

**FUNCTIONAL SERVICING & STORMWATER  
MANAGEMENT REPORT**

**7072 SIXTH LINE  
TOWN OF MILTON  
REGION OF HALTON**

**PREPARED FOR:  
TARGET TRUCK SALES**

**PREPARED BY:  
C.F. CROZIER & ASSOCIATES INC.  
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**NOVEMBER 2025**

**CFCA FILE NO. 2709-7165**

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## 1.0 INTRODUCTION

C.F. Crozier & Associates Inc. (Crozier) has been retained by Target Truck Sales to complete a Functional Servicing and Stormwater Management Report in support of a Zoning-By-Law Amendment (ZBA) and Site Plan Approval (SPA) application for the property located at 7072 Sixth Line, in the Town of Milton. The proposed development will herein be referred to as the Subject Development/Subject Lands. This report demonstrates how the proposed development's functional servicing will conform with the requirements of the Town of Milton (Town), Region of Halton (Region) and Conservation Halton (CH).

C.F. Crozier & Associates is part of a team of consultants providing support for this development. Other members of the consulting team include:

- Glen Shnarr and Associates Inc. (Planning)
- EnVision (Ecology, Geology, Hydrogeology, and Arborist Reports)
- Crozier (Civil and Transportation Engineering)

These consultants have prepared studies/ plans to support the planning application. This report prepared by Crozier should be read in conjunction with the work of the other team members.

## 2.0 SITE DESCRIPTION AND BACKGROUND

### 2.1 EXISTING CONDITIONS

The Subject Lands are approximately 1.07 ha and currently consist of an existing two-storey dwelling and combination gravel and asphalt parking lot. The property is located along the eastern limit of the Derry Green Business Park area and is currently bound by Sixth Line to the east, agricultural lands to the south and west, and agricultural and natural heritage lands to the north. Please refer to **Figure 1** for the Site Location Plan.

### 2.2 PROPOSED CONDITIONS

The Development Concept Plan, prepared by GSAI and dated October 2025, includes the construction of a 1-storey 720 m<sup>2</sup> industrial building complete with 16 trailer parking spaces, 24 vehicle parking spaces, drive aisles, landscape areas, and natural heritage space. Site access is proposed from Sixth Line with a potential additional truck access proposed via an access road from a proposed future industrial development to the south. The site layout from the Development Concept Plan has been shown on the Concept Plan completed by Crozier and is included in **Figure 2**.

### 2.3 RELATED STUDIES AND REPORTS

This report has been completed in accordance with the guidelines, standards and policies of the Town, Region and Conservation Halton. The relevant background studies and reports include:

- "Subwatershed Impact Study – Study Area 5A Derry Green Corporate Business Park" prepared by The Municipal Infrastructure Group Ltd., October 2017
- "Subwatershed Impact Study Addendum – 7072 Sixth Line" prepared by Crozier, October 2025
- "Sixteen Mile Creek Areas 2 & 7 Subwatershed Update Study" prepared by Amec Environment and Infrastructure., April 2013 (Revised November 2015).

### 3.0 SITE ACCESS AND GRADING

Access to the Subject Development will be provided via a 10 meter wide driveway access from Sixth Line. Please refer to the Transportation Brief (Crozier, October 2025), submitted under separate cover, which identifies future operating conditions of the boundary road network surrounding the development.

The site grading will be influenced by the existing and proposed drainage systems within the Subject Development. Grading will tie into the existing elevations along the property limits, match the pre-development overland stormwater flow patterns where possible, and provide sufficient cover for the proposed water, sanitary and storm servicing, and required groundwater separation.

The parking lot will have curb and gutter throughout and will be designed in accordance with Town of Milton Engineering Standards. Grading of parking will be completed to ensure no flooding of private property or depths greater than 0.30 m occur during storm events up to and including the 100-year storm event; this is to ensure safe access and egress is provided.

### 4.0 WATER SERVICING

#### 4.1 EXISTING WATER SERVICING

The property is currently serviced by an existing well located southwest of the existing 2-storey brick dwelling. Refer to the Subsurface Utility Investigation (SUE) completed by Multiview in October 2024 included in **Appendix A** showing the location of the existing well. The yield of the well is currently unknown.

The Halton Region Existing Water Distribution System figure included in the Sustainable Halton Water & Wastewater Master Plan (included in **Appendix B** for reference) shows an existing watermain on Sixth Line along the frontage of the property. Review of Town and Region record drawings along with the SUE completed for the Site did not confirm the existence, location, or size of this watermain.

#### 4.2 PROPOSED WATER SERVICING

The current Concept Plan layout shows the proposed building overtop of the existing well location. As such, the well shall be decommissioned and a new well will be required on the property to service the proposed building. Alternatively, if the watermain on Sixth Line can be located, a water service connection to the existing watermain should be installed.

Preliminary water demands for the Subject Development have been estimated in conjunction with Town Standards that concur with Table 3-1 of the Ministry of Environment, Conservation and Parks (MECP) Design Guidelines for Drinking Water Systems. Applicable design criteria have been summarized in **Table 1** below.

**Table 1: Water Supply Design Criteria**

Criteria	Standard
Average Flow Rate (L/cap/day)	450
Maximum Day Peaking Factor	2.5
Industrial Density (person/ha)	125

The following water demands have been calculated for the Subject Development per Town standards identified above:

- Average Daily Flow Rate – **0.06 L/s**
- Max Daily Flow Rate – **0.15 L/s**

Since there are no hydrants near the Subject Lands, it is assumed that the Town of Milton rural fire service will apply to these lands, and that fire flow will be provided to the Subject Development by pumper truck. This is to be confirmed through discussion with the Town of Milton Fire Department.

Refer to **Appendix C** for the water demand calculations. The preliminary proposed well location is shown on **Figure 3**, to be confirmed at the Site Plan stage.

## 5.0 SANITARY SERVICING

### 5.1 EXISTING SANITARY SERVICING

The existing site is serviced by a 1250 gallon on site septic system. The existing septic tank was not discovered during the subsurface utility investigation, however, an approximate location is shown on **Figure 3**. It is expected that the septic tank and all appurtenances will be located and uncovered during construction.

The Halton Region Existing Wastewater System figure included in the Sustainable Halton Water & Wastewater Master Plan (included in **Appendix B** for reference) shows no existing sanitary sewer on Sixth Line.

### 5.2 PROPOSED SANITARY SERVICING

The proposed servicing solution for the Subject Development will be to install a septic system to support the proposed industrial building. The design of the septic tank will be confirmed in the Site Plan Approval submission.

Preliminary sanitary flows for the Subject Development were estimated according to Town standards. Applicable design criteria have been summarized in **Table 2**.

**Table 2: Sanitary Design Criteria**

Criteria	Standard
Average Flow Rate (L/s/ha)	0.64
Infiltration (L/s/ha)	0.23
Peaking Factor (Harmon Formula)	2.25
Industrial Density (person/ha)	125

Based on above criteria and the proposed unit totals, it is estimated that peak sanitary flow from the Subject Development is **0.57 L/s**. Refer to **Appendix C** for sanitary flow calculations. The preliminary proposed septic location is shown on **Figure 3**, to be confirmed at the Site Plan stage.

## 6.0 STORMWATER MANAGEMENT (SWM) SERVICING

### 6.1 DESIGN CRITERIA

The management of stormwater and site drainage for the proposed development must comply with the policies and standards of the various agencies, including the Town of Milton, Conservation Halton, and the Ministry of Environment, Conservation and Parks (MECP).

The stormwater management criteria for the Subject Development includes the following:

- Development Standards
  - Minor and major drainage system to convey frequent and infrequent rainfall/ runoff events, respectively.
  - Grades at 2% optimum.
- Water Quality Control
  - 80% removal efficiency of total suspended solids per MECP 'enhanced protection' requirements.
- Water Quantity Control
  - Control of the post development peak flows to pre-development levels for all storms up to and including the 100-year event.
- Erosion Control
  - 48-hour detention of the 25 mm event.
- External Drainage Management
  - The stormwater management strategy for the site must ensure that the identified external drainage areas are safely conveyed through the site, to the outlet.

### 6.2 EXISTING DRAINAGE CONDITIONS

The Subject Development is located within the Sixteen Mile Creek Subwatershed. The Subject Lands are currently characterized by open space and an existing commercial building. Based on the existing contours the majority of the of the Subject Lands drain to the existing drainage feature north of the Subject Development, before draining east via a culvert at Sixth Line toward Sixteen Mile Creek.

The existing drainage conditions for the Subject Lands have been split into the following two drainage areas:

- **Catchment PRE-1:** This catchment is approximately 0.5 ha and represents the portion of the Subject Lands contributing to the existing drainage feature at the north limit of the Site. It consists of open space and an existing two-storey dwelling. The catchment does not include the portion of the Natural Heritage System associated with the existing drainage feature, as this area will remain unchanged between existing and proposed conditions.
- **Catchment PRE-2:** This catchment is approximately 0.2 ha and represents the portion of the Subject Lands draining overland to the property to the south. It consists of open space and an existing asphalt driveway.

Refer to **Figure 4** for the pre-development drainage plan.



### 6.3 PROPOSED DRAINAGE CONDITIONS

The SWM controls for the Subject Development will be provided by a private underground SWM facility located within the Subject Development. The Subject Development will include curb and gutters and storm sewers to convey stormwater flows to the underground SWM facility. The preliminary storm servicing layout is presented in **Figure 3**. A detailed storm servicing layout with pipe sizes and slopes will be provided at the site plan approval application stage.

The proposed drainage conditions for the Subject Lands have been split into the following three drainage areas:

- **Catchment POST-1:** This catchment is approximately 0.6 ha and consists of the majority of the Subject Development. Stormwater from this area will be conveyed to the underground SWM facility and ultimately to the drainage feature at the north limit of the Subject Lands.
- **Catchment POST-2:** This catchment is approximately 0.05 ha and consists of open space within the Subject Development that sheet drains uncontrolled to the property to the south.
- **Catchment POST-3:** This catchment is approximately 0.02 ha and consists of open space within the Subject Development that drains uncontrolled to the drainage feature at the north limit of the Subject Lands.

Refer to **Figure 5** for the post-development drainage plan.

### 6.4 WATER QUANTITY ANALYSIS

A private underground SWM facility will provide majority of the water quantity control for the Subject Development. Additional volume will be provided via pipe and parking lot storage. A control maintenance hole complete with a multi-stage outlet will address 2-100 Year flow control requirements. The outlet structure will consist of a 150 mm diameter orifice plate and a 65 degree v-notch weir.

Site hydrology was evaluated using the Rational Method using storm data from Town of Milton standards. Pre- and post-development (uncontrolled) flow rates along with the storages required to control flows to pre-development levels are summarized in **Table 3** below.

**Table 3: SWM Flow Rate and Storage Volume Summary**

Storm	Pre-Development Flows (m <sup>3</sup> /s)	Post Development Uncontrolled Flows (m <sup>3</sup> /s)	Post Development Controlled Flows (m <sup>3</sup> /s)	Required Storage (m <sup>3</sup> )
2 Year	0.03	0.13	0.03	88
5 Year	0.05	0.17	0.04	111
10 Year	0.08	0.20	0.05	126
25 Year	0.11	0.23	0.06	144
50 Year	0.14	0.26	0.08	154
100 Year	0.17	0.29	0.10	156

The design of the SWM facility provides 156m<sup>3</sup> of storage and is therefore adequately sized for water quantity storage requirements. Opportunities to offset tank storage with surface ponding and rooftop storage will be investigated at Site Plan stage to confirm overall tank requirements. Refer to **Appendix D** for the SWMF feature sizing calculations.

Areas of the Subject Lands that drain uncontrolled to the property to the south are reduced in both total area and impervious coverage. As such, no quantity control measures are proposed for these areas.

## **6.5 WATER QUALITY ANALYSIS**

Stormwater quality to an Enhanced Protection Level (Stormwater Management and Design Manual, MECP, 2003) will be provided by an Oil and Grit Separator (OGS) providing 60% total suspended solids (TSS) removal in series with sand filters providing 50% TSS removal for a combined treatment train providing 80% TSS removal. The OGS, which is proposed upstream of the underground SWM Facility, is ETV Canada Verified. Sand filters will be located within the underground SWM Facility. Preliminary sizing calculations for the proposed OGS have been provided in **Appendix D**.

## **6.6 FLOODPLAIN ANALYSIS**

The floodplain adjacent to the Subject Lands has been established as part of the Subwatershed Impact Study Addendum prepared by Crozier. The analysis indicates that the floodplain elevation at the proposed Site stormwater management system outlet, corresponding to HEC-RAS model river station 197, under 100 year storm conditions is 187.93. As such, the invert of the proposed underground tank was set above the 100 year floodplain elevation in the creek to avoid loss of active SWM storage to tailwater from the creek.

## **6.7 WATER BALANCE AND LOW IMPACT DEVELOPMENT (LID) DESIGN**

A water balance assessment was prepared by EnVision to determine the annual volume required to be infiltrated to ensure no net loss in total infiltration – *Preliminary Hydrogeological Investigation, August 2025*. Based on the results of the water balance, there is an annual infiltration deficit of 1,264 m<sup>3</sup>/year for the Subject Development.

Based on the proposed concept plans, various opportunities exist to implement LID measures across the site to help achieve stormwater management objectives, however high groundwater levels limit the ability to reasonably achieve the standard 1 meter separation between the base of the infiltration facility and the seasonally high groundwater level. As such, it is assumed that the infiltration gallery will be set above the seasonally high groundwater level but will not achieve the 1 meter separation.

The infiltration gallery is proposed to be installed below the Stormwater Management tank. The gallery location achieves a minimum 4 m separation from the proposed building and minimum 0.3 m away from the property line. The proposed location and further details for the infiltration gallery have been illustrated on **Figure 6**.

The proposed LID regime results in an annual infiltration rate of 1,355m<sup>3</sup>/year, addressing the calculated infiltration deficit.

