Terraprobe

An Englobe Company

HYDROGEOLOGICAL ASSESSMENT
4150 WESTMINSTER PLACE, MISSISSAUGA
ONTARIO

Prepared for:

St. Luke's Dixie Senior Residence Corp
4150 Westminster Place
Mississauga, Ontario
L4W 3Z7

Attention:

Mr. Andrew Vrana

File No 1-20-0258-46
March 16, 2023

EXECUTIVE SUMMARY

Terraprobe Inc. (Terraprobe) was retained by St. Luke's Dixie Senior Residence Corp to conduct a Hydrogeological Assessment for the proposed development located at a property with municipal address 4150 Westminster Place, Mississauga, Ontario (the "Site").

The Site is irregular in shape with a total area of approximately 16,370 m^2 (1.64 hectares). The Site is located in the northwest quadrant of the intersection of Westminster Place and Rathburn Road East, in the City of Mississauga, Ontario. The Site is currently occupied with 3-storey slab-on-grade apartment building block with, and at-grade asphalt parking lot as well as landscaped areas. The asphalt parking lot is located in the southern portion of the Site. **Table I** summarizes the existing conditions at the Site.

Table I: Existing Building Conditions

Current Development			
Development Phase	**Development Use**	**Above Grade Levels**	**Below Grade Level**
4150 Westminster Place, Mississauga	3-storey apartment building block	3	No Basement

Terraprobe understands that the existing common room in the parking lot area and parking lot itself will be demolished to facilitate the proposed redevelopment of the Site to include construction of a 9-storey residential building including penthouse resting on one (1) level of underground parking garage. The design drawing (A402 Building Elevations, prepared by Kearns Mancini Architects, dated September 7, 2022) indicates that the lowest finished floor elevation would be set at 137.40 metres above sea level (masl) and ground elevation is at 140.15 masl. The proposed development details are summarized in **Table II**.

Table II: Proposed Development Details

Proposed Development						
Development Phase	**Above Grade Levels**	**Below Grade Levels**				**The Highest Groundwater Level Elevation (masl)**
		Underground Structure	**Lowest Finished Floor (FFE)**		**Approximate Base of Excavation/Foundation/Elevator Pit (masl)**	
			Depth (m)	**Elevation (masl)**		
4150 Westminster Place, Mississauga (Proposed Development)	9	P1	2.75*	137.40	136.0** (foundation) 135.9***(elevator pit)	138.6

* Considering the existing ground surface at El. 140.15 masl and the lowest proposed FFE at El 137.40 masl
** Conventional Spread Footing foundation elevation 1.4 m below the lowest FFE as per Geotechnical Investigation report
*** Base of the Elevator pit is assumed 1.5 m below the floor level

In general, three (3) main stratigraphic units were encountered at the Site. A summary of units and the estimated hydraulic conductivity for each unit are summarized in **Table III**:

Table III: Summary of Subsoil Profile beneath the Site and Estimated Hydraulic Conductivities

Site Stratigraphy			
Stratum/Formation	**Depth Range (mbgs)**	**Elevation Range (masl)**	**Hydraulic Conductivity (m/s)**
Fill	0.6 – 0.8	138.9 - 139.1	1.00 x 10-6*
Clayey Silt Till	3.0	136.5 - 136.9	9.76 $x10^{-7}$ **
Bedrock	3.2 – 8.0	131.5 – 136.6	1.0 $x10^{-6}$ *

*Indicates conductivity was estimated using typical published values from Freeze and Cherry (1979)
**Indicates conductivity was calculated by Falling Head Test

Groundwater conditions considered for the current short-term dewatering flow rate estimation and the anticipated zone of influence are presented in **Table IV**.

Table IV: Summary of Groundwater Conditions

Groundwater Conditions	
Groundwater Elevation	138.6 masl (1.3 ± m below existing grade using 139.9± masl ground surface elevation)
Zone of Influence	8.1 m

Details of the groundwater exceedances in comparison to the Regional Municipality of Peel and the City of Mississauga Sewer Use By-Law limits are presented in **Table V**.

Table V: Summary of Groundwater Exceedances of the Regional Municipality of Peel and the City of Mississauga Sewer use By-Law Limits

Groundwater Quality				
Sample ID	**Sample Date**	**Regional Municipality of Peel Storm Sewer Limits (mg/L)**	**Regional Municipality of Peel Sanitary Sewer Limits (mg/L)**	**City of Mississauga Storm Sewer Limits (mg/L)**
BH2	September 6, 2022	Exceeds for TSS and total manganese	Meets	Exceeds for TSS and total aluminium

Short-term construction dewatering and long-term foundation drainage flow rates were estimated considering the current design plans, subsurface investigation and the existing data collected from the Site. The findings along with the anticipated requirements are summarized in **Table VI**.

Table VI: Water Taking Requirements for Groundwater Control

Groundwater Quantity: Short-Term (Construction)							
Proposed Development	**Shoring Option**	**Groundwater Seepage (S.F. 1.5)**		**30mm Design Rainfall Event**		**Total Volume**	
		L/day	**L/min**	**L/day**	**L/min**	**L/day**	**L/min**
9 Storey Residential Tower with One (1) Level Underground Parking Garage	Permeable shoring	62,000*	0.72	61,000	0.71	123,000	**1.42**

Groundwater Quantity: Long-Term (Post Construction)							
Proposed Development	**Shoring Option**	**Groundwater Seepage (S.F. 1.5)**		**Infiltration 30mm Design Rainfall Event**		**Total Volume**	
		L/day	**L/min**	**L/day**	**L/min**	**L/day**	**L/min**
9 Storey Residential Tower with One (1) Level Underground Parking Garage	Permeable shoring	55,500	0.64	6,000	0.07	**61,500**	**0.71**

Regulatory Requirements	
Environmental Activity and Sector Registry (EASR) Posting	Required
Short-Term Permit to Take Water (PTTW)	Not Required
Long-Term Permit to Take Water (PTTW)	Required
Short-Term Discharge Agreement City of Mississauga (Regional Municipality of Peel)	Required
Long-Term Discharge Agreement City of Mississauga (Regional Municipality of Peel)	Required

*The short-term groundwater seepage estimate takes into account a permeable shoring system on all four sides of the excavation area.

TABLE OF CONTENTS

FIGURES:

TABLES:

APPENDICES:

1.0 INTRODUCTION

1.1 Site Location and Project Description

Terraprobe Inc. (Terraprobe) was retained by St. Luke's Dixie Senior Residence Corp to conduct a Hydrogeological Assessment for the proposed development located at 4150 Westminster Place, Mississauga, Ontario (the "Site").

The Site is irregular in shape with a total area of approximately 16,370 m^2 (1.64 hectares). The Site is located in the northwest quadrant of the intersection of Westminster Place and Rathburn Road East, in the City of Mississauga, Ontario. The Site is currently occupied with a 3-storey slab-on-grade apartment building block and at-grade asphalt parking lot as well as landscaped areas. The asphalt parking lot is located in the southern portion of the Site. A Site location plan is provided in **Figure 1**. Terraprobe understands that the existing common room in the parking lot area and the at-grade parking lot will be demolished to facilitate the proposed redevelopment of the Site to include construction of a 9-storey residential tower elements including penthouse resting on one (1) level of underground parking garage. The architectural drawings (A402 Building Elevations), prepared by Kearns Mancini Architects, dated September 7, 2022 indicates that the lowest Finished Floor Elevation (FFE) would be set at 137.40 metres above sea level (masl) and ground elevation at 140.15 masl.

The study was undertaken to assess the hydrogeological conditions of the Site and to provide general information regarding the hydrogeological impact of the proposed development on the local groundwater regime. The report addresses the following areas:

- Identifying the geological and hydrogeological setting of the Site;
- Confirming groundwater level(s) and flow direction(s) beneath the Site;
- Assessing groundwater quality in comparison to the Peel Region Sanitary and Storm Sewer Use By-Law;
- Evaluating potential short-term construction dewatering needs for the proposed development;
- Identifying potential impacts to the nearby groundwater receptors including water supply wells and natural heritage features;
- Providing a mitigation plan for the potential impacts to the groundwater receptors and/or natural heritage features, if applicable;
- Estimating long-term foundation flow rate; and,
- Providing recommendations on any needs for applying for Permit to Take Water (PTTW), or posting on the Environmental Activity and Sector Registry (EASR) with Ministry of the Environment, Conservation and Parks (MECP).

The Peel Region and City of Mississauga require that a hydrogeological assessment be completed in order to assess the potential dewatering needs and associated discharge plans. Additionally, associated potential impacts of the proposed development to the natural hydrogeological system and groundwater receptors should be evaluated.

1.2 Scope of Work

The scope of work for the study consisted of the following:

- Review of Available Background Information: A review of available background geological and hydrogeological information for the Site was completed using Ontario Geological Survey (OGS) maps, Ministry of Environment Conservation and Parks (MECP), Ministry of Natural Resources and Forestry (MNRF) databases, and Oak Ridges Moraine Groundwater Program (ORMGP).
- Review of City of Mississauga Official Plans: The City of Mississauga official plans were reviewed to understand the location of the Site and the proposed development within the policy areas.
- Site Inspection: A visual inspection of the Site and surrounding areas to determine local topography and drainage, and an assessment of significant features.
- Groundwater Level Monitoring and Hydraulic Conductivity Testing: Groundwater levels within the installed monitoring wells were monitored over three (3) monitoring events. In-situ hydraulic conductivity testing was completed within the installed monitoring wells to estimate the hydraulic conductivity of the strata within the well screen interval.
- Groundwater Quality Assessment: Groundwater quality was assessed in comparison with the Peel Region Sanitary and Storm Sewer Use By-Law and the City of Mississauga Storm Sewer Use By-Law to assess available options to discharge the potential short-term dewatering and long-term foundation drainage discharges.
- Review of Proposed Site Development Concept: The proposed site development plans were reviewed to confirm the proposed invert elevation for developing the proposed underground structures.
- Construction Dewatering Flow Rate Estimate: Considering the proposed development plans, the construction dewatering flow rate (short-term dewatering) was estimated using the stable groundwater level and estimated hydraulic conductivity measured in the Site.
- Long-term Foundation Drainage: Considering the proposed development plans, potential long-term foundation drainage flow rate was estimated.
- Mitigation Plans for Dewatering: A mitigation plan was recommended to mitigate potential short-term dewatering impacts to the nearby groundwater receptors and structures.
- Potential Dewatering Permits: Considering the estimated short-term dewatering and long-term foundation drainage flow rates, recommendations were provided on any need for applying for a PTTW or posting on the EASR with the MECP, if required.

The above scope of work was prepared in accordance with all of the following: Ontario Water Resources Act, and Ontario Regulation 387/04.

2.0 APPLICABLE REGULATION AND AGENCIES

The environmental regulations and policies relevant to this hydrogeological study are briefly discussed below.

2.1 Toronto and Region Conservation Authority (TRCA) Policies and Regulations (O.Reg. 166/06)

Under Section 28 of the Conservation Authorities Act, local conservation authorities are mandated to protect the health and integrity of the regional greenspace system, and to maintain or improve the hydrological and ecological functions performed by valley and stream corridors. The TRCA, through its regulatory mandate, is responsible for issuing permits under Ontario Regulation (O.Reg.) 166/06, Development, Interference with Wetlands and Alterations to Shorelines and Watercourses for development proposal or Site alteration work to shorelines and watercourses within the regulated areas.

TRCA Regulated Area online mapping was reviewed on August 22, 2022. It is our understanding that the Site is not located within a TRCA Regulated Area. As such, it is anticipated that a permit from the TRCA under O. Reg. 166/06 will not be required for the proposed development.

2.2 City of Mississauga Official Plan

The City of Mississauga Official Plan sets up policies that deal with legislative and administrative concerns, guides physical growth, and addresses social, economic, and environmental concerns. The Official Plan provides land use planning designations and identifies areas of environmental significance where more stringent policies may apply for development applications.

City of Mississauga Official Plans were reviewed for the current study with the results summarized as below:

- Schedule 1A (Urban System – Green System) - A review of the map, version – 22.005, indicates that the Site is not located within an area designated as a Green System.
- Schedule 3 (Natural System) - A review of the map, version 17.003, indicates that the Site is not located within an area of Natural Heritage System.
- Schedule 10 (Land Use Designation) - A review of the map, version 32.006, indicates that the Site is located within an area designated as Residential High Density.

2.3 Permit to Take Water (PTTW) Section 34 of the Ontario Water Resource Act

For construction dewatering, water takings of more than 50,000L/day but less than 400,000 L/day should be registered on the Environmental Activity and Sector Registry (EASR), while water takings of more than 400,000 L/day require a Category 3 PTTW issued by the MECP. If it is identified that an EASR or PTTW is required for the Site, a hydrogeological report will need to be submitted in support of the application. Construction dewatering estimation was completed as a part of the scope of work for the current assessment.

2.4 Clean Water Act

The MECP mandates the protection of existing and future sources of drinking water under the Clean Water Act, 2006 (CWA). Initiatives under the CWA include the delineation of Wellhead Protection Areas (WHPAs), significant groundwater recharge areas (SGRAs) and Highly Vulnerable Aquifers (HVAs) as well as the assessment of drinking water quality and quantity threats within Source Protection Areas. Source Protection Plans are developed under the CWA and include the restriction and prohibition of certain types of activities and land uses within WHPAs.

Based on regional-scale source protection mapping, the Site is not located within a WHPA area, Intake Protection Zone, Issue Contributing Area, Event Based Area, SGRA and HVA.

2.5 Peel Region Guidelines for Hydrogeologic Assessment and Reporting Requirements (July 2009)

Peel Region Guidelines for Hydrogeologic Assessment and Reporting Requirements for new developments on municipal services was reviewed in order to prepare this report.

3.0 METHODOLOGY

3.1 Borehole Advancement and Monitoring Well Installation

Terraprobe previously drilled six (6) boreholes and installed three (3) monitoring wells in July 2020 as a part of geotechnical investigation (BH1- BH6). All three (3) monitoring wells were installed with overburden.

As a part of the current assessment, two (2) additional boreholes were augered adjacent to the previous boreholes BH2 and BH5 into the fractured bedrock. Two (2) monitoring wells were installed within the featured bedrock, accordingly.

Drilling new boreholes and the construction of monitoring wells were conducted on July 27th, 2022. The locations of all boreholes/monitoring wells are shown on **Figure 2**.

Borehole drilling and monitoring well construction were completed by a licensed water well contractor, under the full-time supervision of a geotechnical technician from Terraprobe, who also logged the soil strata encountered during borehole advancement and collected representative soil samples for textural classification. The boreholes were drilled using continuous flight, solid stem augers. Detailed descriptions of the encountered subsoil and groundwater conditions are presented on the borehole and monitoring well logs, in the enclosed **Appendix A**.

The monitoring wells were constructed using 50-mm diameter PVC riser pipes and screens, which were installed in each of the geotechnical boreholes in accordance with Ontario Regulation (O. Reg.) 903. All of the monitoring wells were provided with steel flush mount protective casings at the ground surface.

The UTM coordinates and ground surface elevations at the monitoring wells as well as the monitoring well construction details, are presented on **Table 3-1**. It should be noted that the ground surface elevations at the borehole and monitoring well locations were confirmed by Terraprobe using a Trimble R10 GNSS System. The Trimble R10 system uses the Global Navigation Satellite System and the Can-Net reference system to determine target location and elevation. The Trimble R10 system is reported to have an accuracy of up to 10 mm horizontally and up to 30 mm vertically. It should be noted that the elevations provided in the Borehole Logs are approximate only, for the purpose of relating soil stratigraphy and should not be used or relied on for other purposes.

Table 3-1- Monitoring Well Installation Details

Well ID	Installation Date	UTM Coordinates (m)		Ground El. (masl)	Monitoring Well Depth (mbgs)	Screen Interval (mbgs)	Casing Dia. (mm)	Screened Geological Unit	Protective Casing
		Easting	Northing						
BH2	July 27, 2022	611478	4829990	139.6	4.3	2.8-4.3	50	Fractured Bedrock	Flush Mount
BH3	July 31, 2020	611459	4830007	139.9	3.0	1.5-3.0	50	Clayey Silt Till	Flush Mount
BH4	July 31, 2020	611474	4830021	139.8	3.0	1.5-3.0	50	Clayey Silt Till	Flush Mount
BH5	July 27, 2022	611488	4830007	139.6	5.2	3.7-5.2	50	Fractured Bedrock	Flush Mount
BH6	July 31, 2020	611439	4829978	139.8	3.0	1.5-3.0	50	Clayey Silt Till	Flush Mount

Notes: mbgs metres below ground surface
masl metres above sea level

3.2 Groundwater Monitoring

All five (5) installed monitoring wells were utilized to measure and monitor groundwater levels. The groundwater monitoring program will confirm the stabilized groundwater level beneath the Site. Water levels in the monitoring wells were measured manually, starting from August 3, 2022 extending to October 13, 2022. The findings are presented in **Section 6.1**.

3.3 MECP Water Well Records Review

MECP Water Well Records (WWRs) were reviewed for the registered wells located at the Site and within 500 m radius of the Site boundaries (study area). The findings of the MECP well records are presented in **Section 4.6**.

3.4 In Situ Hydraulic Conductivity Testing

Four (4) installed monitoring wells BH3, BH4, BH5 and BH6 were utilized to conduct hydraulic conductivity tests. The in-situ hydraulic conductivity test provides estimated hydraulic conductivity (K) for subsoil strata at the depths of the well screens. The monitoring wells were developed in advance of the test. Well development involves the purging and removal of groundwater from each monitoring well to remove remnants of clay, silt and other debris introduced into the monitoring well during construction, and to induce the flow of groundwater through the well screens.

The in-situ rising and falling head hydraulic conductivity tests were conducted in above mentioned monitoring wells. The hydraulic conductivity from monitoring well BH4, was determined based on falling head test. Falling head hydraulic conductivity test involves submerging a one (1) meter long slug in the monitoring well to displace the groundwater level upward. The rate at which the water level recovers to static conditions (falling head) is tracked manually using a water level tape and a data logger. The rate at which the water table recovers to static conditions is used to estimate the K value for the water-bearing strata formation at the well screen depth using the Bouwer and Rice method (1976). The hydraulic conductivities from monitoring well BH3, BH5 and BH6 were determined based on the rising water level recovery of the monitoring wells (rising head test). This test involves the rapid removal of water from a single well and monitoring the water level recovery. The results of the rising head tests were analysed using the Bouwer and Rice method (1976). The findings for the hydraulic conductivity testing are presented in Section **6.3.1**

3.5 Hydraulic Conductivity Based on Grain Size Distribution Graphs

The Hazen equation estimation method was also used to estimate the hydraulic conductivity (K) for saturated subsoils at selected depths. The method provides alternative hydraulic conductivity (K) estimates which are derived from the grain size diameter, whereby 10% by weight of the soil particles are finer and 90% are coarser (Freeze and Cherry, 1979). The soils chosen for Hazen to estimate were selected primarily from above the well screen depths. Findings are presented in **Section 6.2.2**.

3.6 Groundwater Quality Assessment

Groundwater quality should be assessed in advance of earth work. As such, one (1) set of groundwater samples (sewer set) was collected from one (1) selected monitoring well (BH2) on September 6, 2022 to characterize its quality for evaluation against the Region of Peel Storm and Sanitary Sewer Use By-Law parameters and the City of Mississauga Storm Sewer Use Bay-Law Limits. This was performed to assess whether any anticipated dewatering effluent can be disposed of into the Peel Region sewer system during construction or, following site development, for any long-term foundation drainage. Based on the results, recommendations for any pre-treatment for any dewatering/drainage effluent can be developed, if required.

One (1) selected monitoring well (BH2) was developed and purged of multiple well casings volumes of groundwater prior to sample collection. The groundwater sample was collected using a bailer. In accordance with the Peel Region Storm and Sanitary Sewer Use By-Law sampling protocols, one complete set of groundwater samples was not filtered during collection, prior to placement in the laboratory sample bottles. Upon sampling, all of the bottles were placed on ice and packed in a cooler at about 9 ± C^{o} for shipment to the analytical laboratory. Sample analysis were performed by an accredited lab by the Canadian Association for Laboratory Accreditation Inc. (CALA). Results of the analysis are discussed in **Section 6.3**.

3.7 A Review of Regional Data and Available Reports for the Site

The maps, data, and documents provided by the MECP, OGS, MNRF, ORMGP, and TRCA were reviewed. Additionally, the concurrent geotechnical report, was reviewed at the time of preparation of the current hydrogeological report.

4.0 REGIONAL AND LOCAL SITE SETTING

4.1 Regional Geology

The current understanding of the surficial geological setting of the Site is based on scientific work conducted by the OGS (OGS, 2003). The northeast corner of the Site and surrounding area are mapped as Till (5d) consisting of clay to silt-textured till (derived from glaciolacustrine deposits or shale). **Figure 3** illustrates the mapped surficial geology for the Site and the surrounding area.

ORMGP produced a cross-sectional geological map to aid in the characterization of the general stratigraphy of the Site and surrounding area. Considering the regional cross-section, it is understood that the overburden unit comprise undifferentiated upper sediments and Halton (or equivalent) with approximate average thicknesses of 1.4 and 3.0 m, respectively. The cross-section indicates that the bedrock can be contacted approximately 4.4 mbgs.

The underlying bedrock at the Site is the Georgian Bay Formation, which consists of shale, limestone, dolostone and siltstone (OGS, 2007).

4.2 Regional Physiography

The Site is located within a physiographic region of Southern Ontario known as the South Slope. The South Slope within the vicinity of the Site comprises Till Plains (Drumlinized).

The South Slope is the southern slope of the Oak Ridges Moraine, which includes a strip of south of the Peel Plain. It rises to the line of contact with the moraine at elevations ranging from 244.0 to 305.0 masl. The South Slope extends from the Niagara Escarpment to the Trent River where it covers an area of approximately 2,435.0 km^2. (Chapman and Putnam, 1984). **Figure 4** shows the location of the Site within the regional physiography map.

4.3 Regional Topography and Drainage

A review of a regional ground surface topography map for the Site and surrounding area indicates that the topography of the Site is relatively flat. The ground surface elevation was measured between 139.6 meters above sea level (masl) and 139.9 masl at the borehole locations. Considering the topography map, ground surface elevation for the Site and the vicinity of the site, slopes downwards in an easterly direction. As such, it is anticipated that generated runoff (if it is not managed) will flow in a southeast direction.

4.4 Watershed Setting

Toronto and Region Conservation Authority (TRCA) interactive watershed map was reviewed. The Site is located within the Etobicoke Creek watershed, which falls with the TRCA jurisdiction. Approximately 11.7% of the watershed consists of natural cover (not including water), which is similar to other heavily urbanized watersheds, with natural cover continuing to decrease (e.g. forest cover) (TRCA website, 2022).

4.5 Local Surface Water and Natural Heritage Features

The MNRF's database was reviewed for any natural heritage features including, watercourses, bodies of water, wetland features, Area of Natural and Scientific Interest (ANSI) and wooded areas. **Figure 6** shows the location of the Site within the surrounding Natural Heritage Features. Record review indicates that there are no records for any natural heritage features within or in close proximity to the Site. Little Etobicoke Creek flows approximately 800 m to the east boundary of the Site, and records for wetland features, not evaluated as per Ontario Wetland Evaluation System (OWES) are mapped approximately 400 m to the north of the Site. Record review indicates that a record for a wooded area is mapped adjacent to the west boundary of the Site.

4.6 Groundwater Resources (MECP Well Records)

MECP well record database was reviewed for records located within a radius of 500 m from the approximate Site boundary (Study Area). The location of the well records is presented on **Figure 7**. A total of eleven wells were located within the study area. A summary of data obtained from record review is presented in **Table 4-1** and **Appendix B**.

Table 4-1- MECP Well Record Summary

Number of the Well Records	**11**
Water Use (Final Status)	
Observation Wells	8 (72%)
Abandoned/Quality	1 (10%)
Unknown	2 (18%)

The above summary indicates that most of the local wells are listed as observation wells. As there is no record of water supply well within or in close proximity to the Site, a door to door well survey is not required.

4.7 Active Permit to Take Water Application Records Review

MECP website was reviewed for any active PTTWs within a 1.0 km radius of the Site on August 22, 2022. Record review indicates there are six active PTTWs within the study area. **Table 4-2** presents a summary of the records.

