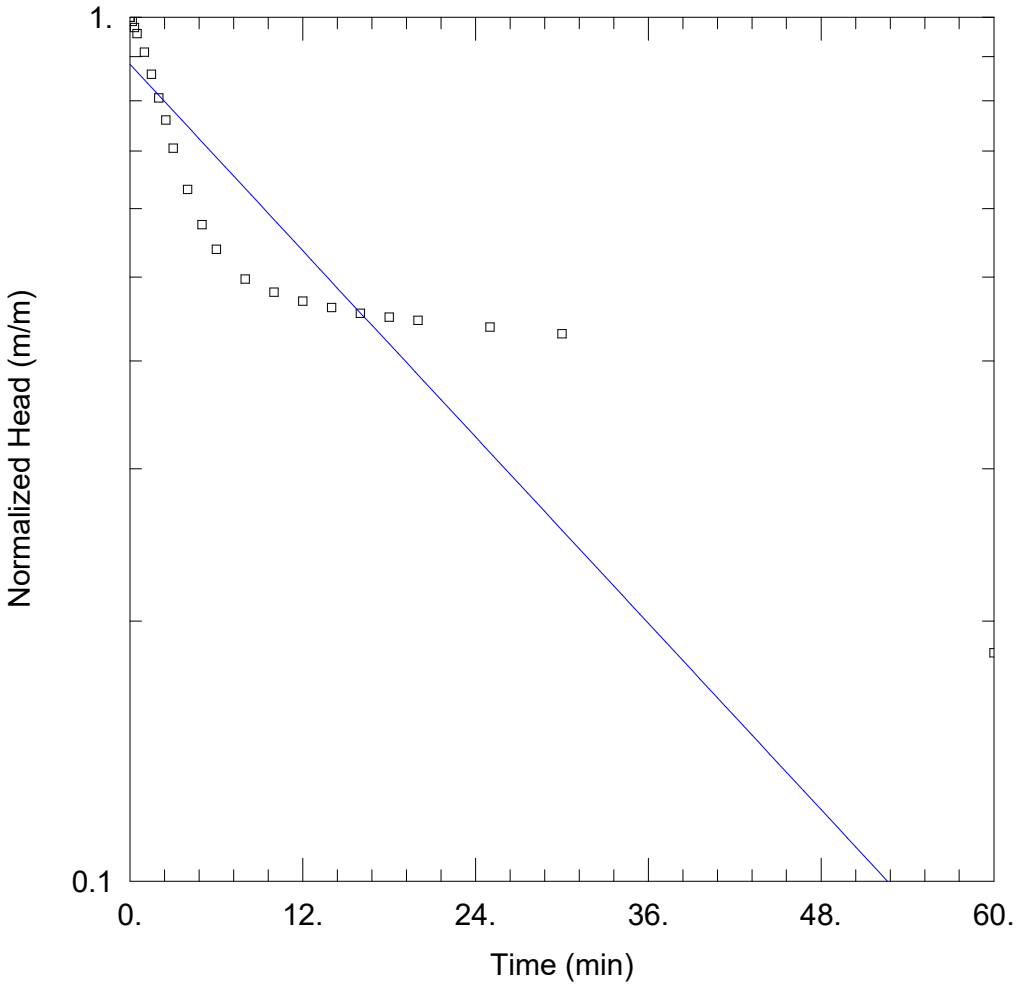
Saturated Thickness: 5.895 m Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW101)

Initial Displacement: 1.61 m Static Water Column Height: 5.895 m
Total Well Penetration Depth: 5.895 m Screen Length: 3. m
Casing Radius: 0.025 m Well Radius: 0.025 m

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev
K = 1.025E-6 m/sec y0 = 1.491 m



WELL TEST ANALYSIS

Data Set:
Date: 06/26/20 Time: 14:38:18

PROJECT INFORMATION

Company: B.I.G. Consulting Inc.
Client: Distrik Capital
Project: BIGC-GEO-397B
Location: 3064 Trafalgar Road, Oakville
Test Date: June 23, 2020

AQUIFER DATA

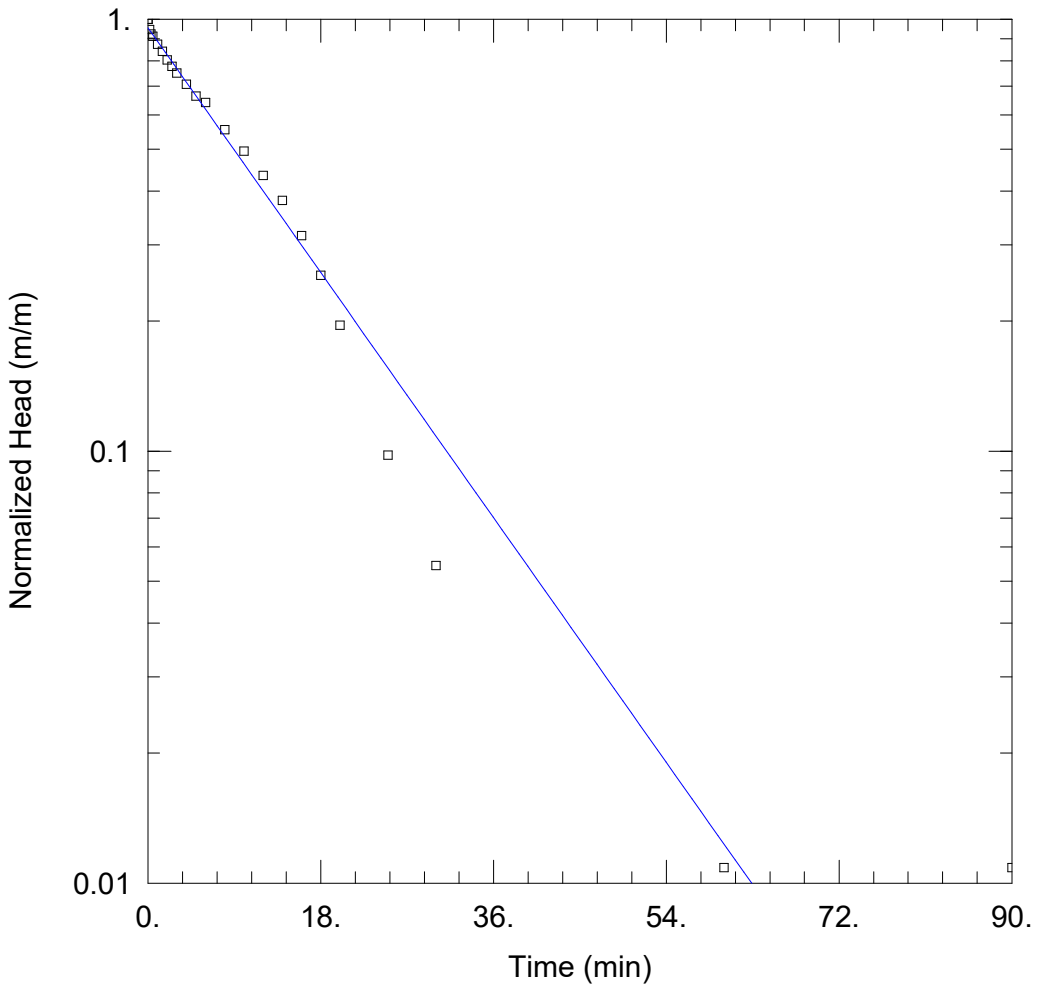
Saturated Thickness: 4.14 m Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW102)

Initial Displacement: 1.29 m Static Water Column Height: 4.14 m
Total Well Penetration Depth: 4.41 m Screen Length: 3. m
Casing Radius: 0.025 m Well Radius: 0.025 m

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev
K = 3.938E-7 m/sec y0 = 1.138 m



WELL TEST ANALYSIS

Data Set: C:\...\MW103.aqt
Date: 06/26/20 Time: 14:35:29

PROJECT INFORMATION

Company: B.I.G. Consulting Inc.
Client: Distrik Capital
Project: BIGC-GEO-397B
Location: 3064 Trafalgar Road, Oakville
Test Date: June 24, 2020

AQUIFER DATA

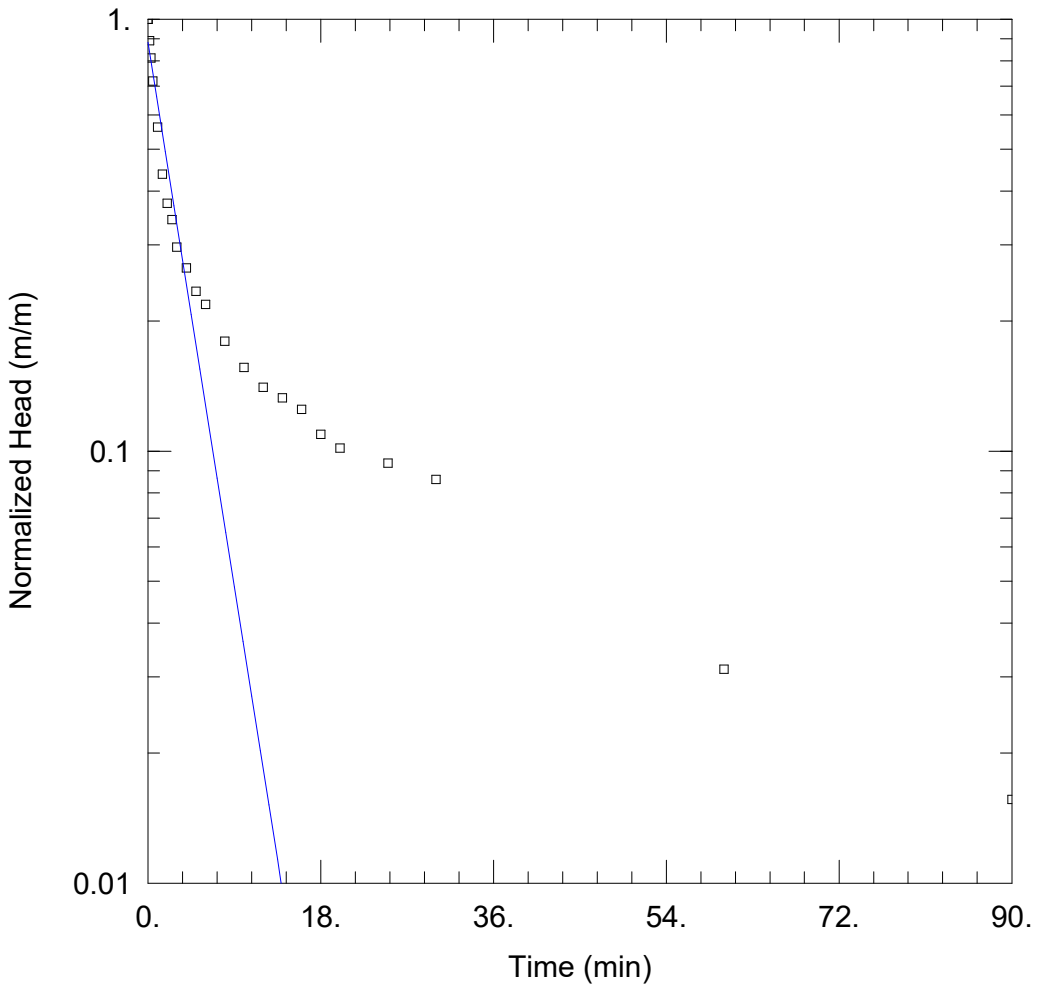
Saturated Thickness: 10.91 m Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW103)

Initial Displacement: 0.92 m Static Water Column Height: 10.91 m
Total Well Penetration Depth: 10.91 m Screen Length: 3. m
Casing Radius: 0.025 m Well Radius: 0.025 m

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev
K = 6.897E-7 m/sec y0 = 0.8785 m



WELL TEST ANALYSIS

Data Set: C:\...\MW104.aqt
Date: 06/26/20 Time: 14:48:14

PROJECT INFORMATION

Company: B.I.G. Consulting Inc.
Client: Distrik Capital
Project: BIGC-GEO-397B
Location: 3064 Trafalgar Road, Oakville
Test Date: June 24, 2020

AQUIFER DATA

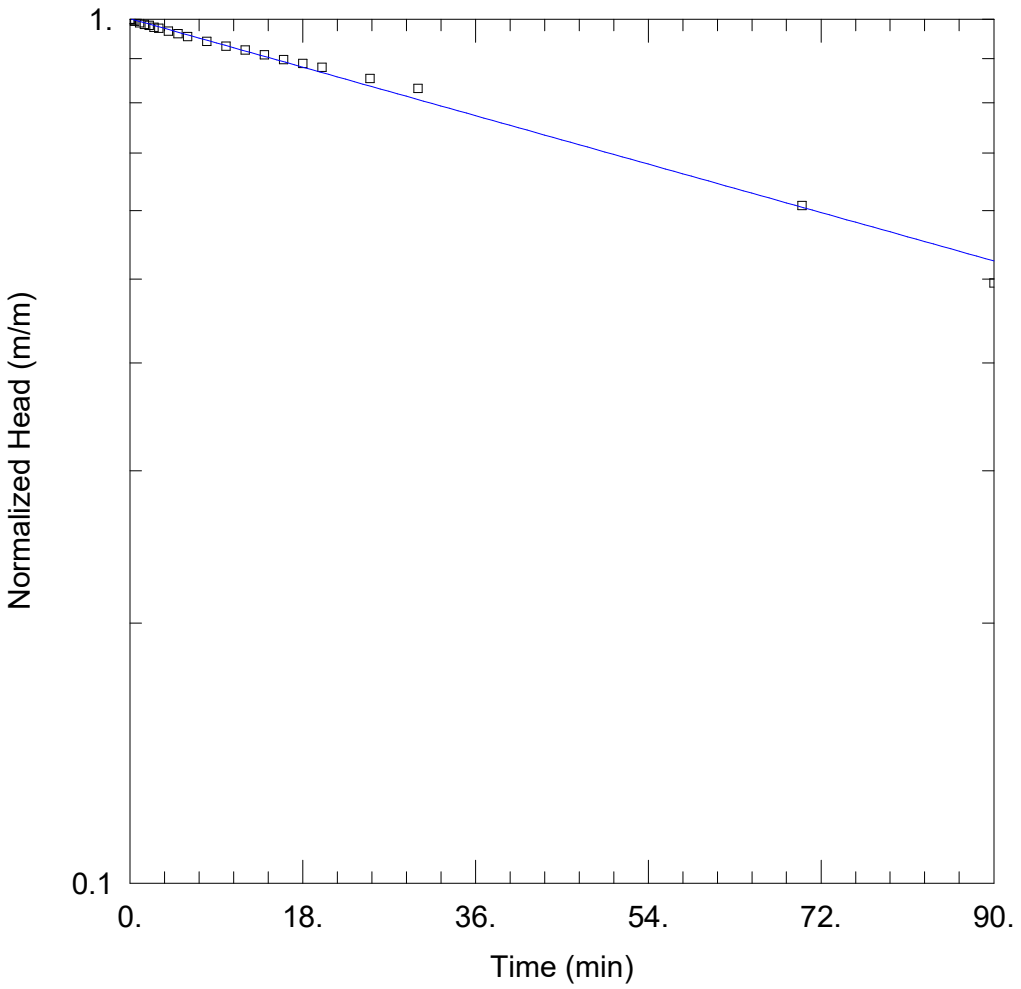
Saturated Thickness: 13.02 m Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW104)