Sizing of the LID facilities as well as water balance mitigation calculations have been included in **Appendix E**.

## **7.0 UTILITIES**

The Subject Development will be serviced with natural gas, telephone, and hydro. The design of such utilities will be coordinated with the local utility companies servicing the Town through the Site

Plan/Detailed Design stage and supplemented with on-site services (such as propane, as is the existing condition) as required.

## **8.0 EROSION & SEDIMENT CONTROLS**

Sediment and erosion controls will be installed prior to the commencement of any earthworks and maintained throughout until the site is stabilized or as directed by the Engineer, Conservation Halton and/or Town. Controls are to be inspected regularly, after each significant rainfall, and maintained in proper working condition.

The proposed erosion and sediment controls for the Subject Development are outlined below.

- Stone Mud Mat

A mud mat will be installed at the main access point to the site (Sixth Line) to reduce the amount of mud tracking onto exiting paved roadways during site servicing operations.

- Dust Suppression

During earthwork activities, the Contractor will ensure that measures for dust suppression are provided as required, such as the application of water or lime.

- Silt Fencing

Heavy Duty Silt fence will be installed where required to intercept sheet flow. Heavy duty silt fence will be located around the perimeter of the site and phasing limits. It should be noted that additional silt fencing may be added based on field decisions by the Site Engineer and Owner prior to, during and following construction.

- Temporary Sediment Trap

Sediment traps will be installed as required at low points on site. Once topsoil has been stripped, runoff generated from the disturbed areas will drain to the sediment trap. The sediment trap will discharge overland to the drainage feature at the north limit of the Site.

- Interceptor Ditches

Swales and interceptor ditches are proposed to be constructed within the site prior to topsoil removal to intercept and convey flow to the sediment basins. Please note interceptor ditches will not interfere with existing drainage conditions. Interceptor ditches will be finished complete with topsoil and hydroseed to reduce potential erosion and reduce flow velocities.

## **9.0 CONCLUSIONS AND RECOMMENDATIONS**

Based on the foregoing, we conclude that the proposed development can meet the servicing and stormwater management objectives of the Town of Milton and Conservation Halton with the proposed servicing, grading and stormwater management scheme as outlined in this report. As such, we offer the following conclusions:

1. Access to the Site will be provided by one (1) connection to Sixth Line at the eastern limit of the Site and one (1) potential connection to future development lands to the south.

2. The Subject Development will be serviced by well and septic. The existing septic system will be decommissioned, and a new septic system will be installed. The existing well will be assessed to confirm available capacity at the Site Plan stage.
3. Site grading conforms to municipal requirements and those outlined in the geotechnical and hydrogeological studies in support of the Subject Development.
4. Low Impact Development measures have been incorporated in the form of infiltration trenches to address the infiltration deficit calculated in the Site water balance.

Based on the conclusion provided, the Site can be serviced according to the Town of Milton, Halton Region, and Conservation Halton requirements. We therefore recommend approval of the Planning Applications for the proposed development from the perspective of functional servicing requirements.

Respectfully submitted,

**C.F. CROZIER & ASSOCIATES INC.**



Nicole O'Connor, P.Eng.  
Project Engineer

**C.F. CROZIER & ASSOCIATES INC.**



Curtis Scobie  
Project Manager

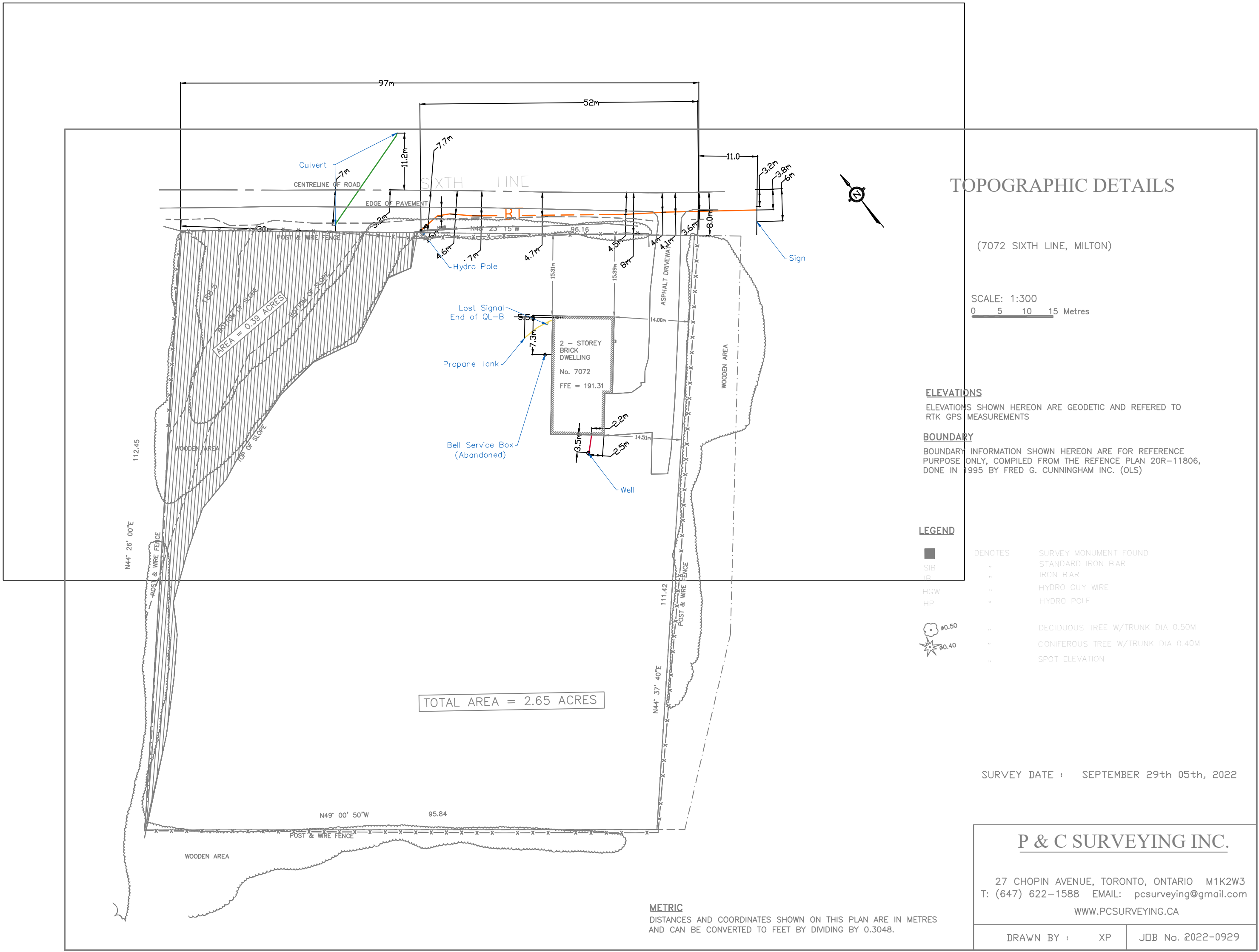
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# APPENDIX A

Subsurface Utility Investigation (SUE)  
Completed by Multi-View

SUE NOTES:

1. All the utility owners could not provide the records for the service lines, they only provided records for the main lines..
2. Overhead Utilities are not included within the scope of work of the SUE Investigation.
3. Public Health no longer has septic system records.
4. Please see some SUE Investigation challenges and the Technical limitations on sheet #2



KEY MAP

GLOSSARY	
CSE	- CONFINED SPACE ENTRY
SAN	- SANITARY
STM	- STORM
INV	- INVERT
OBV	- OBVERT
BOC	- BOTTOM OF CHAMBER
EORI	- END OF RECORD INFORMATION
AATUR	- UTILITY ABANDONED ACCORDING TO UTILITY RECORDS
EOI	- END OF SURFACE GEOPHYSICAL INFORMATION
T/G	- TOP OF GRATE ELEVATION
ROW	- RIGHT OF WAY
NPS	- NOMINAL PIPE SIZE

FOR: GLEN SCHNARR & ASSOCIATES INC

PROJECT NO: 7072 SIXTH LINE

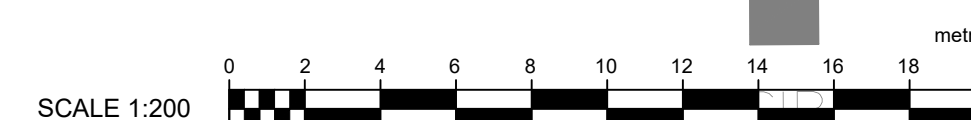
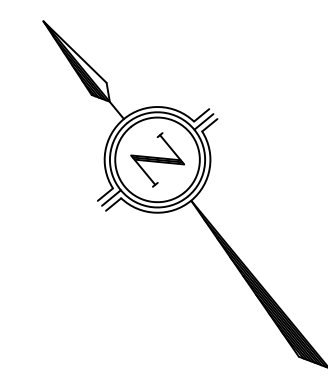
PROJECT NAME: WO 62849

DATE: 2024-10-03

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LEGEND

ALL UTILITIES DEPICTED ARE AT "QUALITY LEVEL B" UNLESS OTHERWISE NOTED

— G — Gasmain  
— BT — Bell  
— E — Electrical Cable  
— Project Boundaries

- Tel: 1-800-363-3116  
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Data presented herein is subject to multiVIEW's terms and conditions as listed on the final page of the contract drawings



## Technical Limitations

1. Throughout this schedule, "multiVIEW" is the corporate entity multiVIEW Locates Inc.
2. Pipe, cable, conduit, rebar, post-tension cables, anchors, containers, vaults, tanks and similar objects that are buried under the ground or embedded within a structure are referred to in multiVIEW's terms and conditions as Buried Assets
3. Subsurface conditions such as depth to bedrock, change in soil type, presence of karst, voids, contaminated soil or ground water, residual construction or industrial debris or buried waste are referred to in multiVIEW's terms and conditions as Buried Liabilities.
4. The Client acknowledges that the laws of fundamental physics apply and acknowledge that sensing instruments can not detect all Buried Assets and Buried Liabilities. Buried Assets and Buried Liabilities which are detectable by properly deployed and operated instruments are termed Locatable Buried Assets and Locatable Buried Liabilities. Buried Assets and Buried Liabilities which are not clearly detectable in an unambiguous manner due to the laws of fundamental physics are termed Unlocatable Buried Assets and Unlocatable Buried Liabilities. multiVIEW follows industry best-practice procedures but is not responsible for determining the presence and location of Unlocatable Buried Assets or Unlocatable Buried Liabilities.
5. Instruments to locate Buried Assets use a variety of approaches to detect and infer the location of the Buried Assets. Standard pipe and cable locating instruments detect the magnetic fields associated with electrical current flowing in the Buried Asset. GPR (Ground Penetrating radar) techniques depend on the transmission of radio waves into the host material and detection of waves reflected back from the Buried Assets. Sounding methods require insertion of a source of magnetic field into the pipe or conduit and detection of the magnetic field created by source at the surface of the Work Area to locate the sonde position. For the purposes of this estimate, Locatable Buried Assets are normally characterized as:
- a. metallic pipes, cables and conduits that are capable of carrying an electrical current and that can be physically accessed to allow an energizing current source to create an electrical current in the Buried Asset of sufficient magnitude as to be detectable by standard locating instruments;
  - b. metallic pipes, cables and conduits that actively carry an identifiable electric current that is sufficiently large and has suitable frequency as to be detectable by standard locating instruments;
  - c. metallic and non-metallic pipes, cables, conduits, rods, bars, wires, voids, and inclusions that represent a substantive electrical contrast to the host material and are embedded in a host material transparent to radio waves such that radio waves reflected from the feature are detectable by a GPR instrument;
  - d. non-metallic pipes, cables and conduits (i.e. composed of plastic, concrete, asbestos, clay, etc.) which have continuous associated tracer wire capable of carrying an electric current and that can be physically accessed to allow an energizing current source to create an electrical current in the tracer wire of sufficient magnitude as to be detectable by standard cable locating instruments;
  - e. non-metallic pipes, cables and conduits which have continuous associated tracer wire capable of carrying an electric current and that naturally carries an electrical current of sufficient magnitude and suitable frequency as to be detectable by standard cable locating instruments;
  - f. open pipe and conduits that can be accessed by a sonde and are sufficiently shallow to permit detectable magnetic fields to be sensed at the surface of the Work Area;
- Examples of Unlocatable Buried Assets include, but are not limited to, the following:
- g. pipes, cables and conduits whose depth of burial is too great to create and/or overlain by or in proximity to metallic material which results in signal distortion thus preventing physically measurable signals at the surface or where burial material interferes with current generation and signal emissions;
  - h. normally Locatable Buried Assets situated in, or emerging from, an area which is an Inaccessible Area;
  - i. normally Locatable Buried Assets with a break or breaks to the electrical continuity of any metallic pipe, cable or tracer wire (i.e. segmented lengths, corroded connections, sections of plastic repair, etc.);
  - j. non-metallic pipe, cable and conduits which do not have a continuous and/or accessible associated tracer wire;
  - k. the host material is opaque to radio waves;
  - l. Buried Assets that are normally characterized as Locatable become Unlocatable when either ambient interfering electromagnetic fields or the material surrounding and/or enclosing and/or above the Buried Asset disrupt the energizing current or the normal operation of the sensing instrument.
6. Instruments used to locate Buried Liabilities use a variety of approaches to detect and infer the location of the Buried Liability. Magnetometers detect the distortion in the local magnetic field induced by the presence of some types of Buried Liabilities. GPR (Ground Penetrating radar) techniques depend on the transmission of radio waves into the host material and detection of waves reflected back from the Buried Liability. In some cases the lack of reflected GPR signal can be a Buried Liability indicator. Electromagnetic induction methods use electromagnetic induction to induce current flow in the subsurface and detect the resulting magnetic fields that are associated with these induced currents to identify Buried Liabilities. Electrical resistivity measurements use direct connect to pass current through host material and map out distortions in the current flow to indicate changes in the subsurface that may indicate the presence of Buried Liabilities. For the purposes of this estimate, Locatable Buried Liabilities are normally characterized as those features that will create a discernable change to the response of the measuring instrument and which differ in character from the background surrounding environment (that is, the features create an Anomalous Response) when industry best practices are followed.
7. The Client acknowledges that the laws of fundamental physics apply and that equipment is subject to measurement distortions that are site specific resulting in limited precision when determining positional coordinates. multiVIEW will use best-practice procedures but is not responsible for determining the location of Buried Assets or Buried Liabilities to an accuracy better than what is typical of normal locate instruments.
8. Determination of type composition, depth or size of the Buried Assets or Buried Liabilities is not possible and does not constitute part of this service. Identification of the type (i.e. gas, electric, communications, etc) of a specific Buried Asset is not technically possible except by visual surface appurtenance or excavation and visual exposure of the Buried Asset. Inferences that may be drawn by correlation with records and as-built drawings may be offered but such inferences are provided on a best effort basis with no guarantee of correctness.
9. Client acknowledges the critical nature of having access to energize Buried Assets to enable locating and assumes full responsibility for identifying and providing access (including provision of licensed plumbing, electrical or confined space entry personnel if required and which adhere to multiVIEW health and safety procedures) to any and all points necessary for the energization of the Buried Assets. multiVIEW accepts no responsibility for locating any Buried Asset for which access and/or appropriate workplace safety measures are not provided.
10. Individual Locatable Buried Assets are deemed Unlocatable Buried Assets where there are numerous Buried Assets clustered together either vertically and/or horizontally ("Clustered Utilities") making identification of individual elements physically impossible. multiVIEW is not responsible for identifying the individual Buried Assets in such situations.
11. Non-metallic pipe and cable (i.e. fibre-optic systems, etc.) are Unlocatable Buried Assets for standard cable locating instruments unless either an unbroken tracer wire or continuous metallic sheathing surrounding such buried plant is easily accessible from the surface. The Client must provide direct and simple access to every traceable wire or continuous metallic sheathing. Otherwise, multiVIEW accepts neither liability nor responsibility for locating such features since they are deemed Unlocatable
12. Non-metallic pipe and conduits (i.e. plastic, concrete, asbestos, clay, etc.) under pressure (i.e. water, gas, forcemain systems, etc.) are Unlocatable Buried Assets for standard cable locating instruments unless an unbroken tracer wire is attached to the pipe and this tracer wire is easily accessible from the surface. The Client must provide direct and simple access to every traceable wire.
13. Non-pressurized, non-metallic (i.e. plastic, concrete, asbestos, clay, etc.) conduits or pipe (i.e. sewers, drains, empty ducts, etc.) are Unlocatable Buried Assets unless a transmitting sonde can be inserted throughout the full length of the pipe or conduit. It is the responsibility of the Client to identify and provide direct access (including provision of licensed plumbing, electrical or confined space entry personnel if required) to any and all access points for such lines. multiVIEW accepts no responsibility for locating such lines where the Client does not provide access and/or appropriate workplace safety measures.
14. Any Buried Asset incapable of generating a reflected radar wave detectable by a GPR instrument is an Unlocatable Buried Assets.
15. All or part of a Work Area is defined as an Inaccessible Area when inaccessible for surveying Inaccessible Areas include the following: those covered by a structure or object (i.e. buildings, vehicles, debris, stockpiled snow, building materials, etc.); those covered by open water; those covered by woods, vegetation, or snow too thick to permit easy walking; those where the surface terrain slopes steeper than 1:2; those covered by snow; and, those where the safety of the operator is jeopardized (i.e. unstable footing, environmental hazards, uncontrolled roads, etc.). The final decision for defining an area as an Inaccessible Area rests with the multiVIEW Health & Safety Officer.
16. Utility data depicted on QLD CAD lines are derived via utility owners record data and shown only for reference.

