Preliminary Servicing and Stormwater Management Report

260 Waydom Drive
Township of North Dumfries

September 2025

MERITECH

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Project No.: 4260

September 24, 2025

Tacoma Engineers
176 Speedvale Avenue West
Guelph, ON N1H 1C3

Attention: Brandon Martin

Dear Mr. Martin,

Re: Preliminary Servicing & Stormwater Management Report
260 Waydom Drive
Township of North Dumfries

Please find our Preliminary Servicing & SWM Report for the above-noted project, in support of Zoning By-law Amendment application.

Our servicing and SWM report identifies constraints for environmental issues, sanitary sewerage, water supply, and storm drainage/stormwater management. Where necessary, reasonable assumptions based on normal industry practices have been used and are described as such.

It is our opinion that adequate services exist to support this project. Recommendations from our report shall be incorporated into the detailed design phase of the project, following approval of the Zoning By-law Amendment application.

Yours very truly,

MERITECH ENGINEERING

LICENSED PROFESSIONAL ENGINEER
A. C. FRANKLIN
100560824
2025-09-24
PROVINCE OF ONTARIO

Jauhar Singh
CAD Designer

Arianna Franklin, P.Eng.
Project Engineer

JAS/
Enclosures (9)

cc

Executive Summary

The existing site is approximately a 0.53 hectares property located north of Waydom Drive bounded by industrial buildings on east and west of the site and agricultural field on the north. The site consists of an existing building which was renovated in 2020 with an addition added to the rear of the original building. The property is currently zoned Industrial. The property is pursuing a Zoning By-law Amendment application to establish a site-specific exemption to allow a commercial greenhouse as a permitted use.

The site consists of an existing septic tank located near the south face of the original building in the front yard near an existing transformer. A septic system assessment was completed by CMT Engineering Inc. in July 2025. The existing septic tank and leaching bed is considered satisfactory to service the current conditions.

The site consists of an existing well located outside approximately near the west face of the original building. The addition consists of a fire reservoir built inside, near the fire connection of the addition.

The site does not have any existing storm infrastructure. Runoff from the site outlets overland. The ditch along the Waydom Drive carries the flows from the front yard of the site to the southeast. The rear yard of the site drains towards the rear property line to the northwest. A small portion consisting of half of each building roofs and the side yard along the buildings drains to the neighbouring property to the west.

In a 5-year storm event, the site experiences a small increase in runoff (total 4L/s) to the rear of site and neighbouring property. Meanwhile, for a 100-year storm event, the increase in total site runoff is 11 L/s to the ditch along Waydom Drive and the rear of site.

Approval agencies shall review and approve this document as a suitable approach to for a zoning by-law amendment.

Disclaimer

This Servicing and Stormwater Management Report was prepared by Meritech Engineering for Tacoma Engineers. The comments, recommendations and materials presented in this report reflect our best judgement in light of the information available at the time of preparation. Except for approval and commenting municipalities and agencies in their review and approval of this project, any use which a third party makes of this report, or any reliance upon, or decisions as a result of, are the responsibility of such third parties. Meritech Engineering accepts no responsibility for damages suffered by any third party, other than an approval or commenting municipality or agency, as a result of decisions made or actions taken based on this report.

Use and Reproduction of This Document

For Further Information

For further information regarding this report please contact the author at the following address:

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Introduction

This report has been prepared in support of a Zoning By-law Amendment.

The existing site is an industrial building located in the Township of North Dumfries. It is currently zoned industrial. It approximately a 0.53 hectares property located north of Waydom Drive bounded by industrial buildings on east and west of the site and agricultural field on the north.

The site consists of an existing 475m² building which was renovated in 2020 with an addition of a 650m² building added to the rear of the original building. The addition is currently used for growing commercial cannabis. The site is applying for a Zoning By-law Amendment to establish a site-specific exemption to allow a commercial greenhouse as a permitted use.

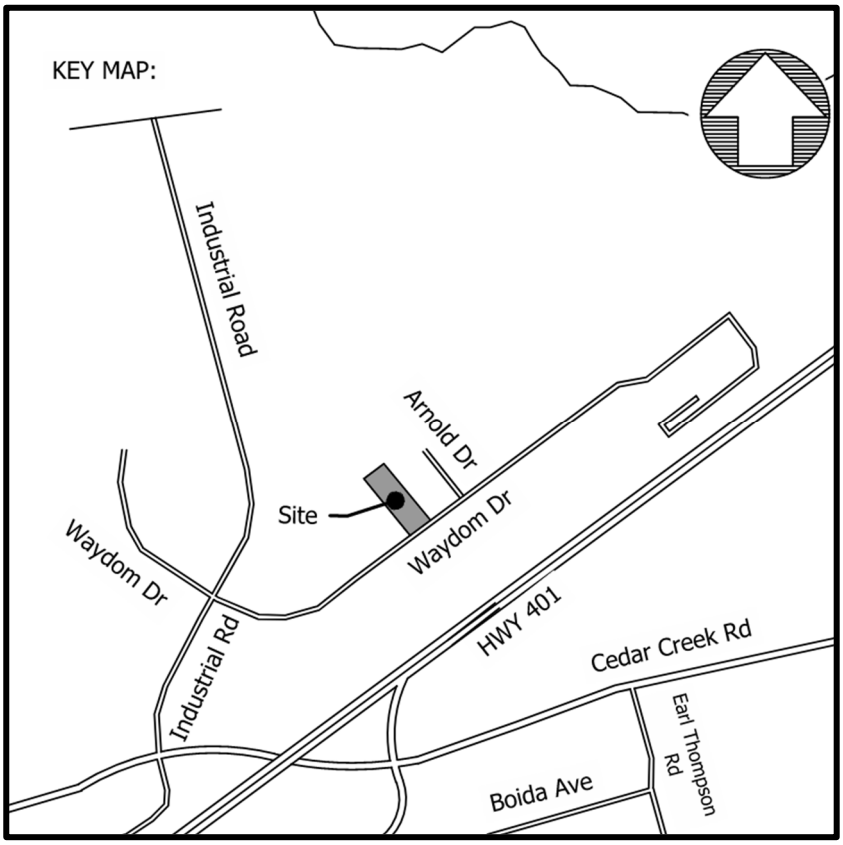


Figure 1: Site Location

Approach

The following flowchart explains a typical submission and approval process. The section highlighted in grey indicates the status of this circulation:

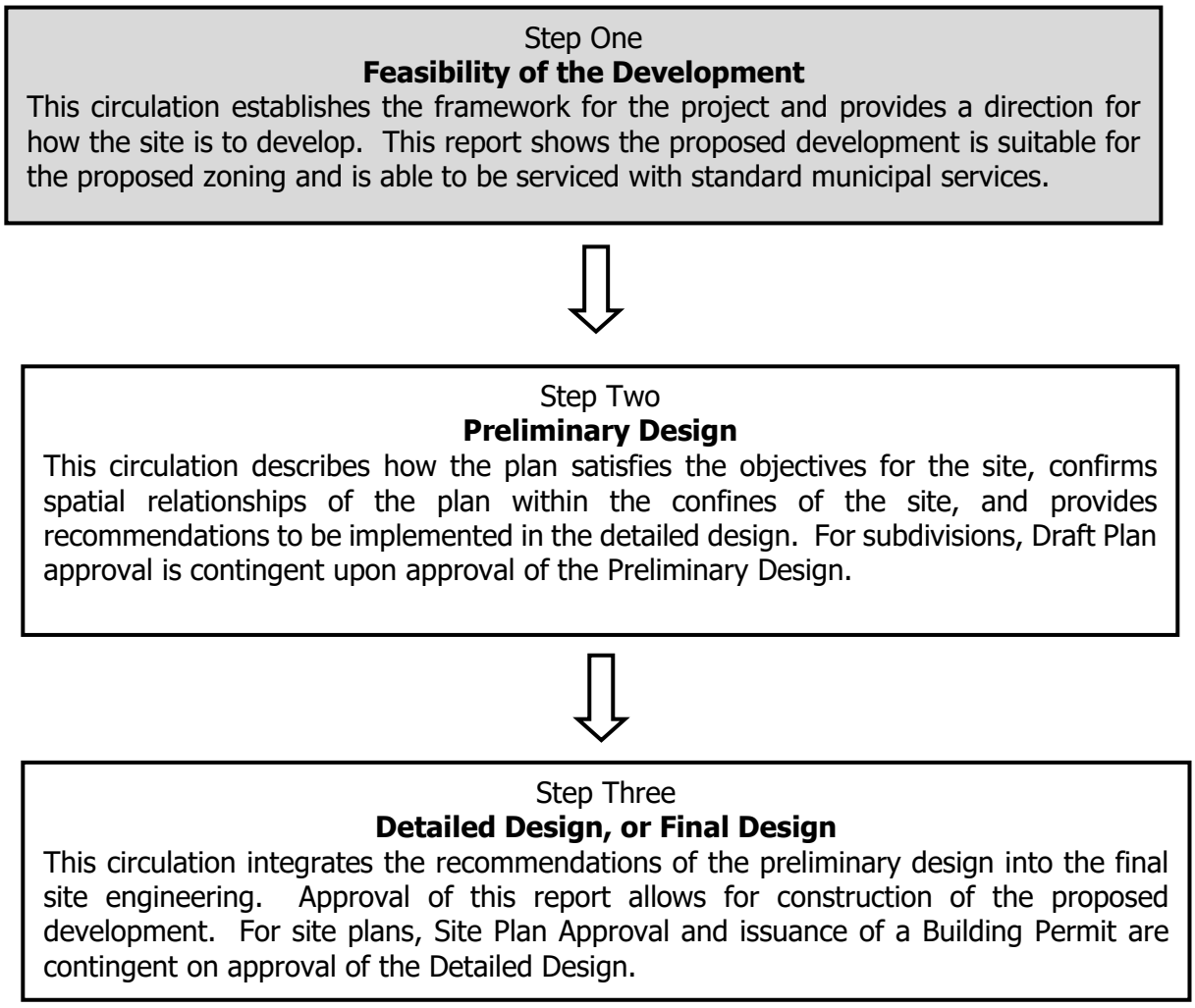


Figure 2: Approach Flowchart

Policy Framework

This chapter outlines the framework upon which the plan is built upon. Previous studies, municipal and provincial standards, as well as any field investigations undertaken to support the project, are examples of information described in this chapter. This background information is then used to build an appropriate plan for the site. The next chapter, Objectives and Targets, describes the site-specific requirements noted from the following sources:

MOE Guidelines

Stormwater Management Planning and Design Manual, Ministry of the Environment, 2003
This manual provides guidelines on the planning and design of stormwater management facilities in Ontario.

Regional Guidelines

Region of Waterloo and Area Municipalities Design Guidelines and Supplemental Specifications for Municipal Services Guidelines (DGSSMS)
The design portion of this annually updated document (Part B) should be considered as guidelines that provides the municipalities' design preferences under normal circumstances. These guidelines are read together with Municipal guidelines and standards in place.

Conservation Authority Guidelines

Greater Golden Horseshoe Area Conservation Authority Erosion & Siltation Control Guideline for Urban Construction, December 2006
This document describes the methodology for determining the erosion potential of a site and the measures that should be undertaken to mitigate construction disturbance.

Geotechnical Studies

A geotechnical report has been prepared by CMT Engineering Inc. on July 25, 2025.

The geotechnical report identifies the soil stratigraphy as primarily composed of recycled asphalt, Granular fill, Silty Sand fill, Sand and Sand and Gravel.

Accumulated groundwater was not observed in the borehole conducted as part of this investigation.

Pre-Consultation/Design Criteria

Pre-Submission Comments from the Township of North Dumfries dated July 15th, 2024 have been included in Appendix E. Key items from these comments are included in the following chapter 'Objectives and Criteria'.

Septic System Assessment

A Septic System Assessment was completed by CMT Engineering Inc. to determine the current septic system size, type and condition of the system, as well as the suitability for the current building usage, as per the Ontario Building Code.

Fireflow

Calculations for on-site water supply for fire-fighting purposes for the building addition was completed by Tacoma Engineers. The calculations are based on the OBC.

2018 Lidar Derived Surface from GRCA

The 2017-2018 lidar surface was used to determine the drainage pattern for pre-2020 conditions. The surface has been adjusted by 0.4m to ensure that it matches the surveyed Waydom Drive centerline elevations and elevations near property line.

Reconnaissance

Meritech staff have visited the site in order to verify existing drainage patterns of the site and adjacent properties, to confirm existing infrastructure surrounding the site, and to make note of all aboveground features on neighbouring properties. Shown in Figure 2 are existing conditions as of August 22, 2025.

Front Yard of the Property

Rear Yard of the Property

West side yard of property

East side yard of property

Figure 3: Existing Condition Photographs

Objectives and Criteria

This section outlines the objectives and criteria for the wide variety of issues considered in this report; the following Discussion section will demonstrate how the objectives presented have been achieved and how the criteria are met.

Sanitary Servicing

The primary objective with respect to sanitary servicing is that a sanitary sewer system servicing the site can be constructed as per MOE, Region of Waterloo (SSMS), and Township of North Dumfries standards. The septic system is to be assessed to ensure it is sufficient for current use.

Water Servicing

There are two objectives regarding water servicing: provide domestic water supply as per Provincial, Regional, and Municipal requirements, and ensure that an adequate fire-fighting water supply is available as per Ontario Building Code and other municipal requirements.

Storm Servicing

The primary objective with respect to storm servicing is that a storm sewer system servicing the site can be constructed as per MOE and Township of North Dumfries standards.

Stormwater Management

An evaluation of stormwater management is required as part of the ZBA submission. The stormwater management will be evaluated for the 5-year and 100-year storm events for pre-2020 conditions (original building) and post-2020 conditions (with addition) to determine the change in the flows after the addition and to recommend mitigation as necessary.

Discussion

Water Servicing

The site consists of an existing well located approximately 55m from the front of the original building near the west property line. The addition to the building includes a fire reservoir built inside the structure, located near the fire connection at the northeast corner of the addition.

The current usage at the site from the existing well is approximately 757 L (200 gallons) per day, supplied by the on-site well.

The required on-site water supply for the addition for fire-fighting purposes was calculated by Tacoma Engineers at 179,736 L. The fire reservoir has the capacity of 185,000 L.

Calculation for fire supply was completed by Tacoma Engineers and is attached in Appendix C.

Sanitary Servicing

The site consists of an existing septic tank located near the south face of the original building in the front yard near an existing transformer. A septic system assessment was completed by CMT Engineering Inc. in July 2025.

The assessment assumes the total daily sewage design flow based on five employees and no process water. According to the assessment, the required working capacity is the greater of 3,600 L, or of three times the daily design sanitary sewage flow (1,125 L). The septic tank is reported to have the capacity of 3,825 L. The leaching bed has the capacity to accept a daily sanitary flow rate of 5,334 L/day. Therefore, the existing septic tank and leaching bed is considered satisfactory to service the current industrial building. The septic system assessment report is attached in Appendix C.

If it is assumed that the approximate daily usage of 757 L/day is directed fully to the septic system, then three times the daily sanitary sewage flow would be 2,271 L, which is still less than both the OBC required minimum capacity of 3,600 L and the leaching bed capacity.

Storm Servicing

The site does not have an existing storm sewer system, and new storm infrastructure is not proposed.

Stormwater Management

The site does not have any existing stormwater management infrastructure. All flows from the site are overland flows. The ditch along Waydom Drive carries the flows from the front yard of the site. The rear yard of the site drains towards the rear of the property. A small portion consisting of half of each building roofs and a side yard along the buildings drains to the neighbouring property.

Catchment Numbering Convention

The following catchment number convention was used to identify the characteristics of each catchment:

Description:			Catchment #
Existing	Internal	Uncontrolled	100
Existing	External	Uncontrolled	200
Existing	Internal	Controlled	300
Existing	External	Controlled	400
Proposed	Internal	Uncontrolled	500
Proposed	External	Uncontrolled	600
Proposed	Internal	Controlled	700
Proposed	External	Controlled	800

Table 1: Catchment Naming Convention

Hydrologic Model

Hydrologic modelling was performed using MIDUSS software, which is a widely accepted model for urban developments. It has been used for many years in the Region of Waterloo. A Chicago-type storm was selected and coefficients for the various storm events were taken from 2021 City of Kitchener Development Manual.

Rainfall Data

Storm Event	Definition	a	b	c	r
5-year, 3 hour	Minor system	1593	11	0.8789	0.4
100-year, 3 hour	Major system	4688	17	0.9624	0.4

Table 2: Coefficients for Synthetic Design Storms

Pre-2020 Conditions

Suitable modelling parameters for each of the catchments were chosen, as presented in Table 3. The SCS curve number soil parameters, estimated from standard tables, were based on and represent open lawn (CN=75) in good condition for the soil group C

Generated peak flows from each catchment are also summarized in Table 3.

