FUNCTOINAL SERVICING REPORT

PROPOSED RESIDENTIAL DEVELOPMENT AT 7085 GOREWAY DRIVE

FIELDGATE DEVELOPMENTS INC. REDWOOD PROPERTIES INC.

CITY OF MISSISSAUGA Project: 2020-4866

MAY 2020





6 Ronrose Drive Concord, Ontario L4K 4R3

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1.0 INTRODUCTION

1.1 Objective

This Functional Servicing Report is provided in support of the proposed residential development located at 7085 Goreway Drive in the City of Mississauga and prepared at the request of Fieldgate Developments Inc. in association with Redwood Properties Inc.. The property is legally defined as Part of Lot 11, Concession 8, east of Hurontario Street, City of Mississauga, Regional Municipality of Peel.

The property is 0.99ha and is bound on the north by an existing fire station and residential properties, on the east at south by a Mimico Creek, and on the west by Goreway Drive, as shown in **Figure 1**.

This report evaluates the existing and proposed water supply, sanitary and stormwater management services within and surrounding the subject property, thereby demonstrating the viability of the proposed development, and guiding its detailed design.

1.2 Existing Conditions/Site Constraints

Presently there is an existing commercial property adjacent to Goreway Drive with an associated parking area in the rear. Available topography indicates a variance in elevation of about 2m. The peak elevation is just above 166.0m at the northwest portion of the site, in the parking lot. The lowest point has an elevation just under 164.0m at the southeast portion of the site adjacent to the Creek. This suggests that the site drains to the southeast.

The surrounding properties are well developed with existing commercial along the eastern side of Goreway Drive, and existing single detached homes in the adjacent subdivision north of the site. Utility services exist off of Goreway Drive.

A Flood Hazard Assessment was conducted by Greck and Associates Limited, dated August 2019, which determined that there will be no negative impact to the flood hazard due to the proposed development.





1.3 Proposed Development Plan and Population

The subject site has an area of 0.99ha and is proposed to consist of two (2) high-rise condominium; an 18-storey west tower and a 16-storey east tower, with shared 2-storey podium, as well as twelve (12) 2-storey townhouse units to be located at the rear of the property, all sharing 3 levels of underground parking. The site plan and associated site stats, prepared by IBI Group, have been included in **Appendix A** for reference.

The Region of Peel guidelines for sanitary sewer and water supply design recommends a population density of the greater between 475 persons/hectare for high-density residential land-use, or 2.7 people per residential unit and a population density of 175 persons/hectare for row dwellings. Based on this criteria, the subject site's design population is 762 persons; 700 from the high-density residential (based on the more conservative 2.7ppu) and 62 from the row dwellings, as shown in **Table 1.1.**

Land Use	Criteria	Qty	Population	
High-Density Residential	475 persons/ha	0.64 ha	304	
High-Density Residential	2.7 p.p.u.	p.p.u. 259 units		
West Tower		138 units	373	
East Tower		121 units	327	
Townhouses	175 persons/ha	0.35 ha	62	

Table 1.1: Estimated Population Summary

Based on the proposed site plan, the high-rise portion of the development encompasses approximately 0.64 ha which includes the existing commercial building area as well as the proposed underground ramp, and the town house units encompass the remaining area at the very rear of the property, approximately 0.35 ha as shown on the site plan.



2.0 WATER SUPPLY

2.1 Existing Water Supply Services

The subject property is located within the South Peel Water Supply System Pressure Zone 4. Zone 4 is serviced by the Hanlan Reservoir and Pumping Station. Based on information received from the Region of Peel, the following watermains exist in the vicinity of the site:

- a 400mm diameter concrete watermain along the east side of Goreway Drive;
- a 150mm diameter PVC watermain along the west side of Goreway Drive;

There is an existing hydrant adjacent to the subject site. Existing water supply infrastructure can be seen schematically on **Figure 2**.

2.2 Design Criteria

The proposed water supply scheme will be designed in accordance with the Region of Peel design criteria for water systems. The following summarizes typical residential-use design criteria.

- The system shall be designed to provide sufficient flow and pressure to meet the greater of the Maximum Daily Demand Plus Fire Flow or the Maximum Hourly Demand;
- Average Daily Demand of 0.280 m³/capita/day for residential areas;
- Maximum Daily Demand and Peak Hourly Demand factors shall be 2.0 and 3.0, respectively;
- Minimum watermain size of 300mm for residential areas;
- Operating pressure requirements are noted as follows:

Description	Pressure
Minimum Pressure	275 kPa (40 psi)
Maximum Pressure	690 kPa (100 psi)

- The dead ends shall be minimized by looping all watermains.
- Fire Flows in accordance with Water Supply for Public Fire Protection Survey;



2.3 Proposed Water Supply

One 200mm fire connection and one 150mm domestic water service connection are proposed to service the subject site. It is proposed that the subject site be serviced via connection to the existing 400mm watermain along the east side of Goreway Drive. A preliminary servicing scheme is illustrated in **Figure 2**.

Based on the Region of Peel's design criteria for water supply, the population of the site is 762 persons (as shown in **Table 1.1**: Estimated Population Summary). For a population of 762, the Average Daily Demand (based on 0.280 m³/capita/day) will be 2.47L/s.

The Maximum Daily Demand and Peak Hour Demand are calculated as 4.54L/s and 6.81 L/s respectively for the high-rise building and 0.28L/s and 0.60 L/s respectively for the townhouse units, based on the prescribed peaking factors. **Table 2-1** summarizes the estimated potable water demand.

Land Use	Population	Average Daily Demand (L/s) ¹	Maximum Daily Demand (L/s) ²	Peak Hour Demand (L/s) ³
Residential (High-Rise)	700	2.27	4.54	6.81
Residential (Townhouse)	62	0.20	0.28	0.60

 Table 2.1: Summary of Estimated Potable Water Demand

1. Based on 0.280 m³/capita/day

2. Based on a Max Day Factor of 2.0

3. Based on a Peak Hour Factor of 3.0

The fire flow demand for the high-rise building was calculated assuming the building will be fireresistive construction, and that the vertical openings and exterior vertical communications are properly protected (one-hour rating). In addition, the fire flow demand for the townhouse units was calculated, considering non-combustible construction and sprinkler-free. A maximum fire flow of 7,000L/min, or 117L/s, has been calculated using FUS for the towns, which governs. Supporting calculations can be found in **Appendix B** for both the high-rise and townhomes.

It is anticipated that sufficient capacity and pressure will be available to service the proposed development. Hydrant testing should be conducted to verify the adequacy of the water supply service.





3.0 SANITARY SERVICING

3.1 Existing Sanitary Infrastructure

Based on information received from the Region of Peel, there is an existing 250mm sanitary sewer on the west side of Goreway Drive, which drains west on Dorcas Street and then south on Minotola Avenue.

As the subject site is 0.99 ha, based on the Region's 50 persons per hectare population equivalency, we can extrapolate the site population to be 50 persons.

3.2 Design Criteria

The proposed sanitary servicing of the subject site will be designed in accordance with the Region of Peel's "Public Works Design, Specifications and Procedures Manual". These criteria, where applicable to the proposed development, are summarized below.

- The design flow is equal to the Average Dry Weather Flow multiplied by the Average Peak Sanitary Flow Factor, plus the Infiltration Allowance;
- The Average Dry Weather Flow is based on 302.8 L/capita/day;
- If the population is less than 1000 persons, the domestic sewage flow shall be 13L/s plus the infiltration allowance
- For residential areas, the peak sanitary flow factor is based on the Harmon formula $(M = 1 + 14/(4 + P^{0.5}))$, where P is population in thousands;
- Except under unusual circumstances, infiltration allowance shall be determined at 0.2 x 10⁻³ m³/s/ha for all types of land use;
- Determination of pipe sizes and capacities to be based on Region of Peel standard drawing SD-2-9-3 or use Manning's Formula;

3.3 Proposed Sanitary Servicing

The subject development is proposed to be serviced via connection to the existing 250mm sewer along Goreway Drive (**Figure 2**).