## Liability Limitations

1. Location and mapping services, marks, reports and results provided by multiVIEW cannot constitute as a legally defined Buried Asset location in jurisdiction where government regulation dictates that the Buried Asset owner is solely responsible for identifying and locating their own Buried Assets. In cases where multiVIEW is legally authorized to act on behalf of the Buried Asset owner to locate the owner's Buried Assets, any results provided by multiVIEW will clearly identify that the Buried Asset location is legally authorized on all records, documents, and reports.
2. multiVIEW's markings of Buried Asset or Buried Liability locations are provided as information to be input into the Client's decision making process and the provision of this information does not relieve the Client, or any other person, party, or corporation, from liability for damages for personal injury including death, or for property damage or liability caused to or from any Buried Asset or Buried Liability, within the Work Area.
3. Cables carrying DC voltages and/or small diameter cables (i.e. fire alarm or security systems, remote signal cables, inaccessible tracer wire, perfectly balanced AC cables, etc.) can only be detected by methods which create electrical currents and signals in the cables. Where a sensitive or dangerous connection is involved, the Client must provide qualified personnel to isolate and enable direct access to these systems. The Client is responsible for defining the impact of locating signals on sensitive electronics. multiVIEW accepts no responsibility for any damage to plant, or any third party, caused by locating signals. Technical information about locating signals is available from multiVIEW upon request.
4. multiVIEW is not liable for damages resulting from physical exposure of any Buried Assets or Buried Liability by the Client, its representatives, their sub-contractors or any other person or corporation.
5. multiVIEW will not accept any liability regarding inaccurate estimates of utility depth secured only by electronic means since multiVIEW recommends exposure of any such issues by vacuum excavating if any such depth information is critical to the design, engineering or construction of subsequent infrastructure.
6. multiVIEW accepts no responsibility and is not liable for damages suffered by any third party as a result of decisions or actions based on the performance of the statement of work by multiVIEW.
7. multiVIEW accepts no responsibility and is not liable for conduit blockage, or restoration of the site to pre-survey conditions, as a result of survey practices needed to fulfill the objectives of the Service provided.
8. The completeness of work carried out by multiVIEW is based on information provided by the Client at or prior to the earlier of the time of issuance of this Estimate. If the scope work or size and/or extent of the Work Area changes, a signed Change Order must be issued so that scope of work can be adjusted to address Client requirement changes. Documents and maps provided by multiVIEW are the definitive means legally defining the extent of the Work Area investigated.
9. multiVIEW accepts no responsibility for locating Buried Assets or Buried Liabilities outside the limit of the Work Area or in the Inaccessible Areas.
10. Except as written in this contract, multiVIEW disclaims any and all promises, representations, warranties and covenants, express, implied, statutory or otherwise.
11. multiVIEW shall not be liable for any amount in excess of the fees paid by the Client to multiVIEW for the work described in this estimate on account of any loss, injury, death, or damage whether resulting directly or indirectly to a person or property irrespective of the cause or origin of such loss, injury, death or damage including, without limitation, loss, injury, death or damage attributable to the negligence of multiVIEW, its employees and agents in the performance or non-performance of the Service.
12. In any action, claim, loss or damage arising out of the work for which this estimate is provided, the Client agrees that multiVIEW Locates Inc.'s liability will be 'several' and not 'joint and several' and the Client may only claim payment from multiVIEW Locates Inc or multiVIEW Locates Inc.'s proportionate share of the total liability based on degree of fault. Any action against multiVIEW Locates Inc must be commenced on or before the date which is the earlier of: i) eighteen months from the date on which the work in this estimate is completed and, ii) the date by which an action must be commenced under any applicable legislation other than limitation legislation. In no event shall multiVIEW Locates Inc be liable to the Client whether the claim be in tort, contract or otherwise, for an amount in excess of the fees paid by the Company for the services work provided. In no event shall multiVIEW Locates Inc be liable to the Client, whether a claim be in tort, contract or otherwise for any consequential, indirect, lost profit or similar damages, or failure to realize expected savings. multiVIEW Locates Inc will use all reasonable efforts to complete within any agreed upon timeframe the performance of the services described herein; however, multiVIEW Locates Inc shall not be liable for failures or delays in performance that arise from causes beyond its control, including the untimely performance or non-performance by the Client of its obligations.

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# **APPENDIX B**

Water and Wastewater Master Plans  
Completed by AECOM for Halton Region

Legend

Existing Infrastructure

▲

Wastewater Pumping Station

■

Wastewater Treatment Plant

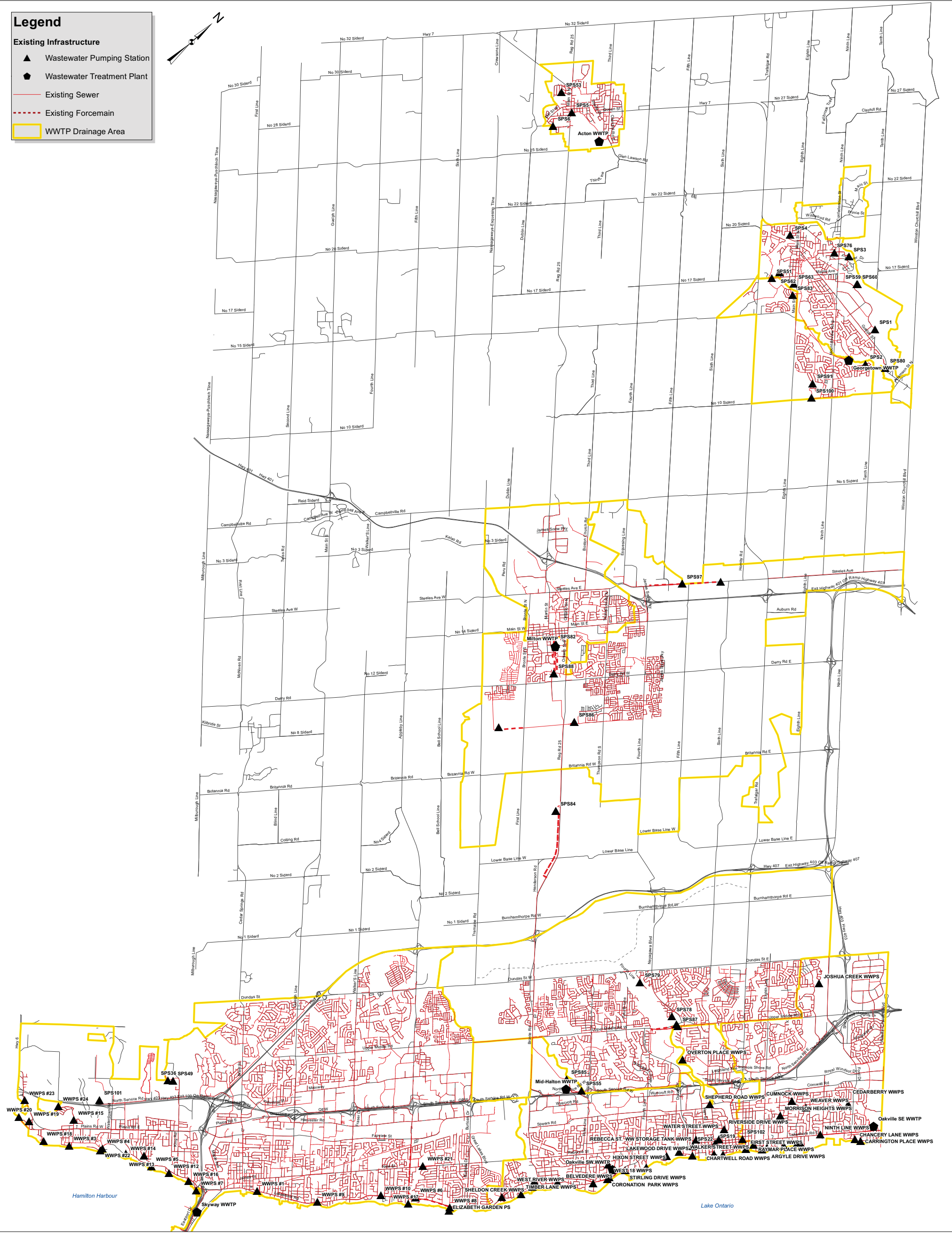
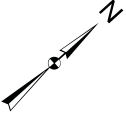
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Existing Sewer