Initial Displacement: 0.64 m Static Water Column Height: 13.02 m
Total Well Penetration Depth: 13.02 m Screen Length: 1.5 m
Casing Radius: 0.025 m Well Radius: 0.025 m

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev
K = 5.362E-6 m/sec y0 = 0.5654 m



WELL TEST ANALYSIS

Data Set: C:\...\MW105.aqt
Date: 06/26/20 Time: 15:03:54

PROJECT INFORMATION

Company: B.I.G. Consulting Inc.
Client: Distrik Capital
Project: BIGC-GEO-397B
Location: 3064 Trafalgar Road, Oakville
Test Date: June 23, 2020

AQUIFER DATA

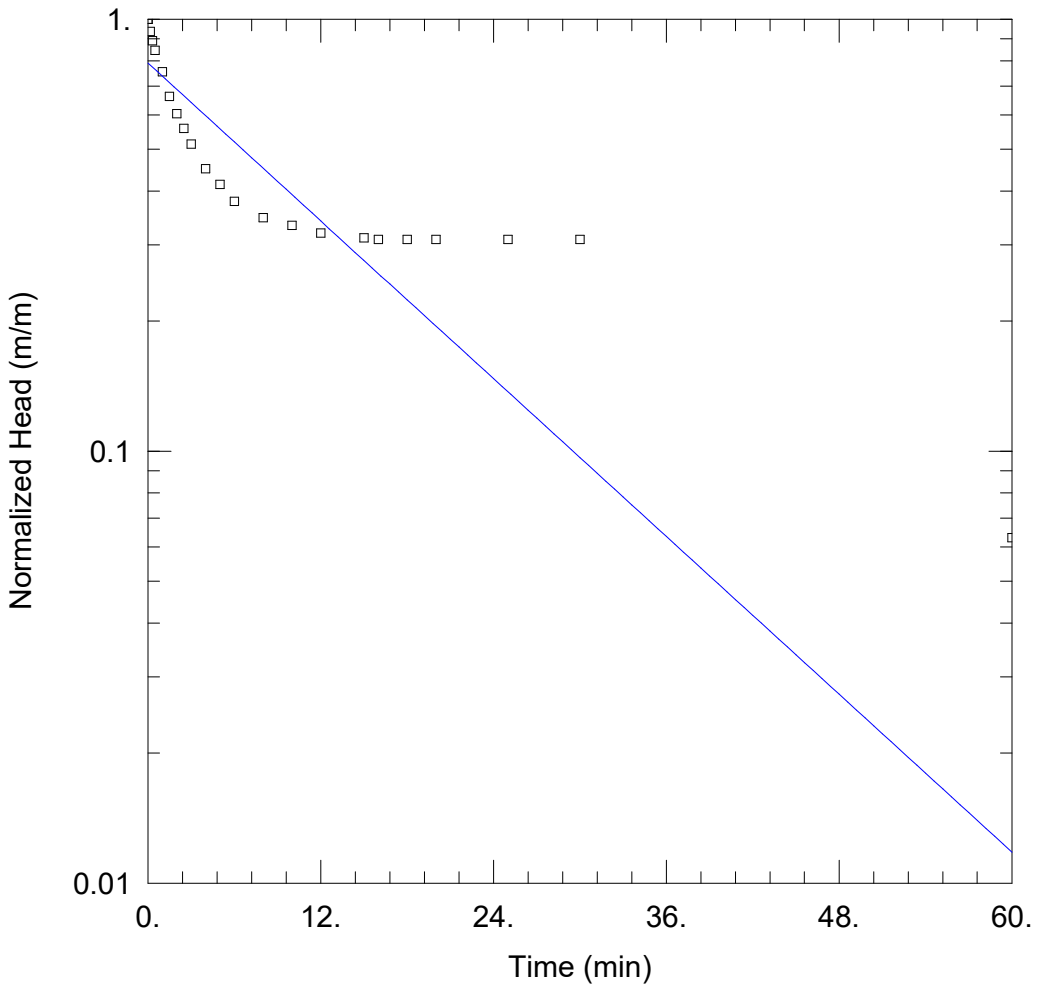
Saturated Thickness: 14.72 m Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW105)

Initial Displacement: 2.08 m Static Water Column Height: 14.72 m
Total Well Penetration Depth: 14.72 m Screen Length: 1.5 m
Casing Radius: 0.025 m Well Radius: 0.025 m

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev
K = 1.193E-7 m/sec y0 = 2.083 m



WELL TEST ANALYSIS

Data Set:
Date: 06/26/20 Time: 15:12:46

PROJECT INFORMATION

Company: B.I.G. Consulting Inc.
Client: Distrik Capital
Project: BIGC-GEO-397B
Location: 3064 Trafalgar Road, Oakville
Test Date: June 23, 2020

AQUIFER DATA

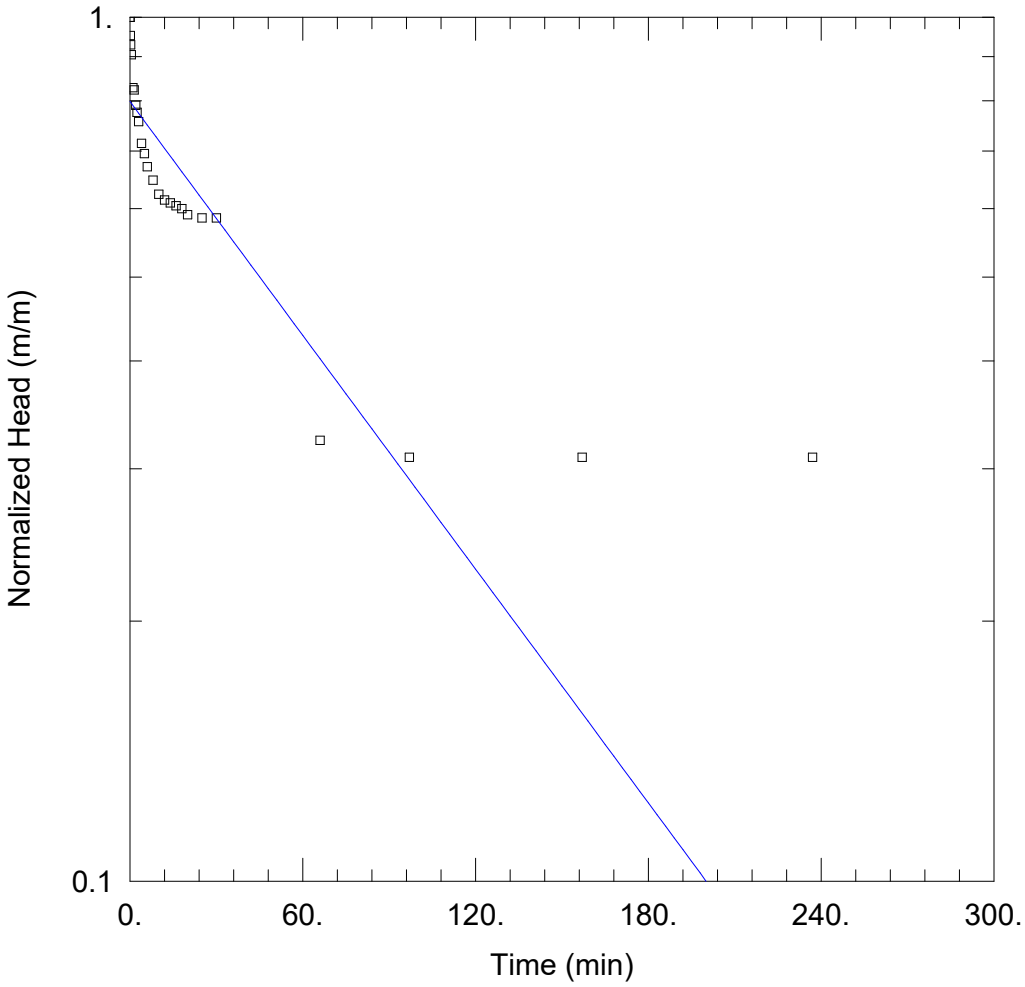
Saturated Thickness: 10.63 m Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW106)

Initial Displacement: 1.11 m Static Water Column Height: 10.63 m
Total Well Penetration Depth: 10.63 m Screen Length: 1.5 m
Casing Radius: 0.025 m Well Radius: 0.025 m

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev
K = 1.165E-6 m/sec y0 = 0.8782 m



WELL TEST ANALYSIS

Data Set: C:\...\MW201.aqt
Date: 11/18/21 Time: 23:53:13

PROJECT INFORMATION

Company: BIG Consulting Inc
Client: 3064 Trafalgar Rd. Inc.
Project: BIGC-ENV-397G
Location: 3064 Trafalgar Road, Oakville
Test Well: MW201
Test Date: 21-11-9

AQUIFER DATA

Saturated Thickness: 23.16 m Anisotropy Ratio (Kz/Kr): 1.

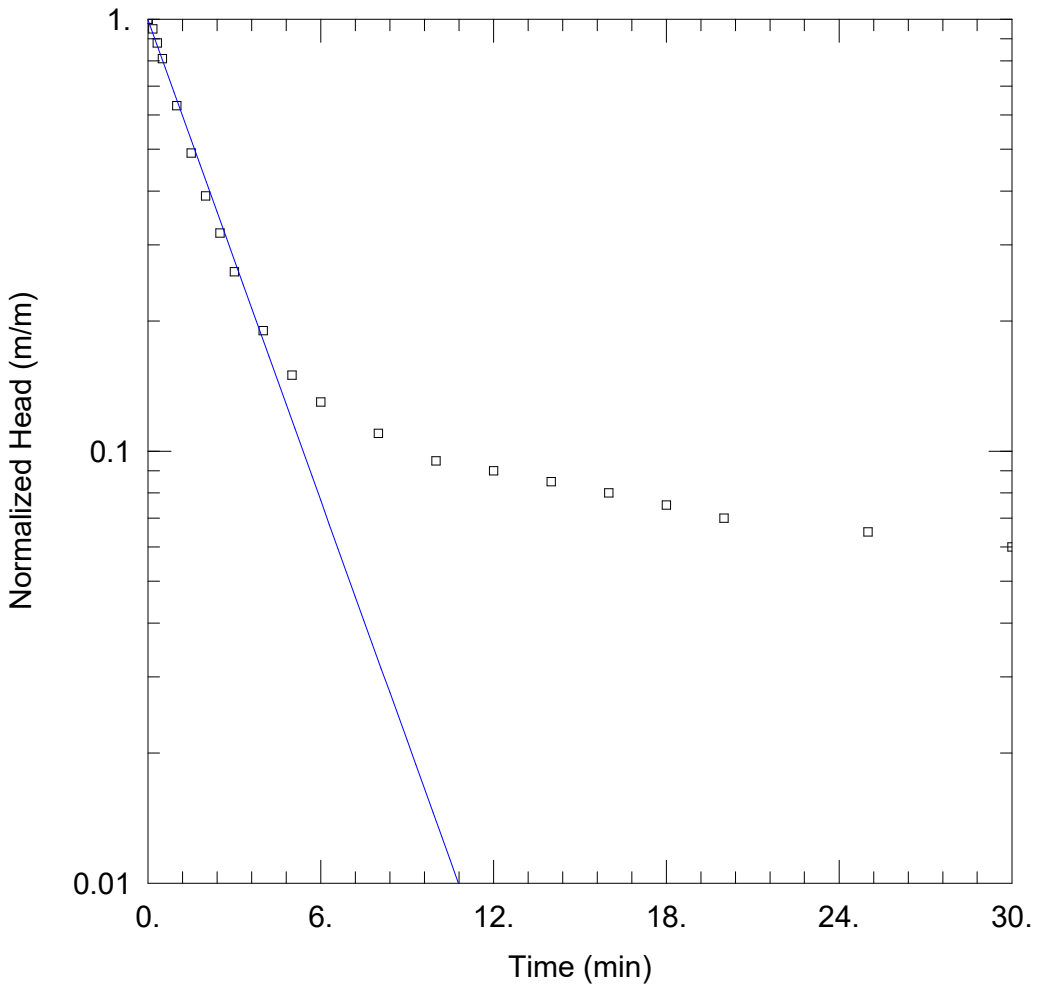
WELL DATA (MW201)

Initial Displacement: 1.05 m
Total Well Penetration Depth: 23.16 m
Casing Radius: 0.0254 m
Static Water Column Height: 23.16 m
Screen Length: 3. m
Well Radius: 0.0254 m

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 1.017E-7 m/sec y0 = 0.8384 m



WELL TEST ANALYSIS

Data Set: C:\...\MW202.aqt
Date: 11/18/21 Time: 23:54:52

PROJECT INFORMATION

Company: BIG Consulting Inc
Client: 3064 Trafalgar Rd. Inc.
Project: BIGC-ENV-397G
Location: 3064 Trafalgar Road, Oakville
Test Well: MW202
Test Date: 21-11-9

AQUIFER DATA

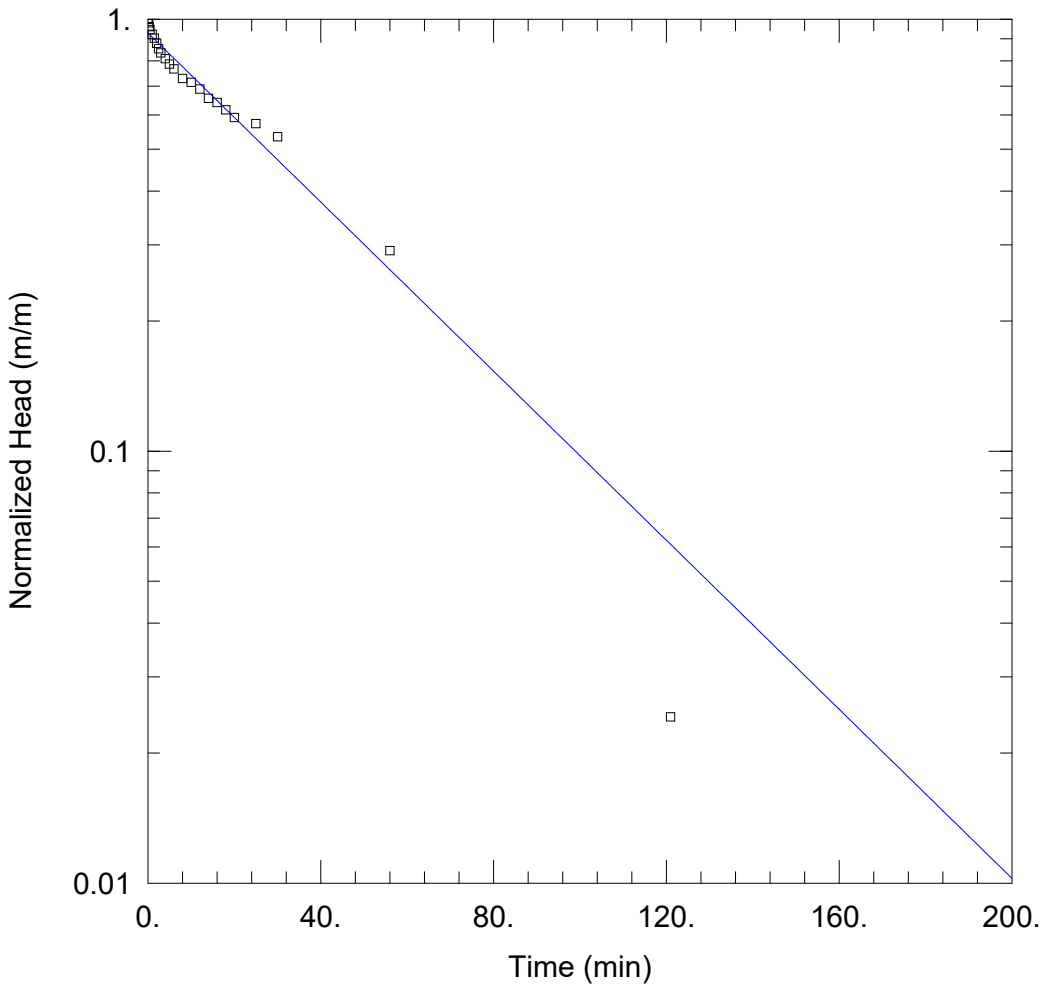
Saturated Thickness: 17.94 m Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW202)