Table 4-2- Active PTTW Record Summary

Permit Number	Permit Holder Name	Purpose	Maximum L/day	Source Type	Distance from the Site (Km)
1585-B78LNL	Enbridge Pipelines Inc.	Dewatering Construction	12,000,000	Groundwater	0.91
1743-AY5QMX	The Regional Municipality of Peel	Dewatering Construction	1,000	Surface and Groundwater	0.72
1743-AY5QMX	The Regional Municipality of Peel	Dewatering Construction	9,500	Surface and Groundwater	0.80
1743-AY5QMX	The Regional Municipality of Peel	Dewatering Construction	63,100	Surface and Groundwater	0.71

5.0 LOCAL GEOLOGY AND SUBSURFACE INVESTIGATION

Terraprobe conducted a geotechnical investigation in 2020. The field work consisted of drilling a total of six (6) boreholes extending to a maximum termination depth of investigation at 8.0 metres below existing ground surface (mbgs). Information regarding borehole logs is presented in **Appendix A**. The approximate locations of boreholes are shown on **Figure 2**.

The following Site stratigraphy is based on the Terraprobe borehole findings in the field. It should be noted that the subsurface conditions are confirmed at the borehole locations only, and may vary at other locations. The boundaries between the various strata represent an inferred transition rather than a precise plane of geological change. This summary is intended to correlate the data to assist in the interpretation of the subsurface conditions at the Site.

5.1 Pavement Structure

A zone of earth fill materials was encountered in Boreholes 1 to 5 beneath the pavement structure and extended to depths varying from about 0.6 mbgs (Boreholes 1, 2 and 5) to 0.8 m (Boreholes 3 and 4). The earth fill materials consisted of mixed composition comprising clayey silt with some sand and trace amounts of gravel. Sporadic organic presence was noted within the fill materials at varying depths.

A sand earth fill zone was encountered beneath the concrete pavers in Borehole 6 and extended to about 0.8 mbgs. The clayey silt earth fill zone is firm to very stiff consistency, and the sand fill zone is loose in density.

The in-situ moisture contents of the earth fill samples ranged from 6 to 13 percent by mass, indicating a moist condition.

5.2 Glacial Till

Glacial till deposit was encountered in all boreholes beneath the earth fill zone at depths varying from about 0.6 (Boreholes 1, 2 and 5) to 0.8 (Boreholes 3, 4 and 6) extended to about 3 mbgs. The till deposit predominately consisted of clayey silt with varying amounts of sand (some sand to sandy) and trace to some gravel. Shale fragments were also encountered at the bottom till deposit.

Glacial till is very stiff to hard in consistency. The in-situ moisture contents of the glacial till samples ranged from 4 to 13 percent by mass, indicating a moist condition.

5.3 Bedrock

The glacial till deposits graded into till-shale complex/weathered shale (Bedrock of Georgian Bay Formation) in each borehole at about 3.0 mbgs. Rock coring was carried out in Boreholes 1 and 4, extending to about 8.0 mbgs. The bedrock beneath the Site consists of the Georgian Bay Formation, which a deposit predominantly comprises thin to medium bedded grey shale of Ordovician age. The shale contains interbedded grey calcareous shale, limestone/dolostone and calcareous sandstone (conventionally grouped together as “limestone”) which are discontinuous and nominally 25 to 125 mm thick. The strength of the bedrock ranged from weak to strong based

on the field estimate method. Compressive strength test was performed on two (2) selected cores in accordance with MTO LS-410 (CSA-A23.2-14C), which further verified the strength classification.

6.0 LOCAL HYDROGEOLOGICAL STUDY

6.1 Groundwater Level Monitoring

A groundwater monitoring program was completed between August 3, 2022 and October 13, 2022 as a part of the hydrogeological assessment. Five (5) monitoring wells, installed for the hydrogeological assessment (BH2, BH3, BH4, BH5 and BH6), were considered for monitoring program.

Groundwater levels were monitored over three (3) monitoring events. The measured groundwater levels, along with other monitoring wells details and findings, are presented in **Appendix C**. A summary of the groundwater observations is provided in **Table 6-1**.

Table 6-1– Static Groundwater Level Monitoring

Well ID		August 3, 2022	September 6, 2022	October 13, 2022	Average	Fluctuation
BH2	mbgs	2.13	2.40	2.39	2.31	0.27
	masl	137.47	137.20	137.21	137.30	
BH3	mbgs	2.88	2.64	2.74	2.75	0.24
	masl	136.99	137.23	137.13	137.11	
BH4	mbgs	1.18	1.50	1.60	1.42	0.41
	masl	138.65	138.33	138.23	138.41	
BH5	mbgs	3.32	3.30	3.53	3.38	0.23
	masl	136.28	136.30	136.07	136.21	
BH6	mbgs	2.20	2.21	2.33	2.25	0.13
	masl	137.59	137.58	137.46	137.55	

Notes: mbgs: metres below ground surface
masl: metres above sea level

As shown in **Table 6-1**, average groundwater levels range from 138.4 masl (1.42 mbgs) to 136.21 masl (3.38 mbgs). The highest and lowest shallow groundwater levels were measured at El. 138.65 masl and 136.07 masl at monitoring well BH4 and BH5, respectively.

In addition, the highest groundwater fluctuation of 0.41 m was measured at monitoring well BH4. The lowest fluctuation of 0.13 m was recorded at monitoring well BH6 location over the monitoring period.

6.2 Hydraulic Conductivity Testing

6.2.1 In-Situ Hydraulic Conductivity Tests

The hydraulic conductivities from the monitoring wells were determined based on a falling and rising head single well response tests (SWRT) at BH3, BH4, BH5 and BH6. The results of the SWRT were analysed using the Bouwer and Rice method (1976). The results of the analysis are presented in **Appendix D**, with a summary of the findings provided in **Table 6-2**.

Table 6-2– Hydraulic Conductivity Tests

Monitoring Well	Well Screen Interval (masl)	Screened Soil Strata	Hydraulic Conductivity (m/s)	Test Method
BH3	136.9 – 138.4	Clayey Silt Till	9.90×10^{-7}	Rising Head Test
BH4	136.8 – 138.3	Clayey Silt Till	9.76×10^{-7}	Falling Head Test
BH5	134.4 – 135.9	Weathered Bedrock	1.55×10^{-7}	Rising Head Test
BH6	136.8 – 138.3	Clayey Silt Till	1.34×10^{-7}	Rising Head Test

6.2.2 Hydraulic Conductivity Test Using Grain Size Distribution Graphs

The Hazen Equation method was adopted to estimate the hydraulic conductivity (K) for different soil layers which may contain groundwater during the seasonal high water table (spring) period, or if they are not encountered within the screen intervals.

The Hazen Equation method relies on the interrelationship between hydraulic conductivity and effective grain size, d_{10}, in the soil media. This empirical relation predicts a power-law relation with K, as follow:

$$K = Ad_{10}^2$$

where;

d_{10}: Value of the soil grain size gradation curve as determined by sieve analysis, whereby 10% by weight of the soil particles are finer and 90% by weight of the soil particles are coarser.

A: Coefficient; it is equal to 1 when K in cm/sec and d_{10} is in mm

The Hazen Equation estimation provides an indication of the groundwater yield capacity for saturated soil strata at the depths where soils samples were selected for grain size analysis. The grain size distribution graphs prepared for the geotechnical investigation were used to the estimate the hydraulic conductivity, with the details are presented in **Appendix E**. The results of the Hazen equation are provided in **Table 6-3**, below.

Table 6-3- Hydraulic Conductivities Based on Grain Size Analysis

Sample ID	Soil Sample Depth (mbgs)	Soil Sample Elevation (masl)	Soil Strata	Hydraulic Conductivity (m/sec.)
BH1-SS2	1.0	138.5	Clayey Silt Till	1.69×10^{-8}
BH4-SS3	1.8	138.0	Clayey Silt Till	1.96×10^{-8}

Notes:
mbgs metres below ground surface
masl metres above sea level

6.3 Groundwater Quality Assessment

One (1) unfiltered groundwater sample was collected by Terraprobe and analyzed by a laboratory accredited by SGS, laboratory the Canadian Association for Laboratory Accreditation. The sample was collected directly from monitoring well BH2 on September 6, 2022.

The sample was analyzed for the following parameters:

- The Regional Municipality of Peel By-Law No. 53-2010 Table 1 – Limits for Sanitary Sewer Discharge
- The Regional Municipality of Peel By-Law No. 53-2010 Table 2 – Limits of Storm Sewer Discharge
- The City of Mississauga By-Law No. 0046-2022– Limits of Storm Sewer Discharge

The exceedances, together with the storm and sanitary criteria, are presented in **Table 6-4,** with a true copy of the Certificate of Analysis and a chain of custody record for the sample is included in **Appendix F**.

Table 6-4- Exceedance Table and Groundwater Quality Results

Parameter	BH2 Groundwater Quality Results (mg/L)	Regional Municipality of Peel Storm Sewer Limits (mg/l)	City of Mississauga Storm Sewer Limits (mg/l)
Total Suspended Solids (TSS)	222	**15**	**15**
Total Manganese	0.278	**0.05**	2.0
Aluminium	2.01	N/A	**1.0**

A review of the results shows that groundwater quality at monitoring well BH2 exceeds for Total Suspended Solids (TSS) and total manganese, in comparison to the Regional Municipality of Peel Storm Sewer Use By-Law limits and exceeds for TSS and total aluminium, in comparison to the City of Mississauga Storm Sewer Use By-Law limits

A review of the groundwater quality results suggests that short-term dewatering discharge could be directed to Regional Municipality of Peel storm sewer system or City of Mississauga storm sewer system considering pre-treatment to reduce the elevated parameters. A review of the results indicates that there are no exceedances in comparison with the Regional Municipality of Peel Sanitary Sewer By-Law.

7.0 DEWATERING REQUIREMENTS

7.1 Proposed Development Plan Review

The proposed development site plan, illustrated on the accompanying **Figure 8**, is prepared by Kearns Mancini Architects, dated September 7, 2022. The proposed development will consist of construction of a 9-storey residential tower element including one (1) level penthouse resting on one (1) level of underground parking garage. It is understood that the Site will be provided with full municipal services for water and sewage. The design drawings indicate that the basement finished floor elevation (FFE) would be set at El. 137.4 masl.The design drawings titled "*A402 Building Elevations*" prepared by Kearns Mancini Architects, dated September 7, 2022 are enclosed in **Appendix H**.

7.2 A review of Geotechnical Investigation Report

The geotechnical investigation report prepared by Terraprobe dated November 11, 2022 (File No. 1-20-0258-01) was reviewed. A summary of findings is presented as below:

- The underside of the spread footings may be at El. 136.0 masl ± (1.4 m depth allowance for the footing depth and frost protection) while the top of bedrock may be encountered at El. 136.5 to 136.9 masl. Therefore, foundation subgrade is expected to consist of the partially weathered (Zone II) shale bedrock. A maximum factored geotechnical resistance at ULS of 6,000 kPa and a maximum net geotechnical reaction at SLS of 3,000 kPa may be used for foundations designed on weathered (Zone II) bedrock. A minimum foundation embedment of 300 mm into the weathered bedrock must be provided.
- The underside of footing/grade beam/pile cap elevations must be designed to provide a minimum of 1.2 m of soil cover or equivalent insulation to the foundation subgrade for frost protection considerations in unheated areas. All footings must be designed to bear at least 0.3 m into the partially weathered shale.
- The basement floor slab should be provided with a capillary moisture barrier and drainage layer. This can be made by placing the slab on a minimum 200 mm thick 19 mm clear stone layer (OPSS.MUNI 1004) compacted by vibration to a dense state. This material also serves as the drainage media for the subfloor drainage system. Provision of subfloor drainage is required in conjunction with the perimeter drainage of the structure.
- To assist in maintaining basement dry from seepage, it is recommended that exterior grades around the building be sloped away at a 2 percent gradient or more, for a distance of at least 1.2 m. The basement wall (for basements) in case of open excavation must be provided with damp-proofing provisions in conformance to the Section 9.13.2 of the Ontario Building Code (2012).
- The elevator pit would likely extend 1 to 2 m deeper than the lowest basement floor level. Drainage for the elevator pit may be provided by incorporating perimeter and subfloor drainage system outletting to a sump or the elevator pit structure can be waterproofed below the lowest basement subfloor drainage system level. The size of the sump should be adequate to accommodate the anticipated water seepage.
- The fill materials encountered in the boreholes are classified as Type 3 Soil and the glacial till deposit encountered in the borehole is classified as Type 2 Soil above and Type 3 below the prevailing groundwater level under these regulations under these regulations.
- The earth fill material at the site may contain perched water that will seep into excavations in the short term. It is expected that trapped groundwater zones, are of limited extent and can be allowed to drain into the excavation, to be pumped out. In general, the volume of groundwater to be anticipated to flow

into open excavations is such that temporary pumping from the excavations is expected to suffice for the control of the groundwater.

- There should be limited seepage from the bedrock and overburden, as the overburden comprises a relatively low permeability till and the fracture permeability of the rock is low and diminishes with increasing depth.
- The shoring requirements for the site will have to be examined in detail with respect to the site boundary constraints, once the development details and the building footprint is finalized. Depending upon the boundary conditions, structures in the vicinity and the project design, the shoring system may consist of a rigid (interlocking drilled caissons) or a steel soldier piles and timber lagging shoring system.
- It is understood that the existing building has no basement while the proposed building would include the one-level underground parking structure, extending deeper than the existing building foundations. In addition, the proposed and existing buildings are connected along the southern limit of the existing building. Therefore, a special attention should be made along the proposed excavation shoring sections adjacent to the southern limit of the existing building. No excavation shall extend below a line cast as one vertical to one horizontal from foundations of the existing structure without adequate alternate support being provided.

7.3 Summary of Hydrogeological Conditions of Site Development

The results of the investigation completed by Terraprobe indicate the following hydrogeological features for the Site:

- Underlying the fill (clayey silt, some sand), native deposits mainly comprise clayey silt till and shale of Georgian Bay formation.
- The shallow groundwater table for design purposes should be considered to be at El. 138.6 ± masl (1.3 mbgs) measured at BH4.
- The estimated hydraulic conductivities of 9.76×10^{-7} m/s (in-situ hydraulic conductivity test), 1.0×10^{-6} m/s (Freeze, A. and Cherry, J., 1979) and 1.0×10^{-6} m/s (Freeze, A. and Cherry, J., 1979) is considered for the glacial till, shale and fill units, respectively.
- Permeable shoring (a steel soldier piles and timber lagging) is considered on all sides.

7.4 Construction Dewatering Flow Rate Estimation (Extraction and Discharge)

The short-term steady state dewatering flow rate was estimated reviewing the proposed development plans, considering subsoil profile, groundwater conditions, and estimated hydraulic conductivity for the geological units in which the excavation and construction of the underground structure will be completed.

Proposed shoring design was not available for review at the time of preparation of the current report. As such, for the current estimate, a permeable shoring (steel soldier piles and timber lagging) was considered based on a review of the geotechnical investigation report. However, the shoring system might be changed in the future according to the final shoring design and the estimated flow rates should be re-evaluated at that time.

Based on a review of the architectural drawings set titled "*A402 Building Elevations*" prepared by Kearns Mancini Architects, dated September 7, 2022, dimensions of the proposed excavation area are approximated as 30.7 m (N-S direction) and 65.7 m (E-W direction) and that lowest proposed building FFE at P1 level is set at 137.4 masl. It is assumed that elevator pit could extend approximately 1.5 m below the lowest proposed FFE at

El 135.9 masl. The assumptions considered for the dewatering flow rate calculations are summarized in **Table 7-1**.

Table 7-1- Summary of Assumptions for Short-Term Dewatering

Proposed Underground Parking	Approx. Proposed Width (m)	Approx. Proposed Length (m)	Approx. Proposed Depth (mbgs)	Lowest Proposed FFE (masl)	Assumed Proposed Foundation / Elevator Pit Elevation (masl)	The Highest Groundwater Level (masl)	Assumed Shoring System
P1 Level	30.7	65.7	2.5*	137.4	Footing: 136.0 Elevator Pit: 135.9	138.6	Permeable

Notes:
mbgs metres below ground surface
masl metres above sea level
*Considering the existing ground surface at El. 139.9 masl.

The estimated construction dewatering flow rate for the P1 level is summarized below and calculations are presented in **Appendix G**.

- 41,333 L/day without safety factor included, and it could reach 62,000 L/day of groundwater seepage into the excavation considering a safety factor of 1.5.
- The above estimate does not take into account storm water management from rainfall events. The collection system should also account for a typical 2-year design storm event which will generate approximately 61,000 L/day. The dewatering system should be designed to take into account removal of rainfall from the excavation. As such, a total short-term anticipated dewatering flow reaches up to 123,000 L/day
- According to O. Reg. 63/16, a plan for discharge must consider the conveyance of storm water from a 100-year storm event, which translates to approximately 201,000 L/day.

The short-term (construction) dewatering estimates for the Site are summarized in **Table 7-2**.

Table 7-2- Summary of Short-Term Dewatering

Location	Groundwater Seepage*		2-Year Rainfall Event		Total Volume	
	L/day	L/sec	L/day	L/sec	L/day	L/sec
Total Developable Site	62,000**	0.72	61,000	0.71	123,000	**1.42**

*A safety factor (s.f.) of 1.5 has been applied to groundwater seepage estimates (41,333 L/day groundwater seepage without s.f.)
**The short-term groundwater seepage estimate takes into account a permeable shoring system on all four sides of the excavation area.

The dewatering flow rates are estimated based on the highest recorded groundwater level measured in the monitoring wells installed within the clayey silt glacial till.

The estimated flow rate does not include anticipated perched water that can be observed within the fill material during the excavation.

7.5 Long-Term Groundwater Control Requirements (Post Construction)

Long-term groundwater seepage is anticipated for the proposed construction. The long-term (post-construction) foundation drainage flow rate estimates for the Site are summarized in **Table 7-3**.

Table 7-3- Summary of Long-Term Dewatering

Location	Groundwater Seepage*		2-Year Rainfall Event		Total Volume	
	L/day	L/sec	L/day	L/sec	L/day	L/sec
Total Developable Site	55,500	0.64	6,000	0.07	**61,500**	**0.71**

*A safety factor of 1.5 has been applied to groundwater seepage estimates (37,000 L/day groundwater seepage without s.f.)

Any localized protrusions extending below the base of the excavation, including elevator or sump pits should be waterproofed in the long-term

7.6 Permit Requirements

Total estimated short-term dewatering flow rate is above the lower EASR limit of 50,000 L/day, but remains below the upper limits of 400,000 L/day and will reach 123,000 L/day. As such, filling EASR with MECP is required to manage short-term construction dewatering flow.

The estimated long-term foundation drainage flow rate exceeds MECP threshold of 50,000 L/day. As such, applying for PTTW with MECP is required.

It is understood that water collected through groundwater seepage and storm water entering the excavation pit will be pumped and discharged to the City of Mississauga or Regional Municipality of Peel Sewers during construction. As such, obtaining discharge permit from the City of Mississauga/ Regional Municipality of Peel is required.

It is also assumed that the long-term foundation drainage will be conveyed to the City of Mississauga storm sewer system. As such, obtaining discharge permit from the City of Mississauga is required.

7.7 Zone of Influence (ZOI)

The Zone of Influence (ZOI) with respect to groundwater was calculated based on the estimated groundwater taking rate and the hydraulic conductivity of the unit which water will be taken at the Site.

The ZOI was calculated using the Sichart equation below. Inc.

Equation: $R_0 = 3000*dH*K^{0.5}$

Where:

dH is the dewatering thickness (m)
K is the hydraulic conductivity (m/s)

Calculation:

$R_0 = 3000*(138.6\text{-}135.91\ m)*(1.00 \times 10^{-6} m/s)^{0.5}$

$R_0 = 8.1\pm$ m

The zone of influence is 8.1 m.

7.8 Potential Dewatering Impacts and Mitigation Plan

7.8.1 Ground Settlement

Considering the conceptual zone of influence for dewatering, it is anticipated that the existing neighboring building located to the northwest side of the proposed development and Westminster Place are partially located within the estimated zone of influence of 8.1 m. Shallow bedrock was contacted within the proposed development footprint. However, considering shallow groundwater level contacted within the clayey silt till, potential ground settlement is anticipated for the structures located within the conceptual ZOI. The potential for impacts from the short-term dewatering on ground settlement should be assessed by a Professional Geotechnical Engineer.

7.8.2 Surface Water, Wetlands and Areas of Natural Significance

Record review indicates that no natural heritage features including wetland, water bodies, watercourses and ANSI were identified on the Site. There is no record for a natural heritage feature within the conceptual ZOI. As such, no impacts to natural heritage features are anticipated pertaining the proposed development. Based on regional-scale source protection mapping, the Site is not located within a WHPA area, Intake Protection Zone, Issue Contributing Area, Event Based Area or SGRA and Highly Vulnerable Aquifer.

7.8.3 Water Supply Wells and Zone of Influence

The Site is located in a serviced area of the City of Mississauga. The Site and surrounding area are provided with municipal water and sewers. There is no use of the groundwater for water supply in this area of Mississauga. As such, it is expected that there would be no impact to drinking water wells.

Based on a review of MECP well record database, no water supply well records were located within the 500 m radius of the Study Area.

7.8.4 Contamination Sources

The Site and immediately surrounding area currently consist mostly of residential and commercial areas. However, these property uses have not been environmentally assessed by Terraprobe.

8.0 CONCLUSIONS AND RECOMMENDATIONS

- The Site is located within a physiographic region of Southern Ontario known as the South Slope. The South Slope within the vicinity of the Site comprises Till Plains (Drumlinized).
- The Site and surrounding area are mapped as Till (5d) consisting of clay to silt-textured till (derived from glaciolacustrine deposits or shale).
- The Site is located within the Etobicoke Creek watershed, which falls with the TRCA jurisdiction. Record review indicates that there are no records for any natural heritage features within or in close proximity to the Site. Little Etobicoke Creek flows approximately 800 m to the east boundary of the Site, and records for wetland features, not evaluated as per Ontario Wetland Evaluation System (OWES) are mapped approximately 400 m to the north of the Site. Record review indicates that a record for a wooded area is mapped adjacent to the west boundary of the Site.
- The subsoil profile consists mainly of fill, clayey silt glacial till and bedrock to termination depth of investigation at 8.0 mbgs.
- Average groundwater levels range from 138.4 masl (1.42 mbgs) to 136.21 masl (3.38 mbgs). The highest and lowest shallow groundwater levels were measured at El. 138.65 masl and 136.07 masl at monitoring well BH4 and BH5, respectively. In addition, the highest groundwater fluctuation of 0.41 m was measured at monitoring well BH4. The lowest fluctuation of 0.13 m was recorded at monitoring well BH6 location over the monitoring period.
- Estimated hydraulic conductivity of 9.76×10^{-7} m/s, estimated using falling head hydraulic conductivity test, was considered for clayey silt glacial till.
- The analytical results for the unfiltered samples obtained from monitoring well BH2 indicates that the concentrations for all the analyzed parameters meet the Regional Municipality of Peel sanitary sewer by-law limits. However, exceedances were reported for TSS and total manganese in comparison with the Regional Municipality of Peel storm sewer by-law limits and TSS and total aluminium in comparison with the City of Mississauga storm sewer by-law limits.
- Based on the proposed underground parking structure design, it is anticipated that short-term construction dewatering flow rate considering 1.5 safety factor will be approximately 62,000 L/day. Considering a 2-year storm event (30 mm rainfall event) falling within open excavation, a total discharge flow rate of 123,000 L/day is expected for short-term dewatering program.
- Long-term foundation drainage flow rate using a safety factor of 1.5 reaches 55,500 L/day, which can be expected from sub-floor drains below the underground parking structure. Considering infiltration at a rate of 6,000 L/day from 2-year storm event (30 mm rainfall event), a total volume of approximately 61,500 L/day is expected.
- Posting an EASR and applying for PTTW with MECP are required for short-term dewatering and long-term foundation drainage control, respectively.
- Discharge to the municipal sewer will require both a short-term and long-term discharge agreement with the Regional Municipality of Peel/City of Mississauga.
- Considering the conceptual zone of influence for dewatering, it is anticipated that the existing building located to the northwest side of the proposed development and Westminster Place are located partially within the estimated zone of influence of 8.1 m. Shallow bedrock was contacted within the proposed development footprint. However, considering shallow groundwater level contacted within the clayey silt till, potential ground settlement is anticipated for the structures located within the conceptual ZOI. The potential for impacts from the short-term dewatering on ground settlement should be assessed by a Professional Geotechnical Engineer.