- - -

Existing Forcemain

WWTP Drainage Area



Legend

Existing Infrastructure

▲

Water Pumping Station

○

Water Well

●

Water Standpipe

■

Water Reservoir

⬮

Water Purification Plant

⚙

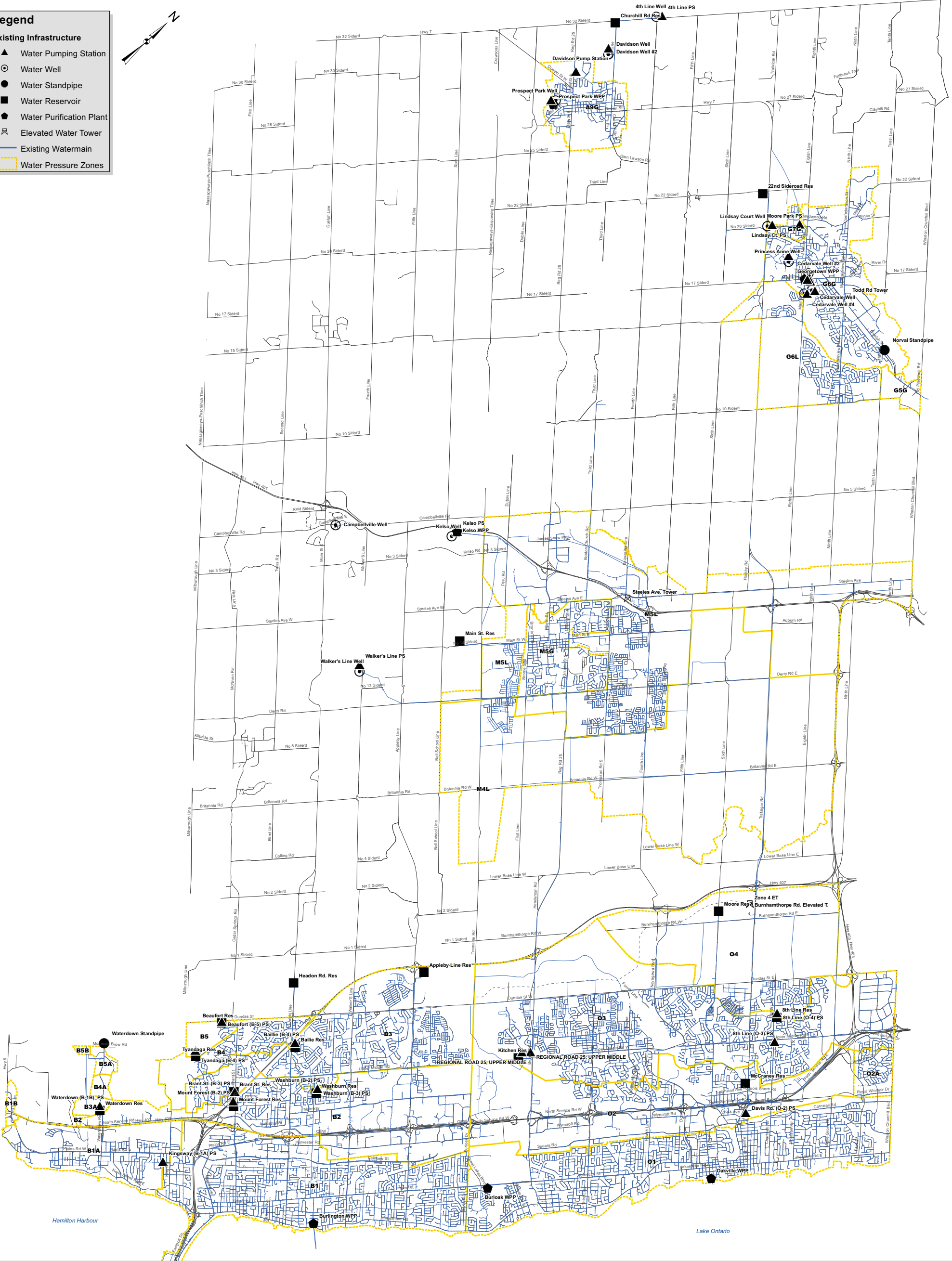
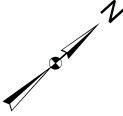
Elevated Water Tower

—

Existing Watermain

▭

Water Pressure Zones



# APPENDIX C

## Sanitary and Water Demand Calculations



Project: Target Truck Sales  
Project No.: 2709-7165  
Date: 15-Oct-25  
By: TM  
Check: NOC

### Target Truck Sales - Sanitary Flow Requirements

Developed Site Area	0.62 ha
Proposed Building GFA	0.07 ha
Building Area Classification Warehouse; Industrial Area	0.07 ha
<u>Industrial Sanitary Demands</u>	
Heavy Industrial - Per Gross Area Flow (Town of Milton San Design Criteria 2.1.4 )	0.64 L/sec/ha 0.05 L/sec
<u>Inflow &amp; Infiltration Sanitary Demands</u> (Town of Milton San Design Criteria 2.1.5 )	
Inflow & Infiltration - Per Gross Area Flow	0.23 L/sec/ha 0.14 L/sec
<u>Total Design Sewage Flows</u>	
Average Daily Flow	0.19 L/sec 16.30 m3/day
Peak Factor	Per Halton Water and Wastewater Linear Design Manual Table 3-2 2.25
<u>Peak Flow</u>	0.57 L/sec



Project: Target Truck Sales  
Project No.: 2709-7165  
Date: 15-Oct-25  
By: TM  
Check: NOC

### Target Truck Sales - Water Demand Requirements

#### SITE STATISTICS

Total Developed Site Area	0.62 ha
Proposed Building GFA	0.07 ha

#### Total Population Estimate - Halton Water and Wastewater Linear Design Manual Table 2-1

Industrial - 125 persons per hectare	9
Total Population	9

#### Total Industrial Water Design Flows (per Halton Water/Wastewater Technical and OBC )

Population	9	450 L/cap/day
Water closets	1	950.00 L/day
Loading Docs	3	150.00 L/day
Average Daily Flow		5.45 m3/day
Max Day Peak Factor (Industrial Peaking Factor)		2.25
Max Day Peak Flow		0.15 L/s

# APPENDIX D

## Hydrology and SWM Facility Design Calculations



### Modified Rational Calculations - Input Parameters

Storm Data: Town of Milton

Time of Concentration:	$T_c =$		10	min
Return Period	A	B	C	I (mm/hr)
2 yr	779.0	6.00	0.8206	80.06
5 yr	959.0	5.70	0.8024	105.25
10 yr	1089	5.70	0.7955	121.81
25 yr	1234	5.50	0.7863	143.01
50 yr	1323	5.30	0.7786	158.18
100 yr	1435	5.20	0.7751	174.10

#### References

- Engineering & Parks Standards Manual (September, 2024).
- TRCA SWM Criteria (Aug 2012).

Intensity

$$i(T_d) = A / (T + B)^C$$

#### Modified Weighted Runoff Coefficient

$$R_{10} = 0.8 \times R_5 + 0.2$$

$$R_{25} = 0.7 \times R_5 + 0.3$$

$$R_{50} = 0.6 \times R_5 + 0.4$$

$$R_{100} = 0.5 \times R_5 + 0.5$$

#### Pre - Development Conditions

Catchment ID	Total Pervious Area (RC = 0.25) (ha)	Total Impervious Area (RC = 0.9) (ha)	Total Area (ha)	Total Area (m <sup>2</sup> )	2 to 10-Year Weighted Runoff Coefficient (C)	10-Year Weighted Runoff Coefficient (C)	25-Year Weighted Runoff Coefficient (C)	50-Year Weighted Runoff Coefficient (C)	100-Year Weighted Runoff Coefficient (C)
Flows to Creek	0.52	0.02	0.54	5410	0.28	0.42	0.50	0.57	0.64
Uncontrolled to Creek	0.00	0.00	0.00	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Uncontrolled to South	0.14	0.03	0.17	1688	0.36	0.49	0.55	0.62	0.68
<b>Total</b>	<b>0.66</b>	<b>0.05</b>	<b>0.71</b>	<b>7097.5</b>	-	-	-	-	-

#### Post - Development Conditions

Catchment ID	Total Pervious Area (RC = 0.25) (ha)	Total Impervious Area (RC = 0.9) (ha)	Area (ha)	Area (m <sup>2</sup> )	2 to 10-Year Weighted Runoff Coefficient (C)	10-Year Weighted Runoff Coefficient (C)	25-Year Weighted Runoff Coefficient (C)	50-Year Weighted Runoff Coefficient (C)	100-Year Weighted Runoff Coefficient (C)
Flows to Creek	0.01	0.62	0.63	6261	0.89	0.91	0.92	0.93	0.95
Uncontrolled to Creek	0.02	0.01	0.02	213	0.44	0.55	0.61	0.67	0.72
Uncontrolled to South	0.06	0.00	0.06	623	0.25	0.40	0.48	0.55	0.63
<b>Total</b>	<b>0.09</b>	<b>0.62</b>	<b>0.71</b>	<b>7097.5</b>	-	-	-	-	-



### Modified Rational Method - Flows to Creek

#### Peak Flow

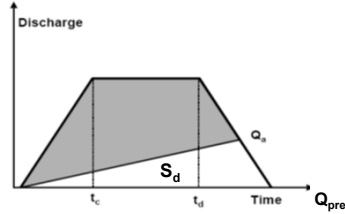
$$Q_{\text{post}} = 0.0028 \cdot C_{\text{post}} \cdot i_{(T_d)} \cdot A$$

#### Intensity

$$i_{(T_d)} = A / (T+B)^c$$

#### Storage

$$S_d = Q_{\text{post}} \cdot T_d - Q_{\text{pre}} (T_d + T_c) / 2$$



Pre-Development Scenario Data			
Inputs		Outputs	
IDF Location	Town of Milton	Intensity (mm/hr):	80.06
Return Period	2 Year		
Time of Concentration (min)	10		
Coeff A	779		
Coeff B	6		
Coeff C	0.8206		
Runoff Coeff (Unadjusted)	0.28	Flow (m³/s)	0.03
Runoff Coefficient (Adjusted)	0.28		
Area (ha)	0.54		

Post-Development Scenario Data			
Inputs		Outputs	
IDF Location	Town of Milton	Intensity (mm/hr):	80.06
Return Period	2 Year		
Time of Concentration (min)	10		
Coeff A	779		
Coeff B	6		
Coeff C	0.8206		
Runoff Coeff (unadjusted)	0.86	Uncont. Flow (m³/s)	0.125
Runoff Coefficient (Adjusted)	0.89		
Area (ha)	0.63		

Target Outflow (m³/s)	0.032	Pre-dev flow - Uncontrolled Flow to Creek
Actual Outflow (m³/s)	0.026	From SSD

**REQUIRED STORAGE VOLUME:** 88.4 m³

Storage Volume Determination (Detailed)				
T <sub>d</sub>	i	T <sub>d</sub>	Q <sub>Uncont</sub>	S <sub>d</sub>
min	mm/hr	sec	m³/s	m³
0	179.06	0	0.280	-7.7
1	157.78	60	0.247	6.4
2	141.40	120	0.221	17.3
3	128.38	180	0.201	26.2
4	117.74	240	0.184	33.5
5	108.89	300	0.170	39.6
6	101.38	360	0.158	44.8
7	94.94	420	0.148	49.3
8	89.34	480	0.140	53.3
9	84.42	540	0.132	56.7
10	80.06	600	0.125	59.8
15	64.05	900	0.100	71.0
20	53.75	1200	0.084	77.9
25	46.53	1500	0.073	82.3
30	41.16	1800	0.064	85.2
35	36.99	2100	0.058	87.0
40	33.66	2400	0.053	88.0
45	30.92	2700	0.048	88.4
50	28.64	3000	0.045	88.4
55	26.70	3300	0.042	88.0
60	25.03	3600	0.039	87.3
65	23.57	3900	0.037	86.3
70	22.29	4200	0.035	85.1
75	21.16	4500	0.033	83.8
80	20.14	4800	0.031	82.3
85	19.23	5100	0.030	80.6

### Modified Rational Method - Flows to Creek

#### Peak Flow

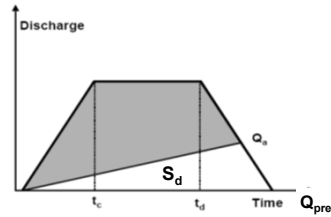
$$Q_{\text{post}} = 0.0028 \cdot C_{\text{post}} \cdot i_{(T_d)} \cdot A$$

#### Intensity

$$i_{(T_d)} = A / (T+B)^C$$

#### Storage

$$S_d = Q_{\text{post}} \cdot T_d - Q_{\text{pre}} (T_d + T_c) / 2$$



Pre-Development Scenario Data			
Inputs		Outputs	
IDF Location	Town of Milton	Intensity (mm/hr):	105.25
Return Period	5 Year		
Time of Concentration (min)	10		
Coeff A	959		
Coeff B	5.7		
Coeff C	0.8024		
Runoff Coeff (Unadjusted)	0.28	Flow (m³/s)	0.045
Runoff Coefficient (Adjusted)	0.28		
Area (ha)	0.54		

Post-Development Scenario Data			
Inputs		Outputs	
IDF Location	Town of Milton	Intensity (mm/hr):	105.25
Return Period	5 Year		
Time of Concentration (min)	10		
Coeff A	959		
Coeff B	5.7		
Coeff C	0.8024		
Runoff Coeff (unadjusted)	0.86	Uncont. Flow (m³/s)	0.165
Runoff Coefficient (Adjusted)	0.89		
Area (ha)	0.63		

Target Outflow (m³/s)	0.042	Pre-dev flow - Uncontrolled Flow to Creek
Actual Outflow (m³/s)	0.038	From SSD

**REQUIRED STORAGE VOLUME:** 110.7 m³

Storage Volume Determination (Detailed)				
T <sub>d</sub>	i	T <sub>d</sub>	Q <sub>Uncont</sub>	S <sub>d</sub>
min	mm/hr	sec	m³/s	m³
0	237.30	0	0.371	-11.4
1	208.44	60	0.326	7.0
2	186.42	120	0.291	21.3
3	169.02	180	0.264	32.7
4	154.89	240	0.242	42.1
5	143.17	300	0.224	50.0
6	133.26	360	0.208	56.7
7	124.77	420	0.195	62.5
8	117.41	480	0.184	67.6
9	110.96	540	0.173	72.0
10	105.25	600	0.165	75.9
15	84.31	900	0.132	90.1
20	70.87	1200	0.111	98.7
25	61.45	1500	0.096	104.2
30	54.44	1800	0.085	107.6
35	49.01	2100	0.077	109.6
40	44.66	2400	0.070	110.5
45	41.09	2700	0.064	110.7
50	38.10	3000	0.060	110.3
55	35.56	3300	0.056	109.3
60	33.37	3600	0.052	108.0
65	31.47	3900	0.049	106.3
70	29.79	4200	0.047	104.3
75	28.30	4500	0.044	102.1
80	26.96	4800	0.042	99.7
85	25.77	5100	0.040	97.1

### Modified Rational Method - Flows to Creek

#### Peak Flow

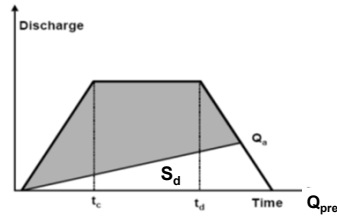
$$Q_{\text{post}} = 0.0028 \cdot C_{\text{post}} \cdot i_{(T_d)} \cdot A$$