A preliminary assessment of the anticipated design flow rates has been conducted in accordance with Region of Peel design criteria. With an estimated population of 762 persons, the expected



design flow is 13.20 L/s as according to the Region of Peel standard drawing 2-9-2, the domestic sewage flow for populations less than 1000 persons, shall be 0.013m³/s plus the infiltration allowance. **Table 3.1** summarizes the estimated sanitary flow demands, and supporting calculations can be found in **Appendix C**.

Land Use	Area (ha)	Expected Population ⁽¹⁾	Average Sewage Flow ⁽²⁾ (L/s)	Infiltration Inflow ⁽³⁾ (L/s)	Estimated Total Flow (L/s)
Residential (High-Rise)	0.64	700		0.13	9.93
Residential (Townhouse)	0.35	62		0.07	1.00
Total	0.99	762	13.00	0.20	13.20

(1) From Table 1.1

⁽²⁾ According to the Region of Peel STD.DWG.2-9-2

⁽³⁾ Infiltration rate of 0.2 L/s/ha (Region of Peel Design Criteria)

Based on the information received from the Region, the existing sanitary sewer estimated a population of 156 for 2.8 ha (6.9 acres) for an area which appears to only include the west side of Goreway Drive. As such, the downstream sanitary calculations which are included in **Appendix C** have added the east side of Goreway Drive, and analyzed the downstream sewers down to Minotola Avenue. The design sheets indicate sufficient capacity to convey the increased flows for the redevelopment. It should be noted that the sanitary design sheet provided by the Region of Peel (for Pastoria Holdings) included in **Appendix C** denotes mention of a 30" dia. trunk sewer, the location of which has not been provided based the records we have obtained from the Region. Should we be able to obtain records of the trunk sewer, the downstream analysis can be revised as need be.



4.0 STORM DRAINAGE

4.1 Existing Site Conditions and Servicing Proposal

As previously noted, the subject site currently consists of a commercial building and large parking lot area, that appears to have been constructed during the years of 1980/1985 based on aerial photography per the City of Mississauga's Online Mapping Service. According to information provided by the City and Region, there is an existing 450/525 mm dia. storm sewer located on Goreway Drive, to the west of the subject site. Site investigations and the topographic survey indicate that the exiting site's flows are captured via various on-site catchbasins and discharge to the East Branch of Mimico Creek, located immediately south of the subject site. This drainage scheme will be maintained in the post-development condition, as the subject site is proposed to drain into Mimico Creek, discharging via a proposed headwall.

The subject site has an area of 0.987 ha. Reducing the small (164 sq.m.) piece at the existing site's northwest corner which is currently draining west to the adjacent 7125 Goreway retail parcel gives an area of 0.97 ha. The existing site is partially within the regulatory floodline per the information provided by Greck & Associates Ltd., and as part of the site's development, it is proposed to regrade within the public lands to the east of the site in order to allow for the redevelopment to proceed. The proposed regulatory floodplain has been provided by Greck & Associates Ltd. (refer to **Appendix D**) and shown on the preliminary engineering plans. Removing the portion of the subject site that will be within the proposed regulatory floodplain leaves an area of 0.77 ha, which will the basis of the stormwater calculations for the site. The lands within this new regulatory floodplain, which are currently asphalt parking lot, will be converted to pervious soft landscaping, ensuring pre-development flows are reduced.

It should be noted that site investigation has revealed that the stormwater flows from 7101 Goreway Drive (the adjacent Fire Station) are discharged to Mimico Creek by a sewer that cuts through the middle of the subject site in an easement. As part of this redevelopment proposal, as indicated on the site servicing plan SS-1, we are proposing to redirect the sewer around the development (through a new easement) to Mimico Creek. As the existing storm sewer from 7101 Goreway is located under the floodplain elevation, it is not feasible to raise the sewer above the regulatory (or 100-year) flood plain level. This mimics the existing conditions.

As indicated on the Site Servicing drawing (SS-1) included in **Appendix E**, the subject site's flows will be discharging via a proposed storm sewer towards Mimico Creek. The proposed regulatory



and 100-yr floodlines provided by Greck & Associates Ltd. are at elevations of 165.27m and 163.15m, respectively. The storm system leaving the subject site is proposed at 163.65m, which is 0.50m higher than the 100-year floodline, to mitigate flooding risks. In order to further mitigate the effects of the regulatory floodline, backwater preventers will be considered during the detailed design stage.

4.2 Design Criteria

The stormwater flow calculations are based on the following the City of Mississauga design criteria:

- As the storm flows will discharge to the Mimico Creek, Post to Pre-development controls for all storm events are to be provided;
- The first 5mm of runoff shall be retained on-site and managed by way of infiltration, evapotranspiration or re-use;
- Storm sewers shall be designed using Rational Formula; Q = 0.0028 CIA, where Q is the flow rate in m³/s, C is the runoff coefficient (dimensionless), I is rainfall intensity in mm/hr and A is area in ha;
- Storm sewer design should be based on City of Mississauga Rainfall Intensity Curves and a minimum time of concentration of 15 min. $I = A/(T + B)^{C}$, where I is rainfall intensity in mm/hr, T is time of Concentration in hours, A = 610, B = 4.6, C = 0.78 for the 2-year storm event;
- Runoff Coefficient:
 - Impervious surfaces 0.90
 - o Sodded surfaces 0.25
 - Runoff Coefficients are to be adjusted per the City's Design Criteria, to account for increase in runoff due to saturation of the catchment surface that would occur for larger, less frequent storms.

4.3 Proposed Servicing and Allowable Release Rate

All storm flows will be directed to the stormwater management tank and controlled to an allowable release rate which will conform to the requirements noted above.



The pre-development and post-development hydrologic conditions for the site were established using the City's IDF data, a recommended entry time of 15 minutes, and weighted runoff coefficients.

In the estimation of the allowable release rates, a weighted pre-development runoff coefficient was calculated reflecting the imperviousness of the existing building & parking area. Per City design criteria, the pre-development runoff coefficient shall be limited to 0.50 and thus governs in this case. Using the rational method, the peak release rate was calculated for the subject site. The calculations have been included in **Appendix D**, and results summarized below.

Return Period (years)	Runoff Coefficient ⁽¹⁾	Intensity (mm/hr)	Peak Flow (m ³ /sec)
2	0.50	59.89	0.064
5 0.50		80.51	0.086
10 0.50		99.17	0.106
25 0.55		113.89	0.134
50	0.60	127.13	0.163
100	0.63	140.69	0.188

Table 4.1: Pre-Development Conditions

(1) RC adjusted per City requirements

4.4 Stormwater Management Plan

As noted above, it is proposed to have the subject site's stormwater discharge mimic the predevelopment scenario of discharging to Mimico Creek. To ensure post-development discharge does not exceed the pre-development site discharge for each storm return period, on-site attenuation can be provided as required. Typically, a combination of roof top, surface and/or underground storage can used to achieve the required volumes which will be discussed below, and outlined in detail in the Stormwater Management Report during the detailed design stage.

The proposed storm drainage and stormwater management features are shown in **Figure 3**, and supporting calculations are included in **Appendix D**. The new on-site storm sewers, which will be located within the parking garage, will be designed by a mechanical engineer to meet the standards of the Ontario Building Code.