Initial Displacement: 1. m
Total Well Penetration Depth: 17.94 m
Casing Radius: 0.0254 m
Static Water Column Height: 17.94 m
Screen Length: 3. m
Well Radius: 0.0254 m

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev
K = 3.649E-6 m/sec
y0 = 0.9956 m



WELL TEST ANALYSIS

Data Set: C:\...\MW203.aqt
Date: 11/18/21 Time: 23:56:04

PROJECT INFORMATION

Company: BIG Consulting Inc
Client: 3064 Trafalgar Rd. Inc.
Project: BIGC-ENV-397G
Location: 3064 Trafalgar Road, Oakville
Test Well: MW203
Test Date: 21-11-9

AQUIFER DATA

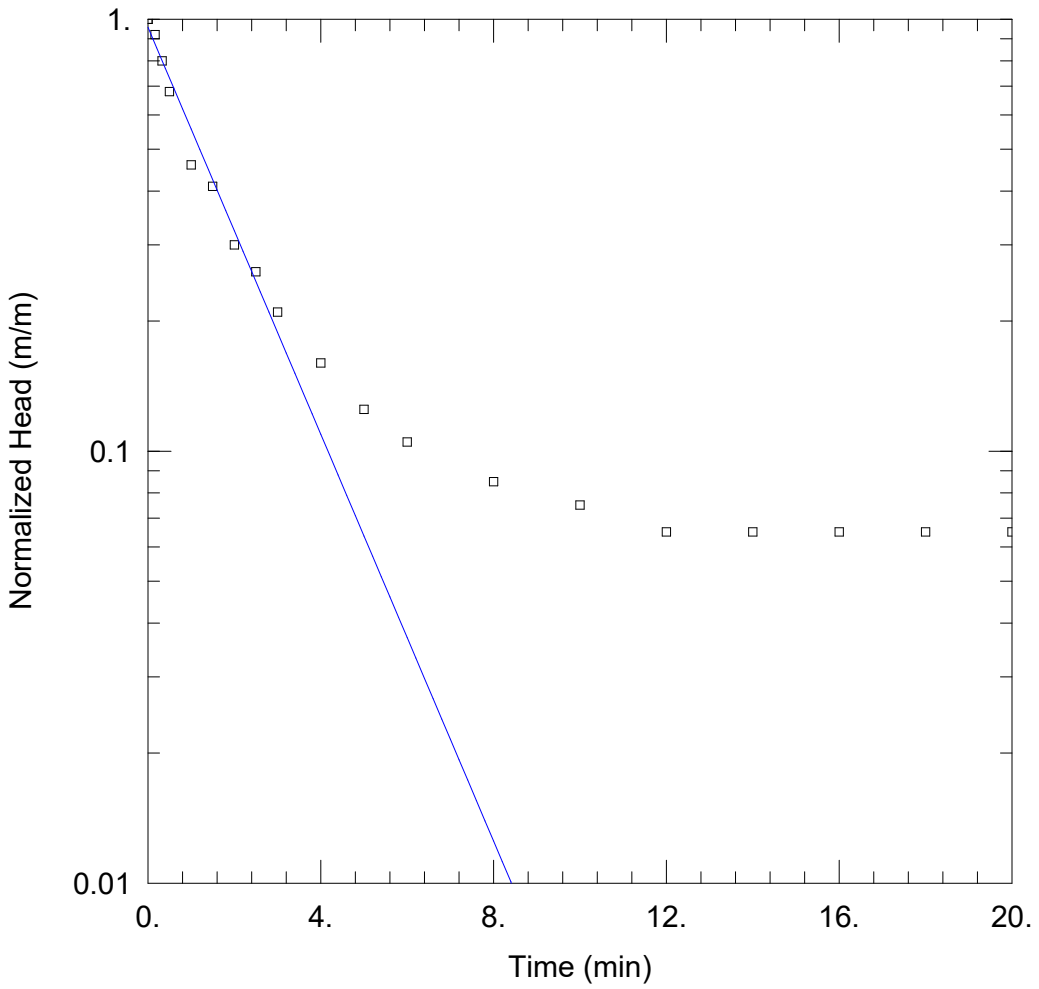
Saturated Thickness: 17.34 m Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW203)

Initial Displacement: 1.03 m
Total Well Penetration Depth: 17.34 m
Casing Radius: 0.0254 m
Static Water Column Height: 17.34 m
Screen Length: 3. m
Well Radius: 0.0254 m

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev
K = 2.207E-7 m/sec
y0 = 0.9567 m



WELL TEST ANALYSIS

Data Set: C:\...\MW204.aqt
Date: 11/18/21 Time: 23:57:23

PROJECT INFORMATION

Company: BIG Consulting Inc
Client: 3064 Trafalgar Rd. Inc.
Project: BIGC-ENV-397G
Location: 3064 Trafalgar Road, Oakville
Test Well: MW204
Test Date: 21-11-9

AQUIFER DATA

Saturated Thickness: 17.21 m Anisotropy Ratio (Kz/Kr): 1.

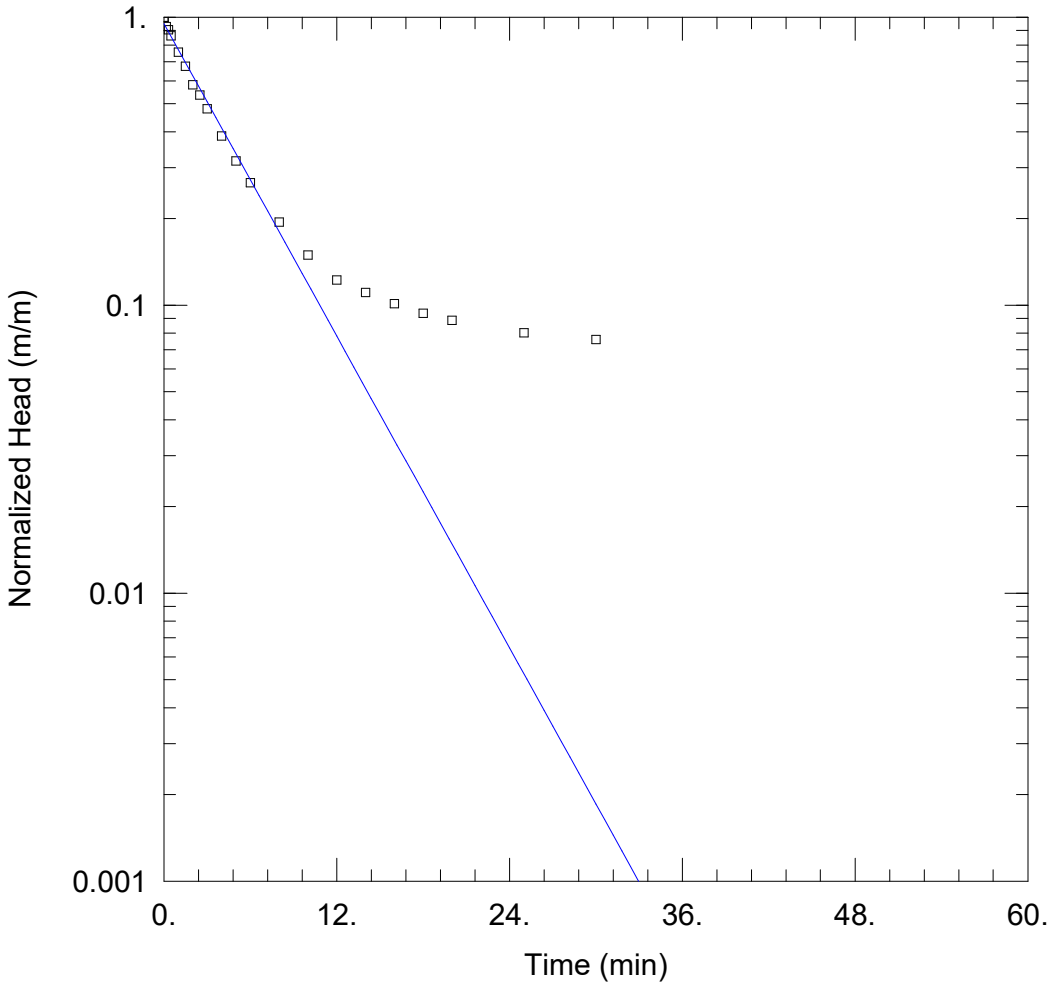
WELL DATA (MW204)

Initial Displacement: 1. m
Total Well Penetration Depth: 17.21 m
Casing Radius: 0.0254 m
Static Water Column Height: 17.21 m
Screen Length: 3. m
Well Radius: 0.0254 m

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 5.309E-6 m/sec y0 = 0.9567 m



WELL TEST ANALYSIS

Data Set: C:\...\PW1.aqt
Date: 06/26/20 Time: 13:05:57

PROJECT INFORMATION

Company: B.I.G. Consulting Inc.
Client: Distrik Capital
Project: BIGC-GEO-397B
Location: 3064 Trafalgar Road, Oakville
Test Date: June 23, 2020

AQUIFER DATA

Saturated Thickness: 8.635 m Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (PW1)

Initial Displacement: 1.185 m
Total Well Penetration Depth: 8.635 m
Casing Radius: 0.051 m
Static Water Column Height: 8.635 m
Screen Length: 3. m
Well Radius: 0.051 m

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev
K = 7.163E-6 m/sec
y0 = 1.124 m

APPENDIX D: WATER QUALITY LABORATORY CERTIFICATE OF ANALYSIS AND CHAIN OF CUSTODY

Your Project #: BIGC-GEO-397B
Site Location: 3064 Trafalgar Road, Oakville
Your C.O.C. #: 778467-01-01

Attention: Eileen Liu

B.I.G Consulting Inc.
12-5500 Tomken Road
Mississauga, ON
CANADA L4W 2Z4

Report Date: 2020/07/06
Report #: R6235817
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

BV LABS JOB #: C0F5877
Received: 2020/06/23, 18:50

Sample Matrix: Water
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Sewer Use By-Law Semivolatile Organics	1	2020/06/26	2020/06/29	CAM SOP 00301	EPA 8270 m
Biochemical Oxygen Demand (BOD)	1	2020/06/24	2020/06/29	CAM SOP-00427	SM 23 5210B m
Carbonaceous BOD	1	2020/06/24	2020/06/29	CAM SOP-00427	SM 23 5210B m
Chromium (VI) in Water	1	N/A	2020/06/25	CAM SOP-00436	EPA 7199 m
Total Cyanide	1	2020/06/24	2020/06/24	CAM SOP-00457	OMOE E3015 5 m
Fluoride	1	2020/06/24	2020/06/25	CAM SOP-00449	SM 23 4500-F C m
Mercury in Water by CVAA	1	2020/06/29	2020/06/29	CAM SOP-00453	EPA 7470A m
Total Metals Analysis by Axial ICP	1	2020/06/26	2020/06/30	CAM SOP-00408	EPA 6010D m
Total Metals Analysis by ICPMS	1	N/A	2020/06/29	CAM SOP-00447	EPA 6020B m
E.coli, (CFU/100mL)	1	N/A	2020/06/23	CAM SOP-00552	MOE LSB E3371
Total Nonylphenol in Liquids by HPLC	1	2020/07/03	2020/07/04	CAM SOP-00313	In-house Method
Nonylphenol Ethoxylates in Liquids: HPLC	1	2020/07/03	2020/07/04	CAM SOP-00313	In-house Method
Animal and Vegetable Oil and Grease	1	N/A	2020/06/27	CAM SOP-00326	EPA1664B m,SM5520B m
Total Oil and Grease	1	2020/06/27	2020/06/27	CAM SOP-00326	EPA1664B m,SM5520B m
OC Pesticides (Selected) & PCB (1)	1	2020/06/24	2020/06/25	CAM SOP-00307	EPA 8081A/8082B m
OC Pesticides Summed Parameters	1	N/A	2020/06/24	CAM SOP-00307	EPA 8081A/8082B m
pH	1	2020/06/24	2020/06/25	CAM SOP-00413	SM 4500H+ B m
Phenols (4AAP)	1	N/A	2020/06/25	CAM SOP-00444	OMOE E3179 m
Sulphate by Automated Colourimetry	1	N/A	2020/06/25	CAM SOP-00464	EPA 375.4 m
Total Kjeldahl Nitrogen in Water	1	2020/06/26	2020/06/29	CAM SOP-00938	OMOE E3516 m
Total PAHs (2)	1	N/A	2020/06/30	CAM SOP - 00301	
Mineral/Synthetic O & G (TPH Heavy Oil) (3)	1	2020/06/27	2020/06/27	CAM SOP-00326	EPA1664B m,SM5520F m
Total Suspended Solids	1	2020/06/26	2020/06/29	CAM SOP-00428	SM 23 2540D m
Volatile Organic Compounds in Water	1	N/A	2020/06/25	CAM SOP-00228	EPA 8260C m

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs in writing). All

Your Project #: BIGC-GEO-397B
Site Location: 3064 Trafalgar Road, Oakville
Your C.O.C. #: 778467-01-01

Attention: Eileen Liu

B.I.G Consulting Inc.
12-5500 Tomken Road
Mississauga, ON
CANADA L4W 2Z4

Report Date: 2020/07/06
Report #: R6235817
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