#### Intensity

$$i_{(T_d)} = A / (T + B)^C$$

#### Storage

$$S_d = Q_{\text{post}} \cdot T_d - Q_{\text{pre}} (T_d + T_c) / 2$$



Pre-Development Scenario Data			
Inputs		Outputs	
IDF Location	Town of Milton	Intensity (mm/hr):	121.81
Return Period	10 Year		
Time of Concentration (min)	10		
Coeff A	1089		
Coeff B	5.7		
Coeff C	0.7955		
Runoff Coeff (Unadjusted)	0.28	Flow (m³/s)	0.08
Runoff Coefficient (Adjusted)	0.42		
Area (ha)	0.54		

Post-Development Scenario Data			
Inputs		Outputs	
IDF Location	Town of Milton	Intensity (mm/hr):	121.81
Return Period	10 Year		
Time of Concentration (min)	10		
Coeff A	1089		
Coeff B	5.7		
Coeff C	0.7955		
Runoff Coeff (unadjusted)	0.86	Uncont. Flow (m³/s)	0.20
Runoff Coefficient (Adjusted)	0.91		
Area (ha)	0.63		

Target Outflow (m³/s)	0.074	Pre-dev flow - Uncontrolled Flow to Creek
Actual Outflow (m³/s)	0.050	From SSD

**REQUIRED STORAGE VOLUME:** 125.8 m³

Storage Volume Determination (Detailed)				
Td	i	Td	Quncont	Sd
min	mm/hr	sec	m³/s	m³
0	272.73	0	0.437	-14.9
1	239.82	60	0.384	6.7
2	214.70	120	0.344	23.4
3	194.82	180	0.312	36.8
4	178.67	240	0.286	47.9
5	165.25	300	0.265	57.1
6	153.92	360	0.246	64.9
7	144.20	420	0.231	71.7
8	135.76	480	0.217	77.6
9	128.36	540	0.205	82.8
10	121.81	600	0.195	87.3
15	97.76	900	0.157	103.7
20	82.30	1200	0.132	113.6
25	71.45	1500	0.114	119.6
30	63.37	1800	0.101	123.2
35	57.09	2100	0.091	125.1
40	52.07	2400	0.083	125.8
45	47.94	2700	0.077	125.5
50	44.48	3000	0.071	124.6
55	41.54	3300	0.067	123.0
60	39.01	3600	0.062	120.9
65	36.80	3900	0.059	118.4
70	34.85	4200	0.056	115.5
75	33.12	4500	0.053	112.4
80	31.57	4800	0.051	109.0
85	30.18	5100	0.048	105.4

### Modified Rational Method - Flows to Creek

#### Peak Flow

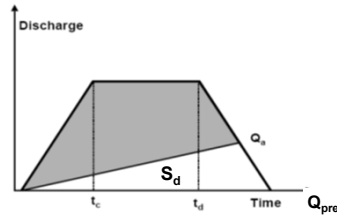
$$Q_{\text{post}} = 0.0028 \cdot C_{\text{post}} \cdot i_{(T_d)} \cdot A$$

#### Intensity

$$i_{(T_d)} = A / (T + B)^C$$

#### Storage

$$S_d = Q_{\text{post}} \cdot T_d - Q_{\text{pre}} (T_d + T_c) / 2$$



Pre-Development Scenario Data			
Inputs		Outputs	
IDF Location	Town of Milton	Intensity (mm/hr):	143.01
Return Period	25 Year		
Time of Concentration (min)	10		
Coeff A	1234		
Coeff B	5.5		
Coeff C	0.7863		
Runoff Coeff (Unadjusted)	0.28	Flow (m³/s)	0.11
Runoff Coefficient (Adjusted)	0.50		
Area (ha)	0.54		

Post-Development Scenario Data			
Inputs		Outputs	
IDF Location	Town of Milton	Intensity (mm/hr):	143.01
Return Period	25 Year		
Time of Concentration (min)	10		
Coeff A	1234		
Coeff B	5.5		
Coeff C	0.7863		
Runoff Coeff (unadjusted)	0.86	Uncont. Flow (m³/s)	0.23
Runoff Coefficient (Adjusted)	0.92		
Area (ha)	0.63		

Target Outflow (m³/s)	0.102	Pre-dev flow - Uncontrolled Flow to Creek
Actual Outflow (m³/s)	0.063	From SSD

**REQUIRED STORAGE VOLUME:** 143.6 m³

Storage Volume Determination (Detailed)				
Td	i	Td	Quncont	Sd
min	mm/hr	sec	m³/s	m³
0	322.97	0	0.523	-19.0
1	283.22	60	0.459	6.7
2	253.08	120	0.410	26.4
3	229.36	180	0.372	42.2
4	210.15	240	0.340	55.2
5	194.25	300	0.315	66.0
6	180.84	360	0.293	75.1
7	169.36	420	0.274	83.0
8	159.42	480	0.258	89.8
9	150.71	540	0.244	95.8
10	143.01	600	0.232	101.1
15	114.78	900	0.186	120.0
20	96.68	1200	0.157	131.1
25	83.99	1500	0.136	137.7
30	74.54	1800	0.121	141.5
35	67.20	2100	0.109	143.3
40	61.32	2400	0.099	143.6
45	56.50	2700	0.092	142.8
50	52.45	3000	0.085	141.2
55	49.01	3300	0.079	138.8
60	46.05	3600	0.075	135.8
65	43.46	3900	0.070	132.4
70	41.18	4200	0.067	128.5
75	39.16	4500	0.063	124.3
80	37.34	4800	0.060	119.7
85	35.71	5100	0.058	114.9

### Modified Rational Method - Flows to Creek

#### Peak Flow

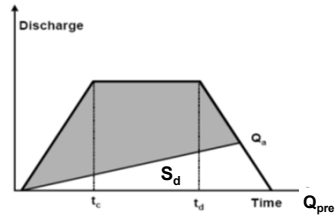
$$Q_{\text{post}} = 0.0028 \cdot C_{\text{post}} \cdot i_{(T_d)} \cdot A$$

#### Intensity

$$i_{(T_d)} = A / (T + B)^C$$

#### Storage

$$S_d = Q_{\text{post}} \cdot T_d - Q_{\text{pre}} (T_d + T_c) / 2$$



Pre-Development Scenario Data			
Inputs		Outputs	
IDF Location	Town of Milton	Intensity (mm/hr):	158.18
Return Period	50 Year		
Time of Concentration (min)	10		
Coeff A	1323		
Coeff B	5.3		
Coeff C	0.7786		
Runoff Coeff (Unadjusted)	0.28	Flow (m³/s)	0.14
Runoff Coefficient (Adjusted)	0.57		
Area (ha)	0.54		

Post-Development Scenario Data			
Inputs		Outputs	
IDF Location	Town of Milton	Intensity (mm/hr):	158.18
Return Period	50 Year		
Time of Concentration (min)	10		
Coeff A	1323		
Coeff B	5.3		
Coeff C	0.7786		
Runoff Coeff (unadjusted)	0.86	Uncont. Flow (m³/s)	0.26
Runoff Coefficient (Adjusted)	0.93		
Area (ha)	0.63		

Target Outflow (m³/s)	0.130	Pre-dev flow - Uncontrolled Flow to Creek
Actual Outflow (m³/s)	0.075	From SSD

**REQUIRED STORAGE VOLUME:** 154.3 m³

Storage Volume Determination (Detailed)				
T <sub>d</sub>	i	T <sub>d</sub>	Q <sub>Uncont</sub>	S <sub>d</sub>
min	mm/hr	sec	m³/s	m³
0	361.11	0	0.592	-22.6
1	315.64	60	0.517	6.2
2	281.43	120	0.461	28.2
3	254.66	180	0.417	45.7
4	233.08	240	0.382	60.0
5	215.26	300	0.353	71.9
6	200.28	360	0.328	82.0
7	187.48	420	0.307	90.6
8	176.41	480	0.289	98.1
9	166.73	540	0.273	104.6
10	158.18	600	0.259	110.3
15	126.92	900	0.208	130.7
20	106.93	1200	0.175	142.4
25	92.92	1500	0.152	149.3
30	82.50	1800	0.135	152.9
35	74.42	2100	0.122	154.3
40	67.94	2400	0.111	154.1
45	62.62	2700	0.103	152.7
50	58.17	3000	0.095	150.3
55	54.38	3300	0.089	147.1
60	51.11	3600	0.084	143.2
65	48.25	3900	0.079	138.8
70	45.74	4200	0.075	133.9
75	43.51	4500	0.071	128.6
80	41.51	4800	0.068	123.0
85	39.71	5100	0.065	117.0

### Modified Rational Method - Flows to Creek

#### Peak Flow

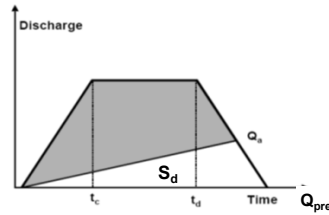
$$Q_{\text{post}} = 0.0028 \cdot C_{\text{post}} \cdot i_{(T_d)} \cdot A$$

#### Intensity

$$i_{(T_d)} = A / (T+B)^c$$

#### Storage

$$S_d = Q_{\text{post}} \cdot T_d - Q_{\text{pre}} (T_d + T_c) / 2$$



Pre-Development Scenario Data			
Inputs		Outputs	
IDF Location	Town of Milton	Intensity (mm/hr):	174.10
Return Period	100 Year		
Time of Concentration (min)	10		
Coeff A	1435		
Coeff B	5.2		
Coeff C	0.775		
Runoff Coeff (Unadjusted)	0.28	Flow (m³/s)	0.17
Runoff Coefficient (Adjusted)	0.64		
Area (ha)	0.54		

Post-Development Scenario Data			
Inputs		Outputs	
IDF Location	Town of Milton	Intensity (mm/hr):	174.10
Return Period	100 Year		
Time of Concentration (min)	10		
Coeff A	1435		
Coeff B	5.2		
Coeff C	0.775		
Runoff Coeff (unadjusted)	0.86	Uncont. Flow (m³/s)	0.29
Runoff Coefficient (Adjusted)	0.95		
Area (ha)	0.63		

Target Outflow (m³/s)	0.1612	Pre-dev flow - Uncontrolled Flow to Creek
Actual Outflow (m³/s)	0.0958	From SSD

**REQUIRED STORAGE VOLUME:** 156.0 m³

Storage Volume Determination (Detailed)				
T <sub>d</sub>	I	T <sub>d</sub>	Q <sub>Uncont</sub>	S <sub>d</sub>
min	mm/hr	sec	m³/s	m³
0	399.83	0	0.663	-28.7
1	348.87	60	0.578	3.1
2	310.69	120	0.515	27.3
3	280.90	180	0.466	46.5
4	256.93	240	0.426	62.0
5	237.18	300	0.393	74.9
6	220.60	360	0.366	85.7
7	206.45	420	0.342	94.9
8	194.22	480	0.322	102.8
9	183.53	540	0.304	109.7
10	174.10	600	0.289	115.7
15	139.66	900	0.232	136.6
20	117.66	1200	0.195	147.9
25	102.26	1500	0.170	153.7
30	90.81	1800	0.151	156.0
35	81.92	2100	0.136	155.9
40	74.81	2400	0.124	154.0
45	68.97	2700	0.114	150.7
50	64.07	3000	0.106	146.3
55	59.91	3300	0.099	141.0
60	56.32	3600	0.093	135.0
65	53.18	3900	0.088	128.3
70	50.42	4200	0.084	121.2
75	47.97	4500	0.080	113.6
80	45.77	4800	0.076	105.6
85	43.79	5100	0.073	97.2

### Modified Rational Method - Uncontrolled Flows to Creek

#### Peak Flow

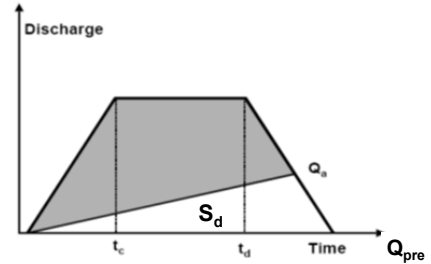
$$Q_{\text{post}} = 0.0028 \cdot C_{\text{post}} \cdot i_{(T_d)} \cdot A$$

#### Intensity

$$i_{(T_d)} = A / (T+B)^c$$

#### Storage

$$S_d = Q_{\text{post}} \cdot T_d - Q_{\text{pre}} (T_d + T_c) / 2$$



Post-Development Scenario Data			
Inputs		Outputs	
IDF Location	Town of Milton	Intensity (mm/hr):	80.06
Return Period	2 Year		
Time of Concentration (min)	10		
Coeff A	779		
Coeff B	6		
Coeff C	0.8206		
Runoff Coeff (unadjusted)	0.44	Uncont. Flow (m³/s)	0.002
Runoff Coefficient (Adjusted)	0.44		
Area (ha)	0.02		

### Modified Rational Method - Uncontrolled Flows to Creek

#### Peak Flow

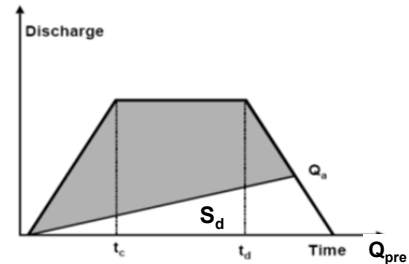
$$Q_{\text{post}} = 0.0028 \cdot C_{\text{post}} \cdot i_{(T_d)} \cdot A$$

#### Intensity

$$i_{(T_d)} = A / (T+B)^c$$

#### Storage

$$S_d = Q_{\text{post}} \cdot T_d - Q_{\text{pre}} (T_d + T_c) / 2$$



Post-Development Scenario Data			
Inputs		Outputs	
IDF Location	Town of Milton	Intensity (mm/hr):	105.25
Return Period	5 Year		
Time of Concentration (min)	10		
Coeff A	959		
Coeff B	5.7		
Coeff C	0.8024		
Runoff Coeff (unadjusted)	0.44	Uncont. Flow (m <sup>3</sup> /s)	0.003
Runoff Coefficient (Adjusted)	0.44		
Area (ha)	0.02		