9.0 LIMITATIONS

This report was prepared at the request of, and for the exclusive use of St. Luke's Dixie Senior Residence Corp and its affiliates ("the Intended User") is intended to provide an assessment of the hydrogeological conditions of the Site located at 4150 Westminster Place, Mississauga (the Site). No one other than the Intended User has the right to use and rely on the work without first obtaining the written authorization of Terraprobe Inc. and St. Luke's Dixie Senior Residence Corp.

Terraprobe Inc. expressly excludes liability to any party except the Intended User for any use of, and/or reliance upon, the work. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. Terraprobe Inc. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report, including consequential financial effects on transactions or property values, or requirements for follow-up actions and costs.

The assessment should not be considered a comprehensive audit that eliminates all risks of encountering hydrogeological problems. The information presented in this report is based on information collected during the completion of the hydrogeological study by Terraprobe Inc. It was based on the conditions on the Site at the time of the hydrogeological study by a review of historical information and field investigation to assess the hydrogeological conditions of the Site, as reported herein.

There is no warranty expressed or implied by this report regarding the hydrogeological conditions for the Site. Professional judgement was exercised in gathering and analysing information collected by reviewing previous reports, data provided by government and are open to public and field work investigation. The conclusions presented are the product of professional care and competence, and cannot be construed as an absolute guarantee.

In the event that during future work new information regarding the hydrogeological conditions of the Site is encountered, or in the event that the outstanding responses from the regulatory agencies indicate outstanding issues on file with respect to the Site, Terraprobe Inc. should be notified in order that we may re-evaluate the findings of this assessment and provide amendments, as required.

10.0 CLOSURE

We trust this report meets with your requirements. Should you have any questions regarding the information presented, please do not hesitate to contact our office.

Yours truly,

Terraprobe Inc.

John S. Biesiadecki, M.Sc., G.I.T
Project Manager

Narjes Alijani, M.Sc., P.Geo.
Senior Hydrogeologist

11.0 REFERENCES

1. Bouwer, H. and R. C. Rice, 1976. Bouwer and Rice Slug Test Solution for Unconfined Aquifers.

2. Chapman, L.J. and D.F. Putnam, 1984. The Physiography of Southern Ontario. Ontario.

3. Toronto and Region Conservation Authority, 2021, Online Regulated Area Map.

4. City of Mississauga, Online Official Plans.

5. Geological Survey. Ontario Geological Survey (OGS), 2003. Surficial Geology of Southern Ontario. Miscellaneous Release – Data 128 – revised.

6. Geological Survey. Ontario Geological Survey (OGS), 2007. Bedrock Geology of Ontario. Miscellaneous Release – MRD 219.

7. Geotechnical Investigation Westminster Place Senior Residence, Mississauga, Ontario, dated November 11, 2022 (Draft).

8. Ministry of the Environment, Conservation and Parks, 2019, Source Protection Information Atlas Interactive Map.

9. Toronto Region Conservation Authority (TRCA), 2022. Watershed Management, Etobicoke Creek Watershed Plan.

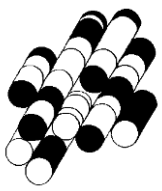
10. Freeze, A. and Cherry, J., 1979. Groundwater, Prentice-Hall Inc., New Jersey

11. Architectural drawings prepared by Kearns Mancini Architects (A402 Building Elevations), dated September 7, 2022.

APPENDIX A

Boreholes and Monitoring Well Logs

TERRAPROBE INC.



Terraprobe

ABBREVIATIONS AND TERMINOLOGY

SAMPLING METHODS

AS	auger sample
CORE	cored sample
DP	direct push
FV	field vane
GS	grab sample
SS	split spoon
ST	shelby tube
WS	wash sample

PENETRATION RESISTANCE

Standard Penetration Test (SPT) resistance ('N' values) is defined as the number of blows by a hammer weighing 63.6 kg (140 lb.) falling freely for a distance of 0.76 m (30 in.) required to advance a standard 50 mm (2 in.) diameter split spoon sampler for a distance of 0.3 m (12 in.).

Dynamic Cone Test (DCT) resistance is defined as the number of blows by a hammer weighing 63.6 kg (140 lb.) falling freely for a distance of 0.76 m (30 in.) required to advance a conical steel point of 50 mm (2 in.) diameter and with 60° sides on 'A' size drill rods for a distance of 0.3 m (12 in.)."

COHESIONLESS SOILS

Compactness	'N' value
very loose	< 4
loose	4 – 10
compact	10 – 30
dense	30 – 50
very dense	> 50

COHESIVE SOILS

Consistency	'N' value	Undrained Shear Strength (kPa)
very soft	< 2	< 12
soft	2 – 4	12 – 25
firm	4 – 8	25 – 50
stiff	8 – 15	50 – 100
very stiff	15 – 30	100 – 200
hard	> 30	> 200

COMPOSITION

Term (e.g)	% by weight
trace silt	< 10
some silt	10 – 20
silty	20 – 35
sand *and* silt	> 35

TESTS AND SYMBOLS

MH	mechanical sieve and hydrometer analysis
w, w_c	water content
w_L, LL	liquid limit
w_P, PL	plastic limit
I_P, PI	plasticity index
k	coefficient of permeability
γ	soil unit weight, bulk
G_s	specific gravity
φ'	internal friction angle
c'	effective cohesion
c_u	undrained shear strength

▽	Unstabilized water level
▼	1st water level measurement
▼	2nd water level measurement
▼	Most recent water level measurement
3.0+	Undrained shear strength from field vane (with sensitivity)
C_c	compression index
c_v	coefficient of consolidation
m_v	coefficient of compressibility
e	void ratio
PID	photoionization detector
FID	flame ionization detector

FIELD MOISTURE DESCRIPTIONS

Damp	refers to a soil sample that does not exhibit any observable pore water from field/hand inspection.
Moist	refers to a soil sample that exhibits evidence of existing pore water (e.g. sample feels cool, cohesive soil is at plastic limit) but does not have visible pore water
Wet	refers to a soil sample that has visible pore water

LOG OF BOREHOLE 1

Terraprobe

Project No. : 1-20-0258-01	Client : St. Luke's Dixie Senior Residence Corp	Originated by : DH
Date started : July 31, 2020	Project : 4150 Westminster Place	Compiled by : AS
Sheet No. : 1 of 1	Location : Mississauga, Ontario	Checked by : SZ

Position : E: 611471, N: 4829979 (UTM 17T) Elevation Datum : Geodetic

Rig type : Truck-mounted Drilling Method : Solid stem augers

Depth Scale (m)	Elev Depth (m)	Description	Graphic Log	Sample Number	Sample Type	SPT 'N' Value	Elevation Scale (m)	Penetration Test Values (Blows / 0.3m) / Undrained Shear Strength (kPa)	Moisture / Plasticity	Headspace Vapour (ppm)	Instrument Details	Unstabilized Water Level	Lab Data and Comments / GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL
0	**139.5**	**GROUND SURFACE**					139						
	139.3	80mm **ASPHALTIC CONCRETE**											
	0.2	80mm **AGGREGATE**		1	SS	11							
	138.9	**FILL**, clayey silt, some sand, trace gravel, trace organics, stiff, dark brown, moist											
	0.6	**CLAYEY SILT**, some sand to sandy, trace to some gravel, very stiff to hard, brown, moist (GLACIAL TILL)		2	SS	28	138						4 27 52 17
				3	SS	51							
				4	SS	46	137						
3	136.5			5	SS	50 / 100mm							
	3.0	**GEORGIAN BAY FORMATION** (See rock core log for details)		1	RUN		136						...at 3.0m, rock cored November 4, 2020.
				2	RUN								
				3	RUN		135						
				4	RUN		134						
7				5	RUN		133						
							132						
8	131.5												
	8.0	**END OF BOREHOLE** Auger refusal on inferred bedrock											

Penetration Test Values (Blows / 0.3m): ×Dynamic Cone 10 20 30 40

Undrained Shear Strength (kPa): ○ Unconfined ● Pocket Penetrometer + Field Vane ■ Lab Vane 40 80 120 160

Moisture / Plasticity: Plastic Limit PL | Natural Water Content MC | Liquid Limit LL; 10 20 30

Borehole was dry and open upon completion of drilling.

file: 1-20-0258-01 bh logs.gpj

LOG OF BOREHOLE 2

Terraprobe

Project No. : 1-20-0258-01	Client : St. Luke's Dixie Senior Residence Corp	Originated by : DH
Date started : July 31, 2020	Project : 4150 Westminster Place	Compiled by : AS
Sheet No. : 1 of 1	Location : Mississauga, Ontario	Checked by : SZ

Position : E: 611478, N: 4829990 (UTM 17T) Elevation Datum : Geodetic

Rig type : Truck-mounted Drilling Method : Solid stem augers

Depth Scale (m)	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value
0	139.6	**GROUND SURFACE**				
	139.4	80mm **ASPHALTIC CONCRETE**				
	0.2	80mm **AGGREGATE**		1	SS	12
	139.0	**FILL**, clayey silt, some sand, trace gravel, trace organics, stiff, dark brown, moist				
	0.6	**CLAYEY SILT**, some sand to sandy, trace to some gravel, hard, brown, moist (GLACIAL TILL)		2	SS	33
1		...shale fragments inclusion and grey below		3	SS	39
2				4	SS	50 / 125mm
3	136.6					
	3.0	**INFERRED BEDROCK**, weathered to partially unweathered shale with intermittent limestone/ dolostone stringers, grey (GEORGIAN BAY FORMATION)		5	SS	50 / 75mm
4				6	SS	50 / 100mm
	135.3					
	4.3	**END OF BOREHOLE** Auger refusal on inferred bedrock				

Elevation Scale (m): 139, 138, 137, 136

Penetration Test Values (Blows / 0.3m): Dynamic Cone 10 20 30 40

Undrained Shear Strength (kPa): Unconfined, Pocket Penetrometer, Field Vane, Lab Vane 40 80 120 160

Moisture / Plasticity: Plastic Limit, Natural Water Content, Liquid Limit — PL, MC, LL 10 20 30

Headspace Vapour (ppm)

Instrument Details

Unstabilized Water Level

Lab Data and Comments

GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL

Augered to about 4.3m below ground surface to install monitoring well on july 27, 2022

Borehole was dry and open upon completion of drilling.

50 mm dia. monitoring well installed.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Aug 3, 2022	2.1	137.5
Sep 6, 2022	2.4	137.2
Oct 13, 2022	2.4	137.2

file: 1-20-0258-01 bh logs.gpj

LOG OF BOREHOLE 3

Terraprobe

Project No. : 1-20-0258-01	Client : St. Luke's Dixie Senior Residence Corp	Originated by : DH
Date started : July 31, 2020	Project : 4150 Westminster Place	Compiled by : AS
Sheet No. : 1 of 1	Location : Mississauga, Ontario	Checked by : SZ

Position : E: 611459, N: 4830007 (UTM 17T) Elevation Datum : Geodetic

Rig type : Truck-mounted Drilling Method : Solid stem augers

Depth Scale (m)	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value
0	139.9	**GROUND SURFACE**				
	139.7	80mm **ASPHALTIC CONCRETE**				
	0.2	100mm **AGGREGATE**		1	SS	11
		FILL, clayey silt, some sand, trace gravel, trace organics, stiff, dark brown, moist				
	139.1					
	0.8	**CLAYEY SILT**, some sand to sandy, trace to some gravel, very stiff to hard, brown, moist (GLACIAL TILL)		2	SS	15
1						
		...shale fragments inclusion and grey below		3	SS	56
2						
				4	SS	56
3	136.9					
	3.0	**INFERRED BEDROCK**, weathered to partially unweathered shale with intermittent limestone/ dolostone stringers, grey (GEORGIAN BAY FORMATION)		5	SS	50 / 75mm
	136.6					
	3.3	**END OF BOREHOLE** Auger refusal on inferred bedrock				

Elevation Scale (m): 139, 138, 137

Penetration Test Values (Blows / 0.3m): Dynamic Cone (10, 20, 30, 40)

Undrained Shear Strength (kPa): Unconfined, Pocket Penetrometer, Field Vane, Lab Vane (40, 80, 120, 160)

Moisture / Plasticity: Plastic Limit (PL), Natural Water Content (MC), Liquid Limit (LL) (10, 20, 30)

Headspace Vapour (ppm)

Instrument Details

Unstabilized Water Level

Lab Data and Comments

GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL

Borehole was dry and open upon completion of drilling.

50 mm dia. monitoring well installed.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Aug 28, 2020	2.6	137.3
Aug 3, 2022	2.9	137.0
Sep 6, 2022	2.6	137.3
Oct 13, 2022	2.7	137.2

file: 1-20-0258-01 bh logs.gpj

LOG OF BOREHOLE 4

Terraprobe

Project No. : 1-20-0258-01	Client : St. Luke's Dixie Senior Residence Corp	Originated by : DH
Date started : July 31, 2020	Project : 4150 Westminster Place	Compiled by : AS
Sheet No. : 1 of 1	Location : Mississauga, Ontario	Checked by : SZ

Position : E: 611474, N: 4830021 (UTM 17T) Elevation Datum : Geodetic

Rig type : Truck-mounted Drilling Method : Solid stem augers

Depth Scale (m)	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value
0	139.8	**GROUND SURFACE**				
	139.6	80mm **ASPHALTIC CONCRETE**				
	0.2	80mm **AGGREGATE**		1	SS	18
		FILL, clayey silt, some sand, trace gravel, trace organics, very stiff, dark brown, moist				
	139.0 0.8	**CLAYEY SILT**, some sand to sandy, trace to some gravel, very stiff to hard, brownish grey, moist (GLACIAL TILL)		2	SS	19
1				3	SS	51
2		...shale fragments inclusion below		4	SS	50 / 150mm
3	136.8 3.0	**GEORGIAN BAY FORMATION** (See rock core log for details)		5	SS	50 / 50mm
				1	RUN	
4				2	RUN	
5				3	RUN	
6						
7				4	RUN	
	131.9 7.9					

Elevation Scale (m): 139, 138, 137, 136, 135, 134, 133, 132

Penetration Test Values (Blows / 0.3m): Dynamic Cone 10 20 30 40

Undrained Shear Strength (kPa): Unconfined, Pocket Penetrometer, Field Vane, Lab Vane — 40 80 120 160

Moisture / Plasticity: Plastic Limit (PL) 10, Natural Water Content (MC) 20, Liquid Limit (LL) 30

Headspace Vapour (ppm)

Instrument Details

Unstabilized Water Level

Lab Data and Comments

GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL

15 13 52 20

...at 3.0m, rock cored November 3, 2020.

...at 7.2m, UCS to 7.3m

END OF BOREHOLE
Auger refusal on inferred bedrock

Borehole was dry and open upon completion of drilling.

50 mm dia. monitoring well installed.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Aug 28, 2020	1.1	138.7
Aug 3, 2022	1.2	138.6
Sep 6, 2022	1.5	138.3
Oct 13, 2022	1.6	138.2

file: 1-20-0258-01 bh logs.gpj

LOG OF BOREHOLE 5

Terraprobe

Project No. : 1-20-0258-01	Client : St. Luke's Dixie Senior Residence Corp	Originated by : DH
Date started : July 31, 2020	Project : 4150 Westminster Place	Compiled by : AS
Sheet No. : 1 of 1	Location : Mississauga, Ontario	Checked by : SZ

Position : E: 611488, N: 4830007 (UTM 17T) Elevation Datum : Geodetic

Rig type : Truck-mounted Drilling Method : Solid stem augers

Depth Scale (m)	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value
0	139.6	**GROUND SURFACE**				
	139.4 / 0.2	80mm **ASPHALTIC CONCRETE**				
		150mm **AGGREGATE**		1	SS	7
	139.0 / 0.6	**FILL**, clayey silt, some sand, trace gravel, trace organics, firm, dark brown, moist				
1		**CLAYEY SILT**, some sand to sandy, trace to some gravel, hard, brown, moist (GLACIAL TILL)		2	SS	31
		...shale fragments inclusion and grey below		3	SS	57
2				4	SS	33
3	136.6 / 3.0	**INFERRED BEDROCK**, weathered to partially unweathered shale with intermittent limestone/ dolostone stringers, grey (GEORGIAN BAY FORMATION)		5	SS	50 / 50mm
4						
5	134.4 / 5.2					

Elevation Scale (m): 139, 138, 137, 136, 135

Penetration Test Values (Blows / 0.3m) — Dynamic Cone: 10, 20, 30, 40

Undrained Shear Strength (kPa) — Unconfined, Pocket Penetrometer, Field Vane, Lab Vane: 40, 80, 120, 160

Moisture / Plasticity — Plastic Limit, Natural Water Content, Liquid Limit: PL, MC, LL; 10, 20, 30

Headspace Vapour (ppm)

Instrument Details

Unstabilized Water Level

Lab Data and Comments

GRAIN SIZE DISTRIBUTION (%) (MIT) — GR SA SI CL

Augered to about 5.2m below ground surface to install monitoring well on july 27, 2022

END OF BOREHOLE
Auger refusal on inferred bedrock

Borehole was dry and open upon completion of drilling.

50 mm dia. monitoring well installed.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Aug 3, 2022	3.3	136.3
Sep 6, 2022	3.3	136.3
Oct 13, 2022	3.5	136.1

file: 1-20-0258-01 bh logs.gpj

LOG OF BOREHOLE 6

Terraprobe

Project No. : 1-20-0258-01	Client : St. Luke's Dixie Senior Residence Corp	Originated by : DH
Date started : July 31, 2020	Project : 4150 Westminster Place	Compiled by : AS
Sheet No. : 1 of 1	Location : Mississauga, Ontario	Checked by : SZ

Position : E: 611439, N: 4829978 (UTM 17T) Elevation Datum : Geodetic

Rig type : Truck-mounted Drilling Method : Solid stem augers

Depth Scale (m)	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value
0	139.8	**GROUND SURFACE**				
		65mm **CONCRETE PAVERS**, .				
		FILL, sand, trace silt, trace gravel, trace organics, loose, dark brown, moist		1	SS	6
	139.0					
	0.8	**CLAYEY SILT**, some sand to sandy, trace to some gravel, hard, brown, moist (GLACIAL TILL)		2	SS	30
1						
		...shale fragments inclusion and grey below		3	SS	38
2						
				4	SS	60
3	136.8					
	136.6	**INFERRED BEDROCK**, weathered to partially unweathered shale with intermittent limestone/ dolostone stringers, grey (GEORGIAN BAY FORMATION)		5	SS	50 / 25mm
	3.2					

Elevation Scale (m): 139, 138, 137

Penetration Test Values (Blows / 0.3m): Dynamic Cone; 10 20 30 40

Undrained Shear Strength (kPa): Unconfined, Pocket Penetrometer, Field Vane, Lab Vane; 40 80 120 160

Moisture / Plasticity: Plastic Limit, Natural Water Content, Liquid Limit; PL MC LL; 10 20 30

Headspace Vapour (ppm)

Instrument Details

Unstabilized Water Level

Lab Data and Comments

GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL

END OF BOREHOLE
Auger refusal on inferred bedrock

Borehole was dry and open upon completion of drilling.

50 mm dia. monitoring well installed.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Aug 28, 2020	2.3	137.5
Aug 3, 2022	2.2	137.6
Sep 6, 2022	2.2	137.6
Oct 13, 2022	2.3	137.5

file: 1-20-0258-01 bh logs.gpj

APPENDIX B

MECP Well Records

TERRAPROBE INC.

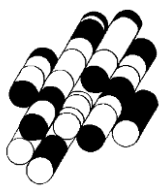
WELL ID	MECP* WWR ID	Construction Method	Well Depth (m)**	Well Usage		Water Found (mbgs)**	Static Water Level (mbgs)**	Top of Screen Depth (mbgs)**	Bottom of Screen Depth (mbgs)**	Date Completed
				Final Status	First Use					
1	7172524	Auger	-	Observation Wells	Monitoring	-	-	1.8	4.9	2011-10-31
2	7327651	-	-	-	-	-	-	-	-	-
3	7157169	Air Percussion	10.7	Observation Wells	Monitoring	-	-	-	-	2010-12-15
4	4902226	Cable Tool	-	Abandoned-Quality	Not Used	12.2	1.2	-	-	1949-08-24
5	7145111	Boring	6.6	Observation Wells	Monitoring	6.3	3.3	-	-	2010-04-08
6	7145111	Boring	66.0	Observation Wells	Monitoring	-	-	0.9	66.0	2010-04-08
7	7270693	-	-	-	-	-	-	-	-	2015-04-27
8	7145111	Boring	6.0	Observation Wells	Monitoring	-	-	0.9	6.0	2010-04-08
9	7145111	Boring	5.1	Observation Wells	Monitoring	-	-	0.9	5.1	2010-04-08
10	7145111	Boring	4.5	Observation Wells	Monitoring	-	-	0.9	4.5	2010-04-08
11	7145111	Boring	6.0	Observation Wells	Monitoring	-	-	0.9	6.0	2010-04-08

*MECP: Ministry of the Environment Conservation and Parks

APPENDIX C

Groundwater Monitoring Details

TERRAPROBE INC.



4150 Westminister Place, Mississauga

Groundwater Depths (m below ground surface)

Monitoring Well ID	Ground Elevation (m asl)	Measured Well Depth (m bgs)	Well Screen Top Depth (m bgs)	1st GW Monitoring Event*	2nd GW Monitoring Event	3rd GW Monitoring Event
				Water Depth Aug 3, 2022 (m bgs)	Water Depth Sept 6, 2022 (m bgs)	Water Depth Oct 13, 2022 (m bgs)
BH2	139.60	4.2	2.7	2.13	2.40	2.39
BH3	139.87	3.0	4.5	2.88	2.64	2.74
BH4	139.83	3.0	1.5	1.18	1.50	1.60
BH5	139.60	5.2	3.7	3.32	3.30	3.53
BH6	139.79	3.0	1.5	2.20	2.21	2.33

Groundwater Elevations (m above sea level)

Monitoring Well ID	Ground Elevation (m asl)	Well Screen Bottom Elevation (m asl)	Well Screen Top Elevation (m asl)	1st GW Monitoring Event*	2nd GW Monitoring Event	3rd GW Monitoring Event
				Groundwater Level Elevation Aug 3, 2022 (m asl)	Groundwater Level Elevation Sept 6, 2022 (m asl)	Groundwater Level Elevation Oct 13, 2022 (m asl)
BH2	139.60	135.4	136.9	137.47	137.20	137.21
BH3	139.87	136.9	135.4	136.99	137.23	137.13
BH4	139.83	136.8	138.3	138.65	138.33	138.23
BH5	139.60	134.4	135.9	136.28	136.30	136.07
BH6	139.79	136.8	138.3	137.59	137.58	137.46

mbgs - meters below ground surface

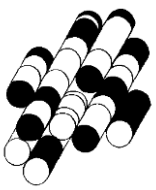
masl - meters above sea level

*Indicates that the groundwater has not been stabilized yet

APPENDIX D

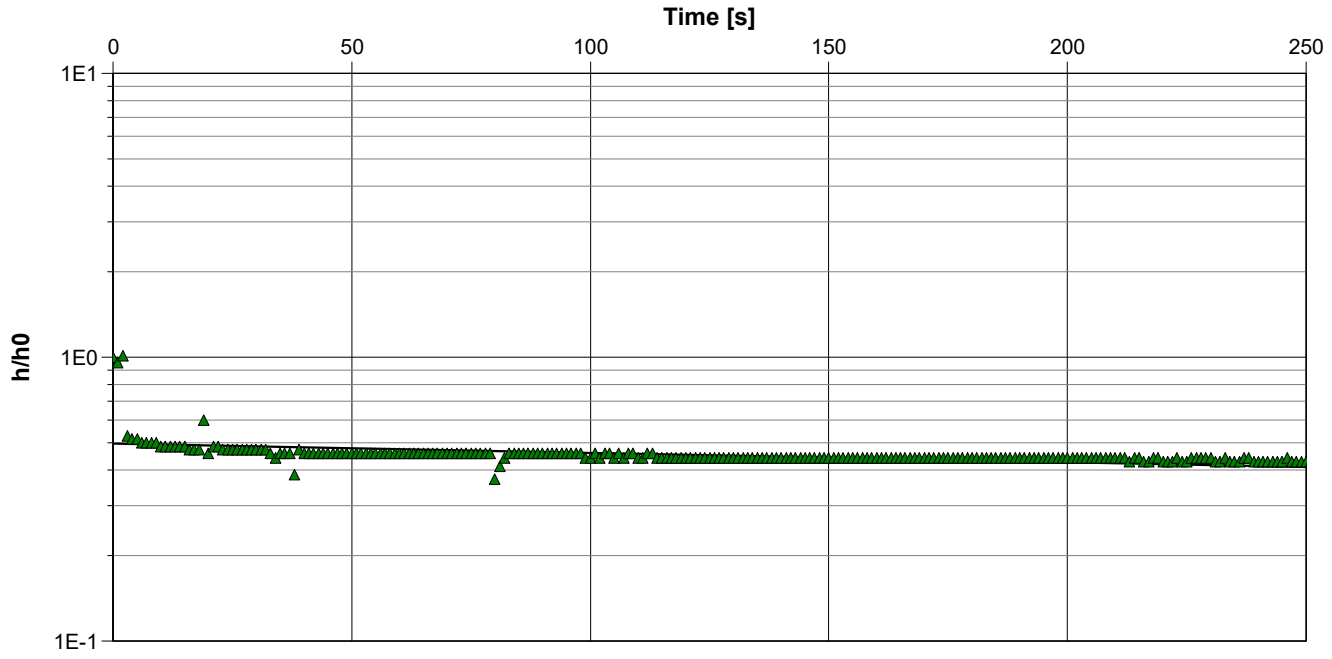
In-situ Hydraulic Conductivity Test Results

TERRAPROBE INC.