Catchment	Area (ha)			Imper-vious (%)	Slope Length (m)	Slope Gradient (%)	SCS CN (pervious)	Peak Flow (m^3/s)	
	Controlled	Uncontrolled	Total					5-year	100-year
Internal									
101		0.024	0.024	100	6	2	-	0.009	0.016
102		0.137	0.137	78	20	2	75	0.033	0.063
103		0.024	0.024	100	6	2	-	0.009	0.016
104		0.126	0.126	80	15	2	75	0.032	0.060
105		0.214	0.214	100	20	2	-	0.083	0.142
Subtotal:		0.525	0.525						
External									
201		0.023	0.023	100	15	2	-	0.008	0.015
Total		0.548	0.548						

Table 3: Pre-2020 Modelling Parameters

Post-2020 Conditions

Post-development catchments incorporate the routing of the minor and major storm systems to the proposed stormwater management facility. Figures 4 and 5 in Appendix B show the catchment areas and flowchart routing for the MIDUSS modeling of both the pre-2020 and post-2020 conditions.

Suitable modelling parameters were selected for each catchment, as presented in Table 4. The SCS curve number is the same as that noted in the pre-2020 conditions.

Catchment	Area (ha)			Imper-vious	Slope Length	Slope Gradient	SCS CN	Uncontrolled Peak Flow (m^3/s)	
	Controlled	Uncontrolled	Total	(%)	(m)	(%)	(perv)	5-year	100-year
Internal									
501		0.024	0.024	100	6	2	-	0.009	0.016
502		0.143	0.143	77	20	2	75	0.034	0.065
503		0.023	0.023	100	6	2	-	0.009	0.015
504		0.075	0.075	88	15	2	75	0.021	0.039
505		0.196	0.196	100	20	2	-	0.072	0.128
506		0.031	0.031	100	7.5	2	-	0.012	0.021
507		0.034	0.034	100	7.5	2	-	0.013	0.023
Subtotal:		0.526	0.526						
External									
601		0.023	0.023	100	15	2	-	0.008	0.015
Total		0.549	0.549					0.180	0.322

Table 4: Post-2020 Modelling Parameters

Tables 5 and 6 compare the site flows from pre-2020 development (original building) and post-2020 development (with addition) for the 5-year and 100-year storms.

Outlet	5yr 3hr max flow (m^3/s)	
	Pre-2020	Post-2020
Waydom Ditch	0.051	0.052
Rear of Site	0.083	0.084
Neighbouring Property	0.041	0.043
Total	0.175	0.180

Table 5: 5-Year Storm Runoff Comparison

Outlet	100yr 3hr max flow (m^3/s)	
	Pre-2020	Post-2020
Waydom Ditch	0.094	0.097
Rear of Site	0.142	0.149
Neighbouring Property	0.076	0.077
Total	0.313	0.322

Table 6: 100-Year Storm Runoff Comparison

In the 5-year storm event, the post-2020 site experiences a small increase in runoff (total 5 L/s) to the Waydom Drive ditch, the rear of site, and the neighbouring property. In the 100-year storm event, the increase in total site runoff is 9 L/s split between the ditch along Waydom Drive, the rear of the site, and the neighbouring property. In both the 5-year and 100-year event, the increase in runoff to the neighbouring property is negligible at only 1 or 2 L/s, an increase of 5% in the 5-year storm. The total peak flow increase in both the 5-year and 100-year storms is 3%. No new stormwater management measures are proposed on site. Instead, the existing peak flow increase is proposed to remain. The MIDUSS calculations for the flows are attached in Appendix D.

Grading and Drainage

In current conditions, the front portion of the site outlets to the existing ditch along Waydom drive. The rest of the site drainage goes to the rear of site to the northwest and the runoff from the west side yard flows to the neighbour's property.

The site is recommended to remain at current conditions due to the minor change in flows for the 5-year and 100-year storm events as discussed in the 'Stormwater Management' section.

Conclusions

The septic tank is reported to have the capacity of 3,825 L. The leaching bed has the capacity to accept a daily sanitary flow rate of 5,334 L/day. Therefore, the existing septic tank and leaching bed is considered satisfactory to service the current industrial building

The current usage at the site from the existing well is approximately 757 L (200 gallons) per day. The on-site water supply for the addition for fire-fighting purposes was calculated 179,736 L. The fire reservoir has the capacity of 185,000 L. Hence, the fire reservoir satisfies the fire supply demand for the addition.

After the construction of the addition, the site has experienced a total increase in peak flow in both the 5-year and 100-year storms of 3%. This increase is considered negligible.

Recommendations

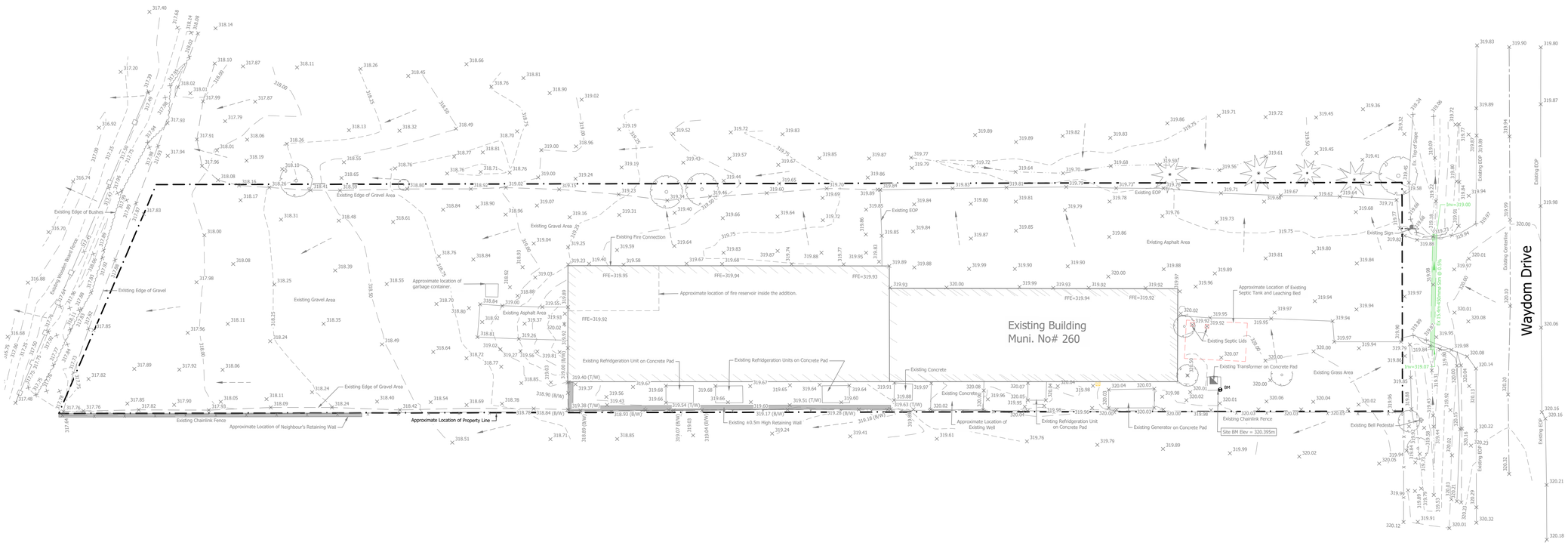
Approval agencies shall review and approve this document as a suitable approach to for a zoning by-law amendment.

References

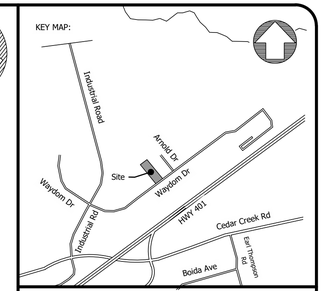
City of Kitchener, Development Manual
Summer 2021

Ministry of the Environment, Stormwater Management Planning & Design Manual
March 2003

Appendix A: Current Conditions Plan



KEY MAP:



Project Notes

1. Only drawings stamped "Issued for Construction" shall be used for construction.
2. This drawing is to be read in conjunction with the following additional information:
   a. Site Plan by Tacoma Engineers, dated May 2024.
   b. Architectural Plans by Tacoma Engineers, dated Apr 2020.
3. Survey and elevations:
   a. Topographic survey completed by Automated Engineering Technologies Ltd., dated May 2025.
   b. Local reference elevation:
      b.1. BM 00820068026 Wellington County-Ayr monument located in NE pillar of HWY 401 & HWY 97 overpass, set horizontally in east face, 40cm above ground. Elevation = 332.511m (CGVD28:78)
      b.2. Site BM Cut cross on SW corner of concrete transformer pad at front of 260 Waydom Drive building . Elevation =320.395m

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LICENSED PROFESSIONAL ENGINEER
A. C. FRANKLIN
100560824
2025-09-23
PROVINCE OF ONTARIO

No.	REVISION/ISSUE	DATE	BY
10.			
9.			
8.			
7.			
6.			
5.			
4.			
3.			
2.			
1.	Issued for ZBA	Sep 19, 2025	JAS

OWNER:
Sharon Hepburn

LOCATION:
Township of North Dumfries

PROJECT:
260 Waydom Drive, Ayr

Drawing Title:
Current Conditions Plan

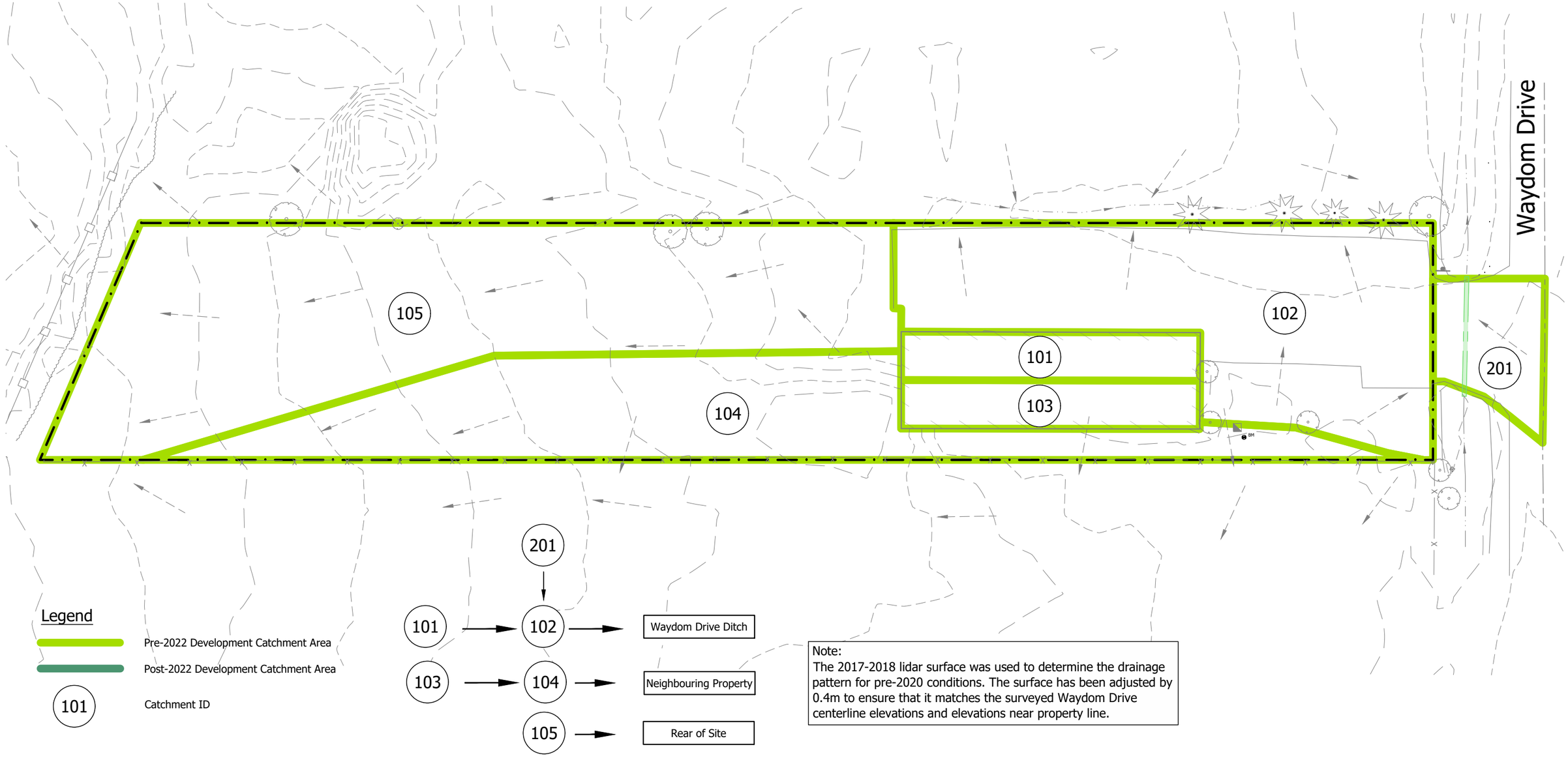
Design By:	JAS	Checked By:	ACF
Drawn By:	JAS	Date:	Sep 19, 2025

Drawing: 4260-1

Scale: 1:300 (0 1.5 3 6 9 12)

Sheet:	File Name:	Contract:
1 of 2	4260	

Appendix B: Catchment Plans



Legend

- Pre-2022 Development Catchment Area
- Post-2022 Development Catchment Area
- 101 — Catchment ID

Note:
The 2017-2018 lidar surface was used to determine the drainage pattern for pre-2020 conditions. The surface has been adjusted by 0.4m to ensure that it matches the surveyed Waydom Drive centerline elevations and elevations near property line.

DRAWING: Pre-2020 Catchment Plan
260 Waydom Drive, Ayr

DRAWN BY:	JAS	CHECKED BY:	ACF	SCALE:	1:500
FILE NAME:	4260	DATE:	Sep 19, 2025		Figure 4

1:500

0 2.5 5 10 15 20

1:500

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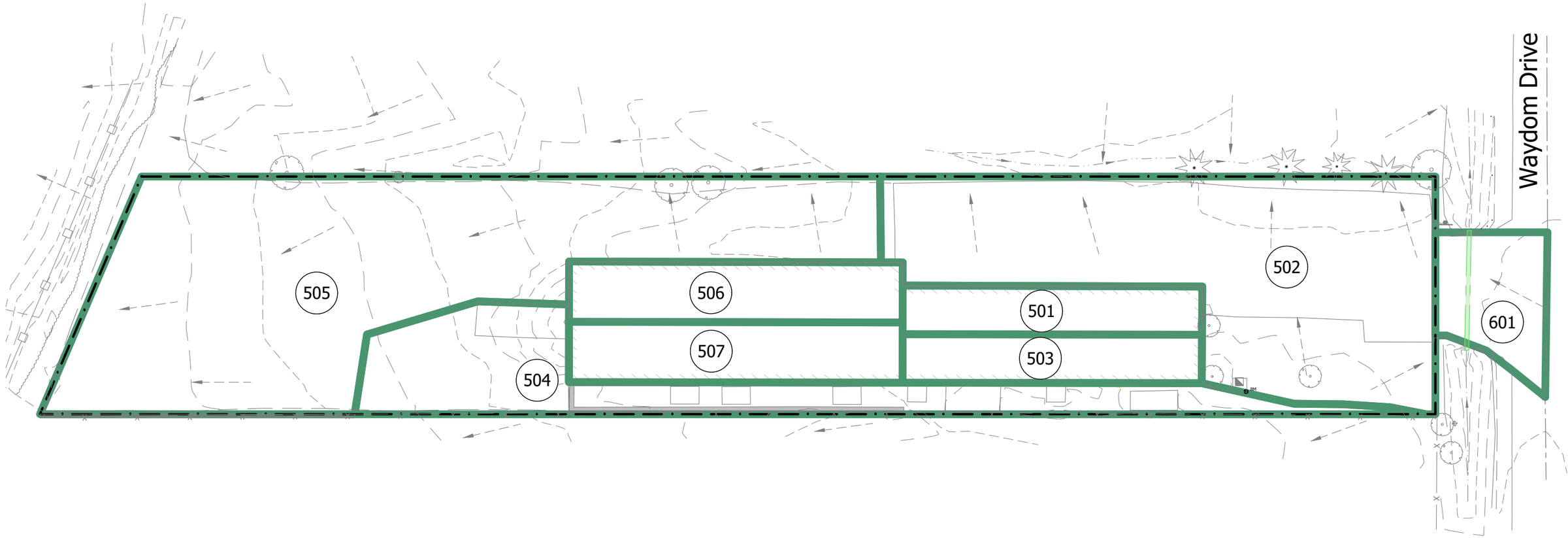
File Path: C:\M\Meritech Engineering\PRJ - DOCS\4260\CAD\Sheets\4260.dwg, - Plotted: September 19, 2025 by: Jauhars



Legend

- Pre-Development Catchment Area
- Post-Development Catchment Area
- 601 — Catchment ID

506 → 505 → Rear of Site

503 → 504 → Neighbouring Property

507 →

501 → 502 → Waydom Drive Ditch

601 →

DRAWING:	Post-2020 Catchment Plan 260 Waydom Drive, Ayr				
DRAWN BY:	JAS	CHECKED BY:	ACF	SCALE:	1:500
FILE NAME:	4260	DATE:	Sep 19, 2025		Figure 5

1:500 0 2.5 5 10 15 20

1:500

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Appendix C: Calculations (by Others)

TACOMA ENGINEERS

CODE REPORT
On-Site Water Supply Calculation

Date:	April 9, 2020	**No. of Pages:**	1 + Encl.
Project:	WestAyr Transportation	**Project No.:**	TE-35816-20
Address:	260 Waydom Drive, Ayr, ON	**Permit No.:**	N/A
Client:	Frey Building Contractors		
Distribution:	Luke Passmore	Frey Building Cobtractors	luke@freybc.com

This report is to outline our calculations for on-site water supply for fire-fighting purposes at the above noted project. The following calculations are based on A-3.2.5.7. of the 2012 OBC.