BV LABS JOB #: C0F5877
Received: 2020/06/23, 18:50

data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by BV Labs, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) Chlordane (Total) = Alpha Chlordane + Gamma Chlordane
(2) Total PAHs include only those PAHs specified in the sewer use by-by-law.
(3) Note: TPH (Heavy Oil) is equivalent to Mineral / Synthetic Oil & Grease

Encryption Key

Christine Gripton
Senior Project Manager
06 Jul 2020 14:50:51

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Christine Gripton, Senior Project Manager
Email: Christine.Gripton@bvlabs.com
Phone# (519)652-9444
==========
BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

BV Labs Job #: C0F5877
Report Date: 2020/07/06

B.I.G Consulting Inc.
Client Project #: BIGC-GEO-397B
Site Location: 3064 Trafalgar Road, Oakville
Sampler Initials: SL

HALTON SANITARY & COMBINED SEWER (2-03)

BV Labs ID				MYF510		
Sampling Date				2020/06/23 14:00		
COC Number				778467-01-01		
	UNITS	Criteria	Criteria-2	MW 101	RDL	QC Batch
Metals						
Total Aluminum (Al)	mg/L	50	-	1.9	0.1	6807454
Total Antimony (Sb)	mg/L	5	-	ND	0.02	6807454
Total Arsenic (As)	mg/L	1	0.02	ND	0.01	6807454
Total Beryllium (Be)	mg/L	5	-	ND	0.0005	6807454
Total Cadmium (Cd)	mg/L	1	0.008	ND	0.002	6807454
Total Chromium (Cr)	mg/L	3	0.08	ND	0.01	6807454
Total Cobalt (Co)	mg/L	5	-	0.002	0.002	6807454
Total Copper (Cu)	mg/L	3	0.04	ND	0.01	6807454
Total Iron (Fe)	mg/L	50	-	2.6	0.02	6807454
Total Lead (Pb)	mg/L	3	0.12	ND	0.01	6807454
Total Manganese (Mn)	mg/L	5	0.05	**0.21**	0.001	6807454
Total Molybdenum (Mo)	mg/L	5	-	0.007	0.005	6807454
Total Nickel (Ni)	mg/L	3	0.08	ND	0.005	6807454
Total Phosphorus (P)	mg/L	10	0.4	0.08	0.05	6807454
Total Selenium (Se)	mg/L	5	0.02	ND	0.02	6807454
Total Silver (Ag)	mg/L	5	0.12	ND	0.01	6807454
Total Tin (Sn)	mg/L	5	-	ND	0.02	6807454
Total Titanium (Ti)	mg/L	5	-	0.024	0.005	6807454
Total Zinc (Zn)	mg/L	3	0.04	0.011	0.005	6807454

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Halton Sanitary & Combined Sewer Bylaw (2-03)
Criteria-2: The Town of Oakville Storm Sewer Discharge By Law 2009-031
ND = Not detected

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0F5877
Report Date: 2020/07/06

B.I.G Consulting Inc.
Client Project #: BIGC-GEO-397B
Site Location: 3064 Trafalgar Road, Oakville
Sampler Initials: SL

OIL & GREASE - A/V/M/T (WATER)

BV Labs ID			MYF510		
Sampling Date			2020/06/23 14:00		
COC Number			778467-01-01		
	UNITS	Criteria	MW 101	RDL	QC Batch
Calculated Parameters					
Total Animal/Vegetable Oil and Grease	mg/L	150	ND	0.50	6800989
Petroleum Hydrocarbons					
Total Oil & Grease	mg/L	-	ND	0.50	6809284
Total Oil & Grease Mineral/Synthetic	mg/L	-	ND	0.50	6809285

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Halton Sanitary & Combined Sewer Bylaw (2-03)
ND = Not detected

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0F5877
Report Date: 2020/07/06

B.I.G Consulting Inc.
Client Project #: BIGC-GEO-397B
Site Location: 3064 Trafalgar Road, Oakville
Sampler Initials: SL

OAKVILLE STORM SEWER (2009-031)

BV Labs ID				MYF510			MYF510		
Sampling Date				2020/06/23 14:00			2020/06/23 14:00		
COC Number				778467-01-01			778467-01-01		
	UNITS	Criteria	Criteria-2	MW 101	RDL	QC Batch	MW 101 Lab-Dup	RDL	QC Batch
Inorganics									
Total BOD	mg/L	-	15	ND	2	6802592			
pH	pH	6.0:10.0	6.5:8.5	7.71		6803939			
Phenols-4AAP	mg/L	1	0.008	ND	0.0010	6804557			
Total Suspended Solids	mg/L	350	15	**78**	10	6807190			
Total Cyanide (CN)	mg/L	2	0.02	ND	0.0050	6803336			
Miscellaneous Parameters									
Nonylphenol Ethoxylate (Total)	mg/L	-	0.01	ND	0.005	6816988	ND	0.005	6816988
Nonylphenol (Total)	mg/L	-	0.001	ND	0.001	6816983	ND	0.001	6816983
Metals									
Chromium (VI)	ug/L	-	40	ND	0.50	6801174			
Mercury (Hg)	mg/L	0.05	0.0004	ND	0.00010	6810551			
Total Arsenic (As)	ug/L	1000	20	2.0	1.0	6810238			
Total Cadmium (Cd)	ug/L	1000	8	ND	0.090	6810238			
Total Chromium (Cr)	ug/L	3000	80	ND	5.0	6810238			
Total Copper (Cu)	ug/L	3000	40	2.1	0.90	6810238			
Total Lead (Pb)	ug/L	3000	120	1.0	0.50	6810238			
Total Manganese (Mn)	ug/L	5000	50	**220**	2.0	6810238			
Total Nickel (Ni)	ug/L	3000	80	6.0	1.0	6810238			
Total Phosphorus (P)	ug/L	10000	400	ND	100	6810238			
Total Selenium (Se)	ug/L	5000	20	ND	2.0	6810238			
Total Silver (Ag)	ug/L	5000	120	0.41	0.090	6810238			
Total Zinc (Zn)	ug/L	3000	40	13	5.0	6810238			
Semivolatile Organics									
Di-N-butyl phthalate	ug/L	-	15	ND	2	6808175			
Bis(2-ethylhexyl)phthalate	ug/L	-	8.8	ND	2	6808175			
3,3'-Dichlorobenzidine	ug/L	-	0.8	ND	0.8	6808175			

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Halton Sanitary & Combined Sewer Bylaw (2-03)
Criteria-2: The Town of Oakville Storm Sewer Discharge By Law 2009-031
ND = Not detected

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0F5877
Report Date: 2020/07/06

B.I.G Consulting Inc.
Client Project #: BIGC-GEO-397B
Site Location: 3064 Trafalgar Road, Oakville
Sampler Initials: SL

OAKVILLE STORM SEWER (2009-031)

BV Labs ID				MYF510			MYF510		
Sampling Date				2020/06/23 14:00			2020/06/23 14:00		
COC Number				778467-01-01			778467-01-01		
	UNITS	Criteria	Criteria-2	MW 101	RDL	QC Batch	MW 101 Lab-Dup	RDL	QC Batch
Pentachlorophenol	ug/L	-	2	ND	1	6808175			
Phenanthrene	ug/L	-	-	ND	0.2	6808175			
Anthracene	ug/L	-	-	ND	0.2	6808175			
Fluoranthene	ug/L	-	-	ND	0.2	6808175			
Pyrene	ug/L	-	-	ND	0.2	6808175			
Benzo(a)anthracene	ug/L	-	-	ND	0.2	6808175			
Chrysene	ug/L	-	-	ND	0.2	6808175			
Benzo(b/j)fluoranthene	ug/L	-	-	ND	0.2	6808175			
Benzo(k)fluoranthene	ug/L	-	-	ND	0.2	6808175			
Benzo(a)pyrene	ug/L	-	-	ND	0.2	6808175			
Indeno(1,2,3-cd)pyrene	ug/L	-	-	ND	0.2	6808175			
Dibenzo(a,h)anthracene	ug/L	-	-	ND	0.2	6808175			
Benzo(g,h,i)perylene	ug/L	-	-	ND	0.2	6808175			
Dibenzo(a,i)pyrene	ug/L	-	-	ND	0.2	6808175			
Benzo(e)pyrene	ug/L	-	-	ND	0.2	6808175			
Perylene	ug/L	-	-	ND	0.2	6808175			
Dibenzo(a,j) acridine	ug/L	-	-	ND	0.4	6808175			
7H-Dibenzo(c,g) Carbazole	ug/L	-	-	ND	0.4	6808175			
1,6-Dinitropyrene	ug/L	-	-	ND	0.4	6808175			
1,3-Dinitropyrene	ug/L	-	-	ND	0.4	6808175			
1,8-Dinitropyrene	ug/L	-	-	ND	0.4	6808175			
Calculated Parameters									
Total PAHs (18 PAHs)	ug/L	-	2	ND	1	6800990			
Volatile Organics									
Benzene	ug/L	10	2	ND	0.40	6803091			
Chloroform	ug/L	40	2	ND	0.40	6803091			
1,4-Dichlorobenzene	ug/L	80	6.8	ND	0.80	6803091			

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Halton Sanitary & Combined Sewer Bylaw (2-03)
Criteria-2: The Town of Oakville Storm Sewer Discharge By Law 2009-031
ND = Not detected

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0F5877
Report Date: 2020/07/06

B.I.G Consulting Inc.
Client Project #: BIGC-GEO-397B
Site Location: 3064 Trafalgar Road, Oakville
Sampler Initials: SL

OAKVILLE STORM SEWER (2009-031)

BV Labs ID				MYF510			MYF510		
Sampling Date				2020/06/23 14:00			2020/06/23 14:00		
COC Number				778467-01-01			778467-01-01		
	UNITS	Criteria	Criteria-2	MW 101	RDL	QC Batch	MW 101 Lab-Dup	RDL	QC Batch
Ethylbenzene	ug/L	160	2	ND	0.40	6803091			
Methylene Chloride(Dichloromethane)	ug/L	2000	5.2	ND	4.0	6803091			
Tetrachloroethylene	ug/L	1000	4.4	ND	0.40	6803091			
Toluene	ug/L	16	2	ND	0.40	6803091			
Trichloroethylene	ug/L	400	7.6	ND	0.40	6803091			
Pesticides & Herbicides									
Aldrin	ug/L	-	-	ND	0.005	6802691			
Dieldrin	ug/L	-	-	ND	0.005	6802691			
a-Chlordane	ug/L	-	-	ND	0.005	6802691			
g-Chlordane	ug/L	-	-	ND	0.005	6802691			
o,p-DDT	ug/L	-	0.04	ND	0.005	6802691			
p,p-DDT	ug/L	-	0.04	ND	0.005	6802691			
Lindane	ug/L	-	40	ND	0.003	6802691			
Hexachlorobenzene	ug/L	-	0.04	ND	0.005	6802691			
Mirex	ug/L	-	40	ND	0.005	6802691			
Microbiological									
Escherichia coli	CFU/100mL	-	200	<10	10	6802185			
Surrogate Recovery (%)									
2,4,6-Tribromophenol	%	-	-	56		6808175			
2-Fluorobiphenyl	%	-	-	63		6808175			
D14-Terphenyl (FS)	%	-	-	102		6808175			
D5-Nitrobenzene	%	-	-	96		6808175			
D8-Acenaphthylene	%	-	-	69		6808175			
2,4,5,6-Tetrachloro-m-xylene	%	-	-	42 (1)		6802691			

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Halton Sanitary & Combined Sewer Bylaw (2-03)
Criteria-2: The Town of Oakville Storm Sewer Discharge By Law 2009-031
ND = Not detected
(1) Surrogate recovery was below the control limit as stipulated by Ontario Regulation 153, however, this recovery is still within Bureau Veritas Laboratories' performance based limits. Results reported with surrogate recoveries within this range are still valid but may have an associated low bias.

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0F5877
Report Date: 2020/07/06

B.I.G Consulting Inc.
Client Project #: BIGC-GEO-397B
Site Location: 3064 Trafalgar Road, Oakville
Sampler Initials: SL

OAKVILLE STORM SEWER (2009-031)

BV Labs ID				MYF510			MYF510		
Sampling Date				2020/06/23 14:00			2020/06/23 14:00		
COC Number				778467-01-01			778467-01-01		
	UNITS	Criteria	Criteria-2	MW 101	RDL	QC Batch	MW 101 Lab-Dup	RDL	QC Batch
Decachlorobiphenyl	%	-	-	68		6802691			
4-Bromofluorobenzene	%	-	-	97		6803091			
D4-1,2-Dichloroethane	%	-	-	93		6803091			
D8-Toluene	%	-	-	95		6803091			

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Halton Sanitary & Combined Sewer Bylaw (2-03)
Criteria-2: The Town of Oakville Storm Sewer Discharge By Law 2009-031

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0F5877
Report Date: 2020/07/06

B.I.G Consulting Inc.
Client Project #: BIGC-GEO-397B
Site Location: 3064 Trafalgar Road, Oakville
Sampler Initials: SL

RESULTS OF ANALYSES OF WATER

BV Labs ID			MYF510		
Sampling Date			2020/06/23 14:00		
COC Number			778467-01-01		
	UNITS	Criteria	MW 101	RDL	QC Batch
Inorganics					
Total Carbonaceous BOD	mg/L	300	ND	2	6802594
Fluoride (F-)	mg/L	10	0.18	0.10	6803929
Total Kjeldahl Nitrogen (TKN)	mg/L	100	0.78	0.10	6807915
Dissolved Sulphate (SO4)	mg/L	1500	100	1.0	6803881

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Halton Sanitary & Combined Sewer Bylaw (2-03)
ND = Not detected

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0F5877
Report Date: 2020/07/06

B.I.G Consulting Inc.
Client Project #: BIGC-GEO-397B
Site Location: 3064 Trafalgar Road, Oakville
Sampler Initials: SL

ORGANOCHLORINATED PESTICIDES BY GC-ECD (WATER)

BV Labs ID			MYF510		
Sampling Date			2020/06/23 14:00		
COC Number			778467-01-01		
	UNITS	Criteria	MW 101	RDL	QC Batch
Calculated Parameters					
Aldrin + Dieldrin	ug/L	0.08	ND	0.005	6800957
Chlordane (Total)	ug/L	40	ND	0.005	6800957
DDT+ Metabolites	ug/L	-	ND	0.005	6800957
o,p-DDT + p,p-DDT	ug/L	-	ND	0.005	6800957
Total PCB	ug/L	0.4	ND	0.1	6800957

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: The Town of Oakville Storm Sewer Discharge By Law 2009-031
ND = Not detected

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	14.7°C

Revised report (2020/07/06): Includes Oakville Storm bylaw criteria.

Sample MYF510 [MW 101] : OC Pesticide Analysis: Detection limits were raised due to matrix interferences.

VOC Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Results relate only to the items tested.