	Slug Test Analysis Report	Appendix D
	Project: 4150 Westminister Place	
	Number: 1-20-0258-46	
	Client:	

Location: 4150 Westminister Place	Slug Test: BH3	Test Well: BH3
Test Conducted by:		Test Date: 11/10/2022
Analysis Performed by: RG	RHT - BH3	Analysis Date: 11/10/2022
Aquifer Thickness: 3.00 m		

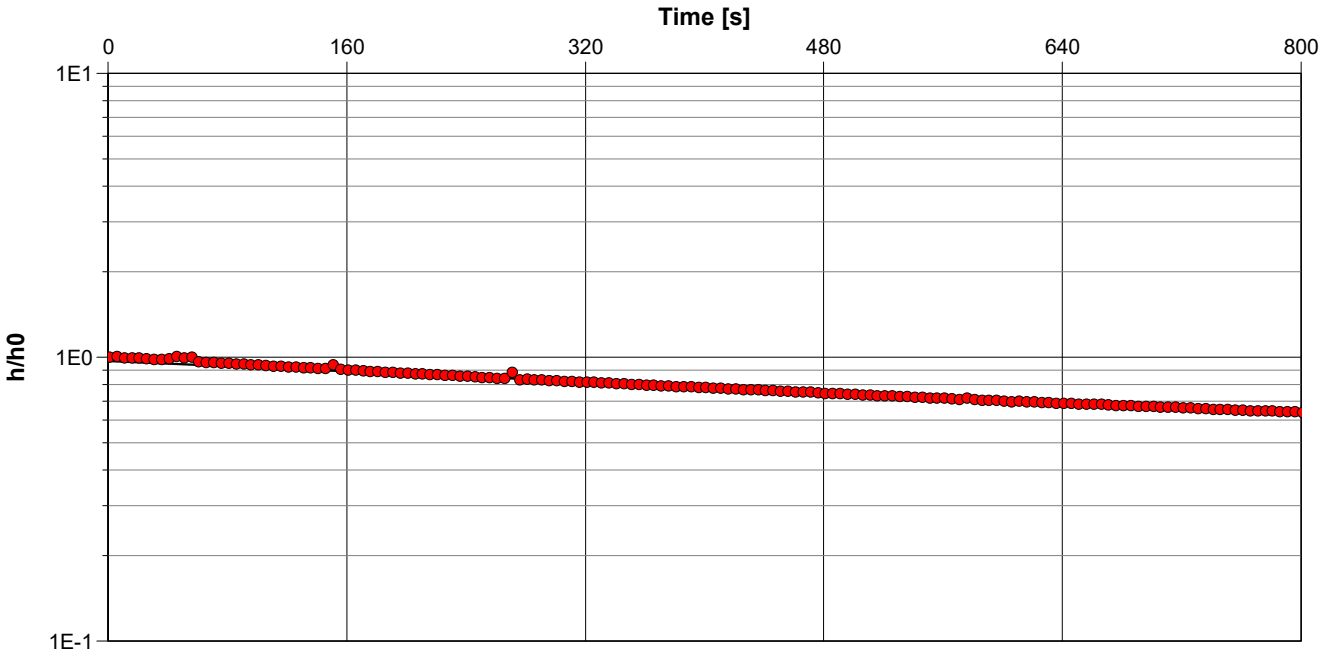


Calculation using Bouwer & Rice

Observation Well	Hydraulic Conductivity [m/s]	
BH3	9.90×10^{-7}	

	Slug Test Analysis Report	Appendix D
	Project: 4150 Westminister Place	
	Number: 1-20-0258-46	
	Client:	

Location: 4150 Westminister Place	Slug Test: BH4	Test Well: BH4
Test Conducted by: AA		Test Date: 10/17/2022
Analysis Performed by: RG	FHT - BH4	Analysis Date: 11/10/2022
Aquifer Thickness: 3.00 m		

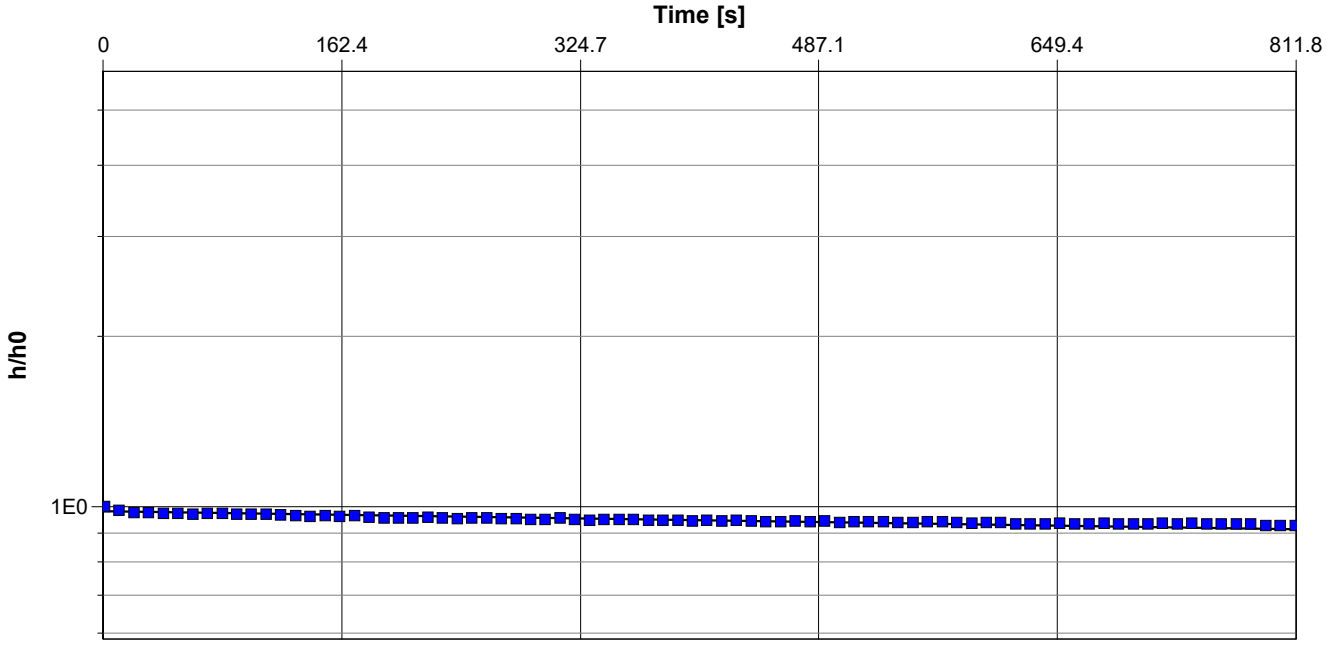


Calculation using Bouwer & Rice

Observation Well	Hydraulic Conductivity [m/s]	
BH4	9.76×10^{-7}	

	Slug Test Analysis Report	Appendix D
	Project: 4150 Westminister Place	
	Number: 1-20-0258-46	
	Client:	

Location: 4150 Westminister Place	Slug Test: BH5	Test Well: BH5
Test Conducted by: AA		Test Date: 10/17/2022
Analysis Performed by: RG	RHT - BH5	Analysis Date: 11/10/2022
Aquifer Thickness: 3.00 m		

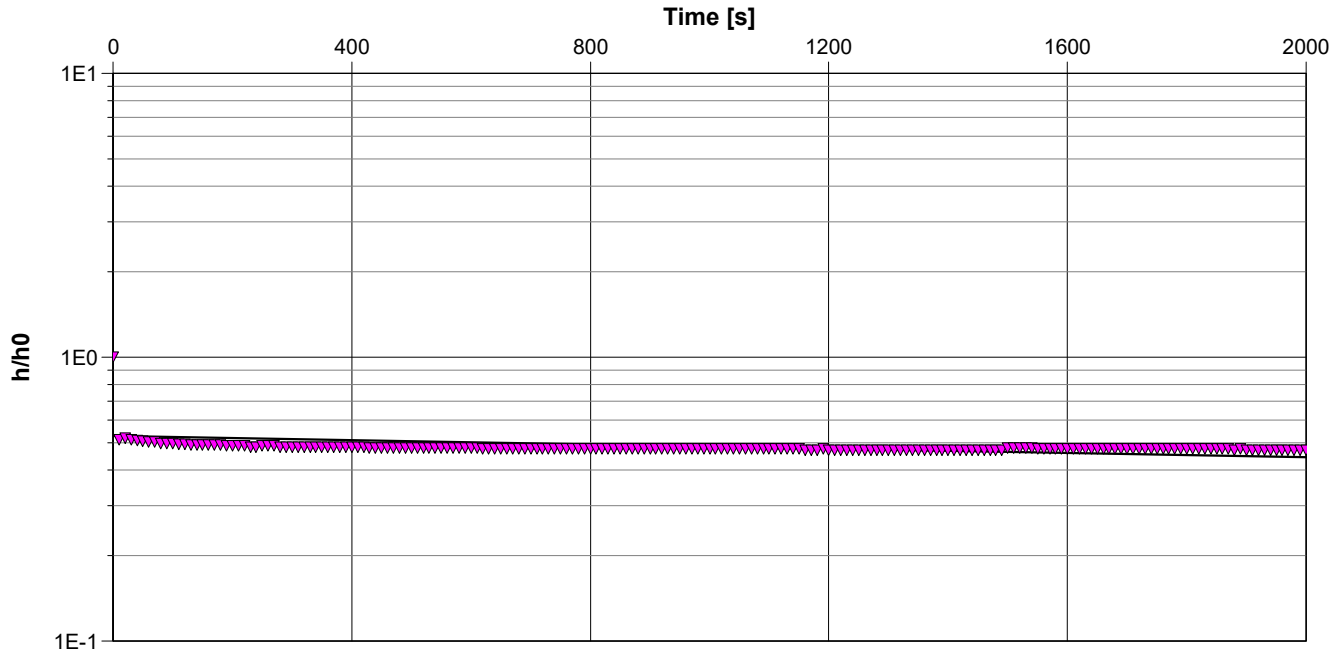


Calculation using Bouwer & Rice

Observation Well	Hydraulic Conductivity [m/s]	
BH5	1.55×10^{-7}	

	Slug Test Analysis Report	Appendix D
	Project: 4150 Westminister Place	
	Number: 1-20-0258-46	
	Client:	

Location: 4150 Westminister Place	Slug Test: BH6	Test Well: BH6
Test Conducted by: AA		Test Date: 11/10/2022
Analysis Performed by: RG	RHT - BH6	Analysis Date: 11/10/2022
Aquifer Thickness: 3.00 m		



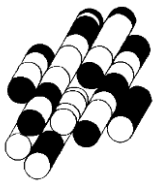
Calculation using Bouwer & Rice

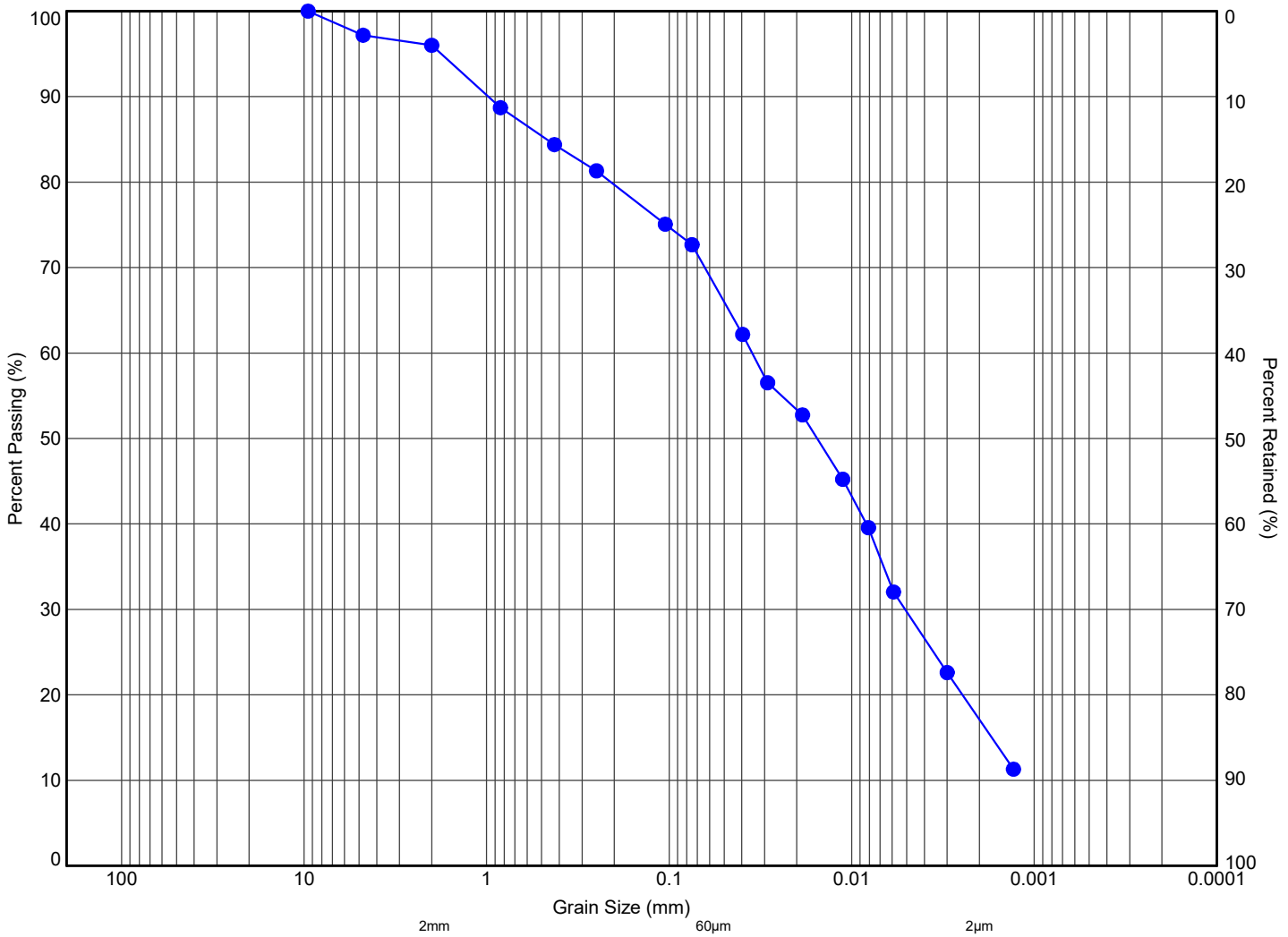
Observation Well	Hydraulic Conductivity [m/s]	
BH6	1.34×10^{-7}	

APPENDIX E

Grain Size Distribution Graphs

TERRAPROBE INC.





MIT SYSTEM	COBBLES	GRAVEL			SAND			SILT	CLAY
		COARSE	MEDIUM	FINE	COARSE	MEDIUM	FINE		

MIT SYSTEM

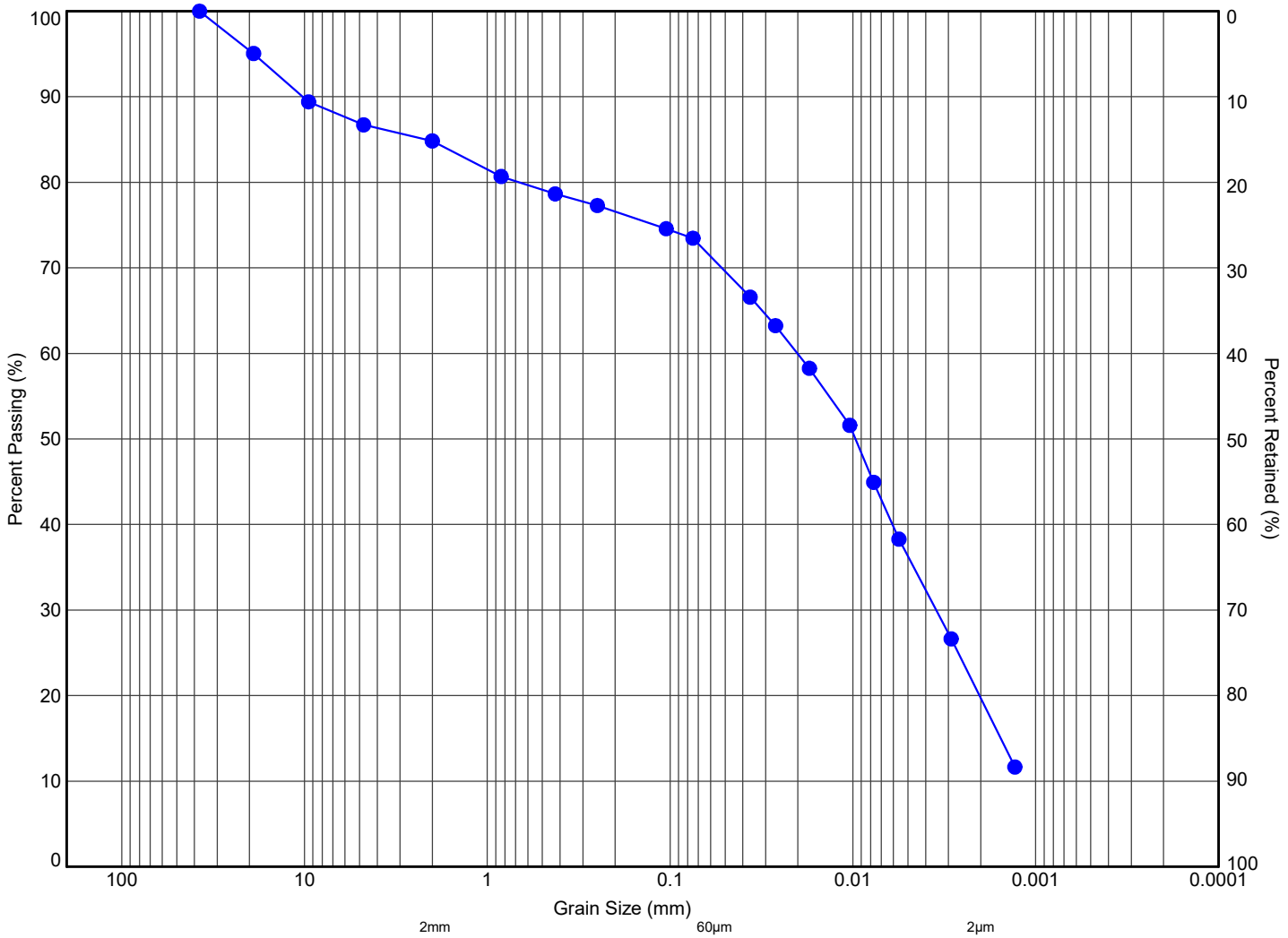
	Hole ID	Sample	Depth (m)	Elev. (m)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	*(Fines, %)*
●	**1**	SS2	1.0		4	27	52	17	

Terraprobe
11 Indell Lane, Brampton Ontario L6T 3Y3
(905) 796-2650

Title:

GRAIN SIZE DISTRIBUTION
SANDY SILT, SOME CLAY, TRACE GRAVEL

File No.: **1-20-0258-01**



MIT SYSTEM	COBBLES	GRAVEL			SAND			SILT	CLAY
		COARSE	MEDIUM	FINE	COARSE	MEDIUM	FINE		

MIT SYSTEM

	Hole ID	Sample	Depth (m)	Elev. (m)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	*(Fines, %)*
●	**4**	SS3	1.8	138.0	15	13	52	20	

Terraprobe
11 Indell Lane, Brampton Ontario L6T 3Y3
(905) 796-2650

Title:

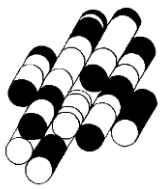
GRAIN SIZE DISTRIBUTION
CLAYEY SILT, SOME GRAVEL, SOME SAND

File No.: **1-20-0258-01**

APPENDIX F

Groundwater Quality Test Results

TERRAPROBE INC.



FINAL REPORT

CA40057-SEP22 R1

1-20-0258-46, 4150 Westminster Place, Mississauga

Prepared for

Terraprobe Inc

FINAL REPORT

First Page

CLIENT DETAILS

Client	Terraprobe Inc
Address	11 Indell Lane Brampton, ON L6T 3Y3. Canada
Contact	Rachel Geddam
Telephone	(905) 796-2650
Facsimile	(905) 796-2250
Email	rgeddam@terraprobe.ca
Project	1-20-0258-46, 4150 Westminster Place, Mississauga
Order Number	
Samples	Ground Water (1)

LABORATORY DETAILS

Project Specialist	Jill Campbell, B.Sc.,GISAS
Laboratory	SGS Canada Inc.
Address	185 Concession St., Lakefield ON, K0L 2H0
Telephone	2165
Facsimile	705-652-6365
Email	jill.campbell@sgs.com
SGS Reference	CA40057-SEP22
Received	09/06/2022
Approved	09/14/2022
Report Number	CA40057-SEP22 R1
Date Reported	09/14/2022

COMMENTS

RL - SGS Reporting Limit

Nonylphenol Ethoxylates is the sum of nonylphenol monoethoxylate and nonylphenol diethoxylate.