This calculation is for proposed addition only.

The setbacks for the building are as per the proposed plan and are as follows:

North side setback	>10.0 m	*to property line*
South side setback	>10.0m	*to property line*
East side setback	>10.0m	*to property line*
West side setback	4.3m	*to property line*

West side setback contributes an additional 0.5 in calculating S_{tot} (A-3.2.5.7. Figure 1). Therefore S_{tot} equals **1.5**.

The building volume is: **136,500 cu.ft (3,865.3 cu.m)**

$$Q = K \times V \times S_{tot}$$

Q = *minimum supply of water in litres*
***K* = 31** *from table 1, based on a "F-2" building classification*
***V* = 3,865.3 cu.m.** *as calculated above*
S_{tot} = ***1.5*** *as per above*

Therefore,

$$Q = 31 \times 3{,}865.3 \times 1.5$$
$$Q = \mathbf{179{,}736\ litres}\ (39{,}536.4\ imp\ gallons\ or\ 47{,}481.2\ US\ gallons\ or\ 6347.3\ cu.ft)$$

We submit this for your review & comment. Thank you.

Per

Brandon Martin, C.E.T.
Project Coordinator, Associate

Encl. Nil.

LICENCED PROFESSIONAL ENGINEER
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July 7, 2025 20-225(a).R01

Tacoma Engineers Inc.
155 Frobisher Drive,
Waterloo, Ontario
N2V 1G2

Attention: Brandon Martin

Re: Class IV Sewage Disposal System
Septic System Assessment
260 Waydom Drive,
Ayr, Ontario

As requested, CMT Engineering Inc. (CMT Inc.) has conducted an assessment of the existing septic system at the above-referenced property. It is understood that the existing industrial building was expanded in 2020, and the usage of the building has changed to an industrial horticultural operation. As such, the Township of North Dumfries has requested that the existing septic system be assessed to confirm the size, type and condition of the system, as well as the suitability for the current building usage, as per the 2024 Ontario Building Code (OBC 2024).

Daily Design Sewage Flow Rate

Currently the building is used for industrial horticultural operations. There are office areas, some warehousing and a larger production area. Since the building is mixed use, and used for production, it would be considered suitable that the usage would be similar to that of a "Factory" and the daily design sewage flow rate would be calculated on an employee basis. There is no process water that is used as part of the operations. The septic system is to service employee bathrooms and breakrooms only. Currently the building is used by three (3) employees, however, CMT Inc. considers a minimum of five (5) employees for design purposes.

Based on the OBC 2024, the total daily sewage system design flow for the proposed industrial building is determined as follows:

Average daily flow for a workshop with five (5) employees per 8-hour shift with no showers: (75 litres per employee per 8-hour shift). 375 litres

Total Daily Design Sewage Flow: 375 litres

Field Investigation

An on-site septic assessment was conducted by CMT Inc. on May 29, 2025, to assess the size, type, and condition of the existing septic system. The septic tank was located and the tank lids were excavated and exposed. The leaching bed was located and the portions of the header, footer and distribution pipes were excavated and exposed within the leaching bed (see attached photographs).

Septic Tank

The septic tank lids were uncovered and opened to inspect the septic tank. The septic tank appeared to be in good condition with no spalling or corrosion of the inlet or outlet side of the septic tank. An inlet baffle was installed and an effluent filter was present on the outlet side of the tank. The tank was pumped out prior to inspection and it was reported to be a 3,825 litre (850 gal) septic tank. Based on the OBC 2024, the minimum working capacity of a septic tank must be the greater of 3,600 litres or three times the daily design sanitary sewage flow for non-residential occupancies. Three times the total design flow of 375 litres for the industrial building would provide a minimum working capacity of 1,125 litres. As such, the existing septic tank with a capacity of 3,825 litre (850 gal) is considered satisfactory to service the existing industrial building.

The existing septic tank is installed a minimum of 1.5 m from all structures, 3.0 m away from property lines and 15.0 m from the on-site drilled well.

Leaching Bed

The distribution pipes within the leaching bed were located using ground penetrating radar. There did not appear to be any signs of saturation at the surface and no areas of sewage breakout. Portions of the header were exposed, as well as a portion of the footer. The leaching bed was observed to consist of in-ground absorption trenches, constructed with 75 mm diameter perforated PVC pipe surrounded by clear stone aggregate. There was observed to be approximately 0.8 m of soil cover above the absorption trenches. The leaching bed was observed to have seven (7) runs of absorption trenches. The distribution pipes within the absorption trenches were measured to be 15.24 m (50.0 ft) in length for a total of 106.68 m (350.0 ft) of absorption trenches. The header was surveyed and appeared to be generally level, within a tolerance of 6.4 mm (0.25 inches) over the entire header, which is considered satisfactory. The slope on the distribution pipes was surveyed and appeared to have a slope of 0.3% (4.5 cm over the 15.24 m length of distribution pipe), which is considered satisfactory. A test pit was completed within the leaching bed. The absorption trenches were observed to be in good condition, un-saturated, and very little bio-mat build-up. A sample of the native soil below the leaching bed was obtained and submitted to the CMT Inc. laboratory in St. Clements, Ontario for sieve analysis, soil classification and percolation time determination. The soil sample from a depth of 1.2 m (3.9 ft) in was determined to be sand and gravel, trace silt and clay, and has an estimated percolation rate (T-time) of 4 min/cm.

According to the equation Q = 200L/T, the leaching bed is designed to accept a daily sanitary sewage flow rate of 5,334 litres/day. As such, the leaching bed is considered satisfactory to remain and service the industrial building under the current usage. Overall, the absorption trenches appear to be in good condition and functioning as intended. The absorption trenches did not appear to have geotextile or building paper above the absorption trenches, and some fine material was observed to be infiltrating the clear stone within the absorption trenches. As well, a portion of the leaching bed was covered with an asphalt driveway. CMT Inc. cannot make a determination on the remaining service life of the existing septic system, however, the system is currently working as intended and is considered satisfactory to remain in service. The distribution pipes in the leaching bed maintain the required setback distances of 3.0 m from property lines, 5.0 m to structures, and 15.0 m from drilled wells.

Conclusions

From the above assessment, the existing septic tank and leaching bed is considered satisfactory to service current industrial building and the intended usage.

We trust that this information meets your present requirements, and we thank you for this opportunity to have been of service. Should you have any questions, please do not hesitate to contact our office.

Yours truly,

Marc Favaro, B.Sc. Nathan Chortos, P.Eng.

tb

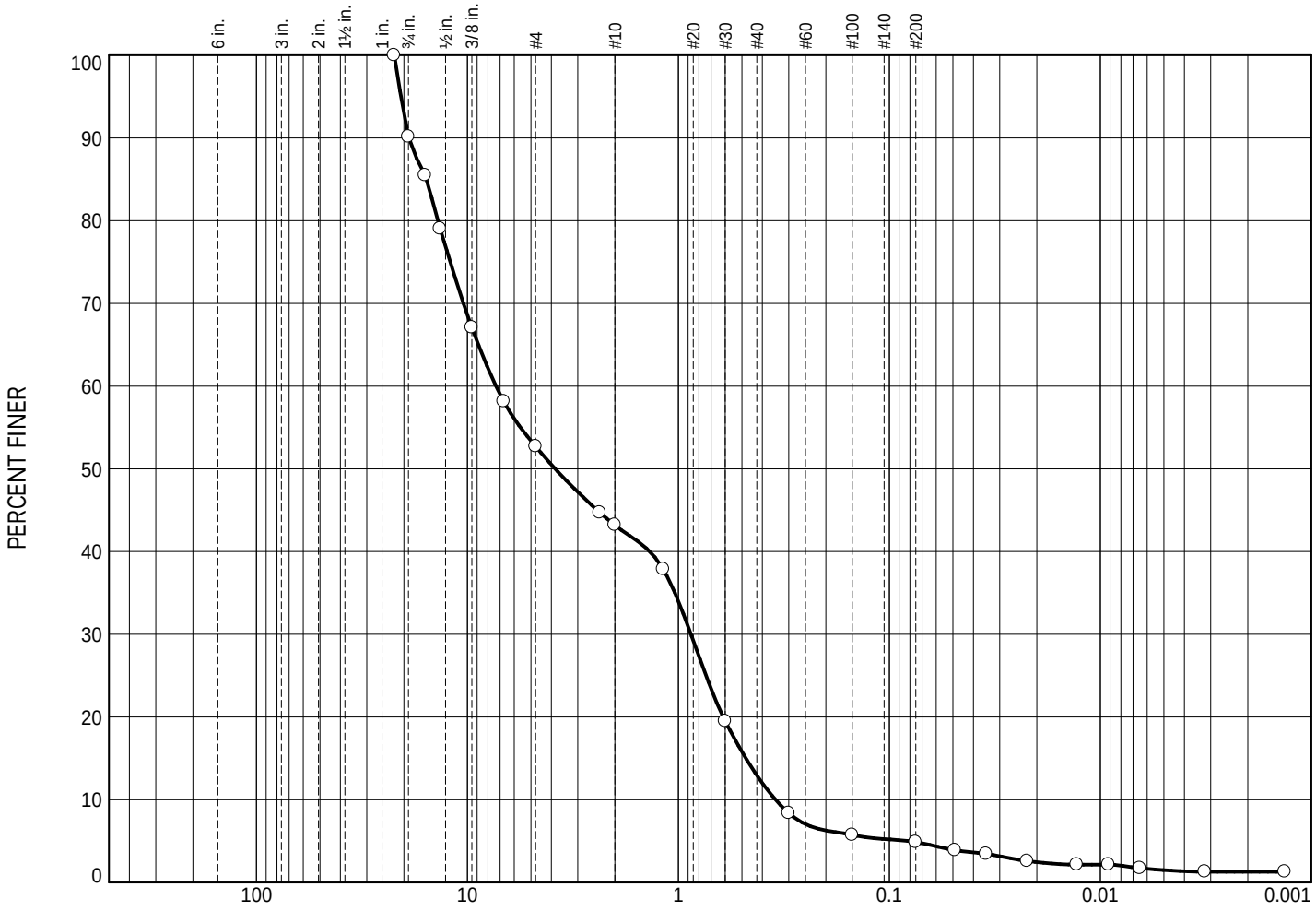
Enclosed: Leaching Bed Photographs
Grain Size Analysis

1 - Surface of leaching bed showing test pit excavation areas.

2 – Septic distribution pipe and native sand and gravel soil.

3 – Septic tank outlet side with effluent filter.

Particle Size Distribution Report



	% Cobbles	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	9.8	37.5	9.5	30.2	8.1	3.6	1.3

SOIL DATA

	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	TP1	1	1.2m	sand and gravel, trace silt and clay	SP
				Estimated Percolation Rate; T = 4 min/cm	
				Sampled by MF of CMT Engineering Inc. May 29, 2025	
				Tested by JM of CMT Engineering Inc. June 3, 2025	

CMT Engineering Inc.

St. Clements, ON

Client: Tacoma Engineers Inc.

Project: Monitoring Well Installation and Septic Assessment
260 Waydom Drive

Project No.: 20-225(a)

