



**Stantec Consulting Ltd.**  
600-171 Queens Avenue  
London ON N6A 5J7

October 20, 2023

Project/File: 161413832

**Carlos Ramirez**  
York Developments  
303 Richmond St, Suite 201  
London, ON, N6B 2H8

Dear Carlos Ramirez,

**Reference: 3080 Bostwick Block 5 SWM Update**

This letter is written in support of the proposed building change on Block 5 of the 3080 Bostwick Road site. While the increased height has little impact on the approved SWM strategy, the location shift of the building does have some significant impacts. Primarily, the proposed bioswales at the front of the building no longer are viable due to the lack of room for them. This letter shall outline the high level SWM strategy needed to maintain the proposed release rates determined in the September 2019 letter.

## Existing Conditions

A residential building and underground parking garage have already been built on site, with the SWM controls for some of this area already in place. These existing bioswales and infiltration galleries are capable of infiltrating the 5-year storm event and meet the water balance goals for the site on their own standing.

## Proposed Conditions

As shown on Figure 1, the overall site has not changed much from the previous plan, with the exception of the proposed building height and the north building shifting northward towards Southdale Road. The overall runoff coefficient for the site remains as it was at 0.67.

The total allowable release rate from site remains 0.059 m<sup>3</sup>/s, with half of that used for the southern existing outlet, leaving 0.030m<sup>3</sup>/s for the northern half.

## Stormwater Management Strategy

The loss of the bioswale and it's associated underground and surface storage means alternative measures are needed for quality and quantity control. The new proposed measures will need to meet the newer

Reference: 3080 Bostwick Block 5 SWM Update

standards as dictated by the Dingman Creek Stormwater Servicing EA completed in October of 2020. This means quality treatment of 80% removal of TSS will be required.

## Quality Treatment

While the rooftop runoff can be considered clean for the purposes of treatment, the surface runoff from area 204 consisting of the parking garage roof and parking lot requires treatment. An OGS unit has been sized (report attached) that shows a Stormceptor EFO4 provides 87% TSS removal for greater than 90% of the expected flows.

## Quantity Treatment

The previous SWMHYMO model for the site was updated, including design storms, to the current standards and modified to determine the volume required to control the 250-year event. This event must be controlled as the site does not have an acceptable overland flow route to release to. The 100-year storm event must be controlled to the allowable release rate of 0.030 m<sup>3</sup>/s.

The rooftop of the new building is proposed to be controlled as it was in the previous report, with 75% of the area being utilized for storage and controlled to a release rate of 10 l/s. This storage is included in the model. The following table illustrates the results of the model.

**Table 1 - Model Results for North Storage**

Event	2-Year	5-Year	10-Year	25-Year	50-Year	100-Year	250-Year
Release Rate (m <sup>3</sup> /s)	0.019	0.022	0.024	0.025	0.026	0.027	0.099
Storage Used (m <sup>3</sup> )	88	145	175	205	228	251	309

The release rates proposed would be achieved by vortex valve to be appropriately sized in detail design. Total storage required would be 310 m<sup>3</sup> located adjacent to the front of the building, with some storage under the building possibly being required. The model inputs and outputs have been attached.

## Infiltration Measures

As the space constraints of the site push the storage adjacent to the footings of the proposed building, infiltration at this location is no longer recommended. As noted in the existing conditions, significant infiltration is achieved by the southern bioswale.

Reference: 3080 Bostwick Block 5 SWM Update

## Closure

We trust the above SWM strategy satisfies the necessary information for the planning approvals for the site. Detail design shall provide more information about the configuration of the proposed storage. Should there be any questions, please feel free to contact the undersigned.