Temperature of Sample upon Receipt: 9 degrees C
Cooling Agent Present: Yes
Custody Seal Present: Yes

Chain of Custody Number: 033285

SIGNATORIES

Jill Campbell, B.Sc.,GISAS

TABLE OF CONTENTS

Client: Terraprobe Inc
Project: 1-20-0258-46, 4150 Westminster Place, Mississauga
Project Manager: Rachel Geddam
Samplers: Alaa Alborno

MATRIX: WATER

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

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

Sample Number	7
Sample Name	BH2
Sample Matrix	Ground Water
Sample Date	06/09/2022

Parameter	Units	RL	L1	L2	Result
General Chemistry					
Biochemical Oxygen Demand (BOD5)	mg/L	2	300	15	< 4 ↑
Total Suspended Solids	mg/L	2	350	15	222
Total Kjeldahl Nitrogen	as N mg/L	0.5	100	1	< 0.5
Metals and Inorganics					
Total Chlorine	mg/L	0.02			0.02
Cyanide (total)	mg/L	0.01	2	0.02	< 0.01
Fluoride	mg/L	0.06	10		0.12
Sulphate	mg/L	0.2	1500		88
Aluminum (total)	mg/L	0.001	50		2.01
Antimony (total)	mg/L	0.0009	5		< 0.0009
Arsenic (total)	mg/L	0.0002	1	0.02	0.0011
Cadmium (total)	mg/L	0.000003	0.7	0.008	0.000003
Chromium (total)	mg/L	0.00008	5	0.08	0.00611
Cobalt (total)	mg/L	0.000004	5		0.00144
Copper (total)	mg/L	0.0002	3	0.05	0.0021
Lead (total)	mg/L	0.00009	3	0.12	0.00071
Manganese (total)	mg/L	0.00001	5	0.05	0.278
Molybdenum (total)	mg/L	0.00004	5		0.00285
Nickel (total)	mg/L	0.0001	3	0.08	0.0037
Phosphorus (total)	mg/L	0.003	10	0.4	0.084
Selenium (total)	mg/L	0.00004	1	0.02	0.00039
Silver (total)	mg/L	0.00005	5	0.12	< 0.00005

Client: Terraprobe Inc
Project: 1-20-0258-46, 4150 Westminster Place, Mississauga
Project Manager: Rachel Geddam
Samplers: Alaa Alborno

MATRIX: WATER

Sample Number	7
Sample Name	BH2
Sample Matrix	Ground Water
Sample Date	06/09/2022

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

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

Parameter	Units	RL	L1	L2	Result
Metals and Inorganics (continued)					
Tin (total)	mg/L	0.00006	5		0.00306
Titanium (total)	mg/L	0.00005	5		0.0518
Zinc (total)	mg/L	0.002	3	0.04	0.014
Microbiology					
E. Coli	cfu/100mL	0		200	0
Nonylphenol and Ethoxylates					
Nonylphenol	mg/L	0.001	0.02		< 0.001
Nonylphenol Ethoxylates	mg/L	0.01	0.2		< 0.01
Nonylphenol diethoxylate	mg/L	0.01			< 0.01
Nonylphenol monoethoxylate	mg/L	0.01			< 0.01
Oil and Grease					
Oil & Grease (total)	mg/L	2			4
Oil & Grease (animal/vegetable)	mg/L	4	150		< 4
Oil & Grease (mineral/synthetic)	mg/L	4	15		< 4

Client: Terraprobe Inc
Project: 1-20-0258-46, 4150 Westminster Place, Mississauga
Project Manager: Rachel Geddam
Samplers: Alaa Alborno

MATRIX: WATER

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

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

Sample Number	7
Sample Name	BH2
Sample Matrix	Ground Water
Sample Date	06/09/2022

Parameter	Units	RL	L1	L2	Result
Other (ORP)					
Chromium VI	µg/L	0.2			< 0.2
pH	No unit	0.05	10	9	7.87
Mercury (total)	mg/L	0.00001	0.01	0.0004	< 0.00001
PCBs					
Polychlorinated Biphenyls (PCBs) - Total	mg/L	0.0001	0.001	0.0004	< 0.0001
Phenols					
4AAP-Phenolics	mg/L	0.002	1	0.008	0.006
SVOCs					
di-n-Butyl Phthalate	mg/L	0.002	0.08	0.015	< 0.002
Bis(2-ethylhexyl)phthalate	mg/L	0.002	0.012	0.0088	< 0.002
VOCs					
Chloroform	mg/L	0.0005	0.04	0.002	< 0.0005
1,2-Dichlorobenzene	mg/L	0.0005	0.05	0.0056	< 0.0005
1,4-Dichlorobenzene	mg/L	0.0005	0.08	0.0068	< 0.0005
cis-1,2-Dichloroethene	mg/L	0.0005	4	0.0056	< 0.0005
trans-1,3-Dichloropropene	mg/L	0.0005	0.14	0.0056	< 0.0005
Methylene Chloride	mg/L	0.0005	2	0.0052	< 0.0005
Methyl ethyl ketone	mg/L	0.02	8		< 0.02
Styrene	mg/L	0.0005	0.2		< 0.0005
1,1,2,2-Tetrachloroethane	mg/L	0.0005	1.4	0.017	< 0.0005
Tetrachloroethylene (perchloroethylene)	mg/L	0.0005	1	0.0044	< 0.0005

Client: Terraprobe Inc
Project: 1-20-0258-46, 4150 Westminster Place, Mississauga
Project Manager: Rachel Geddam
Samplers: Alaa Alborno

MATRIX: WATER

Sample Number	7
Sample Name	BH2
Sample Matrix	Ground Water
Sample Date	06/09/2022

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

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

Parameter	Units	RL	L1	L2	Result
VOCs (continued)					
Trichloroethylene	mg/L	0.0005	0.4	0.008	< 0.0005
VOCs - BTEX					
Benzene	mg/L	0.0005	0.01	0.002	< 0.0005
Ethylbenzene	mg/L	0.0005	0.16	0.002	< 0.0005
Toluene	mg/L	0.0005	0.27	0.002	< 0.0005
Xylene (total)	mg/L	0.0005	1.4	0.0044	< 0.0005
m-p-xylene	mg/L	0.0005			< 0.0005
o-xylene	mg/L	0.0005			< 0.0005

EXCEEDANCE SUMMARY

Parameter	Method	Units	Result	SANSEW / WATER / - - Peel Table 1 - Sanitary Sewer Discharge - BL_53_2010 L1	SANSEW / WATER / - - Peel Table 2 - Storm Sewer Discharge - BL_53_2010 L2
BH2					
Total Suspended Solids	SM 2540D	mg/L	222		15
Manganese	SM 3030/EPA 200.8	mg/L	0.278		0.05

QC SUMMARY

Anions by IC

Method: EPA300/MA300-Ions1.3 | Internal ref.: ME-CA-[ENVIIC-LAK-AN-001

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Sulphate	DIO0198-SEP22	mg/L	0.2	<0.2	0	20	96	90	110	89	75	125

Biochemical Oxygen Demand

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

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Biochemical Oxygen Demand (BOD5)	BOD0011-SEP22	mg/L	2	< 2	7	30	99	70	130	71	70	130

Chlorine

Method: SM 4500 | Internal ref.: ME-CA-[ENVIEWL-LAK-AN-008

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Total Chlorine	EWL0106-SEP22	mg/L	0.02	< 0.02	0	20	100	90	110	NA		

QC SUMMARY

Cyanide by SFA

Method: SM 4500 I Internal ref.: ME-CA-IENVISFA-LAK-AN-005

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Cyanide (total)	SKA0056-SEP22	mg/L	0.01	<0.01	ND	10	92	90	110	97	75	125

Fluoride by Specific Ion Electrode

Method: SM 4500 I Internal ref.: ME-CA-IENVIEWL-LAK-AN-014

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Fluoride	EWL0112-SEP22	mg/L	0.06	<0.06	ND	10	101	90	110	92	75	125

Hexavalent Chromium by SFA

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

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Chromium VI	SKA0066-SEP22	ug/L	0.2	<0.2	ND	20	98	80	120	NV	75	125

QC SUMMARY

Mercury by CVAAS

Method: EPA 7471A/SM 3112B | Internal ref.: ME-CA-[ENVISPE-LAK-AN-004

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Mercury (total)	EHG0012-SEP22	mg/L	0.00001	< 0.00001	ND	20	90	80	120	130	70	130

QC SUMMARY

Metals in aqueous samples - ICP-MS

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

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Silver (total)	EMS0048-SEP22	mg/L	0.00005	<0.00005	ND	20	100	90	110	96	70	130
Aluminum (total)	EMS0048-SEP22	mg/L	0.001	<0.001	ND	20	97	90	110	110	70	130
Arsenic (total)	EMS0048-SEP22	mg/L	0.0002	<0.0002	20	20	99	90	110	118	70	130
Cadmium (total)	EMS0048-SEP22	mg/L	0.000003	<0.000003	3	20	94	90	110	97	70	130
Cobalt (total)	EMS0048-SEP22	mg/L	0.000004	<0.000004	11	20	99	90	110	116	70	130
Chromium (total)	EMS0048-SEP22	mg/L	0.00008	<0.00008	ND	20	100	90	110	100	70	130
Copper (total)	EMS0048-SEP22	mg/L	0.0002	<0.0002	ND	20	95	90	110	95	70	130
Manganese (total)	EMS0048-SEP22	mg/L	0.00001	<0.00001	10	20	101	90	110	107	70	130
Molybdenum (total)	EMS0048-SEP22	mg/L	0.00004	<0.00004	8	20	100	90	110	102	70	130
Nickel (total)	EMS0048-SEP22	mg/L	0.0001	<0.0001	12	20	99	90	110	113	70	130
Lead (total)	EMS0048-SEP22	mg/L	0.00009	<0.00001	ND	20	104	90	110	107	70	130
Phosphorus (total)	EMS0048-SEP22	mg/L	0.003	<0.003	17	20	104	90	110	NV	70	130
Antimony (total)	EMS0048-SEP22	mg/L	0.0009	<0.0009	ND	20	94	90	110	115	70	130
Selenium (total)	EMS0048-SEP22	mg/L	0.00004	<0.00004	12	20	98	90	110	102	70	130
Tin (total)	EMS0048-SEP22	mg/L	0.00006	<0.00006	19	20	104	90	110	NV	70	130
Titanium (total)	EMS0048-SEP22	mg/L	0.00005	<0.00005	ND	20	102	90	110	NV	70	130
Zinc (total)	EMS0048-SEP22	mg/L	0.002	<0.002	ND	20	99	90	110	128	70	130

QC SUMMARY

Microbiology

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

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
E. Coli	BAC9061-SEP22	cfu/100mL	-	ACCEPTED	ACCEPTED							

Nonylphenol and Ethoxylates

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

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Nonylphenol diethoxylate	GCM0173-SEP22	mg/L	0.01	<0.01			90	55	120			
Nonylphenol Ethoxylates	GCM0173-SEP22	mg/L	0.01	< 0.01								
Nonylphenol monoethoxylate	GCM0173-SEP22	mg/L	0.01	<0.01			89	55	120			
Nonylphenol	GCM0173-SEP22	mg/L	0.001	<0.001			91	55	120			

QC SUMMARY

Oil & Grease

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

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Oil & Grease (total)	GCM0108-SEP22	mg/L	2	<2	NSS	20	105	75	125			

Oil & Grease-AV/MS

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

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Oil & Grease (animal/vegetable)	GCM0154-SEP22	mg/L	4	< 4	NSS	20	100	70	130			
Oil & Grease (mineral/synthetic)	GCM0154-SEP22	mg/L	4	< 4	NSS	20	110	70	130			

pH

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

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
pH	EWL0109-SEP22	No unit	0.05	NA	2		100			NA		

QC SUMMARY

Phenols by SFA

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

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
4AAP-Phenolics	SKA0061-SEP22	mg/L	0.002	<0.002	ND	10	100	80	120	104	75	125

Polychlorinated Biphenyls

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

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Polychlorinated Biphenyls (PCBs) - Total	GCM0086-SEP22	mg/L	0.0001	<0.0001	ND	30	98	60	140	73	60	140

QC SUMMARY

Semi-Volatile Organics

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

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Bis(2-ethylhexyl)phthalate	GCM0092-SEP22	mg/L	0.002	< 0.002	NSS	30	112	50	140	NSS	50	140
di-n-Butyl Phthalate	GCM0092-SEP22	mg/L	0.002	< 0.002	NSS	30	100	50	140	NSS	50	140

Suspended Solids

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

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Total Suspended Solids	EWL0113-SEP22	mg/L	2	< 2	4	10	97	90	110	NA		

Total Nitrogen

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

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Total Kjeldahl Nitrogen	SKA0063-SEP22	as N mg/L	0.5	<0.5	3	10	99	90	110	96	75	125

QC SUMMARY

Volatile Organics

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

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
1,1,2,2-Tetrachloroethane	GCM0167-SEP22	mg/L	0.0005	<0.0005	ND	30	91	60	130	102	50	140
1,2-Dichlorobenzene	GCM0167-SEP22	mg/L	0.0005	<0.0005	ND	30	92	60	130	102	50	140
1,4-Dichlorobenzene	GCM0167-SEP22	mg/L	0.0005	<0.0005	ND	30	91	60	130	100	50	140
Benzene	GCM0167-SEP22	mg/L	0.0005	<0.0005	ND	30	94	60	130	101	50	140
Chloroform	GCM0167-SEP22	mg/L	0.0005	<0.0005	ND	30	94	60	130	103	50	140
cis-1,2-Dichloroethene	GCM0167-SEP22	mg/L	0.0005	<0.0005	ND	30	92	60	130	101	50	140
Ethylbenzene	GCM0167-SEP22	mg/L	0.0005	<0.0005	ND	30	92	60	130	101	50	140
m-p-xylene	GCM0167-SEP22	mg/L	0.0005	<0.0005	ND	30	90	60	130	99	50	140
Methyl ethyl ketone	GCM0167-SEP22	mg/L	0.02	<0.02	ND	30	104	50	140	107	50	140
Methylene Chloride	GCM0167-SEP22	mg/L	0.0005	<0.0005	ND	30	92	60	130	102	50	140
o-xylene	GCM0167-SEP22	mg/L	0.0005	<0.0005	ND	30	93	60	130	103	50	140
Styrene	GCM0167-SEP22	mg/L	0.0005	<0.0005	ND	30	92	60	130	101	50	140
Tetrachloroethylene (perchloroethylene)	GCM0167-SEP22	mg/L	0.0005	<0.0005	ND	30	91	60	130	101	50	140
Toluene	GCM0167-SEP22	mg/L	0.0005	<0.0005	ND	30	93	60	130	101	50	140
trans-1,3-Dichloropropene	GCM0167-SEP22	mg/L	0.0005	<0.0005	ND	30	96	60	130	106	50	140
Trichloroethylene	GCM0167-SEP22	mg/L	0.0005	<0.0005	ND	30	93	60	130	105	50	140

QC SUMMARY

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

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

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

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

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

RL: Reporting limit

RPD: Relative percent difference

AC: Acceptance criteria

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

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

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

LEGEND

FOOTNOTES

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

Results relate only to the sample tested.
Data reported represent the sample as submitted to SGS. Solid samples expressed on a dry weight basis.
"Temperature Upon Receipt" is representative of the whole shipment and may not reflect the temperature of individual samples.
Analysis conducted on samples submitted pursuant to or as part of Reg. 153/04, are in accordance to the "Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act and Excess Soil Quality" published by the Ministry and dated March 9, 2004 as amended.

SGS provides criteria information (such as regulatory or guideline limits and summary of limit exceedances) as a service. Every attempt is made to ensure the criteria information in this report is accurate and current, however, it is not guaranteed. Comparison to the most current criteria is the responsibility of the client and SGS assumes no responsibility for the accuracy of the criteria levels indicated.

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

This report supersedes all previous versions.

-- End of Analytical Report --

Request for Laboratory Services and CHAIN OF CUSTODY

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

No: 033285 Page _____ of _____

Laboratory Information Section - Lab use only

Received By: B. Connors | Received By (signature): | Cooling Agent Present: Yes ☑ No ☐ Type: ICE | CA-40057-Sept22 BZ
Received Date: 9 / 6 / 22 (mm/dd/yy) | Custody Seal Present: Yes ☑ No ☐ | Temperature Upon Receipt (°C) 9, 9, 9 | LAB LIMS #:
Received Time: 17 : 45 (hr : min) | Custody Seal Intact: Yes ☑ No ☐

REPORT INFORMATION	INVOICE INFORMATION
Company: Terraprobe inc	☑ (same as Report Information)
Contact: Rachel Geddam	Company:
Address: 11 Indell Lane, Brampton, ON L6T 3Y3	Contact:
Phone: 647 677 0312	Address:
Fax:	Phone:
Email: Rgeddam@terraprobe.ca	Email:

Quotation #: | P.O. #:
Project #: 1-20-0258-46 | Site Location/ID: 4150 Westminster place, Missisauga

TURNAROUND TIME (TAT) REQUIRED

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

RUSH TAT (Additional Charges May Apply): ☐ 1 Day ☐ 2 Days ☐ 3 Days ☐ 4 Days

PLEASE CONFIRM RUSH FEASIBILITY WITH SGS REPRESENTATIVE PRIOR TO SUBMISSION

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

REGULATIONS

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

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

Sewer By-Law:
☑ Sanitary
☑ Storm
Municipality: Peel region

RECORD OF SITE CONDITION (RSC) ☐ YES ☐ NO

ANALYSIS REQUESTED

	SAMPLE IDENTIFICATION	DATE SAMPLED	TIME SAMPLED	# OF BOTTLES	MATRIX
1	BH2	09/06/2022	12:10pm	20	GW
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					

	M & I				SVOC		PCB	PHC		VOC		Pest	Other (please specify)						SPLP	TCLP	COMMENTS:
	Field Filtered (Y/N)	Metals & Inorganics incl CrVI, CN, Hg pH,(B(HWS),EC,SAR–soil) (Cl, Na–water)	Full Metals Suite ICP metals plus B(HWS-soil only) Hg, CrVI	ICP Metals only Sb,As,Ba,Be,B,Cd, Cr,Co,Cu,Pb,Mo,Ni,Se,Ag,Tl,U,V,Zn	PAHs only	SVOCs all incl PAHs, ABNs, CPs	PCBs ☐ Aroclor ☐ Total	F1-F4 + BTEX	F1-F4 only no BTEX	VOCs all incl BTEX	BTEX only	Pesticides Organochlorine or specify other	✓ Sani+Storm Sewers				Sewer Use: Specify pkg:	Water Characterization Pkg ☐ General ☐ Extended	Specify tests ☐ Metals ☐ VOC ☐ 1,4-Dioxane ☐ OCP ☐ ABN	Specify tests ☐ M&I ☐ VOC ☐ PCB ☐ B(a)P ☐ ABN ☐ Ignit.	
1																					
2																					
3																					
4																					
5																					
6																					
7																					
8																					
9																					
10																					
11																					
12																					

Observations/Comments/Special Instructions

Sampled By (NAME): Alaa Alborno | Signature: | Date: 09 / 06 / 2022 (mm/dd/yy) | Pink Copy - Client
Relinquished by (NAME): Alaa Alborno | Signature: | Date: 09 / 06 / 2022 (mm/dd/yy) | Yellow & White Copy - SGS

Revision #: 1.6
Date of Issue: 02 May 2022

FINAL REPORT

CA40057-SEP22 R1

1-20-0258-46, 4150 Westminster Place, Mississauga

Prepared for

Terraprobe Inc

FINAL REPORT

First Page

CLIENT DETAILS

Client	Terraprobe Inc
Address	11 Indell Lane Brampton, ON L6T 3Y3. Canada
Contact	Rachel Geddam
Telephone	(905) 796-2650
Facsimile	(905) 796-2250
Email	rgeddam@terraprobe.ca
Project	1-20-0258-46, 4150 Westminster Place, Mississauga
Order Number	
Samples	Ground Water (1)

LABORATORY DETAILS

Project Specialist	Jill Campbell, B.Sc.,GISAS
Laboratory	SGS Canada Inc.
Address	185 Concession St., Lakefield ON, K0L 2H0
Telephone	2165
Facsimile	705-652-6365
Email	jill.campbell@sgs.com
SGS Reference	CA40057-SEP22
Received	09/06/2022
Approved	09/14/2022
Report Number	CA40057-SEP22 R1
Date Reported	11/17/2022

COMMENTS

RL - SGS Reporting Limit

Nonylphenol Ethoxylates is the sum of nonylphenol monoethoxylate and nonylphenol diethoxylate.

Temperature of Sample upon Receipt: 9 degrees C
Cooling Agent Present: Yes
Custody Seal Present: Yes

Chain of Custody Number: 033285

SIGNATORIES

Jill Campbell, B.Sc.,GISAS

TABLE OF CONTENTS

Client: Terraprobe Inc
Project: 1-20-0258-46, 4150 Westminster Place, Mississauga
Project Manager: Rachel Geddam
Samplers: Alaa Alborno

MATRIX: WATER

L1 = SANSEW / WATER / - - Mississauga Sewer Use ByLaw - Storm Sewer - BL_0046_2022

Sample Number	7
Sample Name	BH2
Sample Matrix	Ground Water
Sample Date	06/09/2022

Parameter	Units	RL	L1	Result
General Chemistry				
Biochemical Oxygen Demand (BOD5)	mg/L	2	15	< 4 ↑
Total Suspended Solids	mg/L	2	15	222
Total Kjeldahl Nitrogen	as N mg/L	0.5		< 0.5
Metals and Inorganics				
Total Chlorine	mg/L	0.02	1	0.02
Cyanide (total)	mg/L	0.01	0.02	< 0.01
Fluoride	mg/L	0.06		0.12
Sulphate	mg/L	0.2		88
Aluminum (total)	mg/L	0.001	1	2.01
Antimony (total)	mg/L	0.0009		< 0.0009
Arsenic (total)	mg/L	0.0002	0.02	0.0011
Cadmium (total)	mg/L	0.000003	0.008	0.000003
Chromium (total)	mg/L	0.00008	0.08	0.00611
Cobalt (total)	mg/L	0.000004		0.00144
Copper (total)	mg/L	0.0002	0.04	0.0021
Lead (total)	mg/L	0.00009	0.12	0.00071
Manganese (total)	mg/L	0.00001	2	0.278
Molybdenum (total)	mg/L	0.00004		0.00285
Nickel (total)	mg/L	0.0001	0.08	0.0037
Phosphorus (total)	mg/L	0.003	0.4	0.084
Selenium (total)	mg/L	0.00004	0.02	0.00039
Silver (total)	mg/L	0.00005	0.12	< 0.00005

Client: Terraprobe Inc
Project: 1-20-0258-46, 4150 Westminster Place, Mississauga
Project Manager: Rachel Geddam
Samplers: Alaa Alborno

MATRIX: WATER

L1 = SANSEW / WATER / - - Mississauga Sewer Use ByLaw - Storm Sewer - BL_0046_2022

Sample Number	7
Sample Name	BH2
Sample Matrix	Ground Water
Sample Date	06/09/2022

Parameter	Units	RL	L1	Result
Metals and Inorganics (continued)				
Tin (total)	mg/L	0.00006		0.00306
Titanium (total)	mg/L	0.00005		0.0518
Zinc (total)	mg/L	0.002	0.2	0.014
Microbiology				
E. Coli	cfu/100mL	0	200	0
Nonylphenol and Ethoxylates				
Nonylphenol	mg/L	0.001		< 0.001
Nonylphenol Ethoxylates	mg/L	0.01		< 0.01
Nonylphenol diethoxylate	mg/L	0.01		< 0.01
Nonylphenol monoethoxylate	mg/L	0.01		< 0.01
Oil and Grease				
Oil & Grease (total)	mg/L	2		4
Oil & Grease (animal/vegetable)	mg/L	4		< 4
Oil & Grease (mineral/synthetic)	mg/L	4		< 4

Client: Terraprobe Inc
Project: 1-20-0258-46, 4150 Westminster Place, Mississauga
Project Manager: Rachel Geddam
Samplers: Alaa Alborno

MATRIX: WATER

L1 = SANSEW / WATER / - - Mississauga Sewer Use ByLaw - Storm Sewer - BL_0046_2022

Sample Number	7
Sample Name	BH2
Sample Matrix	Ground Water
Sample Date	06/09/2022

Parameter	Units	RL	L1	Result
Other (ORP)				
Chromium VI	µg/L	0.2	40	< 0.2
pH	No unit	0.05	9	7.87
Mercury (total)	mg/L	0.00001	0.0004	< 0.00001
PCBs				
Polychlorinated Biphenyls (PCBs) - Total	mg/L	0.0001	0.0004	< 0.0001
Phenols				
4AAP-Phenolics	mg/L	0.002	0.008	0.006
SVOCs				
di-n-Butyl Phthalate	mg/L	0.002		< 0.002
Bis(2-ethylhexyl)phthalate	mg/L	0.002		< 0.002
VOCs				
Chloroform	mg/L	0.0005		< 0.0005
1,2-Dichlorobenzene	mg/L	0.0005	0.0056	< 0.0005
1,4-Dichlorobenzene	mg/L	0.0005	0.0068	< 0.0005
cis-1,2-Dichloroethene	mg/L	0.0005		< 0.0005
trans-1,3-Dichloropropene	mg/L	0.0005		< 0.0005
Methylene Chloride	mg/L	0.0005		< 0.0005
Methyl ethyl ketone	mg/L	0.02		< 0.02
Styrene	mg/L	0.0005		< 0.0005
1,1,2,2-Tetrachloroethane	mg/L	0.0005	0.017	< 0.0005
Tetrachloroethylene (perchloroethylene)	mg/L	0.0005	0.0044	< 0.0005

Client: Terraprobe Inc
Project: 1-20-0258-46, 4150 Westminster Place, Mississauga
Project Manager: Rachel Geddam
Samplers: Alaa Alborno

MATRIX: WATER

L1 = SANSEW / WATER / - - Mississauga Sewer Use ByLaw - Storm Sewer - BL_0046_2022

Sample Number	7
Sample Name	BH2
Sample Matrix	Ground Water
Sample Date	06/09/2022