### Modified Rational Method - Uncontrolled Flows to Creek

#### Peak Flow

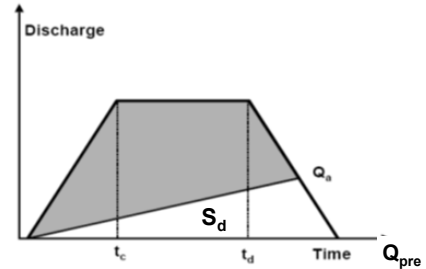
$$Q_{\text{post}} = 0.0028 \cdot C_{\text{post}} \cdot i_{(T_d)} \cdot A$$

#### Intensity

$$i_{(T_d)} = A / (T+B)^c$$

#### Storage

$$S_d = Q_{\text{post}} \cdot T_d - Q_{\text{pre}} (T_d + T_c) / 2$$



Post-Development Scenario Data			
Inputs		Outputs	
IDF Location	Town of Milton	Intensity (mm/hr):	121.81
Return Period	10 Year		
Time of Concentration (min)	10		
Coeff A	1089		
Coeff B	5.7		
Coeff C	0.7955		
Runoff Coeff (unadjusted)	0.44	Uncont. Flow (m³/s)	0.004
Runoff Coefficient (Adjusted)	0.55		
Area (ha)	0.02		

### Modified Rational Method - Uncontrolled Flows to Creek

#### Peak Flow

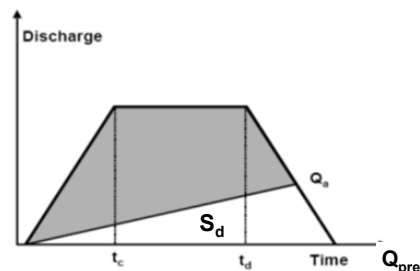
$$Q_{\text{post}} = 0.0028 \cdot C_{\text{post}} \cdot i_{(T_d)} \cdot A$$

#### Intensity

$$i_{(T_d)} = A / (T+B)^c$$

#### Storage

$$S_d = Q_{\text{post}} \cdot T_d - Q_{\text{pre}} (T_d + T_c) / 2$$



Post-Development Scenario Data			
Inputs		Outputs	
IDF Location	Town of Milton	Intensity (mm/hr):	143.01
Return Period	25 Year		
Time of Concentration (min)	10		
Coeff A	1234		
Coeff B	5.5		
Coeff C	0.7863		
Runoff Coeff (unadjusted)	0.44	Uncont. Flow (m³/s)	0.005
Runoff Coefficient (Adjusted)	0.61		
Area (ha)	0.02		

### Modified Rational Method - Uncontrolled Flows to Creek

#### Peak Flow

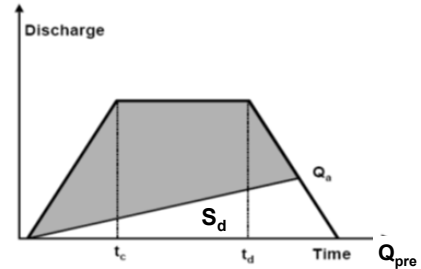
$$Q_{\text{post}} = 0.0028 \cdot C_{\text{post}} \cdot i_{(T_d)} \cdot A$$

#### Intensity

$$i_{(T_d)} = A / (T+B)^c$$

#### Storage

$$S_d = Q_{\text{post}} \cdot T_d - Q_{\text{pre}} (T_d + T_c) / 2$$



Post-Development Scenario Data			
Inputs		Outputs	
IDF Location	Town of Milton	Intensity (mm/hr):	158.18
Return Period	50 Year		
Time of Concentration (min)	10		
Coeff A	1323		
Coeff B	5.3		
Coeff C	0.7786		
Runoff Coeff (unadjusted)	0.44	Uncont. Flow (m³/s)	0.006
Runoff Coefficient (Adjusted)	0.67		
Area (ha)	0.02		

### Modified Rational Method - Uncontrolled Flows to Creek

#### Peak Flow

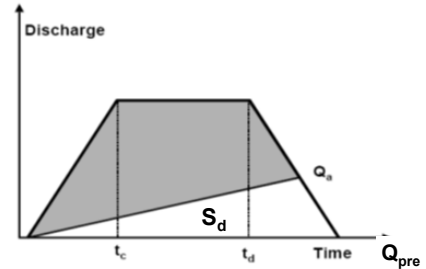
$$Q_{\text{post}} = 0.0028 \cdot C_{\text{post}} \cdot i_{(T_d)} \cdot A$$

#### Intensity

$$i_{(T_d)} = A / (T+B)^c$$

#### Storage

$$S_d = Q_{\text{post}} \cdot T_d - Q_{\text{pre}} (T_d + T_c) / 2$$



Post-Development Scenario Data			
Inputs		Outputs	
IDF Location	Town of Milton	Intensity (mm/hr):	174.10
Return Period	100 Year		
Time of Concentration (min)	10		
Coeff A	1435		
Coeff B	5.2		
Coeff C	0.775		
Runoff Coeff (unadjusted)	0.44	Uncont. Flow (m³/s)	0.007
Runoff Coefficient (Adjusted)	0.72		
Area (ha)	0.02		



**CROZIER  
& ASSOCIATES**  
Consulting Engineers

Project: 7072 Sixth Line  
Project No.: 2709-7165  
File: Water Quantity  
Design by: N.O'Connor  
Date: 2025.10.15

## 7072 Sixth Line

### HYDRAULIC DESIGN OF TANK (Cupolex)

Orifice Diameter: 0.150 m  
Orifice Invert Elevation: 188.66 m  
V-notch Angle: 65 degrees  
V-notch Constant: 0.87  
Weir Invert: 188.75 m

Elev (m)	Depth (m)	Area sq. m	Inc. Volume cu.m	Cupolex cu.m	1st Orifice Discharge (cu.m/s)	V-notch Weir Discharge (cu.m/s)	Total Discharge (cu.m/s)	Storage (ha-m)	Storage (m³)
188.66	0	462	0.000	0.0	0.000	0.000	0.00000	0.0000	0
188.67	0.01	462	3.911	3.9	0.001	0.000	0.00086	0.0004	4
188.68	0.02	462	3.911	7.8	0.002	0.000	0.00171	0.0008	8
188.69	0.03	462	3.911	11.7	0.003	0.000	0.00257	0.0012	12
188.70	0.04	462	3.911	15.6	0.003	0.000	0.00343	0.0016	16
188.71	0.05	462	3.911	19.6	0.004	0.000	0.00429	0.0020	20
188.72	0.06	462	3.883	23.4	0.005	0.000	0.00514	0.0023	23
188.73	0.07	462	3.883	27.3	0.006	0.000	0.00600	0.0027	27
188.74	0.08	462	3.883	31.2	0.004	0.000	0.00354	0.0031	31
188.75	0.09	462	3.883	35.1	0.006	0.000	0.00614	0.0035	35
188.76	0.10	462	3.883	39.0	0.008	0.000	0.00793	0.0039	39
188.77	0.11	462	3.855	42.8	0.009	0.000	0.00942	0.0043	43
188.78	0.12	462	3.855	46.7	0.011	0.000	0.01076	0.0047	47
188.79	0.13	462	3.855	50.5	0.012	0.000	0.01203	0.0051	51
188.80	0.14	462	3.855	54.4	0.013	0.000	0.01326	0.0054	54
188.81	0.15	462	3.855	58.2	0.014	0.001	0.01449	0.0058	58
188.82	0.16	462	3.827	62.1	0.015	0.001	0.01574	0.0062	62
188.83	0.17	462	3.827	65.9	0.015	0.002	0.01702	0.0066	66
188.84	0.18	462	3.827	69.7	0.016	0.002	0.01835	0.0070	70
188.85	0.19	462	3.827	73.6	0.017	0.003	0.01975	0.0074	74
188.86	0.20	462	3.827	77.4	0.018	0.004	0.02121	0.0077	77
188.87	0.21	462	3.799	81.2	0.018	0.004	0.02276	0.0081	81
188.88	0.22	462	3.799	85.0	0.019	0.005	0.02439	0.0085	85
188.89	0.23	462	3.799	88.8	0.020	0.006	0.02612	0.0089	89
188.90	0.24	462	3.799	92.6	0.020	0.008	0.02796	0.0093	93
188.91	0.25	462	3.799	96.4	0.021	0.009	0.02990	0.0096	96
188.92	0.26	462	3.772	100.2	0.022	0.010	0.03195	0.0100	100
188.93	0.27	462	3.772	103.9	0.022	0.012	0.03412	0.0104	104
188.94	0.28	462	3.772	107.7	0.023	0.014	0.03642	0.0108	108
188.95	0.29	462	3.772	111.5	0.023	0.016	0.03884	0.0111	111
188.96	0.30	462	3.772	115.2	0.024	0.018	0.04140	0.0115	115
188.97	0.31	462	4.334	119.6	0.024	0.020	0.04410	0.0120	120
188.98	0.32	462	4.334	123.9	0.025	0.022	0.04694	0.0124	124
188.99	0.33	462	4.334	128.2	0.025	0.025	0.04993	0.0128	128
189.00	0.34	462	4.334	132.6	0.026	0.027	0.05307	0.0133	133
189.01	0.35	462	4.334	136.9	0.026	0.030	0.05636	0.0137	137
189.02	0.36	462	3.428	140.3	0.027	0.033	0.05981	0.0140	140
189.03	0.37	462	3.428	143.8	0.027	0.036	0.06342	0.0144	144
189.04	0.38	462	3.428	147.2	0.028	0.040	0.06720	0.0147	147
189.05	0.39	462	3.428	150.6	0.028	0.043	0.07115	0.0151	151
189.06	0.40	462	3.428	154.0	0.029	0.047	0.07526	0.0154	154
189.07	0.41	462	0.532	154.6	0.029	0.051	0.07956	0.0155	155
189.08	0.42	462	0.468	155.0	0.029	0.055	0.08403	0.0155	155
189.09	0.43	462	0.403	155.5	0.030	0.059	0.08869	0.0155	155
189.10	0.44	462	0.339	155.8	0.030	0.063	0.09353	0.0156	156
189.11	0.45	462	0.202	156.0	0.031	0.068	0.09855	0.0156	156



**CROZIER  
& ASSOCIATES**  
Consulting Engineers

Project: 7072 Sixth Line  
Project No.: 2709-7165  
File: Water Quantity  
Design by: N.O'Connor  
Date: 2025.10.15

## 7072 Sixth Line

### HYDRAULIC DESIGN OF TANK (Cupolex)

Orifice Diameter: 0.150 m  
Orifice Invert Elevation: 188.66 m  
V-notch Angle: 68 degrees  
V-notch Constant: 0.92  
Weir Invert: 188.75 m

Elev (m)	Depth (m)	Area sq. m	Inc. Volume cu.m	Cupolex cu.m	1st Orifice Discharge (cu.m/s)	V-notch Weir Discharge (cu.m/s)	Total Discharge (cu.m/s)	Storage (ha-m)	Storage (m <sup>3</sup> )
188.66	0	462	0.000	0.0	0.000	0.000	0.00000	0.0000	0
188.67	0.01	462	3.911	3.9	0.001	0.000	0.00086	0.0004	4
188.68	0.02	462	3.911	7.8	0.002	0.000	0.00171	0.0008	8
188.69	0.03	462	3.911	11.7	0.003	0.000	0.00257	0.0012	12
188.70	0.04	462	3.911	15.6	0.003	0.000	0.00343	0.0016	16
188.71	0.05	462	3.911	19.6	0.004	0.000	0.00429	0.0020	20
188.72	0.06	462	3.883	23.4	0.005	0.000	0.00514	0.0023	23
188.73	0.07	462	3.883	27.3	0.006	0.000	0.00600	0.0027	27
188.74	0.08	462	3.883	31.2	0.004	0.000	0.00354	0.0031	31
188.75	0.09	462	3.883	35.1	0.006	0.000	0.00614	0.0035	35
188.76	0.10	462	3.883	39.0	0.008	0.000	0.00793	0.0039	39
188.77	0.11	462	3.855	42.8	0.009	0.000	0.00942	0.0043	43
188.78	0.12	462	3.855	46.7	0.011	0.000	0.01077	0.0047	47
188.79	0.13	462	3.855	50.5	0.012	0.000	0.01204	0.0051	51
188.80	0.14	462	3.855	54.4	0.013	0.001	0.01329	0.0054	54
188.81	0.15	462	3.855	58.2	0.014	0.001	0.01453	0.0058	58
188.82	0.16	462	3.827	62.1	0.015	0.001	0.01580	0.0062	62
188.83	0.17	462	3.827	65.9	0.015	0.002	0.01711	0.0066	66
188.84	0.18	462	3.827	69.7	0.016	0.002	0.01848	0.0070	70
188.85	0.19	462	3.827	73.6	0.017	0.003	0.01991	0.0074	74
188.86	0.20	462	3.827	77.4	0.018	0.004	0.02142	0.0077	77
188.87	0.21	462	3.799	81.2	0.018	0.005	0.02302	0.0081	81
188.88	0.22	462	3.799	85.0	0.019	0.006	0.02471	0.0085	85
188.89	0.23	462	3.799	88.8	0.020	0.007	0.02650	0.0089	89
188.90	0.24	462	3.799	92.6	0.020	0.008	0.02840	0.0093	93
188.91	0.25	462	3.799	96.4	0.021	0.009	0.03042	0.0096	96
188.92	0.26	462	3.772	100.2	0.022	0.011	0.03256	0.0100	100
188.93	0.27	462	3.772	103.9	0.022	0.013	0.03483	0.0104	104
188.94	0.28	462	3.772	107.7	0.023	0.015	0.03722	0.0108	108
188.95	0.29	462	3.772	111.5	0.023	0.017	0.03976	0.0111	111
188.96	0.30	462	3.772	115.2	0.024	0.019	0.04244	0.0115	115
188.97	0.31	462	4.334	119.6	0.024	0.021	0.04527	0.0120	120
188.98	0.32	462	4.334	123.9	0.025	0.023	0.04824	0.0124	124
188.99	0.33	462	4.334	128.2	0.025	0.026	0.05138	0.0128	128
189.00	0.34	462	4.334	132.6	0.026	0.029	0.05467	0.0133	133
189.01	0.35	462	4.334	136.9	0.026	0.032	0.05813	0.0137	137
189.02	0.36	462	3.428	140.3	0.027	0.035	0.06175	0.0140	140
189.03	0.37	462	3.428	143.8	0.027	0.038	0.06555	0.0144	144
189.04	0.38	462	3.428	147.2	0.028	0.042	0.06952	0.0147	147
189.05	0.39	462	3.428	150.6	0.028	0.046	0.07367	0.0151	151
189.06	0.40	462	3.428	154.0	0.029	0.049	0.07801	0.0154	154
189.07	0.41	462	0.532	154.6	0.029	0.054	0.08253	0.0155	155
189.08	0.42	462	0.468	155.0	0.029	0.058	0.08724	0.0155	155
189.09	0.43	462	0.403	155.5	0.030	0.062	0.09214	0.0155	155
189.10	0.44	462	0.339	155.8	0.030	0.067	0.09724	0.0156	156
189.11	0.45	462	0.202	156.0	0.031	0.072	0.10254	0.0156	156