Regards,

**STANTEC CONSULTING LTD.**

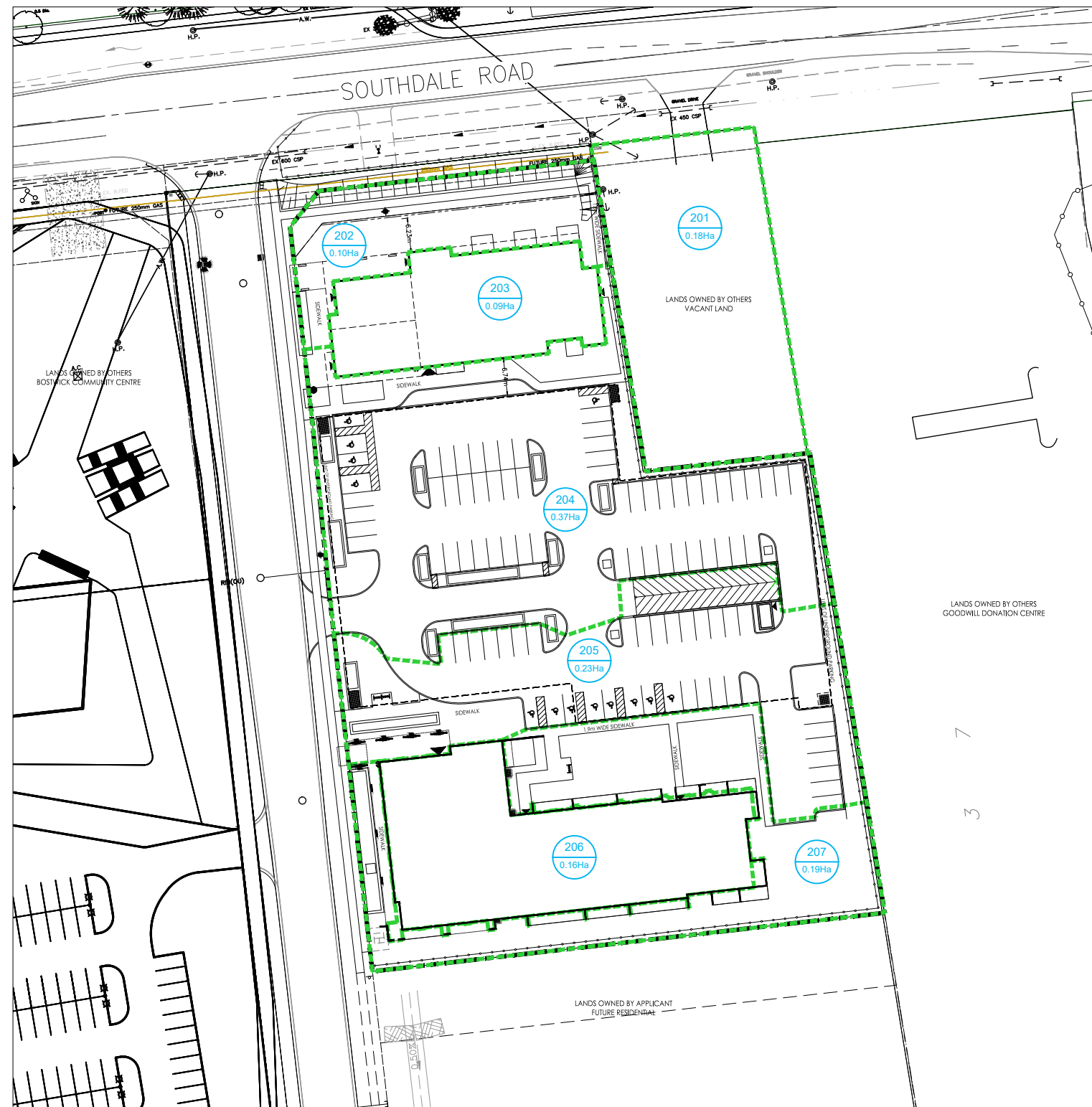
**Adam Kristoferson** P.Eng.  
Senior Water Resources Engineer  
Phone: (519) 675-6669  
adam.kristoferson@stantec.com

Attachment: Figure 1 – Storm Catchment Area Plan  
SWMHYMO Modelling Files  
OGS Sizing Report



Digitally signed  
by Adam  
Kristoferson  
Date:  
2023.10.20  
14:42:11 -04'00'

V:\01614\active\161413832\design\drawing\civil\sheet\_files\161413832\_c-gp.dwg  
 2023-10-12 11:39 AM by: Kenwell, Cynthia



NOTE:  
 ROOF OUTLETS ARE TO BE CONTROLLED  
 TO 10 L/S.