4.4.1 WATER QUANTITY CONTROL, EROSION CONTROL AND RUNOFF VOLUME REDUCTION

Stormwater management for the proposed development will consist of on-site detention to attenuate the post-development flows to levels that are less than or equal to the maximum allowable release rates by utilizing detention storage equipped with orifice controls upstream of the quality control devices to control flows.

The Modified Rational Method was used to calculate the required storage volumes based upon the allowable release rate during the 2 and 100-year storm events. The Maximum Allowable Release Rate from the site is noted in the table above.

Calculations indicating the storage requirements are included in **Appendix D**, and summarized below:

Return Period (years)	Runoff Coefficient ⁽¹⁾ Max. Allowable Release Rate (l/sec)		Required Storage (m ³)	
2	0.86	64	47	
5 0.86		86.2	62	
10 0.86		106.2	75	
25	0.95	134.2	93	
50 1.00		163.4	104	
100	1.00	188.3	108	

 Table 4.2: Post-Development Quantity Control Storage

⁽¹⁾ RC adjusted per City requirements, with max RC of 1.0

The architect has provided space in the underground structure's P1 level for a stormwater management tank, which will have an access hatch and emergency spill point.

It should be noted the quantity control calculations will be developed further during the detailed design stage, once the site's landscape plan is developed further.



4.4.2 WATER BALANCE AND QUALITY CONTROL

The City's T&W Development Requirements note a 5mm runoff requirement for stormwater runoff volume reduction. As such, $38.5 \text{ m}^3 (0.771 \text{ ha x 5mm} = 38.5 \text{ m}^3)$ is required to be retained on-site and managed by way of infiltration, evapotranspiration or re-use. Clean water will be re-used on-site by non-potable means such irrigation and/or in the mechanical cooling system for the development.

On-site quality controls to provide 'Enhanced' (Level 1) protection are proposed for the subject site. To achieve the long-term average removal of 80% of Total Suspended Solids (TSS) on an annual loading basis, a treatment unit will be required due to the large asphalt surface that is proposed.

The water quality item will be examined further and in more detail during the Site Plan Application stage, where a separate Stormwater Management Report will address them in detail.

4.5 Groundwater and Foundation Drainage

Hydrogeological calculations and analysis for the subject site was undertaken by Grounded Engineering and summarized in their Geohydrology Assessment, to assess the potential effects of groundwater on the proposed development.

They have noted that preliminary estimates for the long-term dewatering total 130,000 l/day (1.5 l/sec). As such, the foundation drainage / groundwater may discharge to the storm outlet for the site, which is directed to Mimico Creek. The groundwater flows will be reviewed in greater detail during the detailed design of the development, but given the approximate flows noted by the hydrogeologist, quantity related issues are not expected on this site.







5.0 S U M M A R Y

This Functional Servicing Report provides an overview of the proposed servicing plan for the residential development located at 7085 Goreway Drive, within the City of Mississauga. This report demonstrates that adequate stormwater, sanitary, and water supply servicing will be available for the proposed development. In summary, the functional servicing analysis established the following:

Water Supply

- Water supply servicing will be provided from an existing 400 mm diameter watermain located along Goreway Drive.
- The peak hour water demand for the site is anticipated to be 7.41 L/s.
- No servicing constraints are expected, and hydrant testing shall be conducted to verify the available pressure.

Sanitary Servicing

- The proposed developments will be serviced by the existing 250mm diameter sanitary sewer located along Goreway Drive.
- The anticipated total peak sewage flow from the site is 13.20 L/s.
- No constraints are expected on the downstream sanitary sewers.

Stormwater Servicing

- Peak flows from the subject property will be controlled via on-site measures which include a storage tank within the underground parking, prior to discharging to Mimico Creek.
- 5mm retention and water quality control will be provided.



We trust the above information is suitable for your needs at this time. Should you have any questions or comments, please do not hesitate to contact the undersigned.

Sincerely,

SCHAEFFER & ASSOCIATES LTD.



Hagop Sarkissian, P.Eng.

Partner

Danataheas

Diana Tabuas, EIT Project Manager



Appendix A

Background Information



Scale1:500@11"x17" sheet

6.0 Unit Mix Summary

Unit Type	West Tower +	2 Storey Podium	East Tower +2	East Tower +2 Storey Podium		nhouses	as To	
	No.	%	No.	%	No.	%	No.	%
1 Bedroom	34	24.6%	30	24.8%	1.1.2.20		64	24%
2 Bedroom	37	26.8%	32	26.4%			69	25%
2 Bedroom +Den	33	23.9%	29	24.0%		1 1	62	23%
3 Bedroom	34	24.6%	30	24.8%			64	24%
2 Bedroom Townhouse	0.2042		9.5372		12	100.0%	12	4%
Subtotal	138	100%	121	100%	12	100%	271	100%

7.0 Parking - Proposed

Resident Unit Type	Ratio (Proposed)	West Tower +2 Storey Podium	East Tower +2 Storey Podium	Townhouses	Total
1 Bedroom	1.00	34.0	30.0		64.0
2 Bedroom	1.15	42.6	36.8		79.4
2 Bed + Den	1.15	38.0	33.4	196,2616.0	71.3
2 Bed. Townhouses	1.15	8935772	62,012-1	13.8	13.8
3 Bedroom	1.40	47.6	42.0		89.6
Res. Pkg. Required		162	142	14	318
Vis. Pkg. Required	0.20	27.6	24	2	54
Total Pkg. Required		189.7	166	16	372
Pkg. Provided (3 Lev	vels of UG Parking)				372
Surplus (Deficit)					(0)

Appendix B

Water Supply Calculations

Water Supply Calculation

Project No. 4866

Proposed Residential Development - 7085 Goreway Drive, City of Mississauga

Fire Flow:	7000 l/min	116.667 l/s
Water Supply Demand:	280 l/capita/day	
Water Supply Demand for ICI:	300 l/capita/day	

Land Use	Туре	Units or Area	Pop. Density (persons/unit) †	Population	Average Day Demand (I/s) ‡
Residential	High-Rise Units	259	2.7	700	2.27
Residential	Townhouse	0.35	175	62	0.20
	Total			762	2.47

Land Use	Туре	Average Day Demand (I/s) ‡	Peak Hour Demand Peaking Factor †	Peak Hour Demand (I/s)	Max Day Demand Peaking Factor †	Max Day Demand (I/s)	Max Day Demand + Fire (l/s)
Residential	High-Rise Units	2.269	3.0	6.806	2.0	4.537	121.40
Residential	Townhouse	0.201	3.0	0.603	1.4	0.281	121.49

† As per Region of Peel Design Guidelines‡ Based on 280 L/D per person based on Region of Peel Design Guidelines