# **APPENDIX E**

## Water Balance and LID Calculations

**Design Storm Determination**  
**Project Name: 7072 Sixth Line**  
**Water Balance/Water Budget Assessment**

Total Infiltration Deficit      1,264 m<sup>3</sup>/yr      (From Hydrogeological Report prepared by EnVision, August 2025)

**Days with Precipitation (From Climate Data)**

	Apr	May	Jun	Jul	Aug	Sep	Oct	Total
>= 0.2 mm	12.4	11.9	11.2	10.6	10.6	11.7	12.3	<b>81</b>
>= 5 mm	5.3	5	4.8	4	4.6	5.1	4.7	<b>34</b>
>= 10 mm	2.6	3	2.2	2.3	2.6	3.1	2.4	<b>18</b>
>= 25 mm	0.32	0.48	0.52	0.56	0.6	0.62	0.35	<b>3</b>

**Available Precipitation**

Storm Event (mm)	Total Days Per Year	Incremental Precipitation (mm/yr)	Cumulative Precipitation (mm/yr)
0.2	81	16.1	16.1
5	34	167.5	183.6
10	18	182.0	365.6
25	3	86.3	451.9
<b>Total</b>	<b>136</b>	<b>451.9</b>	

**Infiltration Trench**

Impervious Area: 6180 m<sup>2</sup>  
Depth of Rainfall: 5.98 mm/event  
Equivalent Annual Cumulative Precipitation: 219 mm/yr  
**Total Annual Infiltration Volume: 1,355 m<sup>3</sup>/yr**  
  
**Resulting Infiltration Deficit: -91 m<sup>3</sup>/yr**





Project: 2709-7165  
Project No: 7072 Sixth Line  
Modelled By: N. O'Connor  
Date Created: 2025.10.14

Design Storm Determination  
Project Name: 7072 Sixth Line  
On-Site Retention Calculation

Total Impervious Area	6180 m <sup>2</sup>
Infiltration Target	5 mm
Infiltration Volume Target	31 m <sup>3</sup>
Infiltration Volume Provided	37 m <sup>3</sup>
Equivalent Infiltration	6.0 mm

Mitigation Provided by Private LIDs

Infiltration Trench

Contributing Area	Height (m)	Contact Area (m <sup>2</sup> )	Runoff Volume (m <sup>3</sup> )	Equivalent RV (mm)
6180	0.20	462.0	37.0	5.98

# FIGURES

Figure 1: Site Location Plan

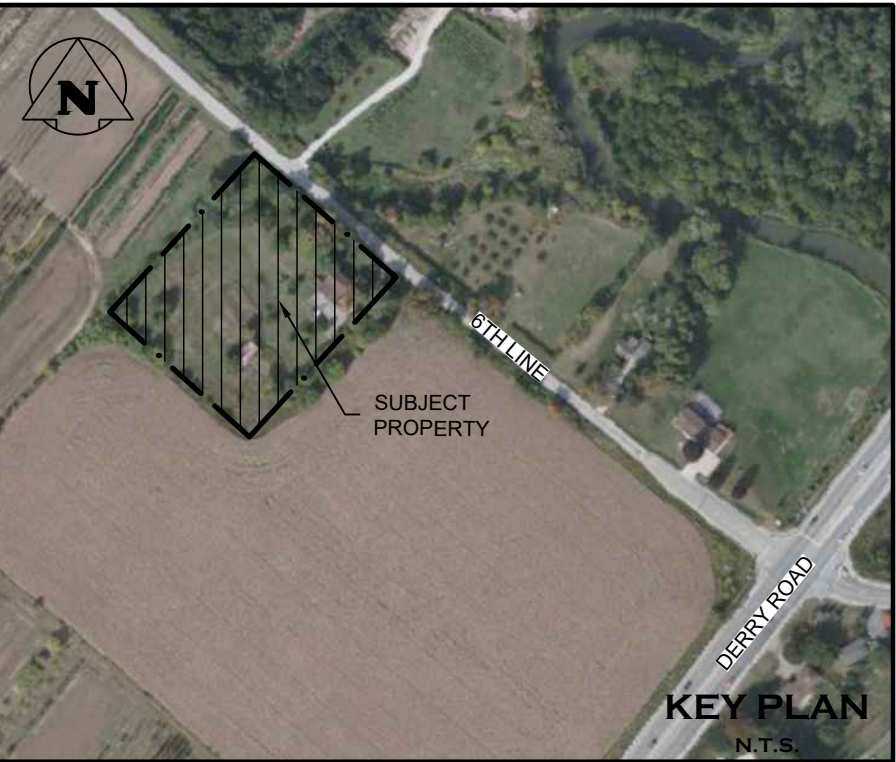
Figure 2: Concept Plan



Figure 3: Preliminary Grading and Servicing Plan

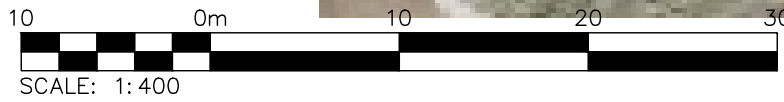
Figure 4: Existing Drainage Plan

Figure 5: Proposed Drainage Plan

Figure 6: Preliminary LID Plan



- LEGEND
-  SITE LOCATION
  -  WATERCOURSE



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Project

7072 SIXTH LINE  
TOWN OF MILTON

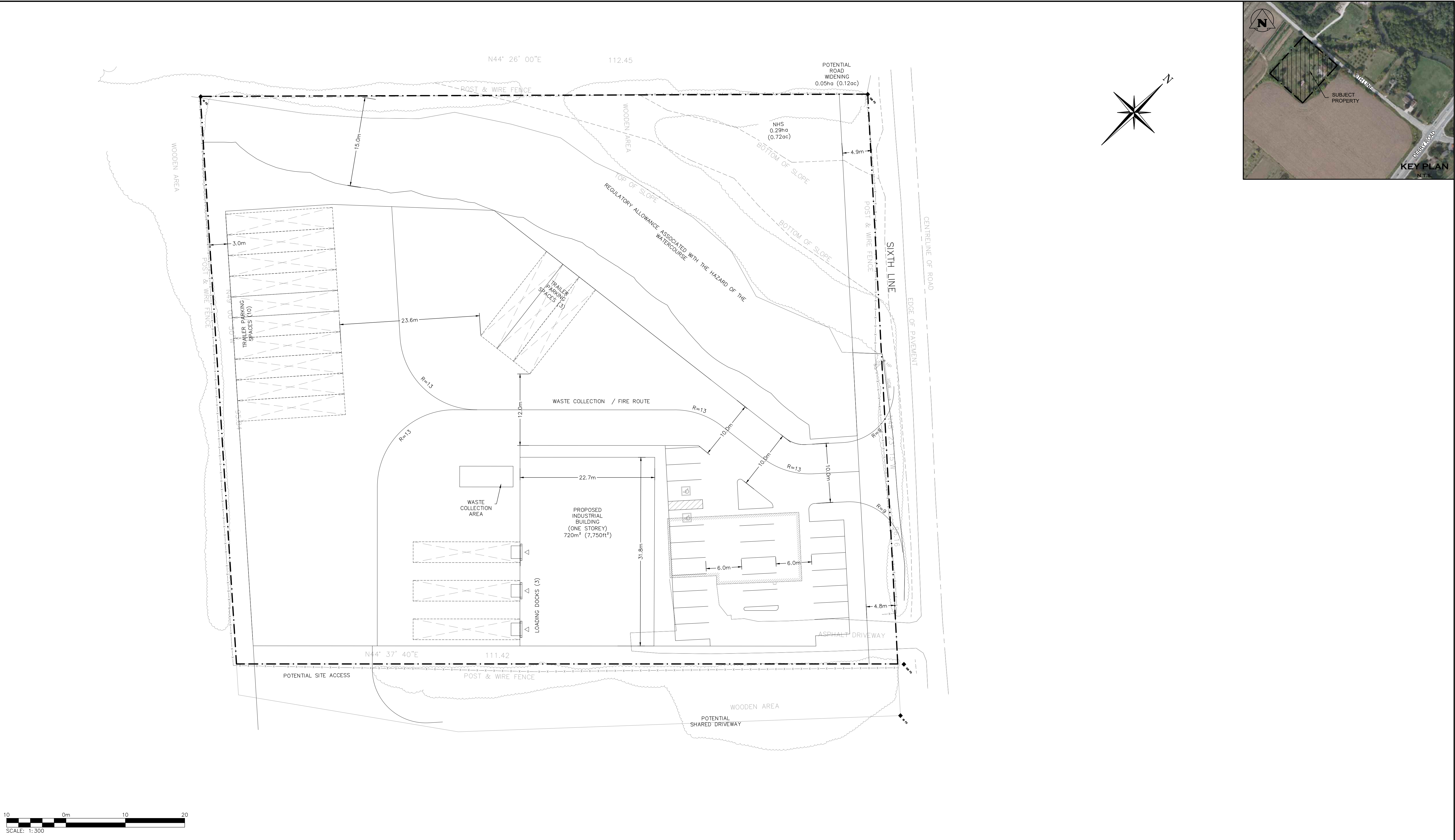
Drawing

SITE LOCATION PLAN



Drawn By	A.T.	Design By	N.O.C./K.S.	Project	2709-7165
Check By	N.O.C./K.S.	Check By	N.O.C./K.S.	Drawing	FIG1





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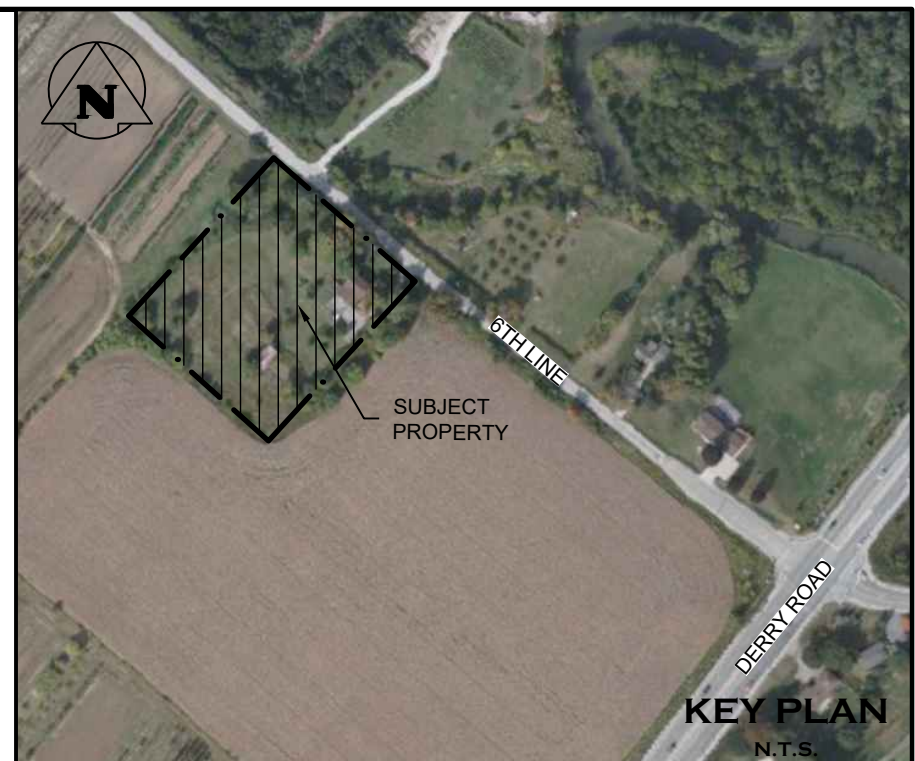
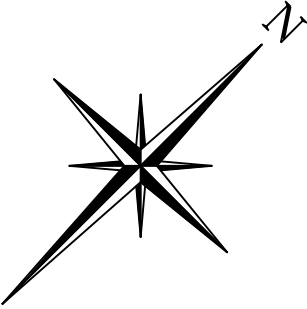
Drawing