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0F5877
Report Date: 2020/07/06

QUALITY ASSURANCE REPORT

B.I.G Consulting Inc.
Client Project #: BIGC-GEO-397B
Site Location: 3064 Trafalgar Road, Oakville
Sampler Initials: SL

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
6802691	2,4,5,6-Tetrachloro-m-xylene	2020/06/25	50	50 - 130	50	50 - 130	55	%				
6802691	Decachlorobiphenyl	2020/06/25	72	50 - 130	105	50 - 130	105	%				
6803091	4-Bromofluorobenzene	2020/06/25	105	70 - 130	106	70 - 130	103	%				
6803091	D4-1,2-Dichloroethane	2020/06/25	88	70 - 130	90	70 - 130	91	%				
6803091	D8-Toluene	2020/06/25	99	70 - 130	97	70 - 130	96	%				
6808175	2,4,6-Tribromophenol	2020/06/27	78	10 - 130	68	10 - 130	59	%				
6808175	2-Fluorobiphenyl	2020/06/27	52	30 - 130	62	30 - 130	64	%				
6808175	D14-Terphenyl (FS)	2020/06/27	95	30 - 130	95	30 - 130	96	%				
6808175	D5-Nitrobenzene	2020/06/27	49	30 - 130	68	30 - 130	71	%				
6808175	D8-Acenaphthylene	2020/06/27	67	30 - 130	64	30 - 130	66	%				
6801174	Chromium (VI)	2020/06/25	100	80 - 120	102	80 - 120	ND, RDL=0.50	ug/L	0.37	20		
6802592	Total BOD	2020/06/29					ND,RDL=2	mg/L	4.9	30	102	80 - 120
6802594	Total Carbonaceous BOD	2020/06/29					ND,RDL=2	mg/L	NC	30	100	85 - 115
6802691	a-Chlordane	2020/06/25	67	50 - 130	82	50 - 130	ND, RDL=0.005	ug/L	1.2	30		
6802691	Aldrin	2020/06/25	54	50 - 130	62	50 - 130	ND, RDL=0.005	ug/L	4.2	30		
6802691	Dieldrin	2020/06/25	85	50 - 130	108	50 - 130	ND, RDL=0.005	ug/L	0.11	30		
6802691	g-Chlordane	2020/06/25	96	50 - 130	110	50 - 130	ND, RDL=0.005	ug/L	1.8	30		
6802691	Hexachlorobenzene	2020/06/25	65	50 - 130	80	50 - 130	ND, RDL=0.005	ug/L	NC	30		
6802691	Lindane	2020/06/25	60	50 - 130	76	50 - 130	ND, RDL=0.003	ug/L	1.2	30		
6802691	Mirex	2020/06/25	43	30 - 130	81	30 - 130	ND, RDL=0.005	ug/L	2.2	40		
6802691	o,p-DDT	2020/06/25	75	50 - 130	94	50 - 130	ND, RDL=0.005	ug/L	0.20	30		
6802691	p,p-DDT	2020/06/25	60	50 - 130	72	50 - 130	ND, RDL=0.005	ug/L	0.14	30		
6803091	1,4-Dichlorobenzene	2020/06/25	96	70 - 130	87	70 - 130	ND, RDL=0.40	ug/L	NC	30		

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
6803091	Benzene	2020/06/25	92	70 - 130	85	70 - 130	ND, RDL=0.20	ug/L	NC	30		
6803091	Chloroform	2020/06/25	83	70 - 130	77	70 - 130	ND, RDL=0.20	ug/L	NC	30		
6803091	Ethylbenzene	2020/06/25	93	70 - 130	84	70 - 130	ND, RDL=0.20	ug/L	NC	30		
6803091	Methylene Chloride(Dichloromethane)	2020/06/25	82	70 - 130	77	70 - 130	ND, RDL=2.0	ug/L	NC	30		
6803091	Tetrachloroethylene	2020/06/25	86	70 - 130	77	70 - 130	ND, RDL=0.20	ug/L	NC	30		
6803091	Toluene	2020/06/25	92	70 - 130	83	70 - 130	ND, RDL=0.20	ug/L	NC	30		
6803091	Trichloroethylene	2020/06/25	94	70 - 130	86	70 - 130	ND, RDL=0.20	ug/L	NC	30		
6803336	Total Cyanide (CN)	2020/06/24	95	80 - 120	98	80 - 120	ND, RDL=0.0050	mg/L	NC	20		
6803881	Dissolved Sulphate (SO4)	2020/06/25	102	75 - 125	101	80 - 120	ND, RDL=1.0	mg/L	NC	20		
6803929	Fluoride (F-)	2020/06/25	92	80 - 120	97	80 - 120	ND, RDL=0.10	mg/L	NC	20		
6803939	pH	2020/06/25			102	98 - 103			0.29	N/A		
6804557	Phenols-4AAP	2020/06/25	101	80 - 120	99	80 - 120	ND, RDL=0.0010	mg/L	NC	20		
6807190	Total Suspended Solids	2020/06/29					ND, RDL=10	mg/L	NC	25	95	85 - 115
6807454	Total Aluminum (Al)	2020/06/30	NC	80 - 120	99	80 - 120	ND, RDL=0.1	mg/L	1.3	20		
6807454	Total Antimony (Sb)	2020/06/30	107	80 - 120	105	80 - 120	ND, RDL=0.02	mg/L	NC	20		
6807454	Total Arsenic (As)	2020/06/30	108	80 - 120	102	80 - 120	ND, RDL=0.01	mg/L	NC	20		
6807454	Total Beryllium (Be)	2020/06/30	100	80 - 120	98	80 - 120	ND, RDL=0.0005	mg/L	NC	20		
6807454	Total Cadmium (Cd)	2020/06/30	106	80 - 120	103	80 - 120	ND, RDL=0.002	mg/L	NC	20		
6807454	Total Chromium (Cr)	2020/06/30	100	80 - 120	101	80 - 120	ND, RDL=0.01	mg/L	NC	20		
6807454	Total Cobalt (Co)	2020/06/30	98	80 - 120	102	80 - 120	ND, RDL=0.002	mg/L	NC	20		
6807454	Total Copper (Cu)	2020/06/30	101	80 - 120	99	80 - 120	ND, RDL=0.01	mg/L	0.37	20		
6807454	Total Iron (Fe)	2020/06/30	100	80 - 120	103	80 - 120	ND, RDL=0.02	mg/L	NC	20		
6807454	Total Lead (Pb)	2020/06/30	96	80 - 120	101	80 - 120	ND, RDL=0.01	mg/L	NC	20		
6807454	Total Manganese (Mn)	2020/06/30	98	80 - 120	98	80 - 120	ND, RDL=0.001	mg/L	2.4	20		
6807454	Total Molybdenum (Mo)	2020/06/30	102	80 - 120	104	80 - 120	ND, RDL=0.005	mg/L	0.91	20		

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
6807454	Total Nickel (Ni)	2020/06/30	99	80 - 120	103	80 - 120	ND, RDL=0.005	mg/L	0.32	20		
6807454	Total Phosphorus (P)	2020/06/30	NC	80 - 120	111	80 - 120	ND, RDL=0.05	mg/L	0.51	20		
6807454	Total Selenium (Se)	2020/06/30	107	80 - 120	104	80 - 120	ND, RDL=0.02	mg/L	NC	20		
6807454	Total Silver (Ag)	2020/06/30	98	80 - 120	98	80 - 120	ND, RDL=0.01	mg/L	NC	20		
6807454	Total Tin (Sn)	2020/06/30	103	80 - 120	107	80 - 120	ND, RDL=0.02	mg/L	1.2	20		
6807454	Total Titanium (Ti)	2020/06/30	104	80 - 120	103	80 - 120	ND, RDL=0.005	mg/L	NC	20		
6807454	Total Zinc (Zn)	2020/06/30	100	80 - 120	102	80 - 120	ND, RDL=0.005	mg/L	0.067	20		
6807915	Total Kjeldahl Nitrogen (TKN)	2020/06/29	116	80 - 120	107	80 - 120	ND, RDL=0.10	mg/L	19	20	106	80 - 120
6808175	1,3-Dinitropyrene	2020/06/27	1.9 (2)	30 - 130	87	30 - 130	ND, RDL=0.4	ug/L				
6808175	1,6-Dinitropyrene	2020/06/27	4.6 (2)	30 - 130	98	30 - 130	ND, RDL=0.4	ug/L				
6808175	1,8-Dinitropyrene	2020/06/27	3.4 (2)	30 - 130	98	30 - 130	ND, RDL=0.4	ug/L				
6808175	3,3'-Dichlorobenzidine	2020/06/27	6.4 (1)	30 - 130	101	30 - 130	ND, RDL=0.8	ug/L				
6808175	7H-Dibenzo(c,g) Carbazole	2020/06/27	108	30 - 130	102	30 - 130	ND, RDL=0.4	ug/L	NC	40		
6808175	Anthracene	2020/06/27	81	30 - 130	83	30 - 130	ND, RDL=0.2	ug/L	NC	40		
6808175	Benzo(a)anthracene	2020/06/27	96	30 - 130	96	30 - 130	ND, RDL=0.2	ug/L	NC	40		
6808175	Benzo(a)pyrene	2020/06/27	84	30 - 130	86	30 - 130	ND, RDL=0.2	ug/L	NC	40		
6808175	Benzo(b/j)fluoranthene	2020/06/27	86	30 - 130	87	30 - 130	ND, RDL=0.2	ug/L	NC	40		
6808175	Benzo(e)pyrene	2020/06/27	95	30 - 130	99	30 - 130	ND, RDL=0.2	ug/L	NC	40		
6808175	Benzo(g,h,i)perylene	2020/06/27	97	30 - 130	104	30 - 130	ND, RDL=0.2	ug/L	NC	40		
6808175	Benzo(k)fluoranthene	2020/06/27	90	30 - 130	98	30 - 130	ND, RDL=0.2	ug/L	NC	40		
6808175	Bis(2-ethylhexyl)phthalate	2020/06/27	111	30 - 130	105	30 - 130	ND,RDL=2	ug/L	NC	40		
6808175	Chrysene	2020/06/27	91	30 - 130	95	30 - 130	ND, RDL=0.2	ug/L	NC	40		
6808175	Dibenzo(a,h)anthracene	2020/06/27	99	30 - 130	105	30 - 130	ND, RDL=0.2	ug/L	NC	40		
6808175	Dibenzo(a,i)pyrene	2020/06/27	86	30 - 130	90	30 - 130	ND, RDL=0.2	ug/L	NC	40		
6808175	Dibenzo(a,j) acridine	2020/06/27	114	30 - 130	124	30 - 130	ND, RDL=0.4	ug/L	NC	40		
6808175	Di-N-butyl phthalate	2020/06/27	94	30 - 130	95	30 - 130	ND,RDL=2	ug/L	NC	40		
6808175	Fluoranthene	2020/06/27	95	30 - 130	95	30 - 130	ND, RDL=0.2	ug/L	NC	40		
6808175	Indeno(1,2,3-cd)pyrene	2020/06/27	97	30 - 130	102	30 - 130	ND, RDL=0.2	ug/L	NC	40		

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
6808175	Pentachlorophenol	2020/06/27	94	30 - 130	37	30 - 130	ND,RDL=1	ug/L				
6808175	Perylene	2020/06/27	91	30 - 130	91	30 - 130	ND, RDL=0.2	ug/L	NC	40		
6808175	Phenanthrene	2020/06/27	82	30 - 130	84	30 - 130	ND, RDL=0.2	ug/L	NC	40		
6808175	Pyrene	2020/06/27	97	30 - 130	97	30 - 130	ND, RDL=0.2	ug/L	NC	40		
6809284	Total Oil & Grease	2020/06/27			99	85 - 115	ND, RDL=0.50	mg/L	4.4	25		
6809285	Total Oil & Grease Mineral/Synthetic	2020/06/27			92	85 - 115	ND, RDL=0.50	mg/L	3.2	25		
6810238	Total Arsenic (As)	2020/06/29	98	80 - 120	100	80 - 120	ND, RDL=1.0	ug/L				
6810238	Total Cadmium (Cd)	2020/06/29	94	80 - 120	96	80 - 120	ND, RDL=0.090	ug/L				
6810238	Total Chromium (Cr)	2020/06/29	90	80 - 120	92	80 - 120	ND, RDL=5.0	ug/L				
6810238	Total Copper (Cu)	2020/06/29	92	80 - 120	93	80 - 120	ND, RDL=0.90	ug/L	3.5	20		
6810238	Total Lead (Pb)	2020/06/29	94	80 - 120	96	80 - 120	ND, RDL=0.50	ug/L				
6810238	Total Manganese (Mn)	2020/06/29	90	80 - 120	94	80 - 120	ND, RDL=2.0	ug/L				
6810238	Total Nickel (Ni)	2020/06/29	91	80 - 120	95	80 - 120	ND, RDL=1.0	ug/L				
6810238	Total Phosphorus (P)	2020/06/29	95	80 - 120	94	80 - 120	ND, RDL=100	ug/L				
6810238	Total Selenium (Se)	2020/06/29	96	80 - 120	99	80 - 120	ND, RDL=2.0	ug/L				
6810238	Total Silver (Ag)	2020/06/29	94	80 - 120	96	80 - 120	ND, RDL=0.090	ug/L				
6810238	Total Zinc (Zn)	2020/06/29	93	80 - 120	97	80 - 120	ND, RDL=5.0	ug/L	1.3	20		
6810551	Mercury (Hg)	2020/06/29	97	75 - 125	96	80 - 120	ND, RDL=0.00010	mg/L	NC	20		
6816983	Nonylphenol (Total)	2020/07/04	95	50 - 130	117	50 - 130	ND, RDL=0.001	mg/L	NC	40		

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
6816988	Nonylphenol Ethoxylate (Total)	2020/07/04	95	50 - 130	101	50 - 130	ND, RDL=0.005	mg/L	NC	40		

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

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

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

(1) Some recoveries were below the lower control limits. This may represent a low bias in some results for these flagged analytes.

(2) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

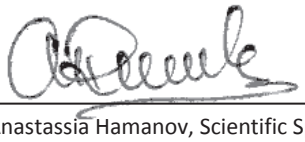
Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0F5877
Report Date: 2020/07/06

B.I.G Consulting Inc.
Client Project #: BIGC-GEO-397B
Site Location: 3064 Trafalgar Road, Oakville
Sampler Initials: SL

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Anastassia Hamanov, Scientific Specialist

Brad Newman, Scientific Service Specialist

Sonja Elavinamannil, Analyst I

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports.
For Service Group specific validation please refer to the Validation Signature Page.

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0F5877
Report Date: 2020/07/06

B.I.G Consulting Inc.
Client Project #: BIGC-GEO-397B
Site Location: 3064 Trafalgar Road, Oakville
Sampler Initials: SL

Exceedance Summary Table – Halton Sanitary Sewer

Result Exceedances

Sample ID	BV Labs ID	Parameter	Criteria	Result	DL	UNITS
No Exceedances						

The exceedance summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.