Fire Flow - 7085 Goreway Drive: high-rise

A = Type of Construction			
Type of Construction:	<u>C</u>		Description
Wood Frame	1.5		(essentially all combustible)
Ordinary	1		(brick/masonry walls, combustible interior)
Non-Combustible	0.8		(unprotected metal structure, masonry/metal walls)
Fire-Resistive	0.6		(fully protected frame, roof, floors)
Construction Coefficient:	0.6		
D = Fire Flow (000's)			
GFA		2,848	square metres
Construction Type		0.6	
Fire Flow		7,044	L/min.
-> Fire Flow		7,000	L/min.
	GFA inclu	des th	e area of the largest floor (ground floor as delineated
	from CA	AD) plu	s 25% of the 2 above floors (assuming they are the
			same size as ground floor)
E = Occupancy Factor			
Fire Hazard of Contents	Charge		1
Non-Combustible	-	-25%	
Limited Combustible		-15%	
Combustible		0%	
Free Burning		15%	
Rapid Burning		25%	
Occupancy Factor		-15%	
Fire Flow		5,950	L/min.
F = Sprinkler Factor	Charge		
Sprinkler System	Charge	0%	
NEDA 13 System		-30%	
Fully Supervised System		-50%	
Fully Supervised System		-50%	
Sprinkler Factor:		-40%	incl 10% Standard Connection Size
C - Expedito Factor			
Separation	Charge		1
0 to 3 m	2.10.90	25%	
3.1 to 10 m		20%	
10.1 to 20 m		15%	north (18m to fire hall) and east (19m to TH)
20.1 to 30 m		10%	
30.1 to 45 m		5%	
Exposed Sides		2	
Exposure Factor		30%	(no more than 75%)
		30 /0	
H - Net Fire Flow Require	d		
E + G Eactors	Cnarge	100/	
r + G Factors		-10%	1
		5355	L/min.
Fire Flow:		5000	L/min.
		83	L/s

Fire Flow - 7085 Goreway Drive: all townhouses

A = Type of Construction Tupe of Construction: C Description Wood Frame 1.5 (essentially all combustible) Ordinary 1 (brick/masonry walls, combustible interior) Non-Combustible 0.8 (unprotected metal structure, masonry/metal walls) Fire-Resistive 0.6 (ully protected frame, root, floors) Construction Coefficient: 0.8				
Type of Construction: C Description Wood Frame 1.5 (essentially all combustible) Ordinary 1 (brick/masony walls, combustible) Non-Combustible 0.8 (unprotected metal structure, masony/metal walls) Fire-Resistive 0.6 (fully protected frame, roof, floors) Construction Coefficient: 0.8 Improtected frame, roof, floors) GFA 1,128 square metres Construction Type 0.8 Improvements Construction Type 0.8 Improvements SP Fire Flow 6,000 L/min. GFA includes the ground floor area delineated from CAD for all townhouse units x 2 floors E = Occupancy Factor 15% Immed Combustible 15% Fire Flow 5,100 L/min. Free Sprinkler System Charge Non-Combustible 15% Fire Flow 5,100 L/min. Fasprinkler System Charge 0% NRPA 13 System 5,00% Sprinkler System Charge 0% NRPA 13 System 5,0% Sprinkler System Charge 25% 10 10 2m </th <th>A = Type of Construction</th> <th>í -</th> <th></th> <th></th>	A = Type of Construction	í -		
Wood Frame 1.5 (essentially all combustible) Ordinary 1 (brick/masonry walls, combustible interior) Non-Combustible 0.8 (unprotected metal structure, masonry/metal walls) Fire-Resistive 0.6 (fully protected frame, roof, floors) Construction Coefficient: 0.8 D = Fire Flow (000's) GFA 1,128 GFA 1,128 square metres Construction Type 0.8	Type of Construction:	С		Description
Ordinary 1 (brick/masonry walls, combustible interior) Non-Combustible 0.8 (unprotected metal structure, masonry/metal walls) Fire-Resistive 0.6 (fully protected frame, root, floors) Construction Coefficient: 0.8 D = Fire Flow (000's) GFA 1,128 GFA 1,128 square metres Construction Type 0.8	Wood Frame	1.5		(essentially all combustible)
Non-Combustible 0.8 (unprotected metal structure, masonry/metal walls) Fire-Resistive 0.6 (fully protected frame, roof, floors) Construction Coefficient: 0.8 D = Fire Flow (000's) GFA 1,128 square metres Construction Type 0.8 Fire Flow 5,911 L/min. Fire Flow 6,000 L/min. Fire Flow 7,000 L/min. Fire Flow 7,000 L/min. Fire Flow 6,000 L/min. Fire Flow 7,000 L/min. Fire Flow 7,000 L/min. Fire Flow 6,100 L/min. Fire Flow 7,000 L/min.	Ordinary	1		(brick/masonry walls, combustible interior)
Fire-Resistive 0.6 (fully protected frame, roof, floors) Construction Coefficient: 0.8 D = Fire Flow (000's)	Non-Combustible	0.8		(unprotected metal structure, masonry/metal walls)
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117 L/s	Fire Flow:		7000	L/min.
			117	L/s



2013 Water and Wastewater Master Plan for the Lake-Based Systems



Volume III - Water Master Plan

Final Report P001-0005

March 31, 2014





Region of Peel Working for you

3 Existing Water Transmission System

3.1 Existing Infrastructure

The Region of Peelos lake-based water transmission system services the City of Mississauga, much of the City of Brampton, and parts of the Town of Caledon. The system consists of two Lake Ontario-based water treatment plants (the Lakeview WTP and the Lorne Park WTP), transmission mains, pumping stations, reservoirs and elevated tanks that deliver water to customers through seven pressure zones separated by approximately 30-metre intervals of elevation. The lake-based water transmission system consists of three main trunk systems: west, central and east. The existing transmission facilities are summarized in Table 3.2.

Separate from the water transmission system, the water distribution system conveys treated water from the water transmission facilities to the customers. With the exception of east-west sub-transmission, the water distribution system is not included in the 2013 Master Plan for the lake-based system.

The Region of Peel also maintains four municipal groundwater systems servicing rural communities in the Town of Caledon. These municipal groundwater systems are not included in the 2013 Master Plan for the lake-based system.

West Trunk System	Central Trunk System	East Trunk System
Snelgrove Elevated Tank (WS6)	Mayfield West Elevated Tank (CS7)	Bolton Elevated Tank (BS6)
West Brampton Reservoir (WS4)	North Brampton Reservoir (CS5)	Tullamore Reservoir (ES4)
and Pumping Station (5LLP, 6HLP)	and Pumping Station (6LLP, 7HLP)	and Pumping Station (5LLP, 6HLP)
Meadowvale North Reservoir (WS3)	East Brampton Reservoir (CS4)	Airport Road Reservoir (ES3)
and Pumping Station (4LLP, 5HLP)	and Pumping Station (5LLP, 6HLP)	and Pumping Station (4LLP, 5HLP, York)
Streetsville Reservoir (WS2)	Beckett Sproule Reservoir (CS3)	
and Pumping Station (3LLP, 4HLP)	and Pumping Station (4LLP, 5HLP)	Beckett Sproule Transfer Pumping Station
Herridge Reservoir (WS1)	Hanlan Reservoir (CS2)	
and Pumping Station (2LLP, 3HLP)	and Pumping Station (3LLP, 4HLP)	
Lorne Park Water Treatment Plant	Silverthorn Reservoir (CS1)	
and Pumping Station (1HLP, 2HLP)	and Pumping Station (2LLP, 3HLP)	
	Lakeview Water Treatment Plant	
	and Pumping Station (1HLP, 2HLP)	
Note: W – West; C – Central; E – East; S - # - pressure zone serviced by the facility	- Storage; LLP – Low Lift Pump; HLP – High	Lift Pump

Table 3.2 Existing lake-based water transmission facilities







Figure 3.2 Existing Region of Peel Lake-Based Water Transmission System



March 31, 2014 Page 13

Appendix C

Sanitary Servicing Calculations

Sanitary Flow Calculation

Project No. 4866

Proposed Residential Development - 7085 Goreway Drive, City of Mississauga

Site Area:	0.99	ha
Infiltration Rate:	0.2	l/ha/sec
Generation Rate:	302.8	l/person/day [‡]