'C' VALUES:	
201	= 0.50
202	= 0.20
203	= 0.90
204	= 0.90
205	= 0.90
206	= 0.90
207	= 0.20

OCTOBER 2023  
 161413832



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Legend

- CATCHMENT LIMIT
- ROOF OUTLET
- CATCHMENT NUMBER  
CATCHMENT AREA

Notes



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 YORK DEVELOPMENTS  
 3080 BOSTWICK ROAD - SITE 5

Figure No.  
 1.0

Title  
 STORM CATCHMENT  
 AREA PLAN

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00001> 2 Metric units
00002> *#*****
00003> *# Project Name: [3080 Bostwick BLK 5] Project Number: [161413832]
00004> *# Date : 2023-10-13
00005> *# Modeller : [AKK]
00006> *# Company : Stantec Consulting Ltd. (London)
00007> *# License # : 4730904
00008> *#*****
00009> *#*****
00010> *#
00011> *# This model represents the hydrologic characteristics of the proposed conditio
00012> *# with 100% volume capture to the 100 year event.
00013> *# Storm events modeled are:
00014> *# 25mm and 2YR to 250YR 3hr Chicago STORMS (London, ONT. IDF)
00015> *#
00016> *#*****
00017> START TZERO=[0.0], METOUT=[2], NSTORM=[1], NRUN=[1]
00018> *# ["1dn25mm.3hr"] <-storm filename
00019> *#-----|-----|-----|-----|
00020> READ STORM STORM_FILENAME=["STORM.001"]
00021> *#-----|-----|-----|-----|
00022> *#*****
00023> *# North Commercial Roof
00024> *#*****
00025> CALIB STANDHYD ID=[01], NHYD=["Nroof"], DT=[1] (min), AREA=[0.09] (ha),
00026> XIMP=[0.99], TIMP=[0.99], DWF=[0.0] (cms), LOSS=[2],
00027> SCS curve number CN=[74],
00028> Pervious surfaces: IAPER=[5] (mm), SLPP=[0.01] (%),
00029> LGP=[10] (m), MNP=[0.24], SCP=[0] (min),
00030> Impervious surfaces: IAIMP=[2] (mm), SLPI=[0.01] (%),
00031> LGI=[10] (m), MNI=[0.04], SCI=[0] (min),
00032> RAINFALL=[ , , , ] (mm/hr), END=-1
00033> *#-----|-----|-----|-----|
00034> ROUTE RESERVOIR IDout=[06], NHYD=["NroofSTG"], IDin=[01],
00035> RDT=[1] (min),
00036> TABLE of ( OUTFLOW-STORAGE ) values
00037> (cms) - (ha-m)
00038> [ 0.0 , 0.0 ]
00039> [ 0.01 , 0.00001 ]
00040> [ 0.01 , 0.005 ]
00041> [ -1 , -1 ] (max twenty pts)
00042> IDovf=[07], NHYDovf=["Nooops"]
00043> *#-----|-----|-----|-----|
00044> *# Gas Property
00045> *#*****
00046> CALIB STANDHYD ID=[01], NHYD=["Gas"], DT=[1] (min), AREA=[0.18] (ha),
00047> XIMP=[0.30], TIMP=[0.50], DWF=[0.0] (cms), LOSS=[2],
00048> SCS curve number CN=[74],
00049> Pervious surfaces: IAPER=[5] (mm), SLPP=[0.5] (%),
00050> LGP=[10] (m), MNP=[0.24], SCP=[0] (min),
00051> Impervious surfaces: IAIMP=[2] (mm), SLPI=[0.5] (%),
00052> LGI=[50] (m), MNI=[0.04], SCI=[0] (min),
00053> RAINFALL=[ , , , ] (mm/hr), END=-1
00054> *#-----|-----|-----|-----|
00055> *#*****
00056> *# North Parking Lot
00057> *#*****
00058> CALIB STANDHYD ID=[02], NHYD=["NPLot"], DT=[1] (min), AREA=[0.37] (ha),