Figure 1

Appendix D: MIDUSS Modeling

Appendix D.1: Pre-Development Conditions

```
"                MIDUSS Output ------------------------------------------------>"
"                MIDUSS version                            Version 2.25  rev. 473"
"                MIDUSS created                                 February 7, 2010"
"           10   Units used:                                            ie METRIC"
"                Job folder:         C:\M\Meritech Engineering\PRJ - DOCS\4260\"
"                                                              60-Design\SWM\MIDUSS"
"                Output filename:                              4260x5yr20250916.out"
"                Licensee name:                                    Arianna Franklin"
"                Company                                      Meritech Engineering"
"                Date & Time last used:                2025-09-17 at 10:22:37 AM"
" 81           ADD COMMENT=================================================="
"           2  Lines of comment"
"              260 Waydom Drive, 5yr, 3hr, Chicago Storm, Pre-2020 "
"              Condition"
" 31           TIME PARAMETERS"
"        5.000   Time Step"
"      180.000   Max. Storm length"
"     1500.000   Max. Hydrograph"
" 32           STORM Chicago storm"
"            1   Chicago storm"
"     1593.000   Coefficient A"
"       11.000   Constant B"
"        0.879   Exponent C"
"        0.400   Fraction R"
"      180.000   Duration"
"        1.000   Time step multiplier"
"              Maximum intensity           139.250    mm/hr"
"              Total depth                  47.240    mm"
"            6   005hyd   Hydrograph extension used in this file"
" 81           ADD COMMENT=================================================="
"           1  Lines of comment"
"              5yr Flow towards Waydom Drive Ditch"
" 33           CATCHMENT 101"
"            2   Rectangular"
"            1   Equal length"
"            1   SCS method"
"          101   Roof Portion"
"      100.000   % Impervious"
"        0.024   Total Area"
"        6.000   Flow length"
"        2.000   Overland Slope"
"        0.000   Pervious Area"
"        6.000   Pervious length"
"        2.000   Pervious slope"
"        0.024   Impervious Area"
"        6.000   Impervious length"
"        2.000   Impervious slope"
"        0.250   Pervious Manning 'n'"
"       75.000   Pervious SCS Curve No."
"        0.000   Pervious Runoff coefficient"
"        0.100   Pervious Ia/S coefficient"
"        8.467   Pervious Initial abstraction"
"        0.015   Impervious Manning 'n'"
"      100.000   Impervious SCS Curve No."
"        1.000   Impervious Runoff coefficient"
"        0.100   Impervious Ia/S coefficient"
"        0.000   Impervious Initial abstraction"
"                     0.009     0.000     0.000     0.000 c.m/sec"
"              Catchment 101          Pervious   Impervious Total Area "
```

```
"             Surface Area           0.000      0.024      0.024      hectare"
"             Time of concentration  7.287      0.740      0.740      minutes"
"             Time to Centroid       101.498    81.464     81.464     minutes"
"             Rainfall depth         47.240     47.240     47.240     mm"
"             Rainfall volume        0.00       11.34      11.34      c.m"
"             Rainfall losses        35.061     0.000      0.000      mm"
"             Runoff depth           12.179     47.240     47.240     mm"
"             Runoff volume          0.00       11.34      11.34      c.m"
"             Runoff coefficient     0.000      1.000      1.000      "
"             Maximum flow           0.000      0.009      0.009      c.m/sec"
" 40          HYDROGRAPH Add Runoff "
"            4   Add Runoff "
"                     0.009     0.009     0.000     0.000"
" 33          CATCHMENT 201"
"            2   Rectangular"
"            1   Equal length"
"            1   SCS method"
"          201   Waydom Road"
"      100.000   % Impervious"
"        0.023   Total Area"
"       15.000   Flow length"
"        2.000   Overland Slope"
"        0.000   Pervious Area"
"       15.000   Pervious length"
"        2.000   Pervious slope"
"        0.023   Impervious Area"
"       15.000   Impervious length"
"        2.000   Impervious slope"
"        0.250   Pervious Manning 'n'"
"       75.000   Pervious SCS Curve No."
"        0.000   Pervious Runoff coefficient"
"        0.100   Pervious Ia/S coefficient"
"        8.467   Pervious Initial abstraction"
"        0.015   Impervious Manning 'n'"
"       98.000   Impervious SCS Curve No."
"        0.890   Impervious Runoff coefficient"
"        0.100   Impervious Ia/S coefficient"
"        0.518   Impervious Initial abstraction"
"                     0.008     0.009     0.000     0.000 c.m/sec"
"             Catchment 201          Pervious   Impervious Total Area "
"             Surface Area           0.000      0.023      0.023      hectare"
"             Time of concentration  12.627     1.307      1.307      minutes"
"             Time to Centroid       105.894    85.550     85.550     minutes"
"             Rainfall depth         47.240     47.240     47.240     mm"
"             Rainfall volume        0.00       10.87      10.87      c.m"
"             Rainfall losses        35.061     5.184      5.184      mm"
"             Runoff depth           12.179     42.055     42.055     mm"
"             Runoff volume          0.00       9.67       9.67       c.m"
"             Runoff coefficient     0.000      0.890      0.890      "
"             Maximum flow           0.000      0.008      0.008      c.m/sec"
" 40          HYDROGRAPH Add Runoff "
"            4   Add Runoff "
"                     0.008     0.018     0.000     0.000"
" 33          CATCHMENT 102"
"            1   Triangular SCS"
"            1   Equal length"
"            1   SCS method"
"          102   Asphalt Area"
"       78.000   % Impervious"
```

```
"         0.137   Total Area"
"        20.000   Flow length"
"         2.000   Overland Slope"
"         0.030   Pervious Area"
"        20.000   Pervious length"
"         2.000   Pervious slope"
"         0.107   Impervious Area"
"        20.000   Impervious length"
"         2.000   Impervious slope"
"         0.250   Pervious Manning 'n'"
"        75.000   Pervious SCS Curve No."
"         0.257   Pervious Runoff coefficient"
"         0.100   Pervious Ia/S coefficient"
"         8.467   Pervious Initial abstraction"
"         0.015   Impervious Manning 'n'"
"        98.000   Impervious SCS Curve No."
"         0.878   Impervious Runoff coefficient"
"         0.100   Impervious Ia/S coefficient"
"         0.518   Impervious Initial abstraction"
"                     0.033     0.018     0.000     0.000 c.m/sec"
"              Catchment 102          Pervious   Impervious Total Area "
"              Surface Area           0.030      0.107      0.137      hectare"
"              Time of concentration  15.006     1.553      2.580      minutes"
"              Time to Centroid       116.727    88.105     90.290     minutes"
"              Rainfall depth         47.240     47.240     47.240     mm"
"              Rainfall volume        14.24      50.48      64.72      c.m"
"              Rainfall losses        35.089     5.780      12.228     mm"
"              Runoff depth           12.151     41.459     35.012     mm"
"              Runoff volume          3.66       44.30      47.97      c.m"
"              Runoff coefficient     0.257      0.878      0.741      "
"              Maximum flow           0.001      0.033      0.033      c.m/sec"
" 40           HYDROGRAPH Add Runoff "
"             4   Add Runoff "
"                     0.033     0.051     0.000     0.000"
" 40           HYDROGRAPH Copy to Outflow"
"             8   Copy to Outflow"
"                     0.033     0.051     0.051     0.000"
" 40           HYDROGRAPH   Combine    1"
"             6   Combine "
"             1   Node #"
"                 Total Runoff"
"              Maximum flow                 0.051    c.m/sec"
"              Hydrograph volume           68.976    c.m"
"                     0.033     0.051     0.051     0.051"
" 40           HYDROGRAPH Start - New Tributary"
"             2   Start - New Tributary"
"                     0.033     0.000     0.051     0.051"
" 81           ADD COMMENT================================================="
"           1  Lines of comment"
"              5yr Flows to Neighbouring Property"
" 33           CATCHMENT 103"
"             2   Rectangular"
"             1   Equal length"
"             1   SCS method"
"           103   Roof Portion"
"       100.000   % Impervious"
"         0.024   Total Area"
"         6.000   Flow length"
"         2.000   Overland Slope"
```

```
"         0.000   Pervious Area"
"         6.000   Pervious length"
"         2.000   Pervious slope"
"         0.024   Impervious Area"
"         6.000   Impervious length"
"         2.000   Impervious slope"
"         0.250   Pervious Manning 'n'"
"        75.000   Pervious SCS Curve No."
"         0.000   Pervious Runoff coefficient"
"         0.100   Pervious Ia/S coefficient"
"         8.467   Pervious Initial abstraction"
"         0.015   Impervious Manning 'n'"
"       100.000   Impervious SCS Curve No."
"         1.000   Impervious Runoff coefficient"
"         0.100   Impervious Ia/S coefficient"
"         0.000   Impervious Initial abstraction"
"                     0.009     0.000     0.051     0.051 c.m/sec"
"              Catchment 103          Pervious   Impervious Total Area "
"              Surface Area           0.000      0.024      0.024      hectare"
"              Time of concentration  7.287      0.740      0.740      minutes"
"              Time to Centroid       101.498    81.464     81.464     minutes"
"              Rainfall depth         47.240     47.240     47.240     mm"
"              Rainfall volume        0.00       11.34      11.34      c.m"
"              Rainfall losses        35.061     0.000      0.000      mm"
"              Runoff depth           12.179     47.240     47.240     mm"
"              Runoff volume          0.00       11.34      11.34      c.m"
"              Runoff coefficient     0.000      1.000      1.000      "
"              Maximum flow           0.000      0.009      0.009      c.m/sec"
" 40           HYDROGRAPH Add Runoff "
"             4   Add Runoff "
"                     0.009     0.009     0.051     0.051"
" 33           CATCHMENT 104"
"             1   Triangular SCS"
"             1   Equal length"
"             1   SCS method"
"           104   West Side of Building"
"        80.000   % Impervious"
"         0.126   Total Area"
"        15.000   Flow length"
"         2.000   Overland Slope"
"         0.025   Pervious Area"
"        15.000   Pervious length"
"         2.000   Pervious slope"
"         0.101   Impervious Area"
"        15.000   Impervious length"
"         2.000   Impervious slope"
"         0.250   Pervious Manning 'n'"
"        75.000   Pervious SCS Curve No."
"         0.257   Pervious Runoff coefficient"
"         0.100   Pervious Ia/S coefficient"
"         8.467   Pervious Initial abstraction"
"         0.015   Impervious Manning 'n'"
"        98.000   Impervious SCS Curve No."
"         0.874   Impervious Runoff coefficient"
"         0.100   Impervious Ia/S coefficient"
"         0.518   Impervious Initial abstraction"
"                     0.032     0.009     0.051     0.051 c.m/sec"
"              Catchment 104          Pervious   Impervious Total Area "
"              Surface Area           0.025      0.101      0.126      hectare"
```

```
"             Time of concentration  12.627     1.307      2.082      minutes"
"             Time to Centroid       113.791    87.817     89.595     minutes"
"             Rainfall depth         47.240     47.240     47.240     mm"
"             Rainfall volume        11.90      47.62      59.52      c.m"
"             Rainfall losses        35.103     5.949      11.780     mm"
"             Runoff depth           12.137     41.291     35.460     mm"
"             Runoff volume          3.06       41.62      44.68      c.m"
"             Runoff coefficient     0.257      0.874      0.751      "
"             Maximum flow           0.001      0.032      0.032      c.m/sec"
" 40          HYDROGRAPH Add Runoff "
"            4   Add Runoff "
"                    0.032     0.041     0.051     0.051"
" 40          HYDROGRAPH Copy to Outflow"
"            8   Copy to Outflow"
"                    0.032     0.041     0.041     0.051"
" 40          HYDROGRAPH   Combine    1"
"            6   Combine "
"            1   Node #"
"                Total Runoff"
"             Maximum flow                  0.093    c.m/sec"
"             Hydrograph volume           124.994    c.m"
"                    0.032     0.041     0.041     0.093"
" 40          HYDROGRAPH Start - New Tributary"
"            2   Start - New Tributary"
"                    0.032     0.000     0.041     0.093"
" 81          ADD COMMENT================================================="
"          1  Lines of comment"
"             5yr Flow to Rear of Site"
" 33          CATCHMENT 105"
"            2   Rectangular"
"            1   Equal length"
"            1   SCS method"
"          105   Rear Yard "
"      100.000   % Impervious"
"        0.214   Total Area"
"       20.000   Flow length"
"        2.000   Overland Slope"
"        0.000   Pervious Area"
"       20.000   Pervious length"
"        2.000   Pervious slope"
"        0.214   Impervious Area"
"       20.000   Impervious length"
"        2.000   Impervious slope"
"        0.250   Pervious Manning 'n'"
"       75.000   Pervious SCS Curve No."
"        0.000   Pervious Runoff coefficient"
"        0.100   Pervious Ia/S coefficient"
"        8.467   Pervious Initial abstraction"
"        0.015   Impervious Manning 'n'"
"      100.000   Impervious SCS Curve No."
"        1.000   Impervious Runoff coefficient"
"        0.100   Impervious Ia/S coefficient"
"        0.000   Impervious Initial abstraction"
"                    0.083     0.000     0.041     0.093 c.m/sec"
"             Catchment 105          Pervious   Impervious Total Area "
"             Surface Area           0.000      0.214      0.214      hectare"
"             Time of concentration  15.006     1.524      1.524      minutes"
"             Time to Centroid       107.825    81.595     81.595     minutes"
"             Rainfall depth         47.240     47.240     47.240     mm"
```

```
"              Rainfall volume        0.00       101.09     101.09     c.m"
"              Rainfall losses        35.061     0.000      0.000      mm"
"              Runoff depth           12.179     47.240     47.240     mm"
"              Runoff volume          0.00       101.09     101.09     c.m"
"              Runoff coefficient     0.000      1.000      1.000      "
"              Maximum flow           0.000      0.083      0.083      c.m/sec"
" 40           HYDROGRAPH Add Runoff "
"             4   Add Runoff "
"                    0.083     0.083     0.041     0.093"
" 40           HYDROGRAPH Copy to Outflow"
"             8   Copy to Outflow"
"                    0.083     0.083     0.083     0.093"
" 40           HYDROGRAPH   Combine    1"
"             6   Combine "
"             1   Node #"
"                 Total Runoff"
"              Maximum flow                 0.175    c.m/sec"
"              Hydrograph volume          226.087    c.m"
"                    0.083     0.083     0.083     0.175"
" 40           HYDROGRAPH   Confluence    1"
"             7   Confluence "
"             1   Node #"
"                 Total Runoff"
"              Maximum flow                 0.175    c.m/sec"
"              Hydrograph volume          226.087    c.m"
"                    0.083     0.175     0.083     0.000"
" 38           START/RE-START TOTALS 1"
"             3   Runoff Totals on EXIT"
"              Total Catchment area                    0.548    hectare"
"              Total Impervious area                   0.493    hectare"
"              Total % impervious                     89.901"