Estimated Site Discharge

Land Use	Туре	Area (ha.)	Units [‡]	Pop. Density (person/ha) [†]	Pop. Density (person/unit) [†]	Population	Average Flow (L/s)	Harmon's Peaking Factor	Peak Flow (L/s)	Infiltration (L/s)	Total Flow (L/s)
Residential	High-Rise Units	0.64	259	475	2.7	700	2.50	3.89	9.80	0.13	9.93
Residential	Townhouse	0.35		175		62	0.22	4.29	0.93	0.07	1.00
		0.99									
					Total	762	2.72	3.87	10.73 *	0.20	13.20
† As per Region o	f Peel Design Crit	eria							13.00 *		

† As per Region of Peel Design Criteria

‡ Based on site plan prepared by IBI Group

* Region of Peel Standard Drawing 2-9-2 states the domestic sewage flow for populations less than 1000 persons shall be 0.013 m³/s

Population	Peak Flow (m ³ /sec)	Population	Peak Flow (m ³ /sec)	Population	Peak Flow (m ³ /sec)
1000	0.0130	4750	0.0542	13000	0.1292
1050	0.0139	5000	0.0569	14000	0.1376
1100	0.0145	5250	0.0594	15000	0.1459
1150	0.0151	5500	0.0618	16000	0.1540
1200	0.0157	5750	0.0640	17000	0.1620
1300	0.0169	6000	0.0666	18000	0.1700
1400	0.0181	6250	0.0691	19000	0.1779
1500	0.0193	6500	0.0710	20000	0.1857
1600	0.0204	6750	0.0737	25000	0.2236
1700	0.0217	7000	0.0762	30000	0.2601
1800	0.0228	7250	0.0784	35000	0.2955
1900	0.0239	7500	0.0809	40000	0.3298
2000	0.0251	7750	0.0830	45000	0.3634
2200	0.0273	8000	0.0854	50000	0.3963
2400	0.0296	8250	0.0878	55000	0.4286
2600	0.0318	8500	0.0898	60000	0.4603
2800	0.0340	8750	0.0922	65000	0.4915
3000	0.0361	9000	0.0945	70000	0.5224
3250	0.0387	9250	0.0968	75000	0.5528
3500	0.0415	9500	0.0981	80000	0.5828
3750	0.0441	9750	0.1010	85000	0.6126
4000	0.0467	10000	0.1033	90000	0.6420
4250	0.0492	11000	0.1120	95000	0.6711
4500	0.0518	12000	0.1210	100000	0.7000

Notes:

1. Domestic sewage flows are based upon a unit sewage flow of 302.8 Lpcd.

2. The flows in the above table include the Harmon Peaking Factor.

3. Domestic sewage flow for less than 1000 persons shall be $0.013m^3$ /sec.

4. Domestic sewage flow for greater than 100,000 persons shall be 7.0 x 10^{-6} m³/sec per capita.

5. Lpcd = Litres per capita per day

1 Litre = 0.001 metre^3



SUBDIVISION 7085 Goreway Drive (CITY OF MISSISSAUGA)

CONSULTANT Schaeffer & Associates Ltd.

DRAINAGE AREA PLAN NO.



REGIONAL MUNICIPALITY OF PEEL

PROJECT No. 2019-4866

SANITARY SEWER DESIGN SHEET PRE-DEVELOPMENT CONDITIONS

DESIGNED BY D.T. / H.S.

DATE 23-Apr-20

	From	Up	То	Down	AREA	DENSITY	POP	CUM.	CUM.	SEWAGE	INFILTRATION	FOUNDATION	TOTAL	Length	Pi	ipe	Grade	Capacity	Full
LOCATION	мн	trear	МН	Stream		persons		AREA	POP.	FLOW	FLOW	DRAINS	FLOW		D	lia			Velocity
		Inv.		Inv.		per									NOM	ACT			
					(ha)	ha		(ha)		(L/sec)	(L/sec)	(L/sec)	(L/sec)	(m)	(mm)	(mm)	(%)	(L/sec)	(m/s)
GOREWAY DRIVE - SOUTH			1A		0.51		33												
GOREWAY DRIVE - NORTH (West Side)			1A		3.40		123												
GOREWAY DRIVE - NORTH (East - excl.subject site)			1A		1.45	50	73												
GOREWAY DRIVE - NORTH (Subject site)			1A		0.99	50	50												
DORCAS STREET	1A		2A		0.00		0	6.35	279	13.00	1.27	0.000	14.27	61.0	250	254.0	0.48	42.98	0.85
								6.35	279										
MINOTOLA AVENUE - NORTH			2A		6.68		300												
MINOTOLA AVENUE	2A		3A		1.82		271	14.85	850	13.00	2.97	0.000	15.97	67.0	250	254.0	0.50	43.87	0.87
								14.85	850										

SUBDIVISION 7085 Goreway Drive (CITY OF MISSISSAUGA)

CONSULTANT Schaeffer & Associates Ltd.

DRAINAGE AREA PLAN NO.



REGIONAL MUNICIPALITY OF PEEL SANITARY SEWER DESIGN SHEET

PROJECT No. 2019-4866

DESIGNED BY D.T. / H.S.

POST-DEVELOPMENT CONDITIONS

DATE 23-Apr-20

	From	Up	То	Down	AREA	DENSITY	POP	CUM.	CUM.	SEWAGE	INFILTRATION	FOUNDATION	TOTAL	Length	Pi	ipe	Grade	Capacity	Full
LOCATION	мн	itrear	МН	Stream		persons		AREA	POP.	FLOW	FLOW	DRAINS	FLOW		D	Dia			Velocity
		Inv.		Inv.		per									NOM	ACT			
					(ha)	ha		(ha)		(L/sec)	(L/sec)	(L/sec)	(L/sec)	(m)	(mm)	(mm)	(%)	(L/sec)	(m/s)
GOREWAY DRIVE - SOUTH			1A		0.51		33												
GOREWAY DRIVE - NORTH (West Side)			1A		3.40		123												
GOREWAY DRIVE - NORTH (East - excl.subject site)			1A		1.45	50	73												
GOREWAY DRIVE - NORTH (Subject site)			1A		0.99		762												
DORCAS STREET	1A		2A		0.00		0	6.35	991	13.00	1.27	0.000	14.27	61.0	250	254.0	0.48	42.98	0.85
								6.35	991										
MINOTOLA AVENUE - NORTH			2A		6.68		300												
MINOTOLA AVENUE	2A		3A		1.82		271	14.85	1562	20.07	2.97	0.000	23.04	67.0	250	254.0	0.50	43.87	0.87
								14.85	1562										

SUBDIVISION PASTORIA HO CONSULTANT. DRAINAGE AREA PLAN No. 48	LDING 	s,	RE	EGIC SA		. M RY	UNI SEW	CIPA ER	LITY	Y OF N CH	F PE	EL		S Pi Di	HEET No Roject No. Esigned	OF n= DATE	
LOCATION	FROM M. H.	TO M.H.	AREA (ocres)	DENSITY persons per gcre	POPULATION	CUM. AREA (acres)	CUM. POP.	SEWAGE FLOW	INFILTRATION FLOW (c.f.s.)	FOUNDATION DRAINS (3) (c.f.s.)	TOTAL FLOW ()+(2+(3) (c.f.s.)	LENGTH (ft.)	PIPE DIA. (Inches)	GRADIENT %	CAPACITY (c.f.s.)	VELOCITY (f.p.s.)	DROF LOW M. I
EXISTING SYSTEM																	
	IA	24		1			-							DISCL	AIMER		
			<u> </u>										HESE RI	E AND LI	ARE BASED		
GOREWAY NONTH TO IA				30e4.1	123							MAT	ON AN		ROVE INAC	CURATE.	
1. F.						1						TH	E REGIO	ON OF PE	EL DISCLAI	IS ANY	
GOREWAY SOUTH TO IA				8 e 4.1	33	6.90	156	1.70	.50	-	1.21	<i>a</i>	RESPO	SIBILITY	SHOULD	ESE	ļ
												R	ECORD	S BE REL	IED UPON T	D THE	
					1		-				1		DEHK	MENIU	ANY-PERS	<u>₩</u>	1
č.	24	31			-						91						
14										*	1						1
MINOTOLA NUMTH			16.5	7304.1	300	23.4	456	.70	.50	No.	1.27		STATE	m GM	DE 10"	2.6570	
			<u> </u>				<u> </u>										
DO PROBLET PROPAGA			1.0				201								· · · · · · · · · · · · · · · · · · ·		
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				~			11	CONALC	MINAL M	U. VERY	SHALLOW	151					1
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					-		-)-	40.73	MON R	200	prad 19	101901	4 01	1			
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Appendix D