Exceedance Summary Table – Oakville Storm Sewer

Result Exceedances

Sample ID	BV Labs ID	Parameter	Criteria	Result	DL	UNITS
MW 101	MYF510-07	Total Manganese (Mn)	0.05	0.21	0.001	mg/L
MW 101	MYF510-08	Total Manganese (Mn)	50	220	2.0	ug/L
MW 101	MYF510-06	Total Suspended Solids	15	78	10	mg/L

The exceedance summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Bureau Veritas Laboratories
6740 Campobello Road, Mississauga, Ontario, Canada L5N 2L8 Tel (905) 817-5700 Toll-free 800-563-6266 Fax (905) 817-5777 www.bvlabs.com

Page of

CHAIN OF CUSTODY RECORD

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#31796 B.I.G Consulting Inc.	Company Name:	Stantec	Quotation #:	B64476	BV Labs Job #:	Bottle Order #: 778467
Attention:	Accounts Payable	Attention:	Eileen Liu	P.O. #:			
Address:	12-5500 Tomken Road Mississauga ON L4W 2Z4	Address:	Stantec	Project:	BIGC-GEO-397B	COC #: C#778467-01-01	Project Manager: Christine Gripton
Tel:	(416) 214-4880 Fax:	Tel:	Stantec Fax:	Project Name:	3064 Trafalgar Road, Oakville		
Email:	ldougherty@brownfieldigi.com; admin@brownfieldigi.co	Email:	eliu@brownfieldigi.com	Site #:			
				Sampled By:			

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BV LABS DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011)	Other Regulations	Special Instructions
☐ Table 1 ☐ Res/Park ☐ Medium/Fine ☐ Table 2 ☐ Ind/Comm ☐ Coarse ☐ Table 3 ☐ Agri/Other ☐ For RSC ☐ Table ___	☐ CCME ☑ Sanitary Sewer Bylaw ☐ Reg 558 ☑ Storm Sewer Bylaw ☐ MISA Municipality Halton ☐ PWQO ☐ Other	

Include Criteria on Certificate of Analysis (Y/N)? Y

Turnaround Time (TAT) Required
Please provide advance notice for rush projects

Regular (Standard) TAT: ☑
(will be applied if Rush TAT is not specified)
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: _____ Time Required: _____ ☐
Rush Confirmation Number: _____ *(call lab for #)*

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	ANALYSIS REQUESTED (PLEASE BE SPECIFIC): Halton Sanitary & Oakville Storm	# of Bottles	Comments
1		MW101	20/06/23	1400	GW	N	✓	22	
2									
3									
4									
5									
6									
7									
8									
9									
10									

23-Jun-20 18:50
Christine Gripton
C0F5877
DSG ENV-1181

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Shirley Li	20/06/23	1845	Lucy Rosenthal	20/06/23	18:50	

Laboratory Use Only				
Time Sensitive	Temperature (°C) on Recei: 17/13/14	Custody Seal Present / Intact	Yes ✓	No

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BV LABS' STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVLABS.COM/TERMS-AND-CONDITIONS.

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

** SAMPLE CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT WWW.BVLABS.COM/RESOURCES/CHAIN-OF-CUSTODY-FORMS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BV LABS

White: BV Labs Yellow: Client

Bureau Veritas Canada (2019) Inc.

Ice

Your Project #: BIGC-GEO-397H
Site Location: 3064 TRAFALGAR RD, OAKVILLE
Your C.O.C. #: 837421-01-01

Attention: Eileen Liu

B.I.G Consulting Inc.
12-5500 Tomken Road
Mississauga, ON
CANADA L4W 2Z4

Report Date: 2022/01/18
Report #: R6967095
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1Z9209
Received: 2021/12/20, 13:01

Sample Matrix: Water
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Dissolved Aluminum (0.2 u, clay free)	1	N/A	2021/12/29	CAM SOP-00447	EPA 6020B m
Alkalinity	1	N/A	2021/12/24	CAM SOP-00448	SM 23 2320 B m
Biochemical Oxygen Demand (BOD)	1	2021/12/24	2021/12/29	CAM SOP-00427	SM 23 5210B m
Chromium (VI) in Water	1	N/A	2021/12/24	CAM SOP-00436	EPA 7199 m
Free (WAD) Cyanide	1	N/A	2021/12/23	CAM SOP-00457	OMOE E3015 m
Dissolved Oxygen	1	2021/12/24	2021/12/24	CAM SOP-00427	SM 23 4500 O G m
Hardness (calculated as CaCO3)	1	N/A	2022/01/06	CAM SOP 00102/00408/00447	SM 2340 B
Mercury	1	2021/12/23	2021/12/23	CAM SOP-00453	EPA 7470A m
Total Metals Analysis by ICPMS	1	N/A	2021/12/29	CAM SOP-00447	EPA 6020B m
Sulphide (as H2S) (1)	1	N/A	2021/12/24	AB WI-00065	Auto Calc.
Total Sulphide (1)	1	N/A	2021/12/24	AB SOP-00080	SM 23 4500 S2-A D Fm
Total Ammonia-N	1	N/A	2022/01/10	CAM SOP-00441	USGS I-2522-90 m
Total Nonylphenol in Liquids by HPLC	1	2021/12/23	2021/12/24	CAM SOP-00313	In-house Method
PAH Compounds in Water by GC/MS (SIM)	1	2021/12/23	2021/12/24	CAM SOP-00318	EPA 8270 m
pH	1	2021/12/23	2021/12/24	CAM SOP-00413	SM 4500H+ B m
Phenols (4AAP)	1	N/A	2021/12/24	CAM SOP-00444	OMOE E3179 m
Total Kjeldahl Nitrogen in Water	1	2022/01/10	2022/01/11	CAM SOP-00938	OMOE E3516 m
Total Phosphorus (Colourimetric)	1	2021/12/29	2022/01/06	CAM SOP-00407	SM 23 4500 P B H m
Total Suspended Solids	1	2021/12/23	2021/12/24	CAM SOP-00428	SM 23 2540D m
Turbidity	1	N/A	2021/12/24	CAM SOP-00417	SM 23 2130 B m
Volatile Organic Compounds in Water	1	N/A	2021/12/23	CAM SOP-00228	EPA 8260C m
Non-Routine Volatile Organic Compounds	1	N/A	2021/12/29	CAM SOP-00226	EPA 8260 m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement

Your Project #: BIGC-GEO-397H
Site Location: 3064 TRAFALGAR RD, OAKVILLE
Your C.O.C. #: 837421-01-01

Attention: Eileen Liu

B.I.G Consulting Inc.
12-5500 Tomken Road
Mississauga, ON
CANADA L4W 2Z4

Report Date: 2022/01/18
Report #: R6967095
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1Z9209
Received: 2021/12/20, 13:01

Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Bureau Veritas Calgary (19th), 4000 19th Street NE , Calgary, AB, T2E 6P8

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Deepthi Shaji, Project Manager
Email: Deepthi.Shaji@bureauveritas.com
Phone# (905)817-5700 Ext:7065843
==========
BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Bureau Veritas Job #: C1Z9209
Report Date: 2022/01/18

B.I.G Consulting Inc.
Client Project #: BIGC-GEO-397H
Site Location: 3064 TRAFALGAR RD, OAKVILLE
Sampler Initials: MV

PWQO METALS AND INORGANICS (WATER)

Bureau Veritas ID			RKY201			RKY201		
Sampling Date			2021/12/20 11:00			2021/12/20 11:00		
COC Number			837421-01-01			837421-01-01		
	UNITS	Criteria	BH/MW101	RDL	QC Batch	BH/MW101 Lab-Dup	RDL	QC Batch
Calculated Parameters								
Hardness (CaCO3)	mg/L	-	770	1.0	7750431			
Sulphide (as H2S)	mg/L	0.002	**0.013**	0.0020	7756396			
Inorganics								
Total Ammonia-N	mg/L	-	1.3 (1)	0.050	7769977			
Dissolved Oxygen	mg/L	-	9.08		7754686	9.09		7754686
pH	pH	6.5:8.5	7.49		7753081			
Phenols-4AAP	mg/L	0.001	ND	0.0010	7753849	ND	0.0010	7753849
Total Phosphorus	mg/L	0.01	**0.12**	0.02	7757223			
Total Sulphide	mg/L	0.002	**0.012**	0.0018	7756397			
Turbidity	NTU	-	3.2	0.1	7752696			
WAD Cyanide (Free)	ug/L	5	ND	1	7752025	ND	1	7752025
Alkalinity (Total as CaCO3)	mg/L	-	280	1.0	7753088			
Metals								
Dissolved (0.2u) Aluminum (Al)	ug/L	15	ND	5	7752694	ND	5	7752694
Chromium (VI)	ug/L	1	ND	0.50	7754452			
Mercury (Hg)	ug/L	0.2	ND	0.10	7751060			
Total Antimony (Sb)	ug/L	20	ND	0.50	7753852			
Total Arsenic (As)	ug/L	100	1.7	1.0	7753852			
Total Beryllium (Be)	ug/L	11	ND	0.40	7753852			
Total Boron (B)	ug/L	200	**1100**	10	7753852			
Total Cadmium (Cd)	ug/L	0.2	ND	0.090	7753852			
Total Chromium (Cr)	ug/L	-	ND	5.0	7753852			
Total Cobalt (Co)	ug/L	0.9	**1.4**	0.50	7753852			
Total Copper (Cu)	ug/L	5	0.96	0.90	7753852			
Total Iron (Fe)	ug/L	300	**1800**	100	7753852			
Total Lead (Pb)	ug/L	5	ND	0.50	7753852			

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.
(1) Result from TKN bottle

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

Bureau Veritas Job #: C1Z9209
Report Date: 2022/01/18

B.I.G Consulting Inc.
Client Project #: BIGC-GEO-397H
Site Location: 3064 TRAFALGAR RD, OAKVILLE
Sampler Initials: MV

PWQO METALS AND INORGANICS (WATER)

Bureau Veritas ID			RKY201			RKY201		
Sampling Date			2021/12/20 11:00			2021/12/20 11:00		
COC Number			837421-01-01			837421-01-01		
	UNITS	Criteria	BH/MW101	RDL	QC Batch	BH/MW101 Lab-Dup	RDL	QC Batch
Total Molybdenum (Mo)	ug/L	40	3.6	0.50	7753852			
Total Nickel (Ni)	ug/L	25	3.2	1.0	7753852			
Total Selenium (Se)	ug/L	100	ND	2.0	7753852			
Total Silver (Ag)	ug/L	0.1	ND	0.090	7753852			
Total Thallium (Tl)	ug/L	0.3	ND	0.050	7753852			
Total Tungsten (W)	ug/L	30	ND	1.0	7753852			
Total Uranium (U)	ug/L	5	2.6	0.10	7753852			
Total Vanadium (V)	ug/L	6	2.9	0.50	7753852			
Total Zinc (Zn)	ug/L	30	ND	5.0	7753852			
Total Zirconium (Zr)	ug/L	4	1.1	1.0	7753852			

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

Bureau Veritas Job #: C1Z9209
Report Date: 2022/01/18

B.I.G Consulting Inc.
Client Project #: BIGC-GEO-397H
Site Location: 3064 TRAFALGAR RD, OAKVILLE
Sampler Initials: MV

PWQO PAH'S (WATER)

Bureau Veritas ID			RKY201		
Sampling Date			2021/12/20 11:00		
COC Number			837421-01-01		
	UNITS	Criteria	BH/MW101	RDL	QC Batch
Polyaromatic Hydrocarbons					
Acenaphthene	ug/L	-	ND	0.010	7752928
Acenaphthylene	ug/L	-	ND	0.010	7752928
Anthracene	ug/L	0.0008	**ND (1)**	0.010	7752928
Benzo(a)anthracene	ug/L	0.0004	**ND (1)**	0.010	7752928
Benzo(a)pyrene	ug/L	-	ND	0.0090	7752928
Benzo(b/j)fluoranthene	ug/L	-	ND	0.010	7752928
Benzo(g,h,i)perylene	ug/L	0.00002	**ND (1)**	0.010	7752928
Benzo(k)fluoranthene	ug/L	0.0002	**ND (1)**	0.010	7752928
Chrysene	ug/L	0.0001	**ND (1)**	0.010	7752928
Dibenzo(a,h)anthracene	ug/L	0.002	**ND (1)**	0.010	7752928
Fluoranthene	ug/L	0.0008	**ND (1)**	0.010	7752928
Fluorene	ug/L	0.2	ND	0.010	7752928
Indeno(1,2,3-cd)pyrene	ug/L	-	ND	0.010	7752928
1-Methylnaphthalene	ug/L	2	ND	0.010	7752928
2-Methylnaphthalene	ug/L	2	ND	0.010	7752928
Naphthalene	ug/L	7	ND	0.010	7752928
Phenanthrene	ug/L	0.03	ND	0.010	7752928
Pyrene	ug/L	-	ND	0.010	7752928
Surrogate Recovery (%)					
D10-Anthracene	%	-	91		7752928
D14-Terphenyl (FS)	%	-	99		7752928
D8-Acenaphthylene	%	-	88		7752928

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.
(1) RDL exceeds criteria

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

Bureau Veritas Job #: C1Z9209
Report Date: 2022/01/18

B.I.G Consulting Inc.
Client Project #: BIGC-GEO-397H
Site Location: 3064 TRAFALGAR RD, OAKVILLE
Sampler Initials: MV

PWQO VOCS (WATER)

Bureau Veritas ID			RKY201		
Sampling Date			2021/12/20 11:00		
COC Number			837421-01-01		
	UNITS	Criteria	BH/MW101	RDL	QC Batch
Volatile Organics					
Benzene	ug/L	100	ND	0.20	7750960
Bromodichloromethane	ug/L	200	ND	0.50	7750960
Acrolein	ug/L	0.03	**ND (1)**	10	7747792
Bromoform	ug/L	60	ND	1.0	7750960
Bromomethane	ug/L	0.9	ND	0.50	7750960
Chlorobenzene	ug/L	15	ND	0.20	7750960
Chloromethane	ug/L	700	ND	5.0	7750960
Dibromochloromethane	ug/L	40	ND	0.50	7750960
1,2-Dichlorobenzene	ug/L	2.5	ND	0.40	7750960
1,3-Dichlorobenzene	ug/L	2.5	ND	0.40	7750960
1,4-Dichlorobenzene	ug/L	4	ND	0.40	7750960
1,1-Dichloroethane	ug/L	200	ND	0.20	7750960
1,2-Dichloroethane	ug/L	100	ND	0.49	7750960
1,1-Dichloroethylene	ug/L	40	ND	0.20	7750960
cis-1,2-Dichloroethylene	ug/L	200	ND	0.50	7750960
trans-1,2-Dichloroethylene	ug/L	200	ND	0.50	7750960
1,2-Dichloropropane	ug/L	0.7	ND	0.20	7750960
trans-1,3-Dichloropropene	ug/L	7	ND	0.40	7750960
Ethylbenzene	ug/L	8	ND	0.20	7750960
Ethylene Dibromide	ug/L	5	ND	0.19	7750960
Methylene Chloride(Dichloromethane)	ug/L	100	ND	2.0	7750960
Methyl Ethyl Ketone (2-Butanone)	ug/L	400	ND	10	7750960
Methyl t-butyl ether (MTBE)	ug/L	200	ND	0.50	7750960
Styrene	ug/L	4	ND	0.40	7750960
1,1,1,2-Tetrachloroethane	ug/L	20	ND	0.50	7750960
1,1,2,2-Tetrachloroethane	ug/L	70	ND	0.40	7750960