" 19           EXIT"
```

```
"                MIDUSS Output ------------------------------------------------>"
"                MIDUSS version                            Version 2.25  rev. 473"
"                MIDUSS created                                  February 7, 2010"
"           10   Units used:                                             ie METRIC"
"                Job folder:         C:\M\Meritech Engineering\PRJ - DOCS\4260\"
"                                                              60-Design\SWM\MIDUSS"
"                Output filename:                          4260x100yr20250916.out"
"                Licensee name:                                  Arianna Franklin"
"                Company                                   Meritech Engineering"
"                Date & Time last used:                2025-09-17 at 10:24:49 AM"
" 81           ADD COMMENT=================================================="
"           2  Lines of comment"
"              260 Waydom Drive, 100yr, 3hr, Chicago Storm, Pre-2020 "
"              Condition"
" 31           TIME PARAMETERS"
"        5.000   Time Step"
"      180.000   Max. Storm length"
"     1500.000   Max. Hydrograph"
" 32           STORM Chicago storm"
"            1   Chicago storm"
"     4688.000   Coefficient A"
"       17.000   Constant B"
"        0.962   Exponent C"
"        0.400   Fraction R"
"      180.000   Duration"
"        1.000   Time step multiplier"
"              Maximum intensity          239.650    mm/hr"
"              Total depth                 87.263    mm"
"            6   100hyd   Hydrograph extension used in this file"
" 81           ADD COMMENT=================================================="
"           1  Lines of comment"
"              100yr Flow towards Waydom Drive Ditch"
" 33           CATCHMENT 101"
"            2   Rectangular"
"            1   Equal length"
"            1   SCS method"
"          101   Roof Portion"
"      100.000   % Impervious"
"        0.024   Total Area"
"        6.000   Flow length"
"        2.000   Overland Slope"
"        0.000   Pervious Area"
"        6.000   Pervious length"
"        2.000   Pervious slope"
"        0.024   Impervious Area"
"        6.000   Impervious length"
"        2.000   Impervious slope"
"        0.250   Pervious Manning 'n'"
"       75.000   Pervious SCS Curve No."
"        0.000   Pervious Runoff coefficient"
"        0.100   Pervious Ia/S coefficient"
"        8.467   Pervious Initial abstraction"
"        0.015   Impervious Manning 'n'"
"      100.000   Impervious SCS Curve No."
"        1.000   Impervious Runoff coefficient"
"        0.100   Impervious Ia/S coefficient"
"        0.000   Impervious Initial abstraction"
"                     0.016     0.000     0.000     0.000 c.m/sec"
"              Catchment 101          Pervious   Impervious Total Area "
```

```
"             Surface Area           0.000      0.024      0.024      hectare"
"             Time of concentration  4.492      0.595      0.595      minutes"
"             Time to Centroid       93.838     80.939     80.939     minutes"
"             Rainfall depth         87.263     87.263     87.263     mm"
"             Rainfall volume        0.00       20.94      20.94      c.m"
"             Rainfall losses        49.280     0.000      0.000      mm"
"             Runoff depth           37.984     87.263     87.263     mm"
"             Runoff volume          0.00       20.94      20.94      c.m"
"             Runoff coefficient     0.000      1.000      1.000      "
"             Maximum flow           0.000      0.016      0.016      c.m/sec"
" 40          HYDROGRAPH Add Runoff "
"            4   Add Runoff "
"                     0.016     0.016     0.000     0.000"
" 33          CATCHMENT 201"
"            2   Rectangular"
"            1   Equal length"
"            1   SCS method"
"          201   Waydom Road"
"      100.000   % Impervious"
"        0.023   Total Area"
"       15.000   Flow length"
"        2.000   Overland Slope"
"        0.000   Pervious Area"
"       15.000   Pervious length"
"        2.000   Pervious slope"
"        0.023   Impervious Area"
"       15.000   Impervious length"
"        2.000   Impervious slope"
"        0.250   Pervious Manning 'n'"
"       75.000   Pervious SCS Curve No."
"        0.000   Pervious Runoff coefficient"
"        0.100   Pervious Ia/S coefficient"
"        8.467   Pervious Initial abstraction"
"        0.015   Impervious Manning 'n'"
"       98.000   Impervious SCS Curve No."
"        0.938   Impervious Runoff coefficient"
"        0.100   Impervious Ia/S coefficient"
"        0.518   Impervious Initial abstraction"
"                     0.015     0.016     0.000     0.000 c.m/sec"
"             Catchment 201          Pervious   Impervious Total Area "
"             Surface Area           0.000      0.023      0.023      hectare"
"             Time of concentration  7.784      1.039      1.039      minutes"
"             Time to Centroid       96.645     83.463     83.463     minutes"
"             Rainfall depth         87.263     87.263     87.263     mm"
"             Rainfall volume        0.00       20.07      20.07      c.m"
"             Rainfall losses        49.280     5.410      5.410      mm"
"             Runoff depth           37.984     81.854     81.854     mm"
"             Runoff volume          0.00       18.83      18.83      c.m"
"             Runoff coefficient     0.000      0.938      0.938      "
"             Maximum flow           0.000      0.015      0.015      c.m/sec"
" 40          HYDROGRAPH Add Runoff "
"            4   Add Runoff "
"                     0.015     0.031     0.000     0.000"
" 33          CATCHMENT 102"
"            1   Triangular SCS"
"            1   Equal length"
"            1   SCS method"
"          102   Asphalt Area"
"       78.000   % Impervious"
```

```
"         0.137   Total Area"
"        20.000   Flow length"
"         2.000   Overland Slope"
"         0.030   Pervious Area"
"        20.000   Pervious length"
"         2.000   Pervious slope"
"         0.107   Impervious Area"
"        20.000   Impervious length"
"         2.000   Impervious slope"
"         0.250   Pervious Manning 'n'"
"        75.000   Pervious SCS Curve No."
"         0.433   Pervious Runoff coefficient"
"         0.100   Pervious Ia/S coefficient"
"         8.467   Pervious Initial abstraction"
"         0.015   Impervious Manning 'n'"
"        98.000   Impervious SCS Curve No."
"         0.919   Impervious Runoff coefficient"
"         0.100   Impervious Ia/S coefficient"
"         0.518   Impervious Initial abstraction"
"                      0.063     0.031     0.000     0.000 c.m/sec"
"              Catchment 102          Pervious   Impervious Total Area "
"              Surface Area           0.030      0.107      0.137      hectare"
"              Time of concentration  9.251      1.234      2.175      minutes"
"              Time to Centroid       104.426    85.583     87.794     minutes"
"              Rainfall depth         87.263     87.263     87.263     mm"
"              Rainfall volume        26.30      93.25      119.55     c.m"
"              Rainfall losses        49.458     7.039      16.371     mm"
"              Runoff depth           37.806     80.225     70.893     mm"
"              Runoff volume          11.39      85.73      97.12      c.m"
"              Runoff coefficient     0.433      0.919      0.812      "
"              Maximum flow           0.006      0.062      0.063      c.m/sec"
" 40           HYDROGRAPH Add Runoff "
"             4   Add Runoff "
"                      0.063     0.094     0.000     0.000"
" 40           HYDROGRAPH Copy to Outflow"
"             8   Copy to Outflow"
"                      0.063     0.094     0.094     0.000"
" 40           HYDROGRAPH   Combine    1"
"             6   Combine "
"             1   Node #"
"                 Total Runoff"
"              Maximum flow                 0.094    c.m/sec"
"              Hydrograph volume          136.892    c.m"
"                      0.063     0.094     0.094     0.094"
" 40           HYDROGRAPH Start - New Tributary"
"             2   Start - New Tributary"
"                      0.063     0.000     0.094     0.094"
" 81           ADD COMMENT================================================="
"           1  Lines of comment"
"              100yr Flows to Neighbouring Property"
" 33           CATCHMENT 103"
"             2   Rectangular"
"             1   Equal length"
"             1   SCS method"
"           103   Roof Portion"
"       100.000   % Impervious"
"         0.024   Total Area"
"         6.000   Flow length"
"         2.000   Overland Slope"
```

```
"         0.000   Pervious Area"
"         6.000   Pervious length"
"         2.000   Pervious slope"
"         0.024   Impervious Area"
"         6.000   Impervious length"
"         2.000   Impervious slope"
"         0.250   Pervious Manning 'n'"
"        75.000   Pervious SCS Curve No."
"         0.000   Pervious Runoff coefficient"
"         0.100   Pervious Ia/S coefficient"
"         8.467   Pervious Initial abstraction"
"         0.015   Impervious Manning 'n'"
"       100.000   Impervious SCS Curve No."
"         1.000   Impervious Runoff coefficient"
"         0.100   Impervious Ia/S coefficient"
"         0.000   Impervious Initial abstraction"
"                      0.016     0.000     0.094     0.094 c.m/sec"
"              Catchment 103          Pervious   Impervious Total Area "
"              Surface Area           0.000      0.024      0.024      hectare"
"              Time of concentration  4.492      0.595      0.595      minutes"
"              Time to Centroid       93.838     80.939     80.939     minutes"
"              Rainfall depth         87.263     87.263     87.263     mm"
"              Rainfall volume        0.00       20.94      20.94      c.m"
"              Rainfall losses        49.280     0.000      0.000      mm"
"              Runoff depth           37.984     87.263     87.263     mm"
"              Runoff volume          0.00       20.94      20.94      c.m"
"              Runoff coefficient     0.000      1.000      1.000      "
"              Maximum flow           0.000      0.016      0.016      c.m/sec"
" 40           HYDROGRAPH Add Runoff "
"             4   Add Runoff "
"                      0.016     0.016     0.094     0.094"
" 33           CATCHMENT 104"
"             1   Triangular SCS"
"             1   Equal length"
"             1   SCS method"
"           104   West Side of Building"
"        80.000   % Impervious"
"         0.126   Total Area"
"        15.000   Flow length"
"         2.000   Overland Slope"
"         0.025   Pervious Area"
"        15.000   Pervious length"
"         2.000   Pervious slope"
"         0.101   Impervious Area"
"        15.000   Impervious length"
"         2.000   Impervious slope"
"         0.250   Pervious Manning 'n'"
"        75.000   Pervious SCS Curve No."
"         0.434   Pervious Runoff coefficient"
"         0.100   Pervious Ia/S coefficient"
"         8.467   Pervious Initial abstraction"
"         0.015   Impervious Manning 'n'"
"        98.000   Impervious SCS Curve No."
"         0.910   Impervious Runoff coefficient"
"         0.100   Impervious Ia/S coefficient"
"         0.518   Impervious Initial abstraction"
"                      0.060     0.016     0.094     0.094 c.m/sec"
"              Catchment 104          Pervious   Impervious Total Area "
"              Surface Area           0.025      0.101      0.126      hectare"
```

```
"             Time of concentration  7.784      1.039      1.757      minutes"
"             Time to Centroid       102.636    85.361     87.200     minutes"
"             Rainfall depth         87.263     87.263     87.263     mm"
"             Rainfall volume        21.99      87.96      109.95     c.m"
"             Rainfall losses        49.416     7.853      16.166     mm"
"             Runoff depth           37.848     79.410     71.098     mm"
"             Runoff volume          9.54       80.05      89.58      c.m"
"             Runoff coefficient     0.434      0.910      0.815      "
"             Maximum flow           0.005      0.058      0.060      c.m/sec"
" 40          HYDROGRAPH Add Runoff "
"            4   Add Runoff "
"                    0.060     0.076     0.094     0.094"
" 40          HYDROGRAPH Copy to Outflow"
"            8   Copy to Outflow"
"                    0.060     0.076     0.076     0.094"
" 40          HYDROGRAPH   Combine    1"
"            6   Combine "
"            1   Node #"
"                Total Runoff"
"             Maximum flow                 0.170    c.m/sec"
"             Hydrograph volume          247.419    c.m"
"                    0.060     0.076     0.076     0.170"
" 40          HYDROGRAPH Start - New Tributary"
"            2   Start - New Tributary"
"                    0.060     0.000     0.076     0.170"
" 81          ADD COMMENT================================================="
"          1  Lines of comment"
"             100yr Flow to Rear of Site"
" 33          CATCHMENT 105"
"            2   Rectangular"
"            1   Equal length"
"            1   SCS method"
"          105   Rear Yard "
"      100.000   % Impervious"
"        0.214   Total Area"
"       20.000   Flow length"
"        2.000   Overland Slope"
"        0.000   Pervious Area"
"       20.000   Pervious length"
"        2.000   Pervious slope"
"        0.214   Impervious Area"
"       20.000   Impervious length"
"        2.000   Impervious slope"
"        0.250   Pervious Manning 'n'"
"       75.000   Pervious SCS Curve No."
"        0.000   Pervious Runoff coefficient"
"        0.100   Pervious Ia/S coefficient"
"        8.467   Pervious Initial abstraction"
"        0.015   Impervious Manning 'n'"
"      100.000   Impervious SCS Curve No."
"        1.000   Impervious Runoff coefficient"
"        0.100   Impervious Ia/S coefficient"
"        0.000   Impervious Initial abstraction"
"                    0.142     0.000     0.076     0.170 c.m/sec"
"             Catchment 105          Pervious   Impervious Total Area "
"             Surface Area           0.000      0.214      0.214      hectare"
"             Time of concentration  9.251      1.226      1.226      minutes"
"             Time to Centroid       97.803     80.979     80.979     minutes"
"             Rainfall depth         87.263     87.263     87.263     mm"
```

```
"              Rainfall volume        0.00       186.74     186.74     c.m"
"              Rainfall losses        49.280     0.000      0.000      mm"
"              Runoff depth           37.984     87.263     87.263     mm"
"              Runoff volume          0.00       186.74     186.74     c.m"
"              Runoff coefficient     0.000      1.000      1.000      "
"              Maximum flow           0.000      0.142      0.142      c.m/sec"
" 40           HYDROGRAPH Add Runoff "
"             4   Add Runoff "
"                      0.142     0.142     0.076     0.170"
" 40           HYDROGRAPH Copy to Outflow"
"             8   Copy to Outflow"
"                      0.142     0.142     0.142     0.170"
" 40           HYDROGRAPH   Combine    1"
"             6   Combine "
"             1   Node #"
"                 Total Runoff"
"              Maximum flow                  0.313    c.m/sec"
"              Hydrograph volume           434.162    c.m"
"                      0.142     0.142     0.142     0.313"
" 40           HYDROGRAPH   Confluence    1"
"             7   Confluence "
"             1   Node #"
"                 Total Runoff"
"              Maximum flow                  0.313    c.m/sec"
"              Hydrograph volume           434.162    c.m"
"                      0.142     0.313     0.142     0.000"
" 38           START/RE-START TOTALS 1"
"             3   Runoff Totals on EXIT"
"              Total Catchment area                      0.548    hectare"
"              Total Impervious area                     0.493    hectare"
"              Total % impervious                       89.901"
" 19           EXIT"
```