Stormwater Management Calculations

City of Mississauga

Pre-development Runoff Coefficient

Project: 7085 Goreway Drive 2019-4866

Criteria:

The Runoff Coefficients were taken from City's Design Criteria.

Calculations for Internal Drainage Area - Draining to Mimico Creek (East Branch)

	Area (ha)	Runoff Coeff.	AxC
Impervious Areas	0.721	0.90	0.6485
Pervious Areas	0.050	0.25	0.0125
Sub Total	0.770		0.6609483

Weighted Coefficient - Site Draining South

0.86

Schaeffers Consulting Engineers Printed: 23-Apr-20

City of Mississauga

Storm Runoff - Existing Conditions

Schaeffers Consulting Engineers

Project: 7085 Goreway Drive 2019-4866

Rainfall intensity

Design Storm Event	А	В	С	l (mm/hr)
2-Year	610	4.6	0.78	59.892
5-Year	820	4.6	0.78	80.511
10-Year	1010	4.6	0.78	99.166
25-Year	1160	4.6	0.78	113.893
50-Year	1300	4.7	0.78	127.133
100-Year	1450	4.9	0.78	140.690

Note:

T=15 minutes I=A / (T+B)^C

Area (ha) 0.770

Existing Peak Discharge Rate to Creek

Return Period (years)	RO Coefficient	Intensity (mm/hr)	Peak Flow (m ³ /sec)
2	0.50	59.89	0.064
5	0.50	80.51	0.086
10	0.50	99.17	0.106
25	0.55	113.89	0.134
50	0.60	127.13	0.163
100	0.63	140.69	0.188

Notes for City of Mississauga

- For previously developed sites, maximum RC of 0.50

- For City of Mississauga apply adjusment factor to RC as follows:

10-yr	1.0
25-yr	1.1
50-yr	1.2
100-yr	1.25

23-Apr-20

Schaeffers Consulting Engineers Printed: 23-Apr-20

Project: 7085 Goreway Drive

Modified Rational Method

Area (ha) =	0.770
C =	0.86
Allowable Release Rate (l/s) =	64.0
Actual Release Rate (I/s) =	59.0
Release from Roof 1 (I/s) =	0.00
Release from Roof 2 (l/s) =	0.00

2 Year Storm

Design Storm =	City of Mississauga	
A =	610	
B =	4.6	
C =	0.78	

						Total	Maximum	Required
Time	Intensity	Total	Runoff	Runoff	Total	Runoff	Release	Storage
(min)	2 year	Runoff	Roof 2	Roof 1	Runoff	Volume	Volume	Volume
	(mm/hr)	(l/s)	(l/s)	(l/s)	(l/s)	(m ³)	(m ³)	(m ³)
15	59.89	110.31	0.00	0.00	110.31	99.28	53.10	46.18
16	57.61	106.11	0.00	0.00	106.11	101.87	56.64	45.23
17	55.52	102.26	0.00	0.00	102.26	104.31	60.18	44.13
18	53.60	98.72	0.00	0.00	98.72	106.61	63.72	42.89
19	51.82	95.44	0.00	0.00	95.44	108.80	67.26	41.54
20	50.16	92.40	0.00	0.00	92.40	110.88	70.80	40.08
21	48.63	89.57	0.00	0.00	89.57	112.86	74.34	38.52
22	47.20	86.93	0.00	0.00	86.93	114.75	77.88	36.87
23	45.86	84.47	0.00	0.00	84.47	116.56	81.42	35.14
24	44.60	82.15	0.00	0.00	82.15	118.30	84.96	33.34
25	43.42	79.98	0.00	0.00	79.98	119.97	88.50	31.47
26	42.31	77.93	0.00	0.00	77.93	121.58	92.04	29.54
27	41.26	76.00	0.00	0.00	76.00	123.13	95.58	27.55
28	40.27	74.18	0.00	0.00	74.18	124.62	99.12	25.50
29	39.34	72.45	0.00	0.00	72.45	126.06	102.66	23.40
30	38.45	70.81	0.00	0.00	70.81	127.46	106.20	21.26
35	34.60	63.74	0.00	0.00	63.74	133.85	123.90	9.95
40	31.54	58.09	0.00	0.00	58.09	139.42	141.60	0.00
45	29.03	53.47	0.00	0.00	53.47	144.37	159.30	0.00
50	26.94	49.61	0.00	0.00	49.61	148.83	177.00	0.00
55	25.16	46.33	0.00	0.00	46.33	152.90	194.70	0.00
60	23.62	43.51	0.00	0.00	43.51	156.64	212.40	0.00
65	22.29	41.05	0.00	0.00	41.05	160.11	230.10	0.00
70	21.12	38.89	0.00	0.00	38.89	163.34	247.80	0.00

Required Storage (m³):

Schaeffers Consulting Engineers Printed: 23-Apr-20

Project: 7085 Goreway Drive

Modified Rational Method

Area (ha) =	0.770
C =	0.86
Allowable Release Rate (I/s) =	86.2
Actual Release Rate (I/s) =	80.0
Release from Roof 1 (l/s) = Release from Roof 2 (l/s) =	0.00 0.00

5 Year Storm

Design Storm =	City of Mississauga	
A =	820	
B =	4.6	
C =	0.78	

						Total	Maximum	Required
Time	Intensity	Total	Runoff	Runoff	Total	Runoff	Release	Storage
(min)	5 year	Runoff	Roof 2	Roof 1	Runoff	Volume	Volume	Volume
	(mm/hr)	(l/s)	(l/s)	(l/s)	(l/s)	(m ³)	(m ³)	(m ³)
15	80.51	148.29	0.00	0.00	148.29	133.46	72.00	61.46
16	77.45	142.65	0.00	0.00	142.65	136.94	76.80	60.14
17	74.63	137.47	0.00	0.00	137.47	140.22	81.60	58.62
18	72.05	132.70	0.00	0.00	132.70	143.32	86.40	56.92
19	69.65	128.29	0.00	0.00	128.29	146.25	91.20	55.05
20	67.43	124.21	0.00	0.00	124.21	149.05	96.00	53.05
21	65.37	120.41	0.00	0.00	120.41	151.71	100.80	50.91
22	63.45	116.86	0.00	0.00	116.86	154.26	105.60	48.66
23	61.65	113.54	0.00	0.00	113.54	156.69	110.40	46.29
24	59.96	110.44	0.00	0.00	110.44	159.03	115.20	43.83
25	58.37	107.51	0.00	0.00	107.51	161.27	120.00	41.27
26	56.88	104.76	0.00	0.00	104.76	163.43	124.80	38.63
27	55.47	102.17	0.00	0.00	102.17	165.51	129.60	35.91
28	54.14	99.72	0.00	0.00	99.72	167.52	134.40	33.12
29	52.88	97.39	0.00	0.00	97.39	169.46	139.20	30.26
30	51.68	95.19	0.00	0.00	95.19	171.34	144.00	27.34
35	46.52	85.68	0.00	0.00	85.68	179.92	168.00	11.92
40	42.40	78.09	0.00	0.00	78.09	187.41	192.00	0.00
45	39.02	71.88	0.00	0.00	71.88	194.07	216.00	0.00
50	36.21	66.69	0.00	0.00	66.69	200.07	240.00	0.00
55	33.82	62.28	0.00	0.00	62.28	205.54	264.00	0.00
60	31.76	58.49	0.00	0.00	58.49	210.57	288.00	0.00
65	29.96	55.19	0.00	0.00	55.19	215.23	312.00	0.00
70	28.38	52.28	0.00	0.00	52.28	219.58	336.00	0.00