Parameter	Units	RL	L1	Result
VOCs (continued)				
Trichloroethylene	mg/L	0.0005	0.0076	< 0.0005
VOCs - BTEX				
Benzene	mg/L	0.0005	0.002	< 0.0005
Ethylbenzene	mg/L	0.0005	0.002	< 0.0005
Toluene	mg/L	0.0005	0.002	< 0.0005
Xylene (total)	mg/L	0.0005	0.0044	< 0.0005
m-p-xylene	mg/L	0.0005		< 0.0005
o-xylene	mg/L	0.0005		< 0.0005

EXCEEDANCE SUMMARY

Parameter	Method	Units	Result	SANSEW / WATER / - - Mississauga Sewer Use ByLaw - Storm Sewer - BL_0046_2022 L1
BH2				
Total Suspended Solids	SM 2540D	mg/L	222	15
Aluminum	SM 3030/EPA 200.8	mg/L	2.01	1

QC SUMMARY

Anions by IC

Method: EPA300/MA300-Ions1.3 I Internal ref.: ME-CA-IENVIIC-LAK-AN-001

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Sulphate	DIO0198-SEP22	mg/L	0.2	<0.2	0	20	96	90	110	89	75	125

Biochemical Oxygen Demand

Method: SM 5210 I Internal ref.: ME-CA-IENVIEWL-LAK-AN-007

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Biochemical Oxygen Demand (BOD5)	BOD0011-SEP22	mg/L	2	< 2	7	30	99	70	130	71	70	130

Chlorine

Method: SM 4500 I Internal ref.: ME-CA-IENVIEWL-LAK-AN-008

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Total Chlorine	EWL0106-SEP22	mg/L	0.02	< 0.02	0	20	100	90	110	NA		

QC SUMMARY

Cyanide by SFA

Method: SM 4500 I Internal ref.: ME-CA-IENVISFA-LAK-AN-005

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Cyanide (total)	SKA0056-SEP22	mg/L	0.01	<0.01	ND	10	92	90	110	97	75	125

Fluoride by Specific Ion Electrode

Method: SM 4500 I Internal ref.: ME-CA-IENVIEWL-LAK-AN-014

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Fluoride	EWL0112-SEP22	mg/L	0.06	<0.06	ND	10	101	90	110	92	75	125

Hexavalent Chromium by SFA

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

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Chromium VI	SKA0066-SEP22	ug/L	0.2	<0.2	ND	20	98	80	120	NV	75	125

QC SUMMARY

Mercury by CVAAS

Method: EPA 7471A/SM 3112B | Internal ref.: ME-CA-[ENVISPE-LAK-AN-004

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Mercury (total)	EHG0012-SEP22	mg/L	0.00001	< 0.00001	ND	20	90	80	120	130	70	130

QC SUMMARY

Metals in aqueous samples - ICP-MS

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

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Silver (total)	EMS0048-SEP22	mg/L	0.00005	<0.00005	ND	20	100	90	110	96	70	130
Aluminum (total)	EMS0048-SEP22	mg/L	0.001	<0.001	ND	20	97	90	110	110	70	130
Arsenic (total)	EMS0048-SEP22	mg/L	0.0002	<0.0002	20	20	99	90	110	118	70	130
Cadmium (total)	EMS0048-SEP22	mg/L	0.000003	<0.000003	3	20	94	90	110	97	70	130
Cobalt (total)	EMS0048-SEP22	mg/L	0.000004	<0.000004	11	20	99	90	110	116	70	130
Chromium (total)	EMS0048-SEP22	mg/L	0.00008	<0.00008	ND	20	100	90	110	100	70	130
Copper (total)	EMS0048-SEP22	mg/L	0.0002	<0.0002	ND	20	95	90	110	95	70	130
Manganese (total)	EMS0048-SEP22	mg/L	0.00001	<0.00001	10	20	101	90	110	107	70	130
Molybdenum (total)	EMS0048-SEP22	mg/L	0.00004	<0.00004	8	20	100	90	110	102	70	130
Nickel (total)	EMS0048-SEP22	mg/L	0.0001	<0.0001	12	20	99	90	110	113	70	130
Lead (total)	EMS0048-SEP22	mg/L	0.00009	<0.00001	ND	20	104	90	110	107	70	130
Phosphorus (total)	EMS0048-SEP22	mg/L	0.003	<0.003	17	20	104	90	110	NV	70	130
Antimony (total)	EMS0048-SEP22	mg/L	0.0009	<0.0009	ND	20	94	90	110	115	70	130
Selenium (total)	EMS0048-SEP22	mg/L	0.00004	<0.00004	12	20	98	90	110	102	70	130
Tin (total)	EMS0048-SEP22	mg/L	0.00006	<0.00006	19	20	104	90	110	NV	70	130
Titanium (total)	EMS0048-SEP22	mg/L	0.00005	<0.00005	ND	20	102	90	110	NV	70	130
Zinc (total)	EMS0048-SEP22	mg/L	0.002	<0.002	ND	20	99	90	110	128	70	130

QC SUMMARY

Microbiology

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

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
E. Coli	BAC9061-SEP22	cfu/100mL	-	ACCEPTED	ACCEPTED							

Nonylphenol and Ethoxylates

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

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Nonylphenol diethoxylate	GCM0173-SEP22	mg/L	0.01	<0.01			90	55	120			
Nonylphenol Ethoxylates	GCM0173-SEP22	mg/L	0.01	< 0.01								
Nonylphenol monoethoxylate	GCM0173-SEP22	mg/L	0.01	<0.01			89	55	120			
Nonylphenol	GCM0173-SEP22	mg/L	0.001	<0.001			91	55	120			

QC SUMMARY

Oil & Grease

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

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Oil & Grease (total)	GCM0108-SEP22	mg/L	2	<2	NSS	20	105	75	125			

Oil & Grease-AV/MS

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

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Oil & Grease (animal/vegetable)	GCM0154-SEP22	mg/L	4	< 4	NSS	20	100	70	130			
Oil & Grease (mineral/synthetic)	GCM0154-SEP22	mg/L	4	< 4	NSS	20	110	70	130			

pH

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

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
pH	EWL0109-SEP22	No unit	0.05	NA	2		100			NA		

QC SUMMARY

Phenols by SFA

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

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
4AAP-Phenolics	SKA0061-SEP22	mg/L	0.002	<0.002	ND	10	100	80	120	104	75	125

Polychlorinated Biphenyls

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

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Polychlorinated Biphenyls (PCBs) - Total	GCM0086-SEP22	mg/L	0.0001	<0.0001	ND	30	98	60	140	73	60	140

QC SUMMARY

Semi-Volatile Organics

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

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Bis(2-ethylhexyl)phthalate	GCM0092-SEP22	mg/L	0.002	< 0.002	NSS	30	112	50	140	NSS	50	140
di-n-Butyl Phthalate	GCM0092-SEP22	mg/L	0.002	< 0.002	NSS	30	100	50	140	NSS	50	140

Suspended Solids

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

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Total Suspended Solids	EWL0113-SEP22	mg/L	2	< 2	4	10	97	90	110	NA		

Total Nitrogen

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

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Total Kjeldahl Nitrogen	SKA0063-SEP22	as N mg/L	0.5	<0.5	3	10	99	90	110	96	75	125

QC SUMMARY

Volatile Organics

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

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
1,1,2,2-Tetrachloroethane	GCM0167-SEP22	mg/L	0.0005	<0.0005	ND	30	91	60	130	102	50	140
1,2-Dichlorobenzene	GCM0167-SEP22	mg/L	0.0005	<0.0005	ND	30	92	60	130	102	50	140
1,4-Dichlorobenzene	GCM0167-SEP22	mg/L	0.0005	<0.0005	ND	30	91	60	130	100	50	140
Benzene	GCM0167-SEP22	mg/L	0.0005	<0.0005	ND	30	94	60	130	101	50	140
Chloroform	GCM0167-SEP22	mg/L	0.0005	<0.0005	ND	30	94	60	130	103	50	140
cis-1,2-Dichloroethene	GCM0167-SEP22	mg/L	0.0005	<0.0005	ND	30	92	60	130	101	50	140
Ethylbenzene	GCM0167-SEP22	mg/L	0.0005	<0.0005	ND	30	92	60	130	101	50	140
m-p-xylene	GCM0167-SEP22	mg/L	0.0005	<0.0005	ND	30	90	60	130	99	50	140
Methyl ethyl ketone	GCM0167-SEP22	mg/L	0.02	<0.02	ND	30	104	50	140	107	50	140
Methylene Chloride	GCM0167-SEP22	mg/L	0.0005	<0.0005	ND	30	92	60	130	102	50	140
o-xylene	GCM0167-SEP22	mg/L	0.0005	<0.0005	ND	30	93	60	130	103	50	140
Styrene	GCM0167-SEP22	mg/L	0.0005	<0.0005	ND	30	92	60	130	101	50	140
Tetrachloroethylene (perchloroethylene)	GCM0167-SEP22	mg/L	0.0005	<0.0005	ND	30	91	60	130	101	50	140
Toluene	GCM0167-SEP22	mg/L	0.0005	<0.0005	ND	30	93	60	130	101	50	140
trans-1,3-Dichloropropene	GCM0167-SEP22	mg/L	0.0005	<0.0005	ND	30	96	60	130	106	50	140
Trichloroethylene	GCM0167-SEP22	mg/L	0.0005	<0.0005	ND	30	93	60	130	105	50	140

QC SUMMARY

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

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

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

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

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

RL: Reporting limit

RPD: Relative percent difference

AC: Acceptance criteria

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

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

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

LEGEND

FOOTNOTES

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

Results relate only to the sample tested.
Data reported represent the sample as submitted to SGS. Solid samples expressed on a dry weight basis.
"Temperature Upon Receipt" is representative of the whole shipment and may not reflect the temperature of individual samples.
Analysis conducted on samples submitted pursuant to or as part of Reg. 153/04, are in accordance to the "Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act and Excess Soil Quality" published by the Ministry and dated March 9, 2004 as amended.

SGS provides criteria information (such as regulatory or guideline limits and summary of limit exceedances) as a service. Every attempt is made to ensure the criteria information in this report is accurate and current, however, it is not guaranteed. Comparison to the most current criteria is the responsibility of the client and SGS assumes no responsibility for the accuracy of the criteria levels indicated.

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

This report supersedes all previous versions.

-- End of Analytical Report --

Request for Laboratory Services and CHAIN OF CUSTODY

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

No: 033285 Page _____ of _____

Laboratory Information Section - Lab use only

Received By: B. Connors | Received By (signature): | Cooling Agent Present: Yes ☑ No ☐ Type: ICE | CA-40057-Sept22 BZ
Received Date: 9 / 6 / 22 (mm/dd/yy) | Custody Seal Present: Yes ☑ No ☐ | Temperature Upon Receipt (°C) 9, 9, 9 | LAB LIMS #:
Received Time: 17 : 45 (hr : min) | Custody Seal Intact: Yes ☑ No ☐

REPORT INFORMATION	INVOICE INFORMATION
Company: Terraprobe inc	☑ (same as Report Information)
Contact: Rachel Geddam	Company:
Address: 11 Indell Lane, Brampton, ON L6T 3Y3	Contact:
Phone: 647 677 0312	Address:
Fax:	Phone:
Email: Rgeddam@terraprobe.ca	Email:

Quotation #: | P.O. #:
Project #: 1-20-0258-46 | Site Location/ID: 4150 Westminster place, Missisauga

TURNAROUND TIME (TAT) REQUIRED

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

RUSH TAT (Additional Charges May Apply): ☐ 1 Day ☐ 2 Days ☐ 3 Days ☐ 4 Days

PLEASE CONFIRM RUSH FEASIBILITY WITH SGS REPRESENTATIVE PRIOR TO SUBMISSION

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

REGULATIONS

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

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

Sewer By-Law:
☑ Sanitary
☑ Storm
Municipality: Peel region

RECORD OF SITE CONDITION (RSC) ☐ YES ☐ NO

ANALYSIS REQUESTED

	SAMPLE IDENTIFICATION	DATE SAMPLED	TIME SAMPLED	# OF BOTTLES	MATRIX
1	BH2	09/06/2022	12:10pm	20	GW
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					

	M & I				SVOC		PCB	PHC		VOC		Pest	Other (please specify)						SPLP	TCLP	COMMENTS:
	Field Filtered (Y/N)	Metals & Inorganics incl CrVI, CN, Hg pH,(B(HWS),EC,SAR–soil) (Cl, Na–water)	Full Metals Suite ICP metals plus B(HWS-soil only) Hg, CrVI	ICP Metals only Sb,As,Ba,Be,B,Cd, Cr,Co,Cu,Pb,Mo,Ni,Se,Ag,Tl,U,V,Zn	PAHs only	SVOCs all incl PAHs, ABNs, CPs	PCBs ☐ Aroclor ☐ Total	F1-F4 + BTEX	F1-F4 only no BTEX	VOCs all incl BTEX	BTEX only	Pesticides Organochlorine or specify other	✓ Sani+Storm Sewers				Sewer Use: Specify pkg:	Water Characterization Pkg ☐ General ☐ Extended	Specify tests ☐ Metals ☐ VOC ☐ 1,4-Dioxane ☐ OCP ☐ ABN	Specify tests ☐ M&I ☐ VOC ☐ PCB ☐ B(a)P ☐ ABN ☐ Ignit.	
1																					
2																					
3																					
4																					
5																					
6																					
7																					
8																					
9																					
10																					
11																					
12																					

Observations/Comments/Special Instructions

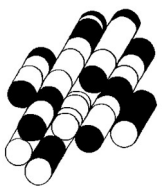
Sampled By (NAME): Alaa Alborno | Signature: | Date: 09 / 06 / 2022 (mm/dd/yy) | Pink Copy - Client
Relinquished by (NAME): Alaa Alborno | Signature: | Date: 09 / 06 / 2022 (mm/dd/yy) | Yellow & White Copy - SGS

Revision #: 1.6
Date of Issue: 02 May 2022

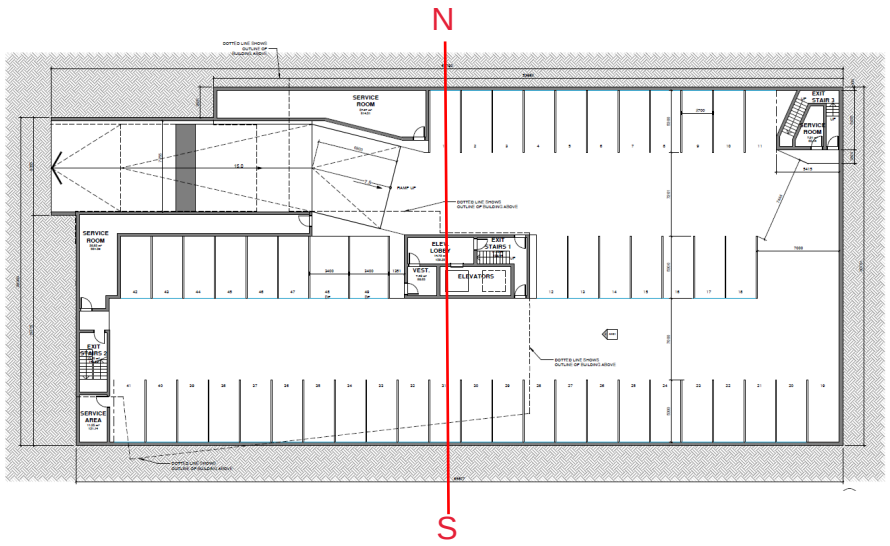
APPENDIX G

Dewatering Calculations

TERRAPROBE INC.



Material Name	Color	KS (m/s)
Fill		1e-006
Clayey Silt Till		9.76e-007
Bedrock		1e-006



Excavation Dimensions: 30.7 m X 65.7 m
Section Cut: N-S

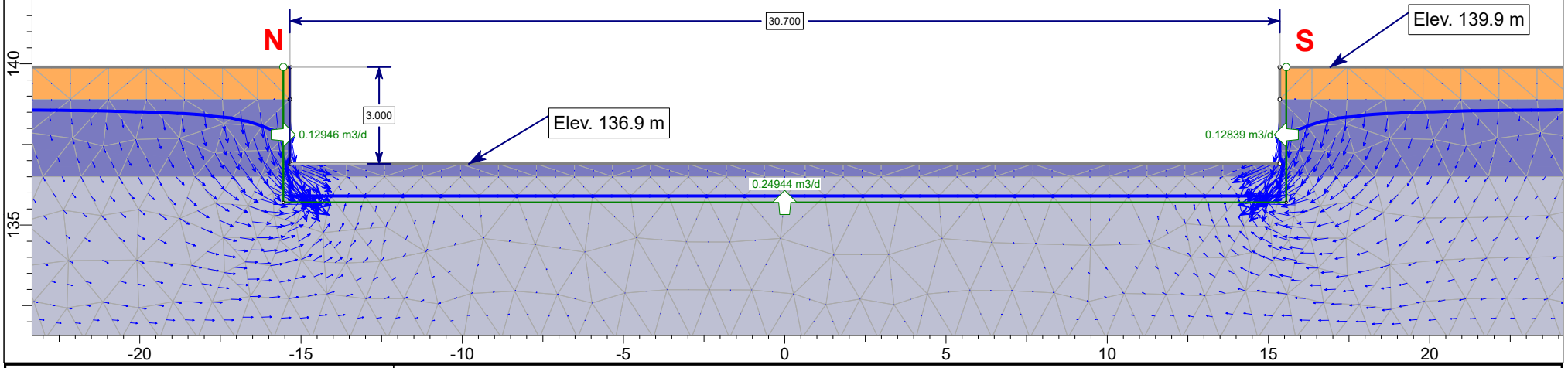
P1 Level Finished Floor: Elev. 137.4 masl
P1 Base of Excavation: Elev. 136.9 masl
Base of Footing: 136.0 masl
Base of Elevator Pit: 135.9 masl

Dewatering Target: Elev. 135.9 masl
Groundwater Level: Elev. 138.6 masl

Q Ground Water = 62,000 L/day
(S.F.=1.5)

30 mm Rainfall Event = 61,000 L/day

Q Total = 123,000 L/day

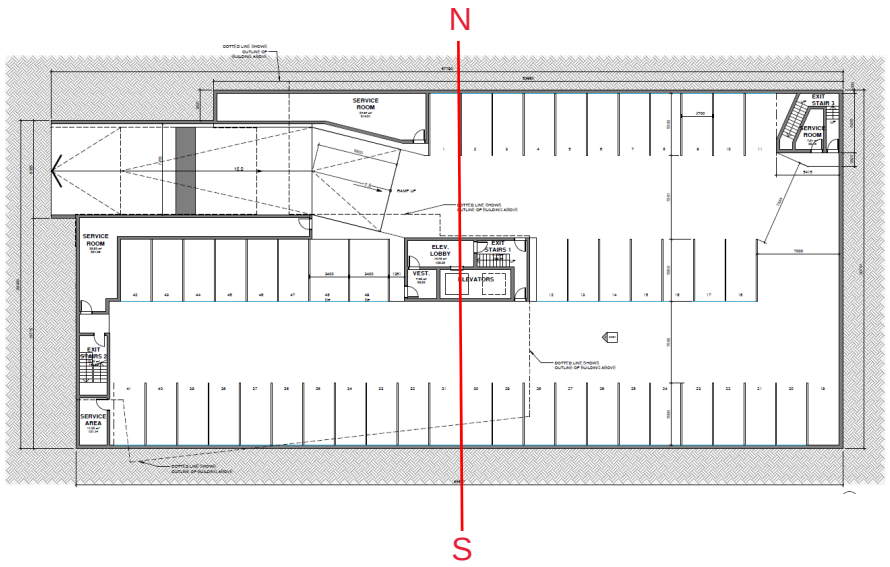


Terraprobe Inc.
Consulting Geotechnical & Environmental Engineering
Construction Materials, Inspection & Testing

SLIDEINTERPRET 7.031

Project	4150 Westminster Place, Mississauga - Short Term Dewatering - Permeable Shoring		
Analysis Description			
Drawn By	RG	*Scale* 1:181	*Company*
Date	11/14/2022, 10:04:45 AM		*File Name* 4150 Westminster Place FEM.slmd

Material Name	Color	KS (m/s)
Fill		1e-006
Clayey Silt Till		9.76e-007
Bedrock		1e-006



Foundation Dimensions: 30.7 m X 65.7 m
Section Cut: N-S

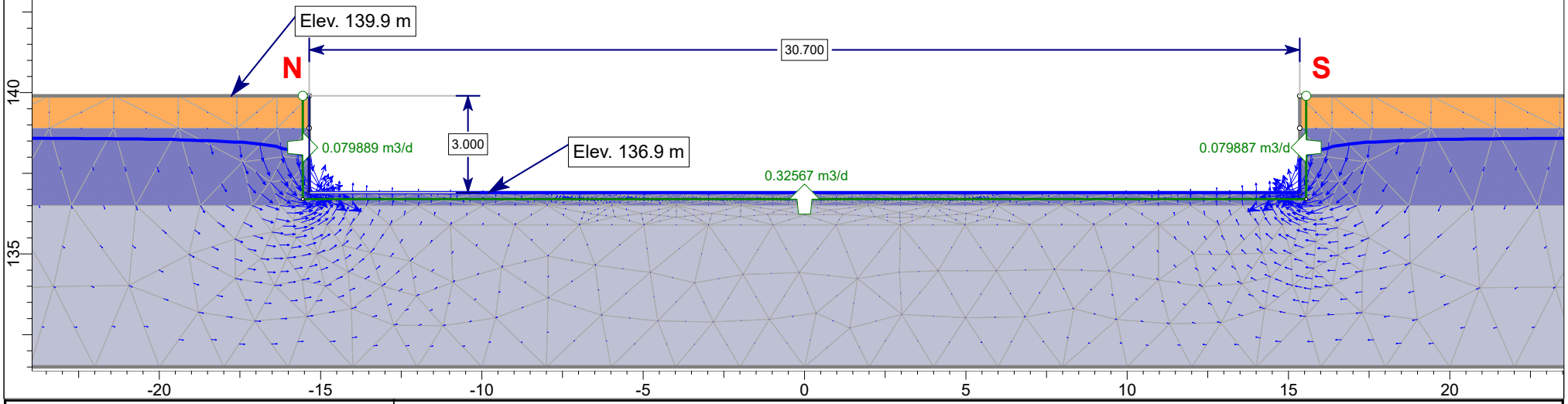
P1 Level Finished Floor: Elev. 137.4 masl
Drainage Layer: Elev. 136.9 masl

Groundwater Level: Elev. 138.6 masl

Q Ground Water = 55,500 L/day
(S.F.=1.5)

Q Infiltration = 6,000 L/day

Q Total = 61,500 L/day



Terraprobe Inc.
Consulting Geotechnical & Environmental Engineering
Construction Materials, Inspection & Testing

SLIDEINTERPRET 7.031

Project	4150 Westminster Place, Mississauga - Long Term Dewatering - Permeable Shoring		
Analysis Description			
Drawn By	RG	*Scale* 1:181	*Company*
Date	11/14/2022, 10:04:45 AM		*File Name* 4150 Westminster Place FEM.slmd

Short-Term Construction Dewatering Flow Rate Estimate Details - 4150 Westminster Place, Mississauga

Dewatering flow rate from Groundwater Source		
Excavation Dimensions		
NS (m)	30.7	
EW (m)	65.7	
Area (m^2)	2016.99	
Perimeter (m)	192.8	
Q BASE		
Flow (m^3/day)	**Length of Base (m)**	**Flow (L/day)**
0.2494400	65.7	16388.208
Q SIDES (m^3/day)		
Flow	**Perimeter (m)**	**Flow (L/day)**
0.12946	96.4	12479.944
0.12839	96.4	12376.796
Q Total	L/day	41,244.95
Safety Factor		1.5
	L/day	61,867.42
	L/day	62,000
	L/sec	0.72

Dewatering Flow Rate from Rainfall Event		
Rainfall Event		
Year	2	100
Hour	3	12
Depth (mm)	30.2	99.6
Depth (m)	0.0302	0.0996
2 Year Event (L/day)	**60,913**	61,000
100 Year Event (L/Day)	**200,892**	201,000

Estimated Short-Term Dewatering Flow Rate

L/day	**123,000**
L/sec	1.42

Long-Term Dewatering Flow Rate Estimate Details - 4150 Westminster Place, Mississauga