CONCEPT PLAN



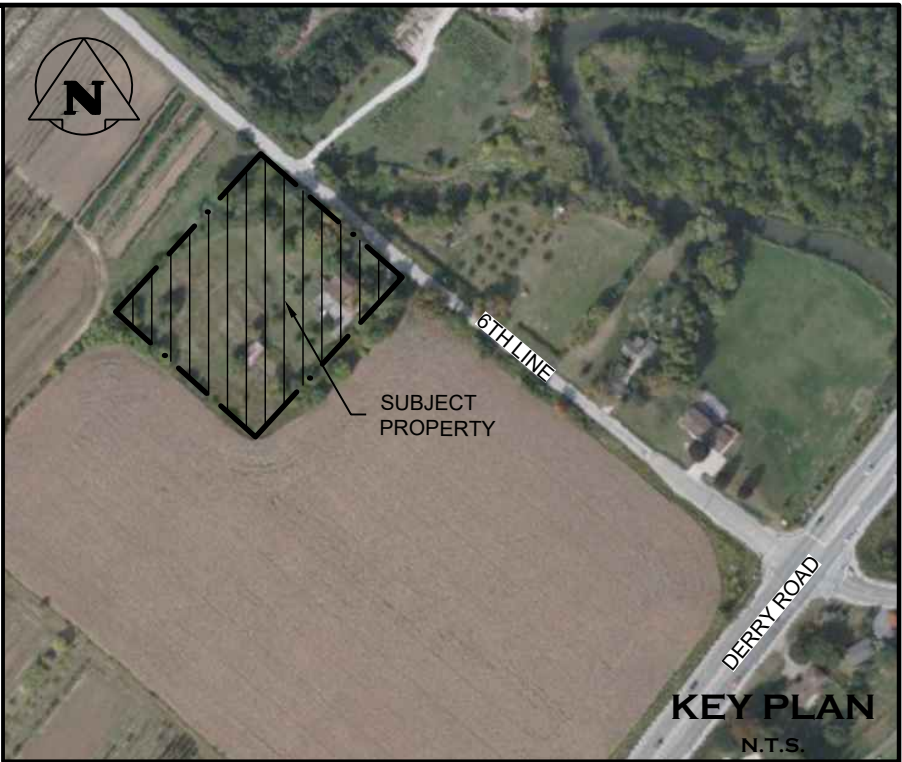
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Check By	N.O.C./K.S.	Check By	N.O.C./K.S.	Drawing	FIG2





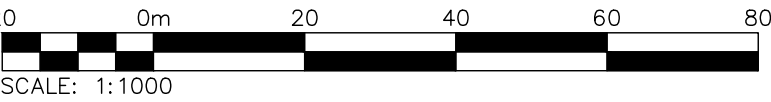
		<b>CROZIER</b> <b>CONSULTING ENGINEERS</b>	
Drawn By	A.T.	Design By	N.O.C./K.S
Check By	N.O.C./K.S	Project	2709-7165
		Drawing	FIG 3





LEGEND

- STUDY AREA
- WATERCOURSE
- PRE-DEVELOPMENT DRAINAGE AREA
- CONTOUR
- EXISTING OVERLAND FLOW DIRECTION
- DRAINAGE ID  
AREA (ha.) | CN COEFFICIENT/% IMPERVIOUS



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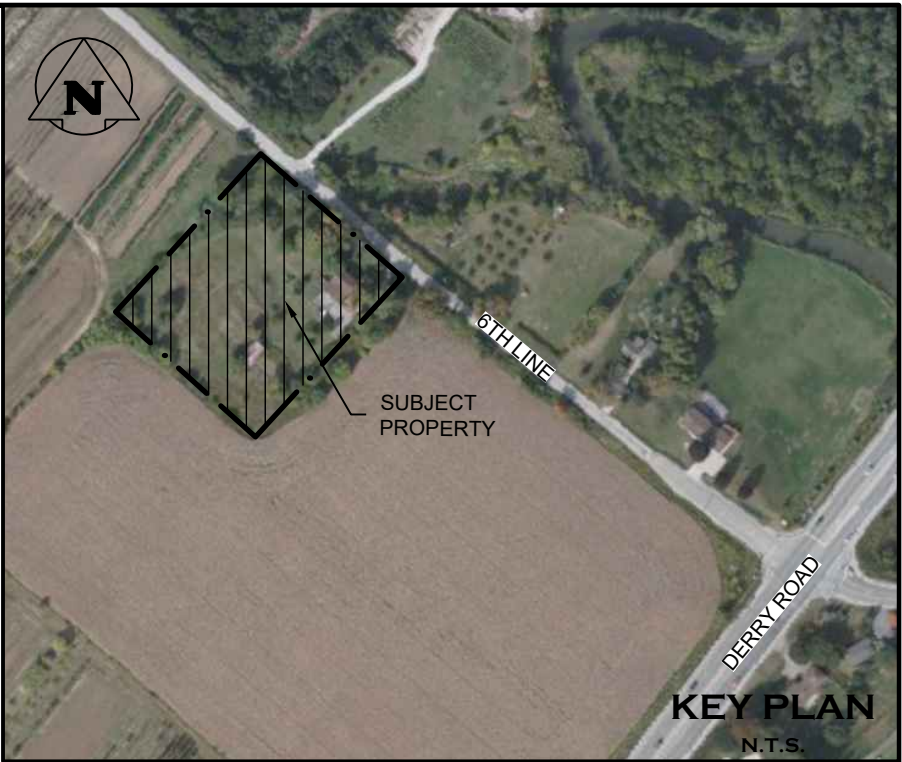
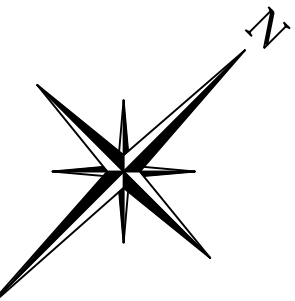
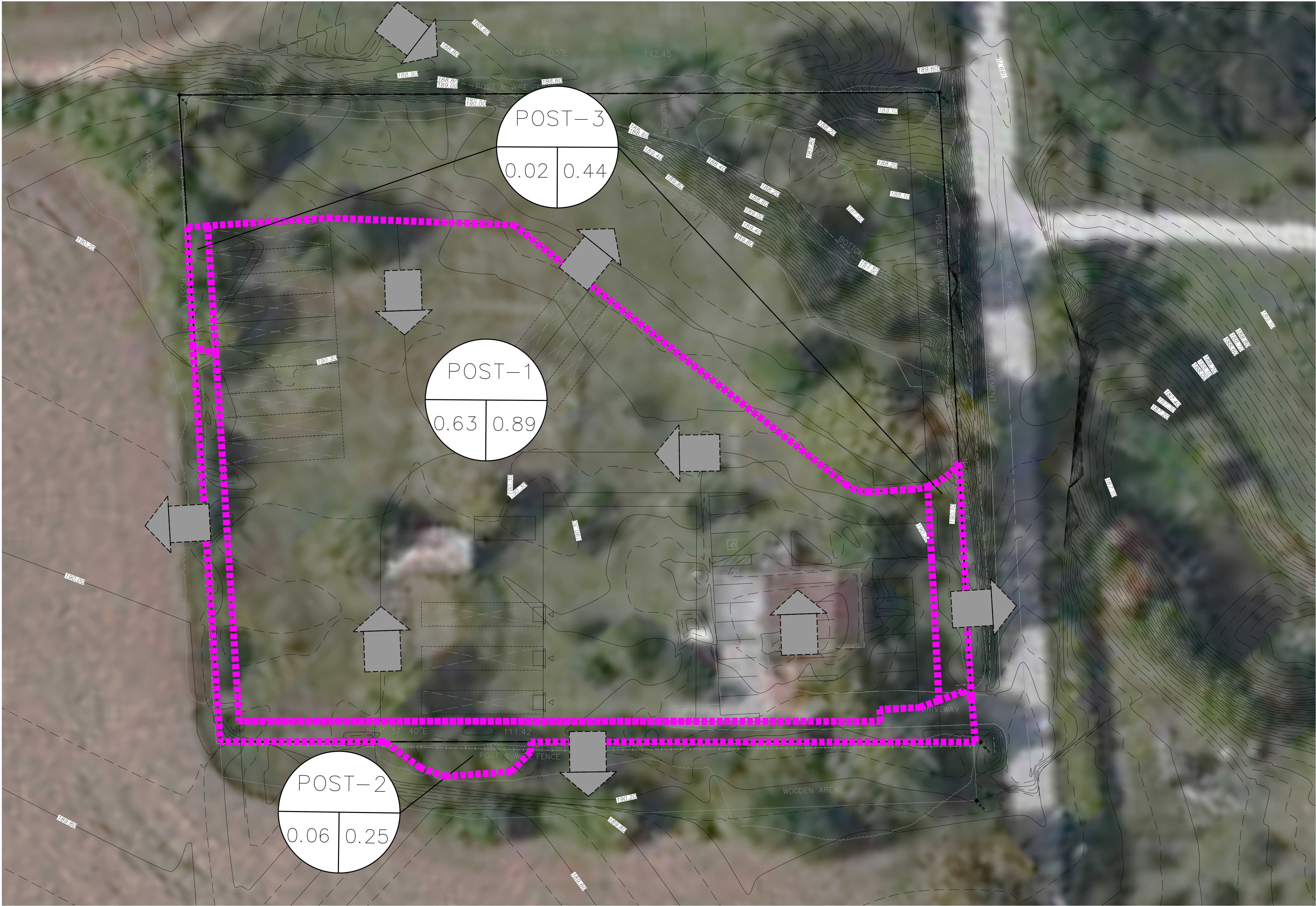
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EXISTING CONDITIONS CATCHMENT  
DRAINAGE PLAN



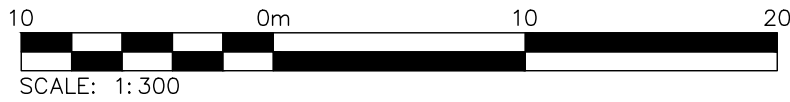
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Check By	N.O.C./K.S.	Check By	N.O.C./K.S.	Drawing	FIG4





LEGEND

- STUDY AREA
- WATERCOURSE
- POST-DEVELOPMENT EXTERNAL DRAINAGE AREA
- POST-DEVELOPMENT INTERNAL DRAINAGE AREA
- CONTOUR
- DRAINAGE ID  
AREA (ha.) | CN COEFFICIENT/% IMPERVIOUS



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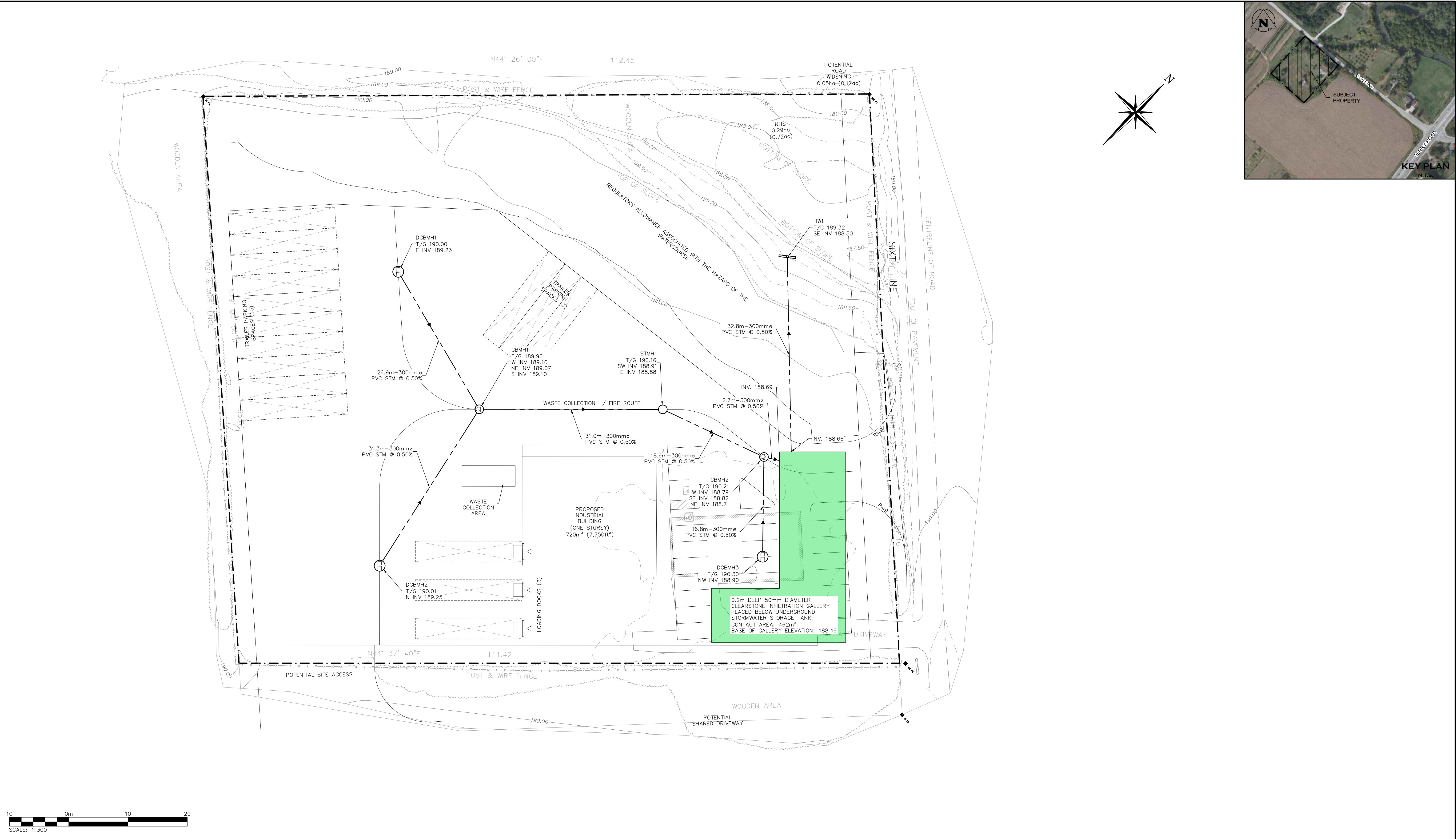
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PROPOSED CONDITIONS CATCHMENT  
DRAINAGE PLAN



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PRELIMINARY LID PLAN



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Check By N.O.C./K.S.	Check By N.O.C./K.S.	Drawing FIG6