Appendix D.2: Post-Development Conditions

```
"                MIDUSS Output ------------------------------------------------>"
"                MIDUSS version                            Version 2.25  rev. 473"
"                MIDUSS created                                 February 7, 2010"
"           10   Units used:                                            ie METRIC"
"                Job folder:         C:\M\Meritech Engineering\PRJ - DOCS\4260\"
"                                                              60-Design\SWM\MIDUSS"
"                Output filename:                              4260d5yr20250916.out"
"                Licensee name:                                    Arianna Franklin"
"                Company                                      Meritech Engineering"
"                Date & Time last used:                2025-09-17 at 10:26:10 AM"
" 81           ADD COMMENT=================================================="
"           2  Lines of comment"
"              260 Waydom Drive, 5yr, 3hr, Chicago Storm, Post-2020 "
"              Condition"
" 31           TIME PARAMETERS"
"        5.000   Time Step"
"      180.000   Max. Storm length"
"     1500.000   Max. Hydrograph"
" 32           STORM Chicago storm"
"            1   Chicago storm"
"     1593.000   Coefficient A"
"       11.000   Constant B"
"        0.879   Exponent C"
"        0.400   Fraction R"
"      180.000   Duration"
"        1.000   Time step multiplier"
"              Maximum intensity          139.250    mm/hr"
"              Total depth                 47.240    mm"
"            6   005hyd   Hydrograph extension used in this file"
" 81           ADD COMMENT=================================================="
"           1  Lines of comment"
"              5yr Flow towards Waydom Drive Ditch"
" 33           CATCHMENT 501"
"            2   Rectangular"
"            1   Equal length"
"            1   SCS method"
"          501   Old Roof Portion"
"      100.000   % Impervious"
"        0.024   Total Area"
"        6.000   Flow length"
"        2.000   Overland Slope"
"        0.000   Pervious Area"
"        6.000   Pervious length"
"        2.000   Pervious slope"
"        0.024   Impervious Area"
"        6.000   Impervious length"
"        2.000   Impervious slope"
"        0.250   Pervious Manning 'n'"
"       75.000   Pervious SCS Curve No."
"        0.000   Pervious Runoff coefficient"
"        0.100   Pervious Ia/S coefficient"
"        8.467   Pervious Initial abstraction"
"        0.015   Impervious Manning 'n'"
"      100.000   Impervious SCS Curve No."
"        1.000   Impervious Runoff coefficient"
"        0.100   Impervious Ia/S coefficient"
"        0.000   Impervious Initial abstraction"
"                     0.009     0.000     0.000     0.000 c.m/sec"
"              Catchment 501          Pervious   Impervious Total Area "
```

```
"             Surface Area           0.000      0.024      0.024      hectare"
"             Time of concentration  7.287      0.740      0.740      minutes"
"             Time to Centroid       101.498    81.464     81.464     minutes"
"             Rainfall depth         47.240     47.240     47.240     mm"
"             Rainfall volume        0.00       11.34      11.34      c.m"
"             Rainfall losses        35.061     0.000      0.000      mm"
"             Runoff depth           12.179     47.240     47.240     mm"
"             Runoff volume          0.00       11.34      11.34      c.m"
"             Runoff coefficient     0.000      1.000      1.000      "
"             Maximum flow           0.000      0.009      0.009      c.m/sec"
" 40          HYDROGRAPH Add Runoff "
"            4   Add Runoff "
"                     0.009     0.009     0.000     0.000"
" 33          CATCHMENT 601"
"            2   Rectangular"
"            1   Equal length"
"            1   SCS method"
"          601   Waydom Road"
"      100.000   % Impervious"
"        0.023   Total Area"
"       15.000   Flow length"
"        2.000   Overland Slope"
"        0.000   Pervious Area"
"       15.000   Pervious length"
"        2.000   Pervious slope"
"        0.023   Impervious Area"
"       15.000   Impervious length"
"        2.000   Impervious slope"
"        0.250   Pervious Manning 'n'"
"       75.000   Pervious SCS Curve No."
"        0.000   Pervious Runoff coefficient"
"        0.100   Pervious Ia/S coefficient"
"        8.467   Pervious Initial abstraction"
"        0.015   Impervious Manning 'n'"
"       98.000   Impervious SCS Curve No."
"        0.890   Impervious Runoff coefficient"
"        0.100   Impervious Ia/S coefficient"
"        0.518   Impervious Initial abstraction"
"                     0.008     0.009     0.000     0.000 c.m/sec"
"             Catchment 601          Pervious   Impervious Total Area "
"             Surface Area           0.000      0.023      0.023      hectare"
"             Time of concentration  12.627     1.307      1.307      minutes"
"             Time to Centroid       105.894    85.550     85.550     minutes"
"             Rainfall depth         47.240     47.240     47.240     mm"
"             Rainfall volume        0.00       10.87      10.87      c.m"
"             Rainfall losses        35.061     5.184      5.184      mm"
"             Runoff depth           12.179     42.055     42.055     mm"
"             Runoff volume          0.00       9.67       9.67       c.m"
"             Runoff coefficient     0.000      0.890      0.890      "
"             Maximum flow           0.000      0.008      0.008      c.m/sec"
" 40          HYDROGRAPH Add Runoff "
"            4   Add Runoff "
"                     0.008     0.018     0.000     0.000"
" 33          CATCHMENT 502"
"            1   Triangular SCS"
"            1   Equal length"
"            1   SCS method"
"          502   Asphalt Area"
"       77.000   % Impervious"
```

```
"         0.143   Total Area"
"        20.000   Flow length"
"         2.000   Overland Slope"
"         0.033   Pervious Area"
"        20.000   Pervious length"
"         2.000   Pervious slope"
"         0.110   Impervious Area"
"        20.000   Impervious length"
"         2.000   Impervious slope"
"         0.250   Pervious Manning 'n'"
"        75.000   Pervious SCS Curve No."
"         0.257   Pervious Runoff coefficient"
"         0.100   Pervious Ia/S coefficient"
"         8.467   Pervious Initial abstraction"
"         0.015   Impervious Manning 'n'"
"        98.000   Impervious SCS Curve No."
"         0.878   Impervious Runoff coefficient"
"         0.100   Impervious Ia/S coefficient"
"         0.518   Impervious Initial abstraction"
"                     0.034     0.018     0.000     0.000 c.m/sec"
"              Catchment 502          Pervious   Impervious Total Area "
"              Surface Area           0.033      0.110      0.143      hectare"
"              Time of concentration  15.006     1.553      2.636      minutes"
"              Time to Centroid       116.727    88.105     90.409     minutes"
"              Rainfall depth         47.240     47.240     47.240     mm"
"              Rainfall volume        15.54      52.02      67.55      c.m"
"              Rainfall losses        35.089     5.780      12.521     mm"
"              Runoff depth           12.151     41.459     34.719     mm"
"              Runoff volume          4.00       45.65      49.65      c.m"
"              Runoff coefficient     0.257      0.878      0.735      "
"              Maximum flow           0.002      0.034      0.034      c.m/sec"
" 40           HYDROGRAPH Add Runoff "
"             4   Add Runoff "
"                     0.034     0.052     0.000     0.000"
" 40           HYDROGRAPH Copy to Outflow"
"             8   Copy to Outflow"
"                     0.034     0.052     0.052     0.000"
" 40           HYDROGRAPH   Combine    1"
"             6   Combine "
"             1   Node #"
"                 Total Runoff"
"              Maximum flow                 0.052    c.m/sec"
"              Hydrograph volume           70.658    c.m"
"                     0.034     0.052     0.052     0.052"
" 40           HYDROGRAPH Start - New Tributary"
"             2   Start - New Tributary"
"                     0.034     0.000     0.052     0.052"
" 81           ADD COMMENT================================================="
"           1  Lines of comment"
"              5yr Flows to Rear of Site"
" 33           CATCHMENT 506"
"             2   Rectangular"
"             1   Equal length"
"             1   SCS method"
"           506   New Roof Portion"
"       100.000   % Impervious"
"         0.031   Total Area"
"         7.500   Flow length"
"         2.000   Overland Slope"
```

```
"         0.000   Pervious Area"
"         7.500   Pervious length"
"         2.000   Pervious slope"
"         0.031   Impervious Area"
"         7.500   Impervious length"
"         2.000   Impervious slope"
"         0.250   Pervious Manning 'n'"
"        75.000   Pervious SCS Curve No."
"         0.000   Pervious Runoff coefficient"
"         0.100   Pervious Ia/S coefficient"
"         8.467   Pervious Initial abstraction"
"         0.015   Impervious Manning 'n'"
"       100.000   Impervious SCS Curve No."
"         1.000   Impervious Runoff coefficient"
"         0.100   Impervious Ia/S coefficient"
"         0.000   Impervious Initial abstraction"
"                      0.012     0.000     0.052     0.052 c.m/sec"
"              Catchment 506          Pervious   Impervious Total Area "
"              Surface Area           0.000      0.031      0.031      hectare"
"              Time of concentration  8.331      0.846      0.846      minutes"
"              Time to Centroid       102.328    81.464     81.464     minutes"
"              Rainfall depth         47.240     47.240     47.240     mm"
"              Rainfall volume        0.00       14.64      14.64      c.m"
"              Rainfall losses        35.061     0.000      0.000      mm"
"              Runoff depth           12.179     47.240     47.240     mm"
"              Runoff volume          0.00       14.64      14.64      c.m"
"              Runoff coefficient     0.000      1.000      1.000      "
"              Maximum flow           0.000      0.012      0.012      c.m/sec"
" 40           HYDROGRAPH Add Runoff "
"             4   Add Runoff "
"                      0.012     0.012     0.052     0.052"
" 33           CATCHMENT 505"
"             2   Rectangular"
"             1   Equal length"
"             1   SCS method"
"           505   Rear Yard"
"       100.000   % Impervious"
"         0.196   Total Area"
"        20.000   Flow length"
"         2.000   Overland Slope"
"         0.000   Pervious Area"
"        20.000   Pervious length"
"         2.000   Pervious slope"
"         0.196   Impervious Area"
"        20.000   Impervious length"
"         2.000   Impervious slope"
"         0.250   Pervious Manning 'n'"
"        75.000   Pervious SCS Curve No."
"         0.000   Pervious Runoff coefficient"
"         0.100   Pervious Ia/S coefficient"
"         8.467   Pervious Initial abstraction"
"         0.015   Impervious Manning 'n'"
"        98.000   Impervious SCS Curve No."
"         0.890   Impervious Runoff coefficient"
"         0.100   Impervious Ia/S coefficient"
"         0.518   Impervious Initial abstraction"
"                      0.072     0.012     0.052     0.052 c.m/sec"
"              Catchment 505          Pervious   Impervious Total Area "
"              Surface Area           0.000      0.196      0.196      hectare"
```

```
"             Time of concentration  15.006     1.553      1.553      minutes"
"             Time to Centroid       107.825    85.631     85.631     minutes"
"             Rainfall depth         47.240     47.240     47.240     mm"
"             Rainfall volume        0.00       92.59      92.59      c.m"
"             Rainfall losses        35.061     5.184      5.184      mm"
"             Runoff depth           12.179     42.055     42.055     mm"
"             Runoff volume          0.00       82.43      82.43      c.m"
"             Runoff coefficient     0.000      0.890      0.890      "
"             Maximum flow           0.000      0.072      0.072      c.m/sec"
" 40          HYDROGRAPH Add Runoff "
"            4   Add Runoff "
"                    0.072     0.084     0.052     0.052"
" 40          HYDROGRAPH Copy to Outflow"
"            8   Copy to Outflow"
"                    0.072     0.084     0.084     0.052"
" 40          HYDROGRAPH   Combine    1"
"            6   Combine "
"            1   Node #"
"                Total Runoff"
"             Maximum flow                  0.137    c.m/sec"
"             Hydrograph volume           167.731    c.m"
"                    0.072     0.084     0.084     0.137"
" 40          HYDROGRAPH Start - New Tributary"
"            2   Start - New Tributary"
"                    0.072     0.000     0.084     0.137"
" 81          ADD COMMENT================================================="
"          1  Lines of comment"
"             5yr Flow to Neighbouring Property"
" 33          CATCHMENT 507"
"            2   Rectangular"
"            1   Equal length"
"            1   SCS method"
"          507   New Roof Portion"
"      100.000   % Impervious"
"        0.034   Total Area"
"        7.500   Flow length"
"        2.000   Overland Slope"
"        0.000   Pervious Area"
"        7.500   Pervious length"
"        2.000   Pervious slope"
"        0.034   Impervious Area"
"        7.500   Impervious length"
"        2.000   Impervious slope"
"        0.250   Pervious Manning 'n'"
"       75.000   Pervious SCS Curve No."
"        0.000   Pervious Runoff coefficient"
"        0.100   Pervious Ia/S coefficient"
"        8.467   Pervious Initial abstraction"
"        0.015   Impervious Manning 'n'"
"      100.000   Impervious SCS Curve No."
"        1.000   Impervious Runoff coefficient"
"        0.100   Impervious Ia/S coefficient"
"        0.000   Impervious Initial abstraction"
"                    0.013     0.000     0.084     0.137 c.m/sec"
"             Catchment 507          Pervious   Impervious Total Area "
"             Surface Area           0.000      0.034      0.034      hectare"
"             Time of concentration  8.331      0.846      0.846      minutes"
"             Time to Centroid       102.328    81.464     81.464     minutes"
"             Rainfall depth         47.240     47.240     47.240     mm"
```

```
"             Rainfall volume        0.00       16.06      16.06      c.m"
"             Rainfall losses        35.061     0.000      0.000      mm"
"             Runoff depth           12.179     47.240     47.240     mm"
"             Runoff volume          0.00       16.06      16.06      c.m"
"             Runoff coefficient     0.000      1.000      1.000      "
"             Maximum flow           0.000      0.013      0.013      c.m/sec"
" 40          HYDROGRAPH Add Runoff "
"            4   Add Runoff "
"                    0.013     0.013     0.084     0.137"
" 33          CATCHMENT 503"
"            2   Rectangular"
"            1   Equal length"
"            1   SCS method"
"          503   Old Roof Portion"
"      100.000   % Impervious"
"        0.023   Total Area"
"        6.000   Flow length"
"        2.000   Overland Slope"
"        0.000   Pervious Area"
"        6.000   Pervious length"
"        2.000   Pervious slope"
"        0.023   Impervious Area"
"        6.000   Impervious length"
"        2.000   Impervious slope"
"        0.250   Pervious Manning 'n'"
"       75.000   Pervious SCS Curve No."
"        0.000   Pervious Runoff coefficient"
"        0.100   Pervious Ia/S coefficient"
"        8.467   Pervious Initial abstraction"
"        0.015   Impervious Manning 'n'"
"      100.000   Impervious SCS Curve No."
"        1.000   Impervious Runoff coefficient"
"        0.100   Impervious Ia/S coefficient"
"        0.000   Impervious Initial abstraction"
"                    0.009     0.013     0.084     0.137 c.m/sec"
"             Catchment 503          Pervious   Impervious Total Area "
"             Surface Area           0.000      0.023      0.023      hectare"
"             Time of concentration  7.287      0.740      0.740      minutes"
"             Time to Centroid       101.498    81.464     81.464     minutes"
"             Rainfall depth         47.240     47.240     47.240     mm"
"             Rainfall volume        0.00       10.87      10.87      c.m"
"             Rainfall losses        35.061     0.000      0.000      mm"
"             Runoff depth           12.179     47.240     47.240     mm"
"             Runoff volume          0.00       10.87      10.87      c.m"
"             Runoff coefficient     0.000      1.000      1.000      "
"             Maximum flow           0.000      0.009      0.009      c.m/sec"
" 40          HYDROGRAPH Add Runoff "
"            4   Add Runoff "
"                    0.009     0.022     0.084     0.137"
" 33          CATCHMENT 504"
"            1   Triangular SCS"
"            1   Equal length"
"            1   SCS method"
"          504   West Building Side"
"       88.000   % Impervious"
"        0.075   Total Area"
"       15.000   Flow length"
"        2.000   Overland Slope"
"        0.009   Pervious Area"
```

```
"       15.000   Pervious length"
"        2.000   Pervious slope"
"        0.066   Impervious Area"
"       15.000   Impervious length"
"        2.000   Impervious slope"
"        0.250   Pervious Manning 'n'"
"       75.000   Pervious SCS Curve No."
"        0.257   Pervious Runoff coefficient"
"        0.100   Pervious Ia/S coefficient"
"        8.467   Pervious Initial abstraction"
"        0.015   Impervious Manning 'n'"
"       98.000   Impervious SCS Curve No."
"        0.874   Impervious Runoff coefficient"
"        0.100   Impervious Ia/S coefficient"
"        0.518   Impervious Initial abstraction"
"                    0.021     0.022     0.084     0.137 c.m/sec"
"             Catchment 504          Pervious   Impervious Total Area "
"             Surface Area           0.009      0.066      0.075      hectare"
"             Time of concentration  12.627     1.307      1.743      minutes"
"             Time to Centroid       113.791    87.817     88.818     minutes"
"             Rainfall depth         47.240     47.240     47.240     mm"
"             Rainfall volume        4.25       31.18      35.43      c.m"
"             Rainfall losses        35.103     5.949      9.447      mm"
"             Runoff depth           12.137     41.291     37.793     mm"
"             Runoff volume          1.09       27.25      28.34      c.m"
"             Runoff coefficient     0.257      0.874      0.800      "
"             Maximum flow           0.000      0.021      0.021      c.m/sec"
" 40          HYDROGRAPH Add Runoff "
"            4   Add Runoff "
"                    0.021     0.043     0.084     0.137"
" 40          HYDROGRAPH Copy to Outflow"
"            8   Copy to Outflow"
"                    0.021     0.043     0.043     0.137"
" 40          HYDROGRAPH   Combine    1"
"            6   Combine "
"            1   Node #"
"                Total Runoff"
"             Maximum flow                 0.180    c.m/sec"
"             Hydrograph volume          223.002    c.m"
"                    0.021     0.043     0.043     0.180"
" 40          HYDROGRAPH   Confluence    1"
"            7   Confluence "
"            1   Node #"
"                Total Runoff"
"             Maximum flow                 0.180    c.m/sec"
"             Hydrograph volume          223.002    c.m"
"                    0.021     0.180     0.043     0.000"
" 38          START/RE-START TOTALS 1"
"            3   Runoff Totals on EXIT"
"             Total Catchment area                      0.549    hectare"
"             Total Impervious area                     0.507    hectare"
"             Total % impervious                       92.370"
" 19          EXIT"
```

```
"                MIDUSS Output ------------------------------------------------>"
"                MIDUSS version                            Version 2.25  rev. 473"
"                MIDUSS created                                  February 7, 2010"
"           10   Units used:                                             ie METRIC"
"                Job folder:         C:\M\Meritech Engineering\PRJ - DOCS\4260\"
"                                                              60-Design\SWM\MIDUSS"
"                Output filename:                          4260d100yr20250916.out"
"                Licensee name:                                  Arianna Franklin"
"                Company                                       Meritech Engineering"
"                Date & Time last used:                2025-09-17 at 10:28:06 AM"
" 81           ADD COMMENT=================================================="
"           2  Lines of comment"
"              260 Waydom Drive, 100yr, 3hr, Chicago Storm, Post-2020 "
"              Condition"
" 31           TIME PARAMETERS"
"        5.000   Time Step"
"      180.000   Max. Storm length"
"     1500.000   Max. Hydrograph"
" 32           STORM Chicago storm"
"            1   Chicago storm"
"     4688.000   Coefficient A"
"       17.000   Constant B"
"        0.962   Exponent C"
"        0.400   Fraction R"
"      180.000   Duration"
"        1.000   Time step multiplier"
"              Maximum intensity           239.650    mm/hr"
"              Total depth                  87.263    mm"
"             6   100hyd   Hydrograph extension used in this file"
" 81           ADD COMMENT=================================================="
"           1  Lines of comment"
"              100yr Flow towards Waydom Drive Ditch"
" 33           CATCHMENT 501"
"             2   Rectangular"
"             1   Equal length"
"             1   SCS method"
"           501   Old Roof Portion"
"      100.000   % Impervious"
"        0.024   Total Area"
"        6.000   Flow length"
"        2.000   Overland Slope"
"        0.000   Pervious Area"
"        6.000   Pervious length"
"        2.000   Pervious slope"
"        0.024   Impervious Area"
"        6.000   Impervious length"
"        2.000   Impervious slope"
"        0.250   Pervious Manning 'n'"
"       75.000   Pervious SCS Curve No."
"        0.000   Pervious Runoff coefficient"
"        0.100   Pervious Ia/S coefficient"
"        8.467   Pervious Initial abstraction"
"        0.015   Impervious Manning 'n'"
"      100.000   Impervious SCS Curve No."
"        1.000   Impervious Runoff coefficient"
"        0.100   Impervious Ia/S coefficient"
"        0.000   Impervious Initial abstraction"
"                     0.016     0.000     0.000     0.000 c.m/sec"
"              Catchment 501          Pervious   Impervious Total Area "
```

```
"             Surface Area           0.000      0.024      0.024      hectare"
"             Time of concentration  4.492      0.595      0.595      minutes"
"             Time to Centroid       93.838     80.939     80.939     minutes"
"             Rainfall depth         87.263     87.263     87.263     mm"
"             Rainfall volume        0.00       20.94      20.94      c.m"
"             Rainfall losses        49.280     0.000      0.000      mm"
"             Runoff depth           37.984     87.263     87.263     mm"
"             Runoff volume          0.00       20.94      20.94      c.m"
"             Runoff coefficient     0.000      1.000      1.000      "
"             Maximum flow           0.000      0.016      0.016      c.m/sec"
" 40          HYDROGRAPH Add Runoff "
"            4   Add Runoff "
"                     0.016     0.016     0.000     0.000"
" 33          CATCHMENT 601"
"            2   Rectangular"
"            1   Equal length"
"            1   SCS method"
"          601   Waydom Road"
"      100.000   % Impervious"
"        0.023   Total Area"
"       15.000   Flow length"
"        2.000   Overland Slope"
"        0.000   Pervious Area"
"       15.000   Pervious length"
"        2.000   Pervious slope"
"        0.023   Impervious Area"
"       15.000   Impervious length"
"        2.000   Impervious slope"
"        0.250   Pervious Manning 'n'"
"       75.000   Pervious SCS Curve No."
"        0.000   Pervious Runoff coefficient"
"        0.100   Pervious Ia/S coefficient"
"        8.467   Pervious Initial abstraction"
"        0.015   Impervious Manning 'n'"
"       98.000   Impervious SCS Curve No."
"        0.938   Impervious Runoff coefficient"
"        0.100   Impervious Ia/S coefficient"
"        0.518   Impervious Initial abstraction"
"                     0.015     0.016     0.000     0.000 c.m/sec"
"             Catchment 601          Pervious   Impervious Total Area "
"             Surface Area           0.000      0.023      0.023      hectare"
"             Time of concentration  7.784      1.039      1.039      minutes"
"             Time to Centroid       96.645     83.463     83.463     minutes"
"             Rainfall depth         87.263     87.263     87.263     mm"
"             Rainfall volume        0.00       20.07      20.07      c.m"
"             Rainfall losses        49.280     5.410      5.410      mm"
"             Runoff depth           37.984     81.854     81.854     mm"
"             Runoff volume          0.00       18.83      18.83      c.m"
"             Runoff coefficient     0.000      0.938      0.938      "
"             Maximum flow           0.000      0.015      0.015      c.m/sec"
" 40          HYDROGRAPH Add Runoff "
"            4   Add Runoff "
"                     0.015     0.031     0.000     0.000"
" 33          CATCHMENT 502"
"            1   Triangular SCS"
"            1   Equal length"
"            1   SCS method"
"          502   Asphalt Area"
"       77.000   % Impervious"
```

```
"         0.143   Total Area"
"        20.000   Flow length"
"         2.000   Overland Slope"
"         0.033   Pervious Area"
"        20.000   Pervious length"
"         2.000   Pervious slope"
"         0.110   Impervious Area"
"        20.000   Impervious length"
"         2.000   Impervious slope"
"         0.250   Pervious Manning 'n'"
"        75.000   Pervious SCS Curve No."
"         0.433   Pervious Runoff coefficient"
"         0.100   Pervious Ia/S coefficient"
"         8.467   Pervious Initial abstraction"
"         0.015   Impervious Manning 'n'"
"        98.000   Impervious SCS Curve No."
"         0.919   Impervious Runoff coefficient"
"         0.100   Impervious Ia/S coefficient"
"         0.518   Impervious Initial abstraction"
"                      0.065     0.031     0.000     0.000 c.m/sec"
"              Catchment 502          Pervious   Impervious Total Area "
"              Surface Area           0.033      0.110      0.143      hectare"
"              Time of concentration  9.251      1.234      2.224      minutes"
"              Time to Centroid       104.426    85.583     87.908     minutes"
"              Rainfall depth         87.263     87.263     87.263     mm"
"              Rainfall volume        28.70      96.09      124.79     c.m"
"              Rainfall losses        49.458     7.039      16.795     mm"
"              Runoff depth           37.806     80.225     70.468     mm"
"              Runoff volume          12.43      88.34      100.77     c.m"
"              Runoff coefficient     0.433      0.919      0.808      "
"              Maximum flow           0.007      0.063      0.065      c.m/sec"
" 40           HYDROGRAPH Add Runoff "
"             4   Add Runoff "
"                      0.065     0.097     0.000     0.000"
" 40           HYDROGRAPH Copy to Outflow"
"             8   Copy to Outflow"
"                      0.065     0.097     0.097     0.000"
" 40           HYDROGRAPH   Combine    1"
"             6   Combine "
"             1   Node #"
"                 Total Runoff"
"              Maximum flow                 0.097    c.m/sec"
"              Hydrograph volume          140.539    c.m"
"                      0.065     0.097     0.097     0.097"
" 40           HYDROGRAPH Start - New Tributary"
"             2   Start - New Tributary"
"                      0.065     0.000     0.097     0.097"
" 81           ADD COMMENT================================================="
"           1  Lines of comment"
"              100yr Flows to Rear of Site"
" 33           CATCHMENT 506"
"             2   Rectangular"
"             1   Equal length"
"             1   SCS method"
"           506   New Roof Portion"
"       100.000   % Impervious"
"         0.031   Total Area"
"         7.500   Flow length"
"         2.000   Overland Slope"
```

```
"         0.000   Pervious Area"
"         7.500   Pervious length"
"         2.000   Pervious slope"
"         0.031   Impervious Area"
"         7.500   Impervious length"
"         2.000   Impervious slope"
"         0.250   Pervious Manning 'n'"
"        75.000   Pervious SCS Curve No."
"         0.000   Pervious Runoff coefficient"
"         0.100   Pervious Ia/S coefficient"
"         8.467   Pervious Initial abstraction"
"         0.015   Impervious Manning 'n'"
"       100.000   Impervious SCS Curve No."
"         1.000   Impervious Runoff coefficient"
"         0.100   Impervious Ia/S coefficient"
"         0.000   Impervious Initial abstraction"
"                      0.021     0.000     0.097     0.097 c.m/sec"
"              Catchment 506          Pervious   Impervious Total Area "
"              Surface Area           0.000      0.031      0.031      hectare"
"              Time of concentration  5.136      0.681      0.681      minutes"
"              Time to Centroid       94.368     80.939     80.939     minutes"
"              Rainfall depth         87.263     87.263     87.263     mm"
"              Rainfall volume        0.00       27.05      27.05      c.m"
"              Rainfall losses        49.280     0.000      0.000      mm"
"              Runoff depth           37.984     87.263     87.263     mm"
"              Runoff volume          0.00       27.05      27.05      c.m"
"              Runoff coefficient     0.000      1.000      1.000      "
"              Maximum flow           0.000      0.021      0.021      c.m/sec"
" 40           HYDROGRAPH Add Runoff "
"             4   Add Runoff "
"                      0.021     0.021     0.097     0.097"
" 33           CATCHMENT 505"
"             2   Rectangular"
"             1   Equal length"
"             1   SCS method"
"           505   Rear Yard"
"       100.000   % Impervious"
"         0.196   Total Area"
"        20.000   Flow length"
"         2.000   Overland Slope"
"         0.000   Pervious Area"
"        20.000   Pervious length"
"         2.000   Pervious slope"
"         0.196   Impervious Area"
"        20.000   Impervious length"
"         2.000   Impervious slope"
"         0.250   Pervious Manning 'n'"
"        75.000   Pervious SCS Curve No."
"         0.000   Pervious Runoff coefficient"
"         0.100   Pervious Ia/S coefficient"
"         8.467   Pervious Initial abstraction"
"         0.015   Impervious Manning 'n'"
"        98.000   Impervious SCS Curve No."
"         0.938   Impervious Runoff coefficient"
"         0.100   Impervious Ia/S coefficient"
"         0.518   Impervious Initial abstraction"
"                      0.128     0.021     0.097     0.097 c.m/sec"
"              Catchment 505          Pervious   Impervious Total Area "
"              Surface Area           0.000      0.196      0.196      hectare"
```