Dewatering flow rate from Groundwater Source		
Excavation Dimensions		
NS (m)	30.7	
EW (m)	65.7	
Area (m^2)	2016.99	
Perimeter (m)	192.8	
Q BASE		
Flow (m^3/day)	**Length of Base (m)**	**Flow (L/day)**
0.3256700	65.7	21396.519
Q SIDES (m^3/day)		
Flow	**Perimeter (m)**	**Flow (L/day)**
0.079889	96.4	7701.2996
0.079887	96.4	7701.1068
Q Total	L/day	36,798.93
Safety Factor		1.5
	L/day	55,198.39
	L/day	55,500
	L/sec	0.64

Dewatering Flow Rate from Rainfall Event		
Rainfall Event		
Year	2	100
Hour	3	12
Depth (mm)	30.2	99.6
Depth (m)	0.0302	0.0996
2 Year Event (L/day)	**5,823**	6,000
100 Year Event (L/Day)	**19,203**	19,500

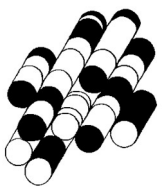
Estimated Short-Term Dewatering Flow Rate

L/day	**61,500**
L/sec	0.71

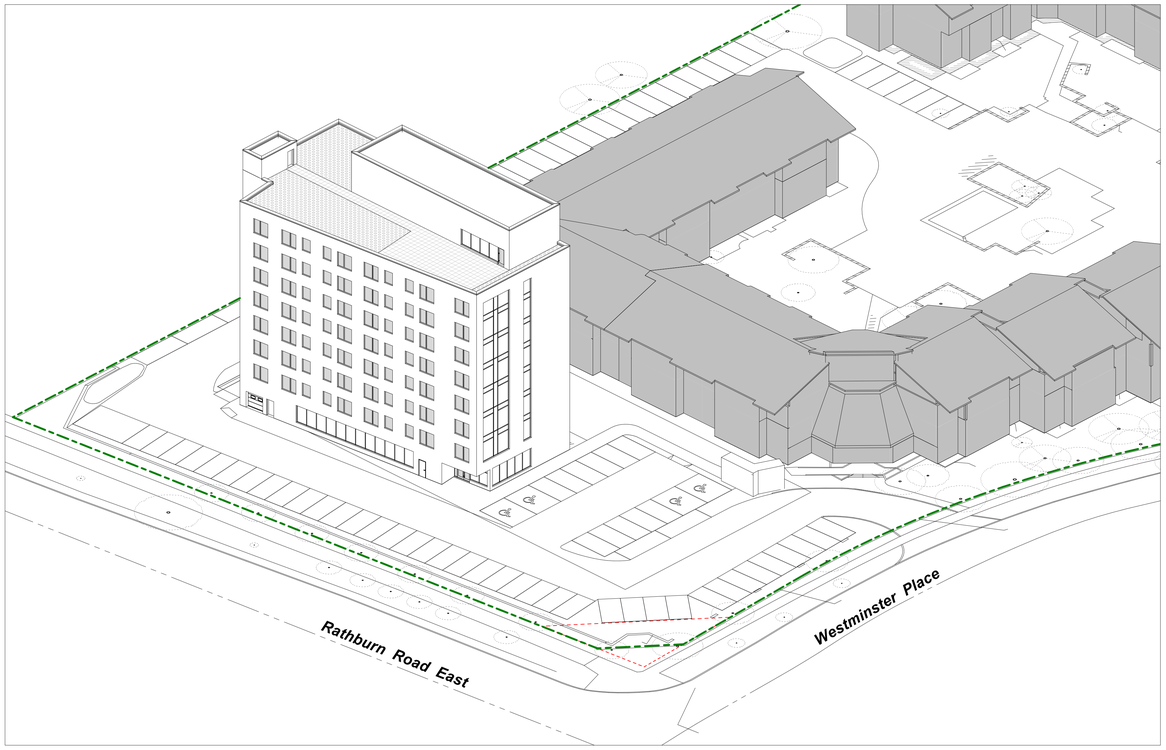
APPENDIX H

Architectural Drawings

TERRAPROBE INC.

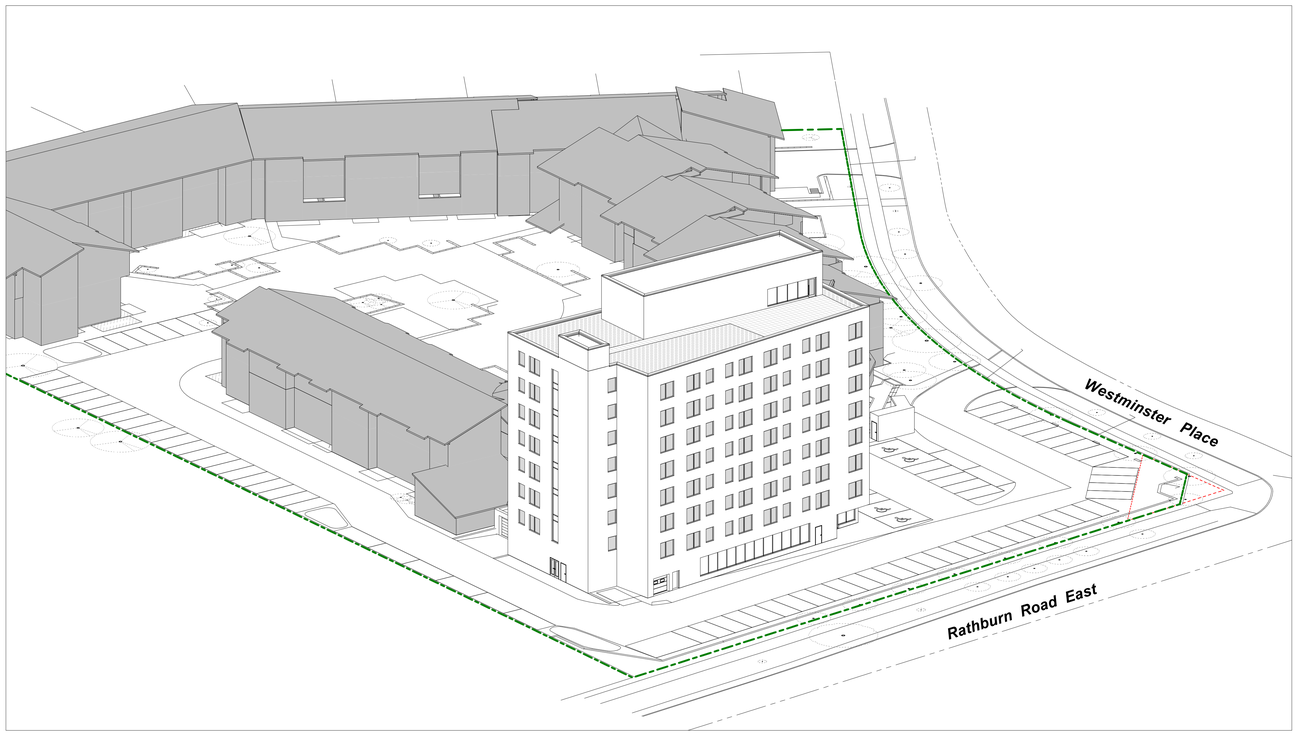


WESTMINSTER ST. LUKE'S SENIORS AFFORDABLE HOUSING



PROPOSED BUILDING - VIEW FROM SOUTH - EAST

CONTEXT PLAN



PROPOSED BUILDING - VIEW FROM SOUTH - WEST

DETAILS OF DEVELOPMENT

	BY-LAW	EXISTING	PROPOSED ADDITION
ZONE CODE	RA1-1		
ZONE DESCRIPTION	APARTMENT, LONG TERM CARE, RETIREMENT BUILDING	RENTAL APARTMENT	RENTAL APARTMENT
ZONE CATEGORY	RESIDENTIAL	RESIDENTIAL	RESIDENTIAL
LAND USE:	RESIDENTIAL HIGH DENSITY		
BY-LAW	0225-2007		
Z-AREA	27		
NEIGHBOURHOOD	RATHWOOD		
LOT AREA:	----------	16370.21m2	16370.21m2
GFA		16070.58m2	24,098.44m2
FSI:	0.4 - 0.9	0.98	1.27
MAXIMUM HEIGHT	13m - 4 STOREYS	11m - 3 STOREYS	32.4m - 8 STOREYS
MIN FRONT YARD	9.5m		39m
MIN SIDE YARD	9.5m		18m
MIN REAR YARD	12.5m		10m

EXISTING LOT COVERAGE 27.41% (4487.23m2 exist. bldg. footprint / Lot Area)
PROPOSED LOT COVERAGE 32.68 % (4487.23m2 exist. bldg. footprint + 861.97 m2 new bldg. footprint / Lot Area)
EXISTING SITE FRONTAGE 92.12m (along RathBurn) ; 131.18m (along Westminster)

EXISTING SOFT LANDSCAPE AREA 5503.12 sm
PROPOSED SOFT LANDSCAPE AREA 5067.97 sm

GFA CALCULATION

FLOOR	GFA	AMENITY FLOOR AREA (INCLUDED IN GFA)
L/G PARKING	1,951.46 m²	0 m²
GROUND FLOOR	849.61 m²	347.15 m²
2 ND FLOOR	719.68 m²	29.45 m²
3 TH FLOOR	719.68 m²	29.45 m²
4 TH FLOOR	719.68 m²	29.45 m²
5 TH FLOOR	719.68 m²	29.45 m²
6 TH FLOOR	719.68 m²	29.45 m²
7 TH FLOOR	719.68 m²	29.45 m²
8 TH FLOOR	719.68 m²	29.45 m²
MECH PENTHOUSE	229.98 m²	(exterior) 105.50 m²
TOTAL PROPOSED	**8,068.79 m²**	**658.80 m²**
TOTAL PROPOSED (EXCLUDES U/G PARKING)	**6,117.33 m²**	
TOTAL EXISTING	**16,070.58 m²**	
GRAND TOTAL (EXCLUDES U/G PARKING)	**22,187.91 m²**	

RESIDENTIAL UNIT TYPE BREAKDOWN

FLOOR	1 BED	1 BED BF	FLOOR TOTAL
GROUND FLOOR	0	0	0
2ND FLOOR	8	2	10
3TH FLOOR	8	2	10
4TH FLOOR	8	2	10
5TH FLOOR	8	2	10
6TH FLOOR	8	2	10
7TH FLOOR	8	2	10
8TH FLOOR	8	2	10
MECH PENTHOUSE	0	0	0
TOTAL PROPOSED	56	14	**70**
TOTAL EXISTING			**190**
TOTAL			**260**

PARKING

PARKING COUNT	NO.	NO. OR BF SPACES INCLUDED
PROPOSED ON GRADE	90	4
PROPOSED UNDERGROUND	49	2
TOTAL	**139**	**6**
PARKING RATIO		
NO. OF EXISTING RESIDENTIAL UNITS	190	
NO. OF PROPOSED NEW RESIDENTIAL UNITS	70	
TOTAL	**260**	
PARKING RATIO	0.53	

ARCHITECTURAL DRAWING LIST

A000	Project Information & Statistics
A001	3D Views
A002	Existing Site Survey
A003	Site Plan
A201	UG Parking and Ground Floor Plan
A202	2nd-8th Floor Plan and Roof Plan
A401	Building Elevations
A402	Building Elevations
SS01	Shadow Study

KEARNS MANCINI ARCHITECTS
67 Mowat Avenue, Suite 432
Toronto, Ontario, M6K 3E3
T 416.536.5666 F 416.536.8626
kmai.com

TRUE N
PROJECT N

Certificate of Practice No.: 1796
Architect's BCIN:

SPA | Permit | Tender | Contract | Construction

No.	Description	Chk'd	Date
1	Submit for Pre-application Review	KMA	March 23, 2021
2	Issued For Client Use	KMA	March 22, 2022
3	ISSUE FOR REZONING CO-ORDINATION	KMA	APR 4, 2022
4	GFA CALCULATION UPDATE	KMA	JULY 25, 2022
5	SITE STATISTICS UPDATE	KMA	SEPT 7, 2022

[redacted]

Project

Westminster

St Luke's Seniors Affordable Housing

4150 Westminster Place
Mississauga ON

Scale As indicated
Date Plotted 9/7/2022 6:17:33 PM
Drawn Author
Checked Checker

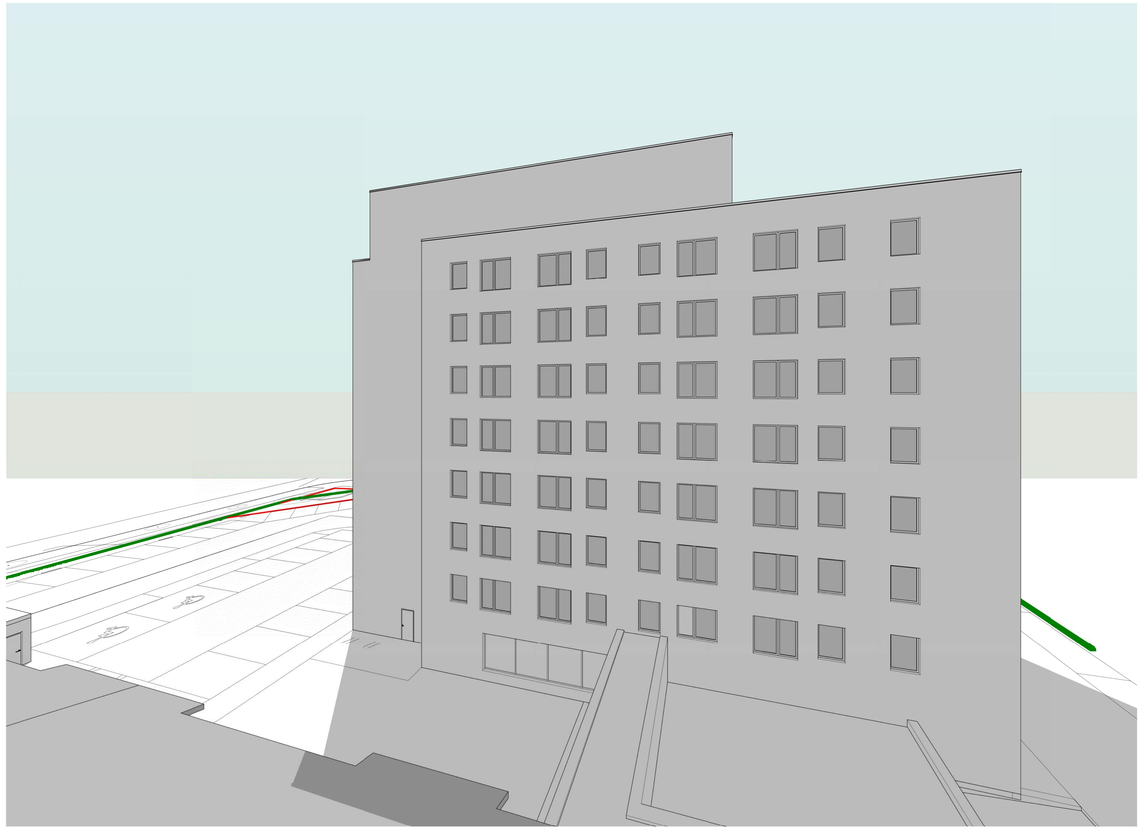
Project No. 18-078

Drawing No.

Project Information & Statistics

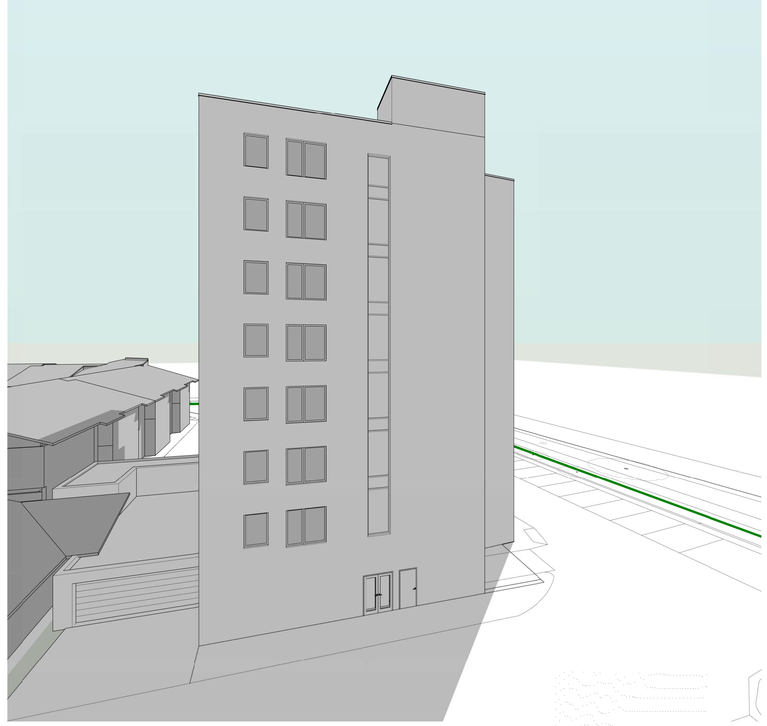
A000

[redacted]



3 A001 3D VIEW - SOUTH

4 A001 3D VIEW - NORTH EAST CORNER

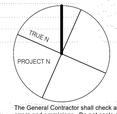


2 A001 3D VIEW - SOUTH WEST CORNER

1 A001 3D VIEW - SOUTH EAST CORNER

KEARNS MANCINI ARCHITECTS

67 Mowat Avenue, Suite 432
Toronto, Ontario, M6K 3E3
T 416.536.5666 F 416.536.8626
kmai.com



Certificate of Practice No.:	1796
Architect's BCIN:	

SPA	Permit	Tender	Contract	Construction
■	■	■		

No.	Description	Chk'd	Date
1	Submit for Pre-application Review	KMA	March 23, 2021
3	ISSUE FOR REZONING CO-ORDINATION	KMA	APR 4, 2022
5	SITE STATISTICS UPDATE	KMA	SEPT 7, 2022

[redacted]

Project

Westminster

St Luke's Seniors Affordable Housing

4150 Westminster Place
Mississauga ON

Scale	
Date Plotted	9/7/2022 6:17:38 PM
Drawn	Author
Checked	Checker

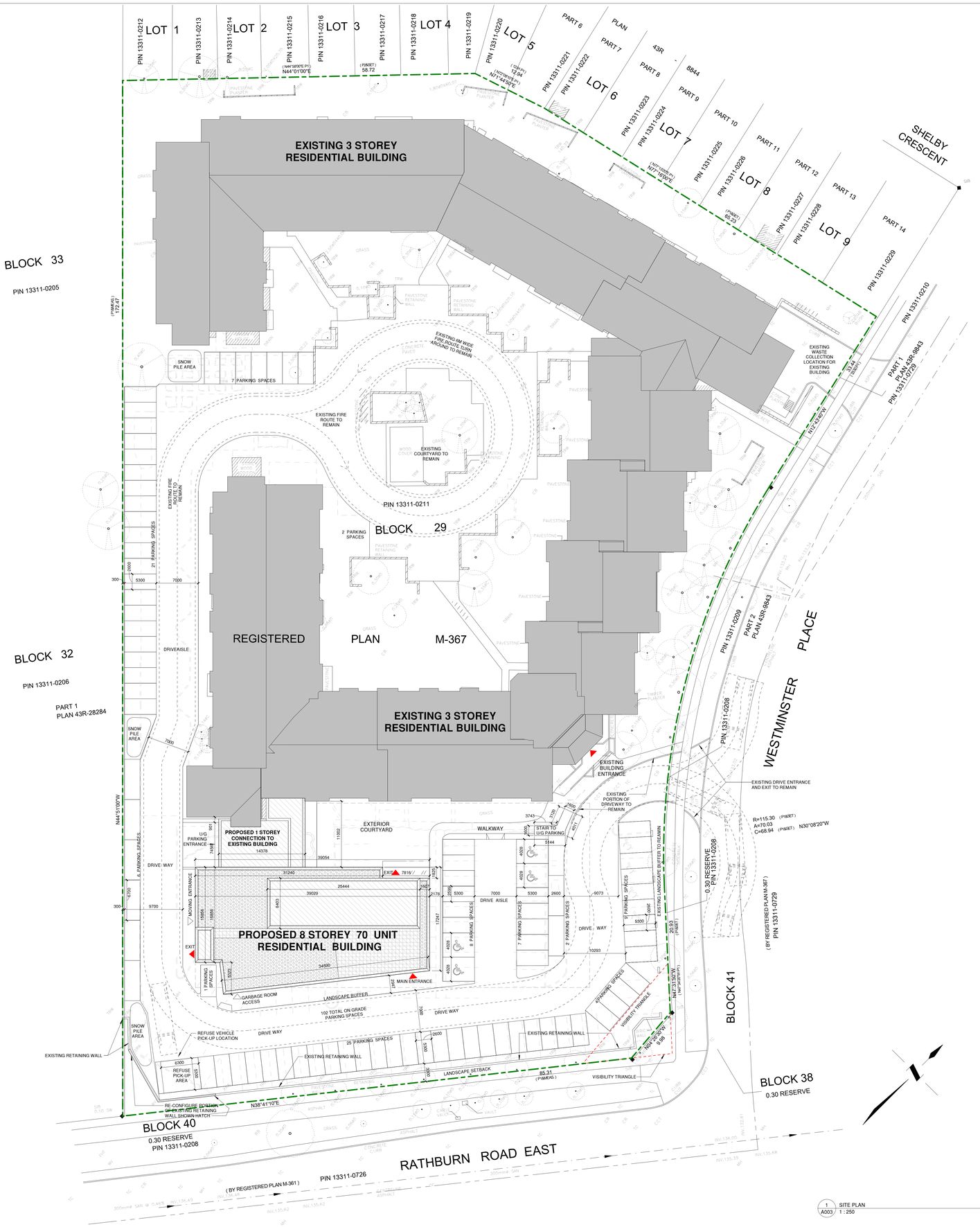
Project No. 18-078

Drawing No.

3D Views

A001

[redacted]



1 SITE PLAN
A003 1 : 250

KEARNS MANCINI ARCHITECTS
67 Mowat Avenue, Suite 432
Toronto, Ontario, M6K 3E3
T 416.536.5666 F 416.536.8626
kma.com

TRUE N
PROJECT N

Certificate of Practice No.:	1796
Architect's BCIN:	

SPA | Permit | Tender | Contract | Construction

No.	Description	Chk'd	Date
1	Submit for Pre-application Review	KMA	March 23, 2021
2	Issued For Client Use	KMA	March 22, 2022
3	ISSUE FOR REZONING CO-ORDINATION	KMA	APR 4, 2022
5	SITE STATISTICS UPDATE	KMA	SEPT 7, 2022

[redacted]

Project

Westminster

St Luke's Seniors Affordable Housing

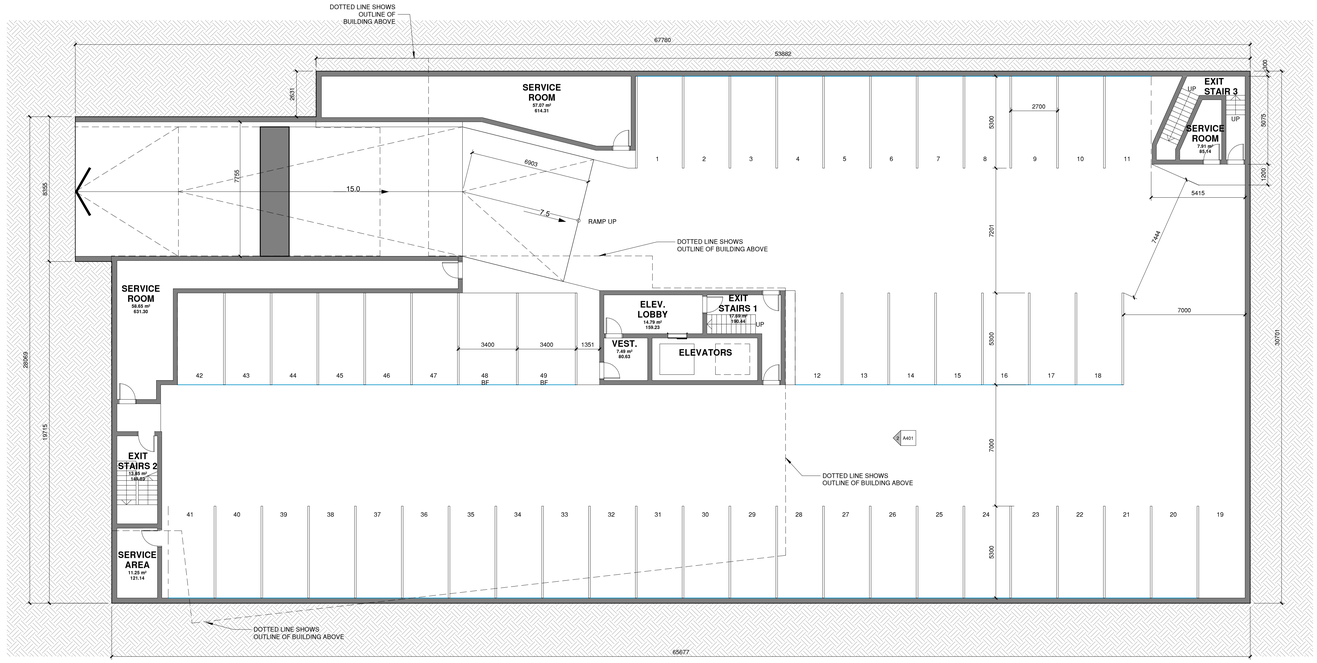
4150 Westminster Place
Mississauga ON

Scale	1 : 250
Date Plotted	9/7/2022 6:17:40 PM
Drawn	Author
Checked	Checker
Project No.	18-078
Drawing No.	