00059> XIMP=[0.95], TIMP=[0.95], DWF=[0.0] (cms), LOSS=[2],
00060> SCS curve number CN=[74],
00061> Pervious surfaces: IAPER=[5] (mm), SLPP=[2] (%),
00062> LGP=[10] (m), MNP=[0.24], SCP=[0] (min),
00063> Impervious surfaces: IAIMP=[2] (mm), SLPI=[1] (%),
00064> LGI=[75] (m), MNI=[0.013], SCI=[0] (min),
00065> RAINFALL=[ , , , ] (mm/hr), END=-1
00066> *#-----|-----|-----|-----|
00067> *#*****
00068> *# North Green Space
00069> *#*****
00070> CALIB STANDHYD ID=[03], NHYD=["NGreen"], DT=[1] (min), AREA=[0.10] (ha),
00071> XIMP=[0.10], TIMP=[0.25], DWF=[0.0] (cms), LOSS=[2],
00072> SCS curve number CN=[74],
00073> Pervious surfaces: IAPER=[5] (mm), SLPP=[2] (%),
00074> LGP=[15] (m), MNP=[0.24], SCP=[0] (min),
00075> Impervious surfaces: IAIMP=[2] (mm), SLPI=[1] (%),
00076> LGI=[15] (m), MNI=[0.013], SCI=[0] (min),
00077> RAINFALL=[ , , , ] (mm/hr), END=-1
00078> *#-----|-----|-----|-----|
00079> *#-----|-----|-----|-----|
00080> ADD HYD IDsum=[09], NHYD=["North"], IDs to add=[1+2+3+6+7]
00081> *#-----|-----|-----|-----|
00082> *#*****
00083> *# North Storage with 0.030 m³/s outlet to storm sewer
00084> *#*****
00085> ROUTE RESERVOIR IDout=[01], NHYD=["NBio"], IDin=[09],
00086> RDT=[1] (min),
00087> TABLE of ( OUTFLOW-STORAGE ) values
00088> (cms) - (ha-m)
00089> [ 0.0 , 0.0 ]
00090> [ 0.015 , 0.001 ]
00091> [ 0.030 , 0.030 ]
00092> [ 0.110 , 0.031 ]
00093> [ -1 , -1 ] (max twenty pts)
00094> IDovf=[02], NHYDovf=["N-OLF"]
00095> *#-----|-----|-----|-----|
00096> *#*****
00097> *# South Residential Roof
00098> *#*****
00099> CALIB STANDHYD ID=[01], NHYD=["SRoof"], DT=[1] (min), AREA=[0.16] (ha),
01000> XIMP=[0.99], TIMP=[0.99], DWF=[0.0] (cms), LOSS=[2],
01001> SCS curve number CN=[74],
01002> Pervious surfaces: IAPER=[5] (mm), SLPP=[0.01] (%),
01003> LGP=[10] (m), MNP=[0.24], SCP=[0] (min),
01004> Impervious surfaces: IAIMP=[2] (mm), SLPI=[0.01] (%),
01005> LGI=[10] (m), MNI=[0.04], SCI=[0] (min),
01006> RAINFALL=[ , , , ] (mm/hr), END=-1
01007> *#-----|-----|-----|-----|
01008> ROUTE RESERVOIR IDout=[06], NHYD=["SRoofSTG"], IDin=[01],
01009> RDT=[1] (min),
01010> TABLE of ( OUTFLOW-STORAGE ) values
01011> (cms) - (ha-m)
01012> [ 0.0 , 0.0 ]
01013> [ 0.01 , 0.00001 ]
01014> [ 0.01 , 0.009 ]
01015> [ -1 , -1 ] (max twenty pts)
01016> IDovf=[07], NHYDovf=["Sooops"]
01017> *#-----|-----|-----|-----|
01018> *#*****
01019> *# South Parking Lot
01020> *#*****
01021> CALIB STANDHYD ID=[02], NHYD=["SPLot"], DT=[1] (min), AREA=[0.25] (ha),
01022> XIMP=[0.95], TIMP=[0.95], DWF=[0.0] (cms), LOSS=[2],
01023> SCS curve number CN=[74],
01024> Pervious surfaces: IAPER=[5] (mm), SLPP=[2] (%),
01025> LGP=[10] (m), MNP=[0.24], SCP=[0] (min),
01026> Impervious surfaces: IAIMP=[2] (mm), SLPI=[1] (%),
01027> LGI=[75] (m), MNI=[0.013], SCI=[0] (min),