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"             Time of concentration  9.251      1.234      1.234      minutes"
"             Time to Centroid       97.803     83.494     83.494     minutes"
"             Rainfall depth         87.263     87.263     87.263     mm"
"             Rainfall volume        0.00       171.04     171.04     c.m"
"             Rainfall losses        49.280     5.410      5.410      mm"
"             Runoff depth           37.984     81.854     81.854     mm"
"             Runoff volume          0.00       160.43     160.43     c.m"
"             Runoff coefficient     0.000      0.938      0.938      "
"             Maximum flow           0.000      0.128      0.128      c.m/sec"
" 40          HYDROGRAPH Add Runoff "
"            4   Add Runoff "
"                    0.128     0.149     0.097     0.097"
" 40          HYDROGRAPH Copy to Outflow"
"            8   Copy to Outflow"
"                    0.128     0.149     0.149     0.097"
" 40          HYDROGRAPH   Combine    1"
"            6   Combine "
"            1   Node #"
"                Total Runoff"
"             Maximum flow                  0.245    c.m/sec"
"             Hydrograph volume           328.024    c.m"
"                    0.128     0.149     0.149     0.245"
" 40          HYDROGRAPH Start - New Tributary"
"            2   Start - New Tributary"
"                    0.128     0.000     0.149     0.245"
" 81          ADD COMMENT================================================="
"          1  Lines of comment"
"             100yr Flow to Neighbouring Property"
" 33          CATCHMENT 507"
"            2   Rectangular"
"            1   Equal length"
"            1   SCS method"
"          507   New Roof Portion"
"      100.000   % Impervious"
"        0.034   Total Area"
"        7.500   Flow length"
"        2.000   Overland Slope"
"        0.000   Pervious Area"
"        7.500   Pervious length"
"        2.000   Pervious slope"
"        0.034   Impervious Area"
"        7.500   Impervious length"
"        2.000   Impervious slope"
"        0.250   Pervious Manning 'n'"
"       75.000   Pervious SCS Curve No."
"        0.000   Pervious Runoff coefficient"
"        0.100   Pervious Ia/S coefficient"
"        8.467   Pervious Initial abstraction"
"        0.015   Impervious Manning 'n'"
"      100.000   Impervious SCS Curve No."
"        1.000   Impervious Runoff coefficient"
"        0.100   Impervious Ia/S coefficient"
"        0.000   Impervious Initial abstraction"
"                    0.023     0.000     0.149     0.245 c.m/sec"
"             Catchment 507          Pervious   Impervious Total Area "
"             Surface Area           0.000      0.034      0.034      hectare"
"             Time of concentration  5.136      0.681      0.681      minutes"
"             Time to Centroid       94.368     80.939     80.939     minutes"
"             Rainfall depth         87.263     87.263     87.263     mm"
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"             Rainfall volume        0.00       29.67      29.67      c.m"
"             Rainfall losses        49.280     0.000      0.000      mm"
"             Runoff depth           37.984     87.263     87.263     mm"
"             Runoff volume          0.00       29.67      29.67      c.m"
"             Runoff coefficient     0.000      1.000      1.000      "
"             Maximum flow           0.000      0.023      0.023      c.m/sec"
" 40          HYDROGRAPH Add Runoff "
"            4   Add Runoff "
"                    0.023     0.023     0.149     0.245"
" 33          CATCHMENT 503"
"            2   Rectangular"
"            1   Equal length"
"            1   SCS method"
"          503   Old Roof Portion"
"      100.000   % Impervious"
"        0.023   Total Area"
"        6.000   Flow length"
"        2.000   Overland Slope"
"        0.000   Pervious Area"
"        6.000   Pervious length"
"        2.000   Pervious slope"
"        0.023   Impervious Area"
"        6.000   Impervious length"
"        2.000   Impervious slope"
"        0.250   Pervious Manning 'n'"
"       75.000   Pervious SCS Curve No."
"        0.000   Pervious Runoff coefficient"
"        0.100   Pervious Ia/S coefficient"
"        8.467   Pervious Initial abstraction"
"        0.015   Impervious Manning 'n'"
"      100.000   Impervious SCS Curve No."
"        1.000   Impervious Runoff coefficient"
"        0.100   Impervious Ia/S coefficient"
"        0.000   Impervious Initial abstraction"
"                    0.015     0.023     0.149     0.245 c.m/sec"
"             Catchment 503          Pervious   Impervious Total Area "
"             Surface Area           0.000      0.023      0.023      hectare"
"             Time of concentration  4.492      0.595      0.595      minutes"
"             Time to Centroid       93.838     80.939     80.939     minutes"
"             Rainfall depth         87.263     87.263     87.263     mm"
"             Rainfall volume        0.00       20.07      20.07      c.m"
"             Rainfall losses        49.280     0.000      0.000      mm"
"             Runoff depth           37.984     87.263     87.263     mm"
"             Runoff volume          0.00       20.07      20.07      c.m"
"             Runoff coefficient     0.000      1.000      1.000      "
"             Maximum flow           0.000      0.015      0.015      c.m/sec"
" 40          HYDROGRAPH Add Runoff "
"            4   Add Runoff "
"                    0.015     0.038     0.149     0.245"
" 33          CATCHMENT 504"
"            1   Triangular SCS"
"            1   Equal length"
"            1   SCS method"
"          504   West Building Side"
"       88.000   % Impervious"
"        0.075   Total Area"
"       15.000   Flow length"
"        2.000   Overland Slope"
"        0.009   Pervious Area"
```