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.
(1) RDL exceeds criteria

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

Bureau Veritas Job #: C1Z9209
Report Date: 2022/01/18

B.I.G Consulting Inc.
Client Project #: BIGC-GEO-397H
Site Location: 3064 TRAFALGAR RD, OAKVILLE
Sampler Initials: MV

PWQO VOCS (WATER)

Bureau Veritas ID			RKY201		
Sampling Date			2021/12/20 11:00		
COC Number			837421-01-01		
	UNITS	Criteria	BH/MW101	RDL	QC Batch
Tetrachloroethylene	ug/L	50	ND	0.20	7750960
Toluene	ug/L	0.8	ND	0.20	7750960
1,1,1-Trichloroethane	ug/L	10	ND	0.20	7750960
1,1,2-Trichloroethane	ug/L	800	ND	0.40	7750960
Trichloroethylene	ug/L	20	ND	0.20	7750960
Vinyl Chloride	ug/L	600	ND	0.20	7750960
p+m-Xylene	ug/L	2	ND	0.20	7750960
o-Xylene	ug/L	40	ND	0.20	7750960
Surrogate Recovery (%)					
4-Bromofluorobenzene	%	-	89		7750960
D4-1,2-Dichloroethane	%	-	113		7750960
D8-Toluene	%	-	90		7750960

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

Bureau Veritas Job #: C1Z9209
Report Date: 2022/01/18

B.I.G Consulting Inc.
Client Project #: BIGC-GEO-397H
Site Location: 3064 TRAFALGAR RD, OAKVILLE
Sampler Initials: MV

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		RKY201		
Sampling Date		2021/12/20 11:00		
COC Number		837421-01-01		
	UNITS	**BH/MW101**	**RDL**	**QC Batch**
Inorganics				
Total BOD	mg/L	ND	2	7753722
Total Kjeldahl Nitrogen (TKN)	mg/L	1.4	0.10	7773150
Total Suspended Solids	mg/L	ND	10	7752433

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

Bureau Veritas Job #: C1Z9209
Report Date: 2022/01/18

B.I.G Consulting Inc.
Client Project #: BIGC-GEO-397H
Site Location: 3064 TRAFALGAR RD, OAKVILLE
Sampler Initials: MV

NONYL PHENOL AND NONYL PHENOL ETHOXYLATE (WATER)

Bureau Veritas ID			RKY201		
Sampling Date			2021/12/20 11:00		
COC Number			837421-01-01		
	UNITS	**Criteria**	**BH/MW101**	**RDL**	**QC Batch**
Miscellaneous Parameters					
Nonylphenol (Total)	mg/L	0.00004	**ND (1)**	0.001	7752752

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
(1) RDL exceeds criteria

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

Bureau Veritas Job #: C1Z9209
Report Date: 2022/01/18

B.I.G Consulting Inc.
Client Project #: BIGC-GEO-397H
Site Location: 3064 TRAFALGAR RD, OAKVILLE
Sampler Initials: MV

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	4.7°C

Results relate only to the items tested.

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

QUALITY ASSURANCE REPORT

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
7750960	4-Bromofluorobenzene	2021/12/23	101	70 - 130	103	70 - 130	100	%				
7750960	D4-1,2-Dichloroethane	2021/12/23	112	70 - 130	109	70 - 130	111	%				
7750960	D8-Toluene	2021/12/23	101	70 - 130	103	70 - 130	98	%				
7752928	D10-Anthracene	2021/12/24	93	50 - 130	95	50 - 130	93	%				
7752928	D14-Terphenyl (FS)	2021/12/24	101	50 - 130	101	50 - 130	98	%				
7752928	D8-Acenaphthylene	2021/12/24	90	50 - 130	93	50 - 130	91	%				
7747792	Acrolein	2021/12/29			94	60 - 140	ND, RDL=10	ug/L	3.2	30		
7750960	1,1,1,2-Tetrachloroethane	2021/12/23	101	70 - 130	105	70 - 130	ND, RDL=0.50	ug/L				
7750960	1,1,1-Trichloroethane	2021/12/23	103	70 - 130	105	70 - 130	ND, RDL=0.20	ug/L				
7750960	1,1,2,2-Tetrachloroethane	2021/12/23	98	70 - 130	104	70 - 130	ND, RDL=0.40	ug/L				
7750960	1,1,2-Trichloroethane	2021/12/23	110	70 - 130	112	70 - 130	ND, RDL=0.40	ug/L				
7750960	1,1-Dichloroethane	2021/12/23	95	70 - 130	98	70 - 130	ND, RDL=0.20	ug/L				
7750960	1,1-Dichloroethylene	2021/12/23	97	70 - 130	100	70 - 130	ND, RDL=0.20	ug/L	2.0	30		
7750960	1,2-Dichlorobenzene	2021/12/23	94	70 - 130	99	70 - 130	ND, RDL=0.40	ug/L				
7750960	1,2-Dichloroethane	2021/12/23	104	70 - 130	104	70 - 130	ND, RDL=0.49	ug/L				
7750960	1,2-Dichloropropane	2021/12/23	98	70 - 130	99	70 - 130	ND, RDL=0.20	ug/L				
7750960	1,3-Dichlorobenzene	2021/12/23	95	70 - 130	100	70 - 130	ND, RDL=0.40	ug/L				
7750960	1,4-Dichlorobenzene	2021/12/23	110	70 - 130	115	70 - 130	ND, RDL=0.40	ug/L				
7750960	Benzene	2021/12/23	87	70 - 130	89	70 - 130	ND, RDL=0.20	ug/L				
7750960	Bromodichloromethane	2021/12/23	105	70 - 130	106	70 - 130	ND, RDL=0.50	ug/L				
7750960	Bromoform	2021/12/23	102	70 - 130	107	70 - 130	ND, RDL=1.0	ug/L				
7750960	Bromomethane	2021/12/23	92	60 - 140	96	60 - 140	ND, RDL=0.50	ug/L				
7750960	Chlorobenzene	2021/12/23	96	70 - 130	101	70 - 130	ND, RDL=0.20	ug/L				
7750960	Chloromethane	2021/12/23	94	60 - 140	98	60 - 140	ND, RDL=5.0	ug/L				
7750960	cis-1,2-Dichloroethylene	2021/12/23	NC	70 - 130	101	70 - 130	ND, RDL=0.50	ug/L	0.13	30		
7750960	Dibromochloromethane	2021/12/23	100	70 - 130	103	70 - 130	ND, RDL=0.50	ug/L				
7750960	Ethylbenzene	2021/12/23	88	70 - 130	92	70 - 130	ND, RDL=0.20	ug/L				
7750960	Ethylene Dibromide	2021/12/23	98	70 - 130	100	70 - 130	ND, RDL=0.19	ug/L				
7750960	Methyl Ethyl Ketone (2-Butanone)	2021/12/23	116	60 - 140	118	60 - 140	ND, RDL=10	ug/L				
7750960	Methyl t-butyl ether (MTBE)	2021/12/23	91	70 - 130	92	70 - 130	ND, RDL=0.50	ug/L				
7750960	Methylene Chloride(Dichloromethane)	2021/12/23	107	70 - 130	109	70 - 130	ND, RDL=2.0	ug/L				

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
7750960	o-Xylene	2021/12/23	87	70 - 130	93	70 - 130	ND, RDL=0.20	ug/L				
7750960	p+m-Xylene	2021/12/23	94	70 - 130	99	70 - 130	ND, RDL=0.20	ug/L				
7750960	Styrene	2021/12/23	99	70 - 130	106	70 - 130	ND, RDL=0.40	ug/L				
7750960	Tetrachloroethylene	2021/12/23	91	70 - 130	95	70 - 130	ND, RDL=0.20	ug/L	NC	30		
7750960	Toluene	2021/12/23	89	70 - 130	93	70 - 130	ND, RDL=0.20	ug/L				
7750960	trans-1,2-Dichloroethylene	2021/12/23	99	70 - 130	101	70 - 130	ND, RDL=0.50	ug/L	0.52	30		
7750960	trans-1,3-Dichloropropene	2021/12/23	109	70 - 130	109	70 - 130	ND, RDL=0.40	ug/L				
7750960	Trichloroethylene	2021/12/23	NC	70 - 130	104	70 - 130	ND, RDL=0.20	ug/L	0.052	30		
7750960	Vinyl Chloride	2021/12/23	86	70 - 130	92	70 - 130	ND, RDL=0.20	ug/L	0.17	30		
7751060	Mercury (Hg)	2021/12/23	93	75 - 125	97	80 - 120	ND, RDL=0.10	ug/L	NC	20		
7752025	WAD Cyanide (Free)	2021/12/23	96	80 - 120	100	80 - 120	ND,RDL=1	ug/L	NC	20		
7752433	Total Suspended Solids	2021/12/24					ND, RDL=10	mg/L	5.8	25	96	85 - 115
7752694	Dissolved (0.2u) Aluminum (Al)	2021/12/29	109	80 - 120	104	80 - 120	ND,RDL=5	ug/L	NC	20		
7752696	Turbidity	2021/12/24			96	85 - 115	ND, RDL=0.1	NTU	19	20		
7752752	Nonylphenol (Total)	2021/12/24	97	50 - 130	102	50 - 130	ND, RDL=0.001	mg/L	NC	40		
7752928	1-Methylnaphthalene	2021/12/24	102	50 - 130	105	50 - 130	ND, RDL=0.010	ug/L	3.0	30		
7752928	2-Methylnaphthalene	2021/12/24	99	50 - 130	103	50 - 130	ND, RDL=0.010	ug/L	3.9	30		
7752928	Acenaphthene	2021/12/24	90	50 - 130	94	50 - 130	ND, RDL=0.010	ug/L	3.5	30		
7752928	Acenaphthylene	2021/12/24	87	50 - 130	91	50 - 130	ND, RDL=0.010	ug/L	3.2	30		
7752928	Anthracene	2021/12/24	87	50 - 130	89	50 - 130	ND, RDL=0.010	ug/L	3.5	30		
7752928	Benzo(a)anthracene	2021/12/24	95	50 - 130	98	50 - 130	ND, RDL=0.010	ug/L	3.4	30		
7752928	Benzo(a)pyrene	2021/12/24	84	50 - 130	86	50 - 130	ND, RDL=0.0090	ug/L	3.9	30		
7752928	Benzo(b/j)fluoranthene	2021/12/24	104	50 - 130	107	50 - 130	ND, RDL=0.010	ug/L	2.9	30		

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
7752928	Benzo(g,h,i)perylene	2021/12/24	84	50 - 130	80	50 - 130	ND, RDL=0.010	ug/L	6.9	30		
7752928	Benzo(k)fluoranthene	2021/12/24	100	50 - 130	101	50 - 130	ND, RDL=0.010	ug/L	3.1	30		
7752928	Chrysene	2021/12/24	105	50 - 130	109	50 - 130	ND, RDL=0.010	ug/L	3.8	30		
7752928	Dibenzo(a,h)anthracene	2021/12/24	68	50 - 130	56	50 - 130	ND, RDL=0.010	ug/L	5.6	30		
7752928	Fluoranthene	2021/12/24	109	50 - 130	110	50 - 130	ND, RDL=0.010	ug/L	4.3	30		
7752928	Fluorene	2021/12/24	97	50 - 130	100	50 - 130	ND, RDL=0.010	ug/L	3.5	30		
7752928	Indeno(1,2,3-cd)pyrene	2021/12/24	87	50 - 130	89	50 - 130	ND, RDL=0.010	ug/L	4.7	30		
7752928	Naphthalene	2021/12/24	85	50 - 130	88	50 - 130	ND, RDL=0.010	ug/L	3.3	30		
7752928	Phenanthrene	2021/12/24	101	50 - 130	102	50 - 130	ND, RDL=0.010	ug/L	3.9	30		
7752928	Pyrene	2021/12/24	108	50 - 130	108	50 - 130	ND, RDL=0.010	ug/L	3.8	30		
7753081	pH	2021/12/24			102	98 - 103			0.31	N/A		
7753088	Alkalinity (Total as CaCO3)	2021/12/24			95	85 - 115	ND, RDL=1.0	mg/L	0.80	20		
7753722	Total BOD	2021/12/29					ND,RDL=2	mg/L	NC	30	94	80 - 120
7753849	Phenols-4AAP	2021/12/24	100	80 - 120	98	80 - 120	ND, RDL=0.0010	mg/L	NC	20		
7753852	Total Antimony (Sb)	2021/12/29	106	80 - 120	101	80 - 120	ND, RDL=0.50	ug/L				
7753852	Total Arsenic (As)	2021/12/29	103	80 - 120	100	80 - 120	ND, RDL=1.0	ug/L				
7753852	Total Beryllium (Be)	2021/12/29	102	80 - 120	99	80 - 120	ND, RDL=0.40	ug/L				
7753852	Total Boron (B)	2021/12/29	99	80 - 120	93	80 - 120	ND, RDL=10	ug/L				
7753852	Total Cadmium (Cd)	2021/12/29	101	80 - 120	100	80 - 120	ND, RDL=0.090	ug/L	NC	20		
7753852	Total Chromium (Cr)	2021/12/29	98	80 - 120	96	80 - 120	ND, RDL=5.0	ug/L	NC	20		
7753852	Total Cobalt (Co)	2021/12/29	97	80 - 120	96	80 - 120	ND, RDL=0.50	ug/L				

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
7753852	Total Copper (Cu)	2021/12/29	100	80 - 120	98	80 - 120	ND, RDL=0.90	ug/L	4.5	20		
7753852	Total Iron (Fe)	2021/12/29	98	80 - 120	97	80 - 120	ND, RDL=100	ug/L	NC	20		
7753852	Total Lead (Pb)	2021/12/29	95	80 - 120	94	80 - 120	ND, RDL=0.50	ug/L	NC	20		
7753852	Total Molybdenum (Mo)	2021/12/29	105	80 - 120	99	80 - 120	ND, RDL=0.50	ug/L				
7753852	Total Nickel (Ni)	2021/12/29	97	80 - 120	96	80 - 120	ND, RDL=1.0	ug/L	18	20		
7753852	Total Selenium (Se)	2021/12/29	105	80 - 120	104	80 - 120	ND, RDL=2.0	ug/L				
7753852	Total Silver (Ag)	2021/12/29	99	80 - 120	97	80 - 120	ND, RDL=0.090	ug/L				
7753852	Total Thallium (Tl)	2021/12/29	96	80 - 120	95	80 - 120	ND, RDL=0.050	ug/L				
7753852	Total Tungsten (W)	2021/12/29	104	80 - 120	100	80 - 120	ND, RDL=1.0	ug/L				
7753852	Total Uranium (U)	2021/12/29	104	80 - 120	102	80 - 120	ND, RDL=0.10	ug/L				
7753852	Total Vanadium (V)	2021/12/29	101	80 - 120	97	80 - 120	ND, RDL=0.50	ug/L				
7753852	Total Zinc (Zn)	2021/12/29	99	80 - 120	102	80 - 120	ND, RDL=5.0	ug/L	2.4	20		
7753852	Total Zirconium (Zr)	2021/12/29	104	80 - 120	98	80 - 120	ND, RDL=1.0	ug/L				
7754452	Chromium (VI)	2021/12/24	101	80 - 120	103	80 - 120	ND, RDL=0.50	ug/L	NC	20		
7756397	Total Sulphide	2021/12/24	NC	80 - 120	86	80 - 120	ND, RDL=0.0018	mg/L				
7757223	Total Phosphorus	2022/01/06	96	80 - 120	97	80 - 120	ND, RDL=0.004	mg/L	2.0	20	104	80 - 120
7769977	Total Ammonia-N	2022/01/10	101	75 - 125	101	80 - 120	ND, RDL=0.050	mg/L	NC	20		

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
7773150	Total Kjeldahl Nitrogen (TKN)	2022/01/11	NC	80 - 120	96	80 - 120	ND, RDL=0.10	mg/L	0.39	20	90	80 - 120

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

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

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

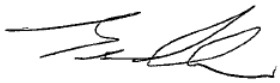
NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:



Brad Newman, B.Sc., C.Chem., Scientific Service Specialist

Ghayasuddin Khan, M.Sc., P.Chem., QP, Scientific Specialist, Inorganics

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

Bureau Veritas Job #: C1Z9209
Report Date: 2022/01/18

B.I.G Consulting Inc.
Client Project #: BIGC-GEO-397H
Site Location: 3064 TRAFALGAR RD, OAKVILLE
Sampler Initials: MV

Exceedance Summary Table – Prov. Water Quality Obj.