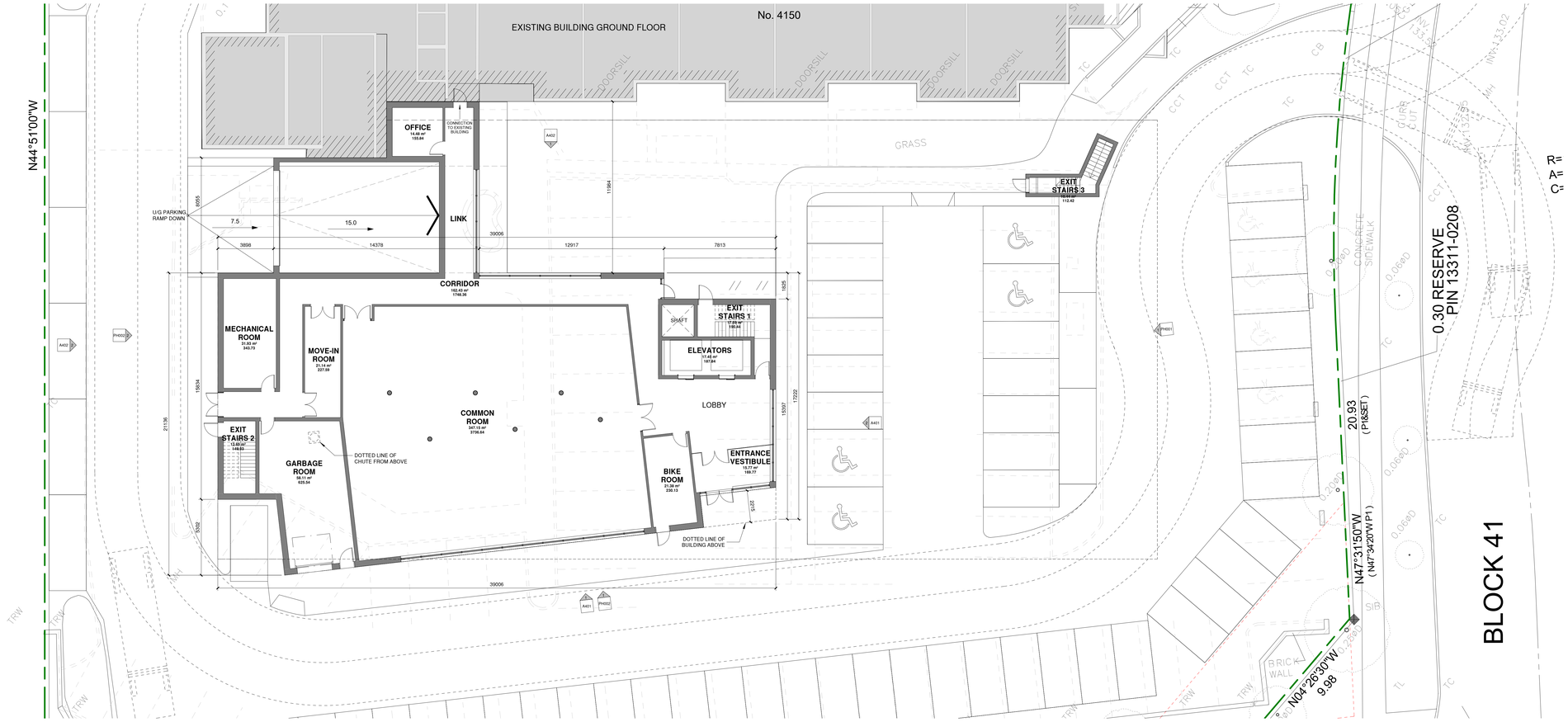
Site Plan

A003

[redacted]



2 A201 UG PARKING FLOOR PLAN
1 : 125



1 A201 GROUND FLOOR PLAN
1 : 125

KEARNS MANCINI ARCHITECTS
67 Mowat Avenue, Suite 432
Toronto, Ontario, M6K 3E3
T 416.536.5666 F 416.536.8626
kmai.com

TRUE N
PROJECT N

Certificate of Practice No.:	1796
Architect's BCIN:	

SPA | Permit | Tender | Contract | Construction

No.	Description	Chk'd	Date
1	Submit for Pre-application Review	KMA	March 23, 2021
2	Issued For Client Use	KMA	March 22, 2022
3	ISSUE FOR REZONING CO-ORDINATION	KMA	APR 4, 2022
5	SITE STATISTICS UPDATE	KMA	SEPT 7, 2022

Project

Westminster

St Luke's Seniors Affordable Housing

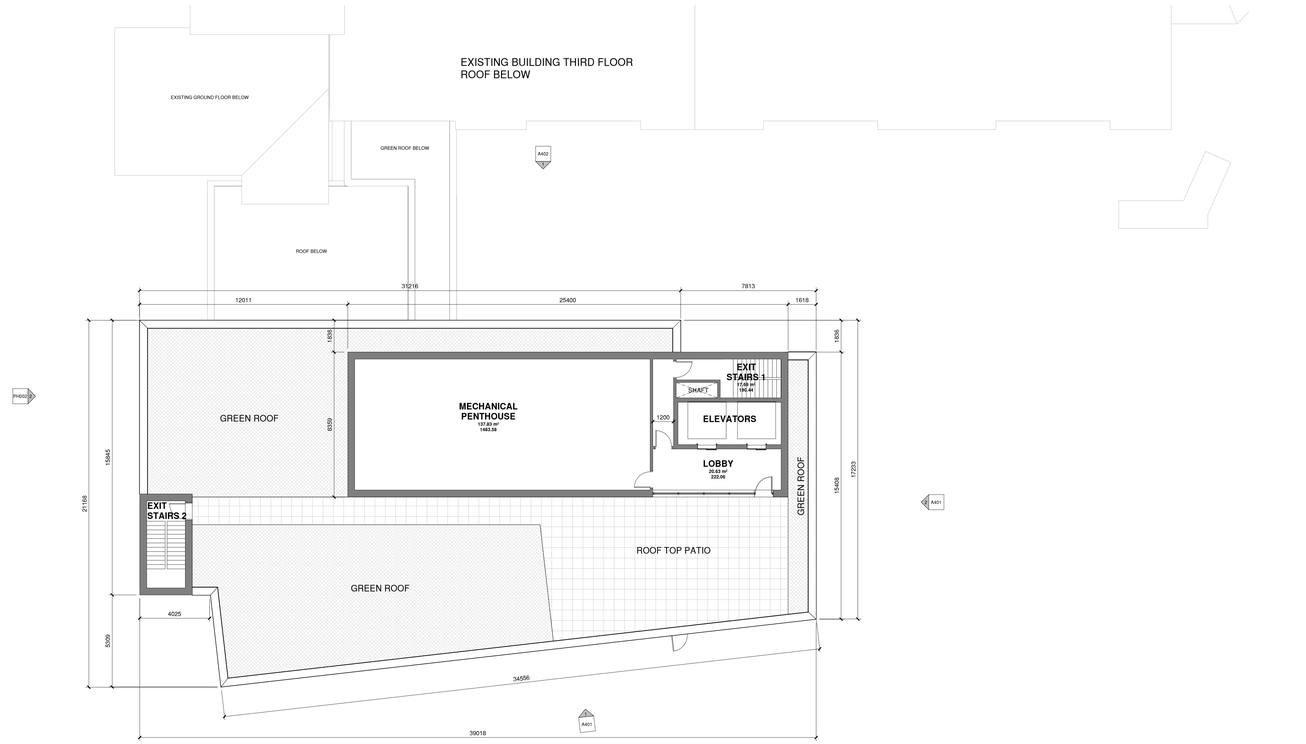
4150 Westminster Place
Mississauga ON

Scale	1 : 125
Date Plotted	9/7/2022 6:17:40 PM
Drawn	Author
Checked	Checker
Project No.	18-078
Drawing No.	

UG Parking and Ground Floor Plan

A201

2 A202 2ND TO 8TH FLOOR PLAN
1 : 125



1 A202 ROOF PLAN
1 : 125

KEARNS MANCINI ARCHITECTS
67 Mowat Avenue, Suite 432
Toronto, Ontario, M6K 3E3
T 416.536.5666 F 416.536.8626
kmai.com

TRUE N
PROJECT N

Certificate of Practice No.: 1796
Architect's BCIN:

SPA | Permit | Tender | Contract | Construction

No.	Description	Chk'd	Date
2	Issued For Client Use	KMA	March 22, 2022
5	SITE STATISTICS UPDATE	KMA	SEPT 7, 2022

Project
Westminster

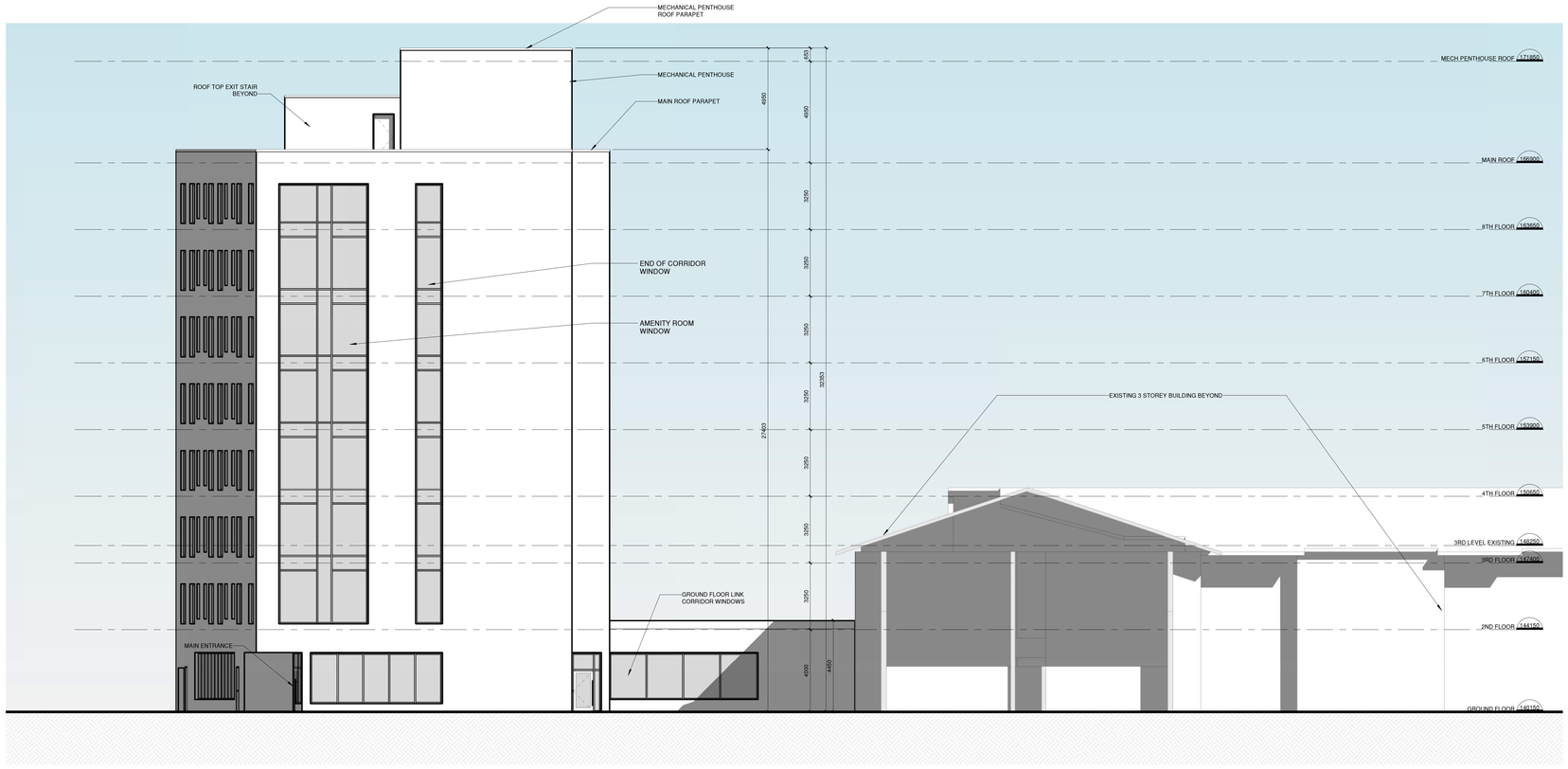
St Luke's Seniors Affordable Housing
4150 Westminster Place
Mississauga ON

Scale	1 : 125
Date Plotted	9/7/2022 6:17:41 PM
Drawn	Author
Checked	Checker

Project No. 18-078
Drawing No.

2nd-8th Floor Plan and Roof Plan

A202



2 / A401 EAST ELEVATION
1 : 100

1 / A401 SOUTH ELEVATION
1 : 100

KEARNS MANCINI ARCHITECTS
67 Mowat Avenue, Suite 432
Toronto, Ontario, M6K 3E3
T 416.536.5666 F 416.536.8626
kmai.com

Certificate of Practice No.:	1796
Architect's BCIN:	

SPA | Permit | Tender | Contract | Construction

No.	Description	Chk'd	Date
1	Submit for Pre-application Review	KMA	March 23, 2021
2	Issued For Client Use	KMA	March 22, 2022
3	ISSUE FOR REZONING CO-ORDINATION	KMA	APR 4, 2022
5	SITE STATISTICS UPDATE	KMA	SEPT 7, 2022

Project
Westminster

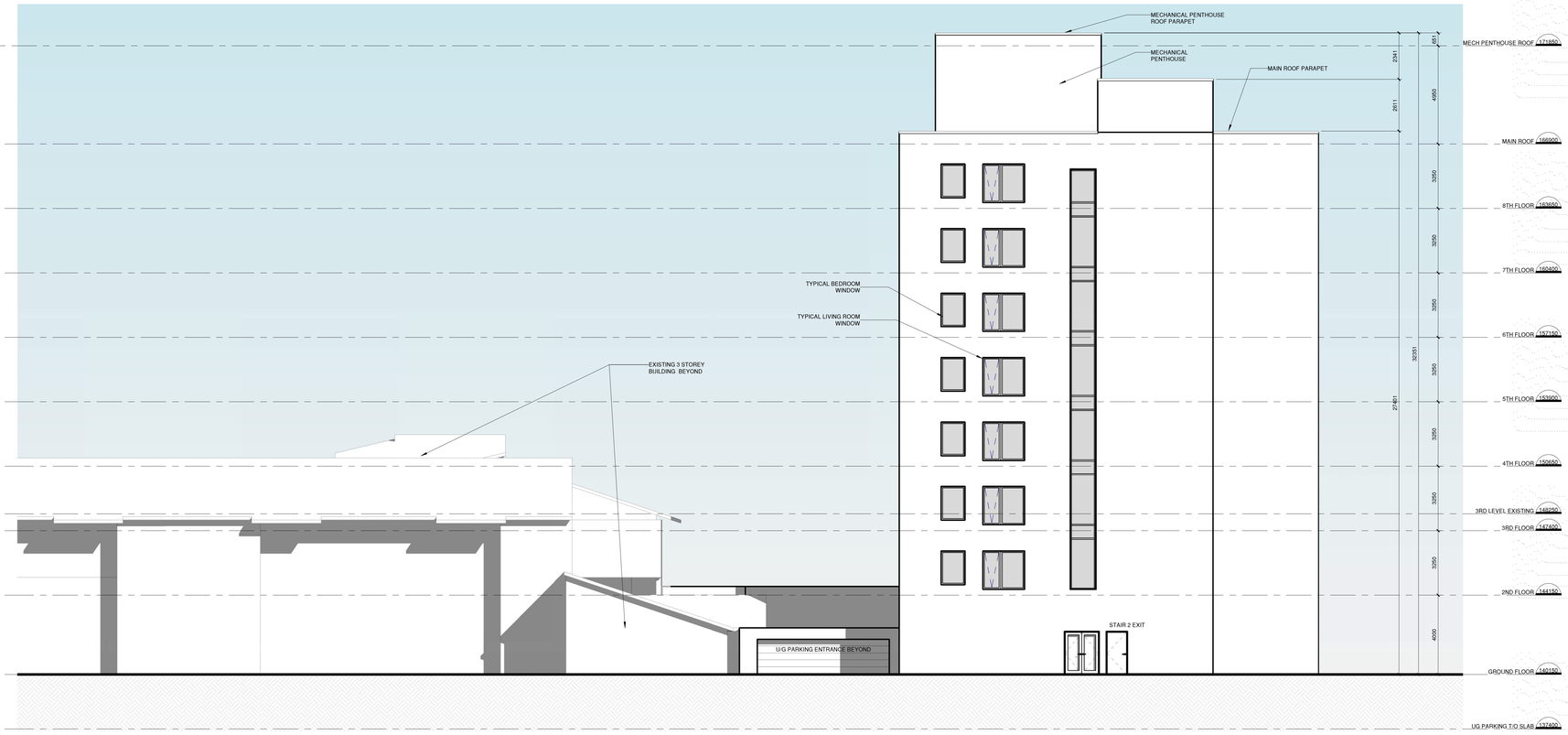
St Luke's Seniors Affordable Housing
4150 Westminster Place
Mississauga ON

Scale	1 : 100
Date Plotted	9/7/2022 6:17:44 PM
Drawn	Author
Checked	Checker

Project No. 18-078
Drawing No.

Building Elevations

A401



2 / A402 WEST ELEVATION
1 : 100

1 / A402 NORTH ELEVATION
1 : 100

KEARNS MANCINI ARCHITECTS
67 Mowat Avenue, Suite 432
Toronto, Ontario, M6K 3E3
T 416.536.5666 F 416.536.8626
kmai.com

Certificate of Practice No.:	1796
Architect's BCIN:	

SPA | Permit | Tender | Contract | Construction

No.	Description	Chk'd	Date
1	Submit for Pre-application Review	KMA	March 23, 2021
2	Issued For Client Use	KMA	March 22, 2022
3	ISSUE FOR REZONING CO-ORDINATION	KMA	APR 4, 2022
5	SITE STATISTICS UPDATE	KMA	SEPT 7, 2022

[redacted]

Project

Westminster

St Luke's Seniors Affordable Housing

4150 Westminster Place
Mississauga ON

Scale	1 : 100
Date Plotted	9/7/2022 6:17:48 PM
Drawn	Author
Checked	Checker
Project No.	18-078
Drawing No.	

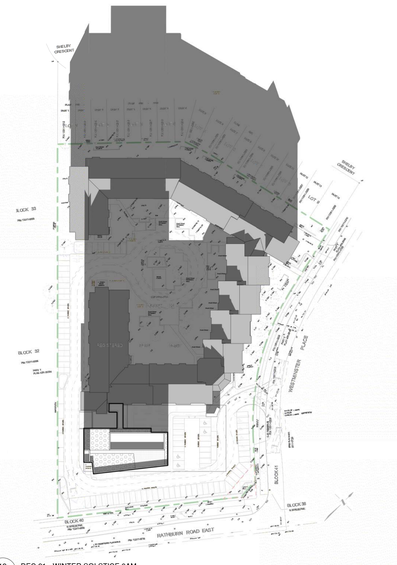
Building Elevations

A402

[redacted]

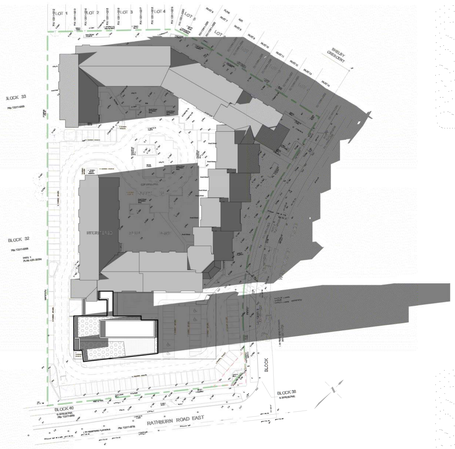
C:\Users\petterng\Documents\18-078 Westminster R2020_petterng@kmai.com.rvt

WINTER



12 SS01 DEC 21 - WINTER SOLSTICE 9AM
1 : 1000

11 SS01 DEC 21 - WINTER SOLSTICE 12PM
1 : 1000

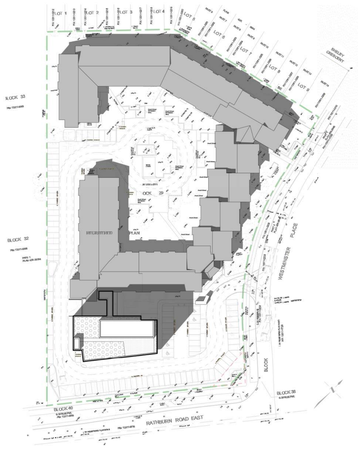


10 SS01 DEC 21 - WINTER SOLSTICE 3PM
1 : 1000

AUTUMN

9 SS01 SEPT 21 - AUTUMN EQUINOX 9AM
1 : 1000

8 SS01 SEPT 21 - AUTUMN EQUINOX 3PM
1 : 1000

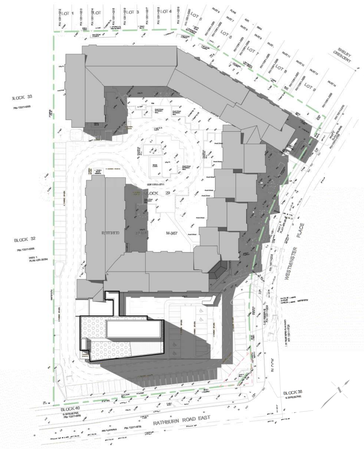


7 SS01 SEPT 21 - AUTUMN EQUINOX 12PM
1 : 1000

SUMMER

6 SS01 JUNE 21 - SUMMER SOLSTICE 9AM
1 : 1000

5 SS01 JUNE 21 - SUMMER SOLSTICE 12PM
1 : 1000



4 SS01 JUNE 21 - SUMMER SOLSTICE 3PM
1 : 1000

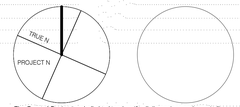
SPRING

3 SS01 MARCH 21 - SPRING EQUINOX 9AM
1 : 1000

2 SS01 MARCH 21 - SPRING EQUINOX 3PM
1 : 1000

1 SS01 MARCH 21 - SPRING EQUINOX 12PM
1 : 1000

KEARNS MANCINI ARCHITECTS
67 Mowat Avenue, Suite 432
Toronto, Ontario, M6K 3E3
T 416.536.5666 F 416.536.8626
kmai.com



Certificate of Practice No.:	1796
Architect's BCIN:	

SPA | Permit | Tender | Contract | Construction

No.	Description	Chk'd	Date
2	Issued For Client Use	KMA	March 22, 2022
3	ISSUE FOR REZONING CO-ORDINATION	KMA	APR 4, 2022
5	SITE STATISTICS UPDATE	KMA	SEPT 7, 2022

[redacted]

Project

Westminster

St Luke's Seniors Affordable Housing

4150 Westminster Place
Mississauga ON

Scale	1 : 1000
Date Plotted	9/7/2022 6:18:12 PM
Drawn	Author
Checked	Checker

Project No. 18-078

Drawing No.

Shadow Study

SS01

[redacted]

C:\Users\peterng\Documents\18-078 Westminster R2020_peterng@kmai.com.rvt