```
"       15.000   Pervious length"
"        2.000   Pervious slope"
"        0.066   Impervious Area"
"       15.000   Impervious length"
"        2.000   Impervious slope"
"        0.250   Pervious Manning 'n'"
"       75.000   Pervious SCS Curve No."
"        0.434   Pervious Runoff coefficient"
"        0.100   Pervious Ia/S coefficient"
"        8.467   Pervious Initial abstraction"
"        0.015   Impervious Manning 'n'"
"       98.000   Impervious SCS Curve No."
"        0.910   Impervious Runoff coefficient"
"        0.100   Impervious Ia/S coefficient"
"        0.518   Impervious Initial abstraction"
"                    0.039     0.038     0.149     0.245 c.m/sec"
"             Catchment 504          Pervious   Impervious Total Area "
"             Surface Area           0.009      0.066      0.075      hectare"
"             Time of concentration  7.784      1.039      1.450      minutes"
"             Time to Centroid       102.636    85.361     86.415     minutes"
"             Rainfall depth         87.263     87.263     87.263     mm"
"             Rainfall volume        7.85       57.59      65.45      c.m"
"             Rainfall losses        49.416     7.853      12.841     mm"
"             Runoff depth           37.848     79.410     74.423     mm"
"             Runoff volume          3.41       52.41      55.82      c.m"
"             Runoff coefficient     0.434      0.910      0.853      "
"             Maximum flow           0.002      0.038      0.039      c.m/sec"
" 40          HYDROGRAPH Add Runoff "
"            4   Add Runoff "
"                    0.039     0.077     0.149     0.245"
" 40          HYDROGRAPH Copy to Outflow"
"            8   Copy to Outflow"
"                    0.039     0.077     0.077     0.245"
" 40          HYDROGRAPH   Combine    1"
"            6   Combine "
"            1   Node #"
"                Total Runoff"
"             Maximum flow                 0.322    c.m/sec"
"             Hydrograph volume          433.581    c.m"
"                    0.039     0.077     0.077     0.322"
" 40          HYDROGRAPH   Confluence    1"
"            7   Confluence "
"            1   Node #"
"                Total Runoff"
"             Maximum flow                 0.322    c.m/sec"
"             Hydrograph volume          433.581    c.m"
"                    0.039     0.322     0.077     0.000"
" 38          START/RE-START TOTALS 1"
"            3   Runoff Totals on EXIT"
"             Total Catchment area                      0.549    hectare"
"             Total Impervious area                     0.507    hectare"
"             Total % impervious                       92.370"
" 19          EXIT"
```

Appendix E: Agency Comments

The TOWNSHIP of
NORTH DUMFRIES
106 Earl Thompson Road, P.O. Box 1060, Ayr, Ontario – N0B 1E0

July 15th, 2024 Via Email only

Sharon Hepburn
Starbuck Transportation System Inc.
260 Waydom Drive
Ayr, Ontario
N0B 1E0

Email : sharon@westayr.ca

Re : **Pre-Consultation Application – 260 Waydom Drive**
Proposed Site Plan Application
File No: PC-11/24

Dear Ms. Hepburn,

Thank you for your interest in investing in the Township of North Dumfries. A pre-consultation application was circulated to agencies and departments on May 23rd, 2024. Township Staff and outside commenting agencies have provided specific comments pertaining to your application, which are attached to this letter for your information. Please contact the appropriate representative for any questions you may have.

It may be determined during the review of the formal application submission that additional studies or information is required as a result of issues arising during the processing of the application. The applicant will be required to provide technical studies and necessary information as identified by the Township and agencies at their expense.

Please note that comments provided as part of this pre-consultation are valid for a period of up to two years subject to changes in legislation/policies.

The subject property, known municipally as 260 Waydom Drive is developed with an existing industrial building consisting of a total building area of 1,125.3 square metres (12,113 square feet). The industrial building underwent renovations in 2020 that saw a 650.3 square metre (7,000 square feet) addition added to the rear of the then existing building, which was only 475 square metres (5,113 square feet) in size. The industrial building is currently being used to grow commercial cannabis within the enclosed building, which is not a permitted use under the applicable Z.11 – Industrial zoning classification of the Township's Zoning By-law No. 689-83, applied to the property. As such, the applicant has submitted a Pre-Consultation Application to evaluate the requirements for submitting a Zoning By-law Amendment application to establish the appropriate permissions to operate a commercial greenhouse on the property.

The following designations of the Township Official Plan are applicable to the subject lands:

- **Map 2** –Rural Employment Area and Highway 401/Regional Road 97 Employment Area;
- **Map 2.27** – Dry Industrial/Commercial and Highway 401/Regional Road 97 Employment Area;
- **Map 8** – Mineral Aggregates Resource Area

TOWNSHIP PLANNING COMMENTS

Planning Staff commend the applicant for their proposal to grow their industrial business within the Township of North Dumfries. Staff have reviewed the pre-consultation submission with respect to a future Zoning By-law Amendment and Site Plan Application and offer the following comments:

1. The following planning applications will be required to recognize this existing use:

   - **Zoning By-law Amendment - Industrial**
   - **Site Plan Application – Industrial**

   Application submission requirements are provided on page six (6) of this document with respect to a future Zoning By-law Amendment and Site Plan Application.

2. The subject property is currently zoned Z.11 – Industrial in its entirety by Township Zoning By-law No. 689-83. A commercial greenhouse is not listed as a permitted use under the Z.11 – Industrial zone, and therefore, a Zoning By-law Amendment application to establish a site-specific exemption for the property to allow a commercial greenhouse as a permitted use is required.

3. Planning Staff have reviewed the proposed concept plan against the minimum provisions of the Z.11 – Industrial Zone. The table provides confirmation of compliance or non-compliance.

Development Standard	Zoning Requirement	Proposed	Compliance/Non-Compliance
Minimum Lot Area (Without Municipal Water and Sewer)	2000 square metres or the area of a recognized lot.	5,259.3 square metres	**Complies**

Minimum Lot Width (Without Municipal Water and Sewer)	30 metres or the width of a recognized lot	30.48 metres	**Complies**
Minimum Front Yard	7.5 metres	30.48 metres	**Complies**
Minimum Rear Yard	7.5 metres	53.88 metres	**Complies**
Minimum Interior Side Yard	3.25 metres	4.26 metres	**Complies**
Maximum Building Height	13.5 metres	6.5 metres	**Complies**
Outdoor Storage	i) Shall not be permitted between the front wall of the main building and the street line. ii) Shall not be permitted in any required side yard. iii) All outdoor storage areas shall be screened by a wall, fence or planting so that such storage space is not visible from any street. iv) Notwithstanding the aforementioned, outdoor display and sale of new or used motor vehicles or farm equipment is permitted so long as all such display or sales area are to the rear of all building lines by this By-law	No Outdoor Storage appears to be proposed.	**Complies**
Parking	Industry Parking Rate of 1 space for each 2 employees 10 employees = 5 required spaces	10 spaces proposed	**Complies**

Parking Location (Section 6.13.1 b)	All off-street parking areas shall be situated to the rear of the building line.	Parking is proposed in the front yard.	**Does not Comply.** **Applicant should consider moving parking stalls to the rear of the building or establish a permission to allow parking in the front yard through the Zoning By-law Amendment Application.**
Parking Stall Size	3.0 metres by 6 metres	2.75 metres by 5.50 metres	**Does not comply.** **Parking to meet minimum size requirements or request to add a permission for a reduced parking stall size to be included as part of a future Zoning By-law Amendment.**
Lot Coverage	50 percent of the total lot area	21.4 percent	**Complies**

- Based on Staff's review of the minimum provisions, it appears that the proposal will satisfy the minimum performance standards of the Z.11 – Industrial zone. However, the proposed parking stalls located in front of the building line and within the front yard are not permitted under Section 6.13.1 (b) of the Township Zoning By-law. All required parking is to be located to the rear of the building line. As such, the applicant has the following two options with respect to the proposed parking:
    - The first option is to move the proposed parking stalls to the rear of the building to comply with the relevant provision of the By-law.
    - The second option is to request as part of the Zoning By-law Amendment application a site-specific provision that would permit parking to be located in front of the building line and within the front yard. As a Site-Specific By-

law is required to add a new commercial greenhouse use as a permitted use under the Z.11 – Industrial Zone, an additional site-specific provision could be considered for the location of the parking.

- Similarly, the proposed parking stall sizes do not comply with the Township's minimum parking stall size requirements. Therefore, the applicant will be required to either increase their sizes or to submit a request to include a reduced parking stall size as a site-specific provision through the future Zoning By-law Amendment application.

4. Township Planning Staff will require that a Planning Justification Report (PJR) be submitted as part of a Zoning By-law Amendment Application. The PJR should include an introduction with an overview of the proposal and site context, a description of the proposed use for the lands, and the specific details of the Zoning Amendment being requested. It must analyze the proposal's consistency with the Provincial Policy Statement, conformity with the Official Plan, and alignment with other relevant planning documents. The report should provide a rationale for the amendment, assess compatibility and potential impacts on the surrounding area, and propose mitigation measures. The PJR should be prepared by a qualified planning professional.

5. Please note that the applicant will be required to demonstrate that the appropriate licensing has been obtained from the Province of Ontario to permit the growing of cannabis at this location.

6. Please note that the Site Plan drawing does not include any barrier-free spaces as part of the proposed parking plan. Township Planning Staff require that the applicant provide at a minimum one (1) Type A barrier-free parking space on the property. The minimum stall size for a Type A parking space is 3.4 metres by 6 metres, as per the GAATES Guide (Global Alliance on Accessible Technologies and Environments).

7. Should the applicant choose to maintain the proposed parking spaces within the front yard, Planning Staff request that the applicant consider incorporating a 1.5 metre landscape strip adjacent to the first parking stall located closest to the road frontage. Currently, the Plan identifies a 1.5 metre separation from the property line. A landscape buffer would provide a more defined separation between the parking space and the street.

8. Please identify the height of the existing precast concrete retaining wall located along the western property line.

9. Further to the comments provided by the Fire Department, please confirm that a sufficient on-site water supply will be available for firefighting.

10. Please identify garbage collection areas and snow storage locations on the Site Plan drawing.

11. A photometrics plan will be required to identify existing and proposed exterior lighting on the site. Please ensure that little to no light spill advances across the property lines.

12. Please identify all registered easements on the Site Plan. Please identify whom the easement is in favour of.

13. Please note that the comments from the Region of Waterloo advise that a Record of Site Condition (RSC) may be required, and that internal discussions were being had to determine whether an RSC would be necessary. As per the email correspondence received from Regional Staff on July 8th, 2024, attached as part of the consolidated comments document, an RSC and Ministry Acknowledgement will not be required as part of a complete application for a future Zoning By-law Amendment.

14. Please note that Township Staff will require that an Emissions Assessment be prepared to evaluate and mitigate any potential environmental impacts associated with the cultivation of cannabis indoors, including but not limited to, odor control, air quality, and any other emissions that could affect the surrounding property owners.

ZONING BY-LAW AMENDMENT REQUIREMENTS

1) Cover Letter;
2) Complete Zoning By-law Amendment Application Form;
3) Planning Justification Report;
4) Emissions Assessment;
5) Site Plan Drawing;
6) Elevations and Floor Plans;
7) Grading Plan;
8) Photometrics Plan;
9) Functional Servicing Report and Site Servicing Plan;
10) Stormwater Management Plan and Report;
11) Cost Estimates for Proposed Works;
12) OBC Matrix as per Building Department Comments;
13) **2024 Fees**:
    A. Township Fees
        - Zoning By-law Amendment (Industrial): $4,700.00
        - Refundable Deposit – Standard: $6,600.00

TOWNSHIP AND AGENCY COMMENTS

Comments were provided by the following commenting agencies:

1. GRCA – John Brum: jbrum@grandriver.ca
   Comments provided on May 23rd, 2024.

The TOWNSHIP of NORTH DUMFRIES
106 Earl Thompson Road, P.O. Box 1060, Ayr, Ontario – N0B 1E0

2. Regional Municipality of Waterloo – Matthew Colley: mcolley@regionofwaterloo.ca
   Comments provided in June 2024.

3. Engineering and Public Works Department – Sandy Bucholtz:
   sbucholtz@northdumfries.ca
   Comments provided on July 11th, 2024.

5. Building Department Comments – Shannon Black: sblack@northdumfries.ca
   Comments provided on July 9th, 2024.

6. Fire Department – Eric Yates: eyates@cambridge.ca
   Comments provided on June 18th, 2024.

7. Grandbridge Energy Comments – Shunzi Redfern:
   sredfern@grandbridgeenergy.com
   Comments provided on May 24th, 2024.

Should you have any questions, please do not hesitate to contact me at macampos@northdumfries.ca or by telephone at 519-632-8800 ext. 132.

Yours sincerely,

Michael Campos, BES
Manager of Planning

Michael Campos

From: Shannon Black
Sent: July 9, 2024 2:55 PM
To: Michael Campos
Subject: RE: Request for Comments - Pre-Consultation Application File No. PC-11-24: 260 Waydom Drive

Follow Up Flag: Follow up
Flag Status: Flagged

Michael,

My comments on this application are
-OBC matrix required to confirm 3.2.2 classification, number of storeys due to changes to open floor and mezzanine configurations
-Fully dimensioned floor plan to confirm room sizing and mezzanine sizes
-If the precast conc retaining wall exceeds 0.91m in height, compliance with the setbacks in zbl required
-Septic verification required. Confirmation of cannabis grow wash water storage
-Verification of water quantity to water plants and confirmation it is coming from existing well
-Confirmation that operation is only for growing, no extraction or manufacturing of products occurring onsite. ZBL text to capture.
-Copy of health Canada Cannabis license
-Any exterior fencing or security requirements required by the health Canada license to be shown on site plan, compliance with the Township's fence by-law required
-It appears that there is a transformer and generator located along the west property line, these should be shown on the plan
-Grading plan
-Snow storage should be shown and garbage if external to the building

Shannon Black, CBCO
Director of Development Services/Chief Building Official

The Corporation of the Township of North Dumfries
106 Earl Thompson Road, 3rd Floor
P.O. Box 1060
Ayr, Ontario N0B 1E0

☎ 519-632-8800 🖷 519-632-8700
✉ sblack@northdumfries.ca

Website: www.northdumfries.ca

Michael Campos

From: Eric Yates
Sent: June 18, 2024 12:58 PM
To: Michael Campos
Subject: RE: Request for Comments - Pre-Consultation Application File No. PC-11-24: 260 Waydom Drive

HI Michael,

The following comments:

- Ensure OBC requirements are met
- Provide calculations to ensure onsite water for firefighting purpose is adequate for occupancy
- CHUBB box keyed to North Dumfries Fire Department to be located in an accessible location. Location to be determined prior to installation
- Ensure proper fire route, FDC, and water reservoir signage

Regards,

Eric Yates, CFEI
Deputy Chief, Chief Fire Prevention Officer
North Dumfries Fire Department
501 Scott Street
Ayr, ON N0B 1E0
p.519-632-8800 x138
m.519-242-4608
f.519-632-8700
eyates@northdumfries.ca

From: Michael Campos <mcampos@northdumfries.ca>
Sent: Thursday, May 23, 2024 1:41 PM
To: Sandy Bucholtz <sbucholtz@northdumfries.ca>; Robert Shantz <rshantz@northdumfries.ca>; Eric Yates <eyates@northdumfries.ca>; Shannon Black <sblack@northdumfries.ca>; Matt Colley - Region of Waterloo <MColley@regionofwaterloo.ca>; Region of Waterloo <planningapplications@regionofwaterloo.ca>; John Brum <jbrum@grandriver.ca>; notifications-enbridge <notifications@enbridge.com>; est.reg.crossing <est.reg.crossing@enbridge.com>; NMunicipalRequest@grandbridgeenergy.com; Waterloo Catholic District School Board <planning@wcdsb.ca>; Waterloo Region District School Board <planning@wrdsb.ca>
Cc: Planning <planning@northdumfries.ca>; Alida Wilms <awilms@northdumfries.ca>; Andrew Mcneely <amcneely@northdumfries.ca>
Subject: Request for Comments - Pre-Consultation Application File No. PC-11-24: 260 Waydom Drive

Good morning, Everyone,

The Township of North Dumfries has received a Pre-Consultation Application for the property municipally addressed as 260 Waydom Drive. The subject property is currently being operated as an indoor Commercial Greenhouse for the production of cannabis, which is not a permitted use within the Township's Z.11 – Industrial zone. As such, the Owner is preparing to submit a future Zoning By-law Amendment application to establish a site-specific provision to acknowledge a Commercial Greenhouse as a permitted use on this property.

May 24, 2024

260 Waydom Dr
North Dumfries Township, PRE-CON/PC-11-24

Township of North Dumfries
North Dumfries Community Complex
106 Earl Thompson Road, 3rd Floor
Ayr, ON N0B 1E0
Attn: Michael Campos

Via E-mail

Re: 260 Waydom Dr, pre-consultation for a future ZBA application

---

GBE has no objection to the proposal by the Applicant/Owner to submit a future Zoning By-law Amendment to establish a site-specific provision to acknowledge a Commercial Greenhouse as a permitted use on this property. All GBE and ESA minimum clearances to existing hydro plant must be met. The approval requires that there are no changes proposed to the existing footprint of the dwelling. If relocation or upgrade of hydro plant is required as a result of this Application, the Applicant/Owner will be responsible for 100% cost. If easements are required as a result of this application, the Applicant/Owner will be responsible for 100% cost.

I trust this is satisfactory, however, should additional information be required, kindly contact me at your convenience.

Kindest Regards,
GrandBridge Energy Inc.
Shunzi Redfern
Shunzi Redfern

Christina Blazinovic

From: John Brum <jbrum@grandriver.ca>
Sent: May 23, 2024 3:14 PM
To: Michael Campos
Cc: Planning; 'Matthew Colley'; Cheryl Marcy
Subject: PC-11/24 (260 Waydom Dr.)-GRCA Comments
Attachments: PC11-24 MAP.pdf

Follow Up Flag: Follow up
Flag Status: Completed

Hi Michael,

Please be advised that the subject property is not regulated by the GRCA and is outside of our area of interests (refer to the attached map). As such, we have no comments/concerns regarding this pre-consultation application.

I trust this helps.

Regards,

John Brum
Resource Planner
Grand River Conservation Authority

400 Clyde Road, PO Box 729
Cambridge, ON N1R 5W6
Office: 519-621-2763 ext. 2233
Toll-free: 1-866-900-4722
Email: jbrum@grandriver.ca
www.grandriver.ca | Connect with us on social media

Grand River Conservation Authority

Date: May 23, 2024
Author: J.Brum

PC-11/24 (260 Waydom Dr)

Legend

- Regulation Limit (GRCA)
- Floodplain (GRCA)
  - Engineered
  - Estimated
  - Approximate
- Floodplain - Special Policy Area (GRCA)
- Slope Erosion (GRCA)
  - Steep
  - Oversteep
  - Toe
- Slope Valley (GRCA)
  - Steep
  - Oversteep
- Regulated Watercourse (GRCA)
- Regulated Waterbody (GRCA)
- Wetland (GRCA)
- Lake Erie Flood (GRCA)
- Lake Erie Shoreline Reach (GRCA)
- Lake Erie Dynamic Beach (GRCA)
- Lake Erie Erosion (GRCA)
- Parcel - Assessment (MPAC/MNRF)
- Conservation Area Boundary (GRCA)

Scale 1:1,452

NAD83 UTM zone 17 (EPSG:26917)

Map Centre (X,Y): 545281.71, 4798433.75 | Map Link

This map is not to be used for navigation | 2022 Ortho (ROWG)

Township of North Dumfries
Pre-Submission Consultation (PC-11/24)
June 2024
Zoning By-Law Amendment
260 Waydom Drive

The owner/applicant is proposing a future Zoning By-Law Amendment for 260 Waydom Drive. The subject property is currently operated as an indoor Commercial Greenhouse for the production of cannabis. The existing operation is located entirely within the enclosed building and comprises roughly 836 square metres of the total building area. The remaining building area is used for storage and office space.

This use is currently not permitted with the Township's Industrial zone and therefore a Zoning By-Law Amendment is proposed to establish a site-specific provision to acknowledge the existing use as permitted on the subject lands. The subject property is on private services and no new development is proposed with this application.

The subject lands are located in the Highway 401/Regional Road 97 Employment Area in the Regional Official Plan (ROP).

Regional Municipality of Waterloo

Regional Fees

The following application fees are applicable according to the Regional Fee By-Law 23-062:

- Regional Zoning By-Law Amendment Fee - $3000.00

Record of Site Condition

The subject lands are identified as having High Threats in the Region's Threats Inventory Database associated with historical industrial uses on the property. As per the Region's Implementation Guideline for the Review of Development Applications on or Adjacent to Known and Potentially Contaminated Sites a development application proposing to legalize a non-sensitive use with high contamination on the subject lands requires a Record of Site Condition (RSC). The RSC and Ministry Acknowledgement Letter is required as part of a complete application, unless otherwise waived by the Regional Commissioner of Planning, Development and Legislative Services.

Regional Staff are considering whether based on the nature of the subject application if the RSC requirement is appropriate. Staff encourage the owner/applicant to reach out to Regional Staff on this matter.

Application Requirements:

The following items are required as part of the complete application(s):

- Regional Zoning By-Law Amendment Fee - $3000.00

- RSC and Ministry Acknowledgement Letter (unless otherwise waived by the Region)

Contact

Community Planning
Matthew Colley
Senior Planner
519-577-6241
MColley@regionofwaterloo.ca

Please note: Comments and requirements are based on the information provided by the applicant during the pre-submission process. Should new details and/or information become available through the application process, the above-noted requirements are subject to change.

Michael Campos

From: Matthew Colley <MColley@regionofwaterloo.ca>
Sent: July 8, 2024 9:00 AM
To: Michael Campos
Cc: Christina Blazinovic
Subject: RE: 260 Waydom Dr Pre-Sub Comments

HI Michael,

Just an update from these comments if you want to pass along to applicant. Regional Staff have reviewed internally and concur that no RSC is required for this future ZBL application due to there being no significant purpose based on the nature of the proposed application.

Thank you.

Matthew Colley, MCIP, RPP
Senior Planner
Planning, Development and Legislative Services
Regional Municipality of Waterloo
T: 519-575-4757 ext. 3210
C : 519-577-6241
F: 519-575-4449
Mcolley@regionofwaterloo.ca

From: Matthew Colley
Sent: Wednesday, June 12, 2024 8:52 AM
To: 'Michael Campos' <mcampos@northdumfries.ca>
Cc: Christina Blazinovic <cblazinovic@northdumfries.ca>
Subject: RE: 260 Waydom Dr Pre-Sub Comments

Hi Michael,

We received payment. Unfortunately our Legal Staff is off this week so I cannot finalize/sort out the RSC item so for the time being it is still required. I will update you when I have a clearer answer.

For now see the attached comments.

Thanks.

Matthew Colley, MCIP, RPP
Senior Planner
Planning, Development and Legislative Services
Regional Municipality of Waterloo
T: 519-575-4757 ext. 3210
C : 519-577-6241
F: 519-575-4449
Mcolley@regionofwaterloo.ca

From: Michael Campos <mcampos@northdumfries.ca>
Sent: Friday, June 7, 2024 2:17 PM
To: Matthew Colley <MColley@regionofwaterloo.ca>

The TOWNSHIP of NORTH DUMFRIES

MEMORANDUM

To: **Development Services, Township of North Dumfries**

Attention: Michael Campos, BES, Manager of Planning

From: Sandy Bucholtz, Engineering Technologist

Re: **Request for Comments**

Date: Thursday, July 11, 2024

Application(s): PC-11-24
Owner(s): Starbuck Transportation
Civic Address: 260 Waydom Dr.

Comments:
The Engineering and Public Works Department has reviewed the following information.

- Package as distributed by Planning

We offer the following comments

- The applicant will be required to submit the following documents.
  - Stormwater Management (SWM) Report
  - Traffic Impact Study
  - Servicing and Grading Plan

Appendix F: Historical Drawings

(Intentionally left blank)

Meritech Engineering 1315 Bishop Street North Suite 202 Cambridge ON N1R 6Z2 t 519.623.1140 f 519.623.7334