Required Storage (m³):

Schaeffers Consulting Engineers Printed: 23-Apr-20

Project: 7085 Goreway Drive

Modified Rational Method

Area (ha) =	0.770
C =	0.86
Allowable Release Rate (I/s) =	106.2
Actual Release Rate (I/s) =	100.0
Release from Roof 1 (I/s) =	0.00
	0.00
Release from Roof 2 (l/s) =	0.00

10 Year Storm

Design Storm =	City of Mississauga	
A =	1010	
B =	4.6	
C =	0.78	

						Total	Maximum	Required
Time	Intensity	Total	Runoff	Runoff	Total	Runoff	Release	Storage
(min)	10 year	Runoff	Roof 2	Roof 1	Runoff	Volume	Volume	Volume
	(mm/hr)	(l/s)	(l/s)	(l/s)	(l/s)	(m ³)	(m ³)	(m ³)
15	99.17	182.65	0.00	0.00	182.65	164.39	90.00	74.39
16	95.39	175.70	0.00	0.00	175.70	168.67	96.00	72.67
17	91.93	169.32	0.00	0.00	169.32	172.71	102.00	70.71
18	88.74	163.45	0.00	0.00	163.45	176.52	108.00	68.52
19	85.79	158.02	0.00	0.00	158.02	180.14	114.00	66.14
20	83.06	152.99	0.00	0.00	152.99	183.58	120.00	63.58
21	80.52	148.30	0.00	0.00	148.30	186.86	126.00	60.86
22	78.15	143.94	0.00	0.00	143.94	190.00	132.00	58.00
23	75.93	139.85	0.00	0.00	139.85	193.00	138.00	55.00
24	73.85	136.02	0.00	0.00	136.02	195.87	144.00	51.87
25	71.90	132.43	0.00	0.00	132.43	198.64	150.00	48.64
26	70.06	129.04	0.00	0.00	129.04	201.30	156.00	45.30
27	68.32	125.84	0.00	0.00	125.84	203.86	162.00	41.86
28	66.68	122.82	0.00	0.00	122.82	206.34	168.00	38.34
29	65.13	119.96	0.00	0.00	119.96	208.73	174.00	34.73
30	63.66	117.25	0.00	0.00	117.25	211.04	180.00	31.04
35	57.30	105.53	0.00	0.00	105.53	221.61	210.00	11.61
40	52.22	96.18	0.00	0.00	96.18	230.84	240.00	0.00
45	48.07	88.53	0.00	0.00	88.53	239.04	270.00	0.00
50	44.60	82.14	0.00	0.00	82.14	246.43	300.00	0.00
55	41.65	76.72	0.00	0.00	76.72	253.16	330.00	0.00
60	39.11	72.04	0.00	0.00	72.04	259.36	360.00	0.00
65	36.91	67.97	0.00	0.00	67.97	265.10	390.00	0.00
70	34.96	64.39	0.00	0.00	64.39	270.45	420.00	0.00

Required Storage (m³):

Schaeffers Consulting Engineers Printed: 23-Apr-20

Project: 7085 Goreway Drive

Modified Rational Method

Area (ha) =	0.770
C =	0.95
Allowable Release Rate (I/s) =	134.2
Actual Release Rate (I/s) =	128.0
Release from Roof 1 (I/s) =	0.00
	0.00
Release from Roof 2 (l/s) =	0.00

25 Year Storm

Design Storm =	City of Mississauga	
A =	1160	
B =	4.6	
C =	0.78	

						Total	Maximum	Required
Time	Intensity	Total	Runoff	Runoff	Total	Runoff	Release	Storage
(min)	25 year	Runoff	Roof 2	Roof 1	Runoff	Volume	Volume	Volume
	(mm/hr)	(l/s)	(l/s)	(l/s)	(l/s)	(m ³)	(m ³)	(m ³)
15	113.89	230.75	0.00	0.00	230.75	207.68	115.20	92.48
16	109.56	221.97	0.00	0.00	221.97	213.09	122.88	90.21
17	105.58	213.91	0.00	0.00	213.91	218.19	130.56	87.63
18	101.92	206.49	0.00	0.00	206.49	223.01	138.24	84.77
19	98.53	199.64	0.00	0.00	199.64	227.59	145.92	81.67
20	95.40	193.28	0.00	0.00	193.28	231.93	153.60	78.33
21	92.48	187.36	0.00	0.00	187.36	236.08	161.28	74.80
22	89.75	181.85	0.00	0.00	181.85	240.04	168.96	71.08
23	87.21	176.69	0.00	0.00	176.69	243.83	176.64	67.19
24	84.82	171.85	0.00	0.00	171.85	247.46	184.32	63.14
25	82.58	167.30	0.00	0.00	167.30	250.95	192.00	58.95
26	80.46	163.02	0.00	0.00	163.02	254.32	199.68	54.64
27	78.47	158.98	0.00	0.00	158.98	257.55	207.36	50.19
28	76.59	155.17	0.00	0.00	155.17	260.68	215.04	45.64
29	74.80	151.55	0.00	0.00	151.55	263.70	222.72	40.98
30	73.11	148.13	0.00	0.00	148.13	266.63	230.40	36.23
35	65.80	133.32	0.00	0.00	133.32	279.98	268.80	11.18
40	59.98	121.51	0.00	0.00	121.51	291.64	307.20	0.00
45	55.21	111.85	0.00	0.00	111.85	301.99	345.60	0.00
50	51.22	103.78	0.00	0.00	103.78	311.33	384.00	0.00
55	47.84	96.92	0.00	0.00	96.92	319.84	422.40	0.00
60	44.92	91.02	0.00	0.00	91.02	327.67	460.80	0.00
65	42.39	85.88	0.00	0.00	85.88	334.92	499.20	0.00
70	40.15	81.35	0.00	0.00	81.35	341.68	537.60	0.00

Required Storage (m³):

Schaeffers Consulting Engineers Printed: 23-Apr-20

Project: 7085 Goreway Drive

Modified Rational Method

Area (ha) =	0.770
C =	1.00
Allowable Release Rate (l/s) =	163.4
Actual Release Rate (I/s) =	157.0
Release from Roof 1 (I/s) -	0.00
	0.00
Release from Roof 2 (l/s) =	0.00