Result Exceedances

Sample ID	Bureau Veritas ID	Parameter	Criteria	Result	DL	UNITS
BH/MW101	RKY201-11	Total Boron (B)	200	1100	10	ug/L
BH/MW101	RKY201-11	Total Cobalt (Co)	0.9	1.4	0.50	ug/L
BH/MW101	RKY201-11	Total Iron (Fe)	300	1800	100	ug/L
BH/MW101	RKY201-12	Total Phosphorus	0.01	0.12	0.02	mg/L
BH/MW101	RKY201-10	Total Sulphide	0.002	0.012	0.0018	mg/L
BH/MW101	RKY201-10	Sulphide (as H2S)	0.002	0.013	0.0020	mg/L

Detection Limit Exceedances

Sample ID	Bureau Veritas ID	Parameter	Criteria	Result	DL	UNITS
BH/MW101	RKY201-16	Acrolein	0.03	<10	10	ug/L
BH/MW101	RKY201-02	Anthracene	0.0008	<0.010	0.010	ug/L
BH/MW101	RKY201-02	Benzo(a)anthracene	0.0004	<0.010	0.010	ug/L
BH/MW101	RKY201-02	Benzo(g,h,i)perylene	0.00002	<0.010	0.010	ug/L
BH/MW101	RKY201-02	Benzo(k)fluoranthene	0.0002	<0.010	0.010	ug/L
BH/MW101	RKY201-02	Chrysene	0.0001	<0.010	0.010	ug/L
BH/MW101	RKY201-02	Dibenzo(a,h)anthracene	0.002	<0.010	0.010	ug/L
BH/MW101	RKY201-02	Fluoranthene	0.0008	<0.010	0.010	ug/L
BH/MW101	RKY201-01	Nonylphenol (Total)	0.00004	<0.001	0.001	mg/L

The exceedance summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Bureau Veritas Laboratories
6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel:(905) 817-5700 Toll-free:800-563-6266 Fax:(905) 817-5777 www.bvlabs.com

Page of

CHAIN OF CUSTODY RECORD

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#31796 B.I.G Consulting Inc.	Company Name:		Quotation #:	C12477	BV Labs Job #:	Bottle Order #:
Attention:	Accounts Payable	Attention:	Eileen Liu	P.O. #:			837421
Address:	12-5500 Tomken Road	Address:		Project:		COC #:	Project Manager:
	Mississauga ON L4W 2Z4			Project Name:	BIGL-GEO-39714	C#837421-01-01	Deepthi Shaji
Tel:	(416) 214-4880 Fax:	Tel:	Fax:	Site #:	3066 Trafalgar Rd, Oakville		
Email:	ldougherty@brownfieldigi.com;admin@brownfieldigi.co	Email:	eliu@brownfieldigi.com	Sampled By:	MV		

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BV LABS DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): ☐ Table 1 ☐ Res/Park ☐ Medium/Fine; ☐ Table 2 ☐ Ind/Comm ☐ Coarse; ☐ Table 3 ☐ Agri/Other ☐ For RSC; ☐ Table ___

Other Regulations: ☐ CCME ☐ Sanitary Sewer Bylaw; ☐ Reg 558 ☐ Storm Sewer Bylaw; ☐ MISA Municipality ____; ☐ PWQO ☐ Reg 406 Table ____; ☐ Other ____

Special Instructions

Include Criteria on Certificate of Analysis (Y/N)? Y

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: ☒
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ____ Time Required: ____ ☐
Rush Confirmation Number: ____ *(call lab for #)*

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	PWQO Metals and Inorganics	PWQO VOCs	Biochemical Oxygen Demand (BOD)	Total Kjeldahl Nitrogen in Water	Phenols (4AAP)	Total Suspended Solids	PAH	nonylphenols			# of Bottles	Comments
1		BH/MW101	21/12/20	11:00 am	GW	X	X	X	X	X	X	X	X	X			21	
2																		
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		

20-Dec-21 13:01
Deepthi Shaji
C1Z9209
VBV ENV-1691

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Matt Vaughan	21/12/20	13:00	[illegible]	21/12/20	13:01	

Laboratory Use Only

Time Sensitive	Temperature (°C) on Recei	Custody Seal	Yes	No
	5 5 4	Present	—	
		Intact	—	

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BV LABS' STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVLABS.COM/TERMS-AND-CONDITIONS.

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

** SAMPLE CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT WWW.BVLABS.COM/RESOURCES/CHAIN-OF-CUSTODY-FORMS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BV LABS

White: BV Labs Yellow: Client

Bureau Veritas Canada (2019) Inc.

ON ZLE

APPENDIX E: CONSTRUCTION DEWATERING ESTIMATE RATE CALCULATIONS

Construction Dewatering Rate Estimate

3064 Trafalgar Road, Oakville, Ontario
Unconfined Aquifer, full penetrating slots, groundwater seepage to rectangular excavation (line source)

Table E-1: Construction Dewatering Rate Estimate

Description	Symbol	Values	Unit	Explanation
Input				
Proposed Ground Elevation		169.00	m asl	Based on drawing A451.S, Section 1 N-S Tower B, prepared by BDP, dated March 26, 2024
Highest Groundwater Level		168.53	m asl	Water level measurement (November 9, 2021)
Footing Elevation		148.25	m asl	Assumed 2 m below P6 FFE, P6 FFE is 150.25 m asl based on drawing A451.S, Section 1 N-S Tower B, prepared by BDP, dated March 26, 2024
Aquifer Bottom		147.25	m asl	Assumed 1 m below lowest excavation depth
Hydraulic Conductivity		7.75×10^{-7}	m/s	Geometric mean K
Length of Excavation	x	94.0	m	Based on drawing A152.S, P5 Underground, prepared by BDP, dated March 26, 2024
Width of Excavation	a	69.0	m	Based on drawing A152.S, P5 Underground, prepared by BDP, dated March 26, 2024
Output				
Top of Aquifer		168.53	m asl	Water table for unconfined aquifer
Target Water Level		147.25	m asl	Assumed 1.0 m below footing elevation
Water Level above aquifer bottom before dewatering	H	21.3	m	
Target water level above aquifer bottom	h	0.0	m	
Radius of Influence	L (R_0)	32.8	m	Schicardt Equation (C=1750 for line source)
Construction dewatering flow rate - Steady State	Q	150.76	m^3/day	Construction Dewatering flow – Dupuit Equation
Maximum construction dewatering flow rate (safety factor of 2.5)	2.5Q	376.91	m^3/day	During the initial period and after rains
Construction Dewatering Flow Rate - Steady State	Q	**151,000**	L/day	
Maximum Construction Flow Rate (safety factor of 2.5)	2.5Q	**377,500**	L/day	

APPENDIX F: LONG TERM DRAINAGE FLOW RATE ESTIMATE CALCULATIONS

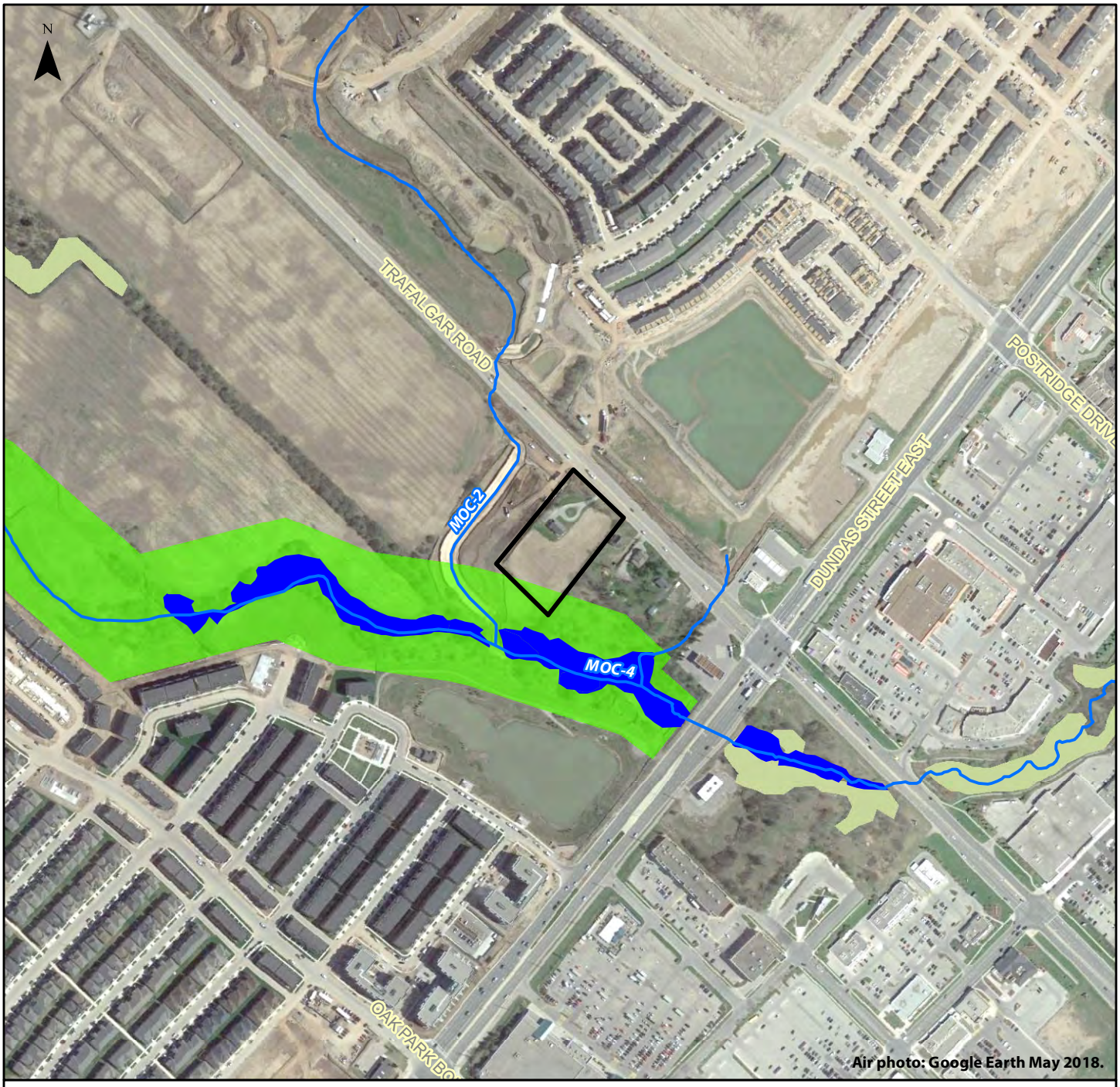
Foundation Drain Flow Rate Estimate

3064 Trafalgar Road, Oakville, Ontario
Unconfined Aquifer, full penetrating slots, groundwater seepage to rectangular excavation (linear source)

Table F-1: Foundation Drain Flow Rate Estimate

Description	Symbol	Values	Unit	Explanation
Input				
Proposed Ground Elevation		169.00	m asl	Based on drawing A451.S, Section 1 N-S Tower B, prepared by BDP, dated March 26, 2024
Highest Groundwater Elevation		168.53	m asl	Water level measurement (November 9, 2021)
Basement Elevation		150.25	m asl	P6 FFE is 150.25 m asl based on drawing A451.S, Section 1 N-S Tower B, prepared by BDP, dated March 26, 2024
Aquifer Bottom		149.25	m asl	Assumed 1 m below lowest excavation depth
Hydraulic Conductivity		7.75×10^{-7}	m/s	Geometric mean K
Length of Excavation	x	94.0	m	Based on drawing A152.S, P5 Underground, prepared by BDP, dated March 26, 2024
Width of Excavation	a	69.0	m	Based on drawing A152.S, P5 Underground, prepared by BDP, dated March 26, 2024
Output				
Top of Aquifer		168.53	m asl	Water table for unconfined aquifer
Target Water Level		149.75	m asl	Assumed 0.5 m below basement floor
Water Level above aquifer bottom before dewatering	H	19.3	m	
Target water level above aquifer bottom	h	0.5	m	
Radius of Influence	L (R_0)	48.2	m	Weber's Equation - R_0 after 45 days
Foundation Drain Flow Rate - Steady State	Q	84.14	m^3/day	Long-term flow rate – Dupuit Equation
Maximum Foundation Drain Flow Rate (safety factor of 1.5)	1.5Q	126.14	m^3/day	During the initial period and after rains
Estimated Long-term Foundation Drain Flow Rate	Q	**84,000**	L/day	
Estimated Maximum Foundation Drain Flow Rate	1.5Q	**126,000**	L/day	

APPENDIX H: SIGNIFICANT NATURAL AREAS FROM SAVANTA



3064 Trafalgar Road

Figure 2
Significant Natural Areas

- Subject Lands
- Watercourse
- Woodland (MNRF LIO)
- Provincially Significant Wetland (MNRF)
- 120 m Linkage Preserve

SAVANTA
A GEI Company

0 100 Meters

1:6,000

Contains information licensed under the Open Government Licence Ontario

Path: S:\9296 - SAV 1902588\gis\mxd\2019 08 15\Figure 2 Significant Natural Areas.mxd REVISED: September 4, 2019