50 Year Storm

Design Storm =	City of Mississauga	
A =	1300	
B =	4.7	
C =	0.78	

						Total	Maximum	Required
Time	Intensity	Total	Runoff	Runoff	Total	Runoff	Release	Storage
(min)	50 year	Runoff	Roof 2	Roof 1	Runoff	Volume	Volume	Volume
	(mm/hr)	(l/s)	(l/s)	(l/s)	(l/s)	(m ³)	(m ³)	(m ³)
15	127.13	271.63	0.00	0.00	271.63	244.47	141.30	103.17
16	122.32	261.34	0.00	0.00	261.34	250.89	150.72	100.17
17	117.90	251.90	0.00	0.00	251.90	256.93	160.14	96.79
18	113.83	243.20	0.00	0.00	243.20	262.65	169.56	93.09
19	110.06	235.16	0.00	0.00	235.16	268.08	178.98	89.10
20	106.57	227.70	0.00	0.00	227.70	273.24	188.40	84.84
21	103.32	220.76	0.00	0.00	220.76	278.15	197.82	80.33
22	100.29	214.28	0.00	0.00	214.28	282.85	207.24	75.61
23	97.46	208.22	0.00	0.00	208.22	287.35	216.66	70.69
24	94.80	202.54	0.00	0.00	202.54	291.66	226.08	65.58
25	92.30	197.20	0.00	0.00	197.20	295.80	235.50	60.30
26	89.94	192.17	0.00	0.00	192.17	299.79	244.92	54.87
27	87.72	187.43	0.00	0.00	187.43	303.63	254.34	49.29
28	85.62	182.94	0.00	0.00	182.94	307.34	263.76	43.58
29	83.64	178.69	0.00	0.00	178.69	310.93	273.18	37.75
30	81.75	174.66	0.00	0.00	174.66	314.40	282.60	31.80
35	73.60	157.25	0.00	0.00	157.25	330.24	329.70	0.54
40	67.10	143.36	0.00	0.00	143.36	344.06	376.80	0.00
45	61.77	131.98	0.00	0.00	131.98	356.34	423.90	0.00
50	57.32	122.47	0.00	0.00	122.47	367.41	471.00	0.00
55	53.54	114.39	0.00	0.00	114.39	377.50	518.10	0.00
60	50.28	107.44	0.00	0.00	107.44	386.77	565.20	0.00
65	47.45	101.38	0.00	0.00	101.38	395.37	612.30	0.00
70	44.95	96.04	0.00	0.00	96.04	403.39	659.40	0.00

Required Storage (m³):

Schaeffers Consulting Engineers Printed: 23-Apr-20

Project: 7085 Goreway Drive

Modified Rational Method

Area (ha) =	0.770
C =	1.00
Allowable Release Rate (I/s) =	188.3
Actual Release Rate (I/s) =	182.0
Release from Roof 1 (l/s) = Release from Roof 2 (l/s) =	0.00
	0.00

100 Year Storm

City of Miss	rm =	uga
	A =	450
	B =	4.9
	C =	.78

	100 Year					Total	Maximum	Required
Time	Intensity	Total	Runoff	Runoff	Total	Runoff	Release	Storage
(min)	100 year	Runoff	Roof 2	Roof 1	Runoff	Volume	Volume	Volume
	(mm/hr)	(l/s)	(l/s)	(l/s)	(l/s)	(m ³)	(m ³)	(m ³)
15	140.69	301.04	0.00	0.00	301.04	270.94	163.80	107.14
16	135.41	289.74	0.00	0.00	289.74	278.16	174.72	103.44
17	130.56	279.37	0.00	0.00	279.37	284.96	185.64	99.32
18	126.09	269.81	0.00	0.00	269.81	291.39	196.56	94.83
19	121.96	260.96	0.00	0.00	260.96	297.50	207.48	90.02
20	118.12	252.75	0.00	0.00	252.75	303.30	218.40	84.90
21	114.55	245.11	0.00	0.00	245.11	308.83	229.32	79.51
22	111.21	237.97	0.00	0.00	237.97	314.12	240.24	73.88
23	108.09	231.29	0.00	0.00	231.29	319.18	251.16	68.02
24	105.16	225.02	0.00	0.00	225.02	324.04	262.08	61.96
25	102.41	219.13	0.00	0.00	219.13	328.70	273.00	55.70
26	99.82	213.58	0.00	0.00	213.58	333.19	283.92	49.27
27	97.37	208.34	0.00	0.00	208.34	337.51	294.84	42.67
28	95.05	203.38	0.00	0.00	203.38	341.69	305.76	35.93
29	92.86	198.69	0.00	0.00	198.69	345.72	316.68	29.04
30	90.77	194.23	0.00	0.00	194.23	349.62	327.60	22.02
35	81.77	174.97	0.00	0.00	174.97	367.44	382.20	0.00
40	74.58	159.58	0.00	0.00	159.58	382.99	436.80	0.00
45	68.68	146.96	0.00	0.00	146.96	396.80	491.40	0.00
50	63.75	136.42	0.00	0.00	136.42	409.25	546.00	0.00
55	59.56	127.45	0.00	0.00	127.45	420.58	600.60	0.00
60	55.95	119.72	0.00	0.00	119.72	431.00	655.20	0.00
65	52.81	112.99	0.00	0.00	112.99	440.66	709.80	0.00
70	50.03	107.06	0.00	0.00	107.06	449.66	764.40	0.00

Required Storage (m³):

TABLE 2.01.03.03c: STORMWATER QUANTITY CONTROL REQUIREMENTS

Note 1: In all cases, the storm sewer capacity constraints may govern

- Note 2: Where "pre-development" is listed as part of the requirement, it is implied as raw land for which the run-off co-efficient=0.25 but will not exceed 0.50 for a site that may already be developed
- Note 3: CVC-Credit Valley Conservation, TRCA-Toronto Region Conservation Authority, CH-Conservation Halton

Subwatershed Name (Conservation Authority)	Quantity Control Criteria	References & Notes		
	East of Winston Churchill Blvd - Provide post to pre control for only 10 year design storm	Loyalist Creek Watershed Study (CBCL Limited, 1980)		
Loyalist Creek (CVC)	West of Winston Churchill Blvd - Provide post to pre control for all storms (i.e. 2,5,10,25,50 & 100 year)	Erin Mills West Loyalist Creek Drainage Report (Proctor & Redfern Group, 1985)		
Mary Fix Creek (CVC)	10 Year Post to 2 Year Pre-development Control	-		
Mimico Creek	Provide post to pre control for all	Hydrologic Model: VISUAL OTTHYMO-Return period peak flows based on the AES - 12 hour design storm		
(TRCA)	(i.e. 2,5,10,25,50 & 100 year)	Hydrology Study:Mimico Hydrology Update (Marshall Macklin Monaghan, 2009)		
Moore Creek (CVC)	No control required	-		
	Provide post to pre control for all storms (i.e. 2,5,10,25,50 & 100 year) & Regional storm	Hydrologic Model: GAWSER Model-Return period peak flows based on 24 hour SCS Type II distribution		
Mullet Creek (CVC)	Consider storm sewer constraints outlined in Streetsville Area Drainage Study (Dillon, 1994)	Gateway West Subwatershed Study (Gartner Lee Limited & Cosburn Patterson Mather, 1999)		
		Gateway West Subwatershed Study Update by Kidd Consulting (Update in Progress)		
Sawmill Creek (CVC)	Provide post to pre control for all	Hydrologic Model: GAWSER Model-Return period peak flows based on 24 hour SCS Type II distribution		
	(i.e. 2,5,10,25,50 & 100 year)	Sawmill Creek Subwatershed Study (Proctor & Redfern Limited, 1993)		
Serson Creek (CVC)	100 Year Post to 2 Year Pre-development Control	Large number of buildings (> 150) in the regulated flood plain		

City of Mississauga Transportation and Works Department Development Requirements Manual Effective September 2016

A-1 - Watershed Boundaries



City of Mississauga Transportation and Works Department

Appendix E

Engineering Drawings

- ARISING FROM SUCH INSPECTION.