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00128> RAINFALL=[ , , , ] (mm/hr), END=-1
00129> *#-----|-----|-----|-----|
00130> *#*****
00131> *# South Green Space
00132> *#*****
00133> CALIB STANDHYD ID=[03], NHYD=["SGreen"], DT=[1] (min), AREA=[0.19] (ha),
00134> XIMP=[0.10], TIMP=[0.25], DWF=[0.0] (cms), LOSS=[2],
00135> SCS curve number CN=[74],
00136> Pervious surfaces: IAPER=[5] (mm), SLPP=[2] (%),
00137> LGP=[15] (m), MNP=[0.24], SCP=[0] (min),
00138> Impervious surfaces: IAIMP=[2] (mm), SLPI=[1] (%),
00139> LGI=[15] (m), MNI=[0.013], SCI=[0] (min),
00140> RAINFALL=[ , , , ] (mm/hr), END=-1
00141> *#-----|-----|-----|-----|
00142> ADD HYD IDsum=[09], NHYD=["South"], IDs to add=[2+3+6+7]
00143> *#-----|-----|-----|-----|
00144> *#*****
00145> *# South Bioswale with 0.030 m³/s outlet to storm sewer
00146> *#*****
00147> ROUTE RESERVOIR IDout=[01], NHYD=["SBio"], IDin=[09],
00148> RDT=[1] (min),
00149> TABLE of ( OUTFLOW-STORAGE ) values
00150> (cms) - (ha-m)
00151> [ 0.0 , 0.0 ]
00152> [ 0.0009 , 0.016 ]
00153> [ 0.032 , 0.017 ]
00154> [ 0.032 , 0.048 ]
00155> [ 0.113 , 0.049 ]
00156> [ 0.113 , 0.052 ]
00157> [ -1 , -1 ] (max twenty pts)
00158> IDovf=[02], NHYDovf=["S-OLF"]
00159> *#-----|-----|-----|-----|
00160> START TZERO=[0.0], METOUT=[2], NSTORM=[1], NRUN=[2]
00161> ["1dn2yr.3hr"]
00162> *#-----|-----|-----|-----|
00163> START TZERO=[0.0], METOUT=[2], NSTORM=[1], NRUN=[5]
00164> ["1dn5yr.3hr"]
00165> *#-----|-----|-----|-----|
00166> START TZERO=[0.0], METOUT=[2], NSTORM=[1], NRUN=[10]
00167> ["1dn10yr.3hr"]
00168> *#-----|-----|-----|-----|
00169> START TZERO=[0.0], METOUT=[2], NSTORM=[1], NRUN=[25]
00170> ["1dn25yr.3hr"]
00171> *#-----|-----|-----|-----|
00172> START TZERO=[0.0], METOUT=[2], NSTORM=[1], NRUN=[50]
00173> ["1dn50yr.3hr"]
00174> *#-----|-----|-----|-----|
00175> START TZERO=[0.0], METOUT=[2], NSTORM=[1], NRUN=[100]
00176> ["1dn100yr.3hr"]
00177> *#-----|-----|-----|-----|
00178> START TZERO=[0.0], METOUT=[2], NSTORM=[1], NRUN=[250]
00179> ["1dn250yr.3hr"]
00180> *#-----|-----|-----|-----|
00181> FINISH
00182> *#-----|-----|-----|-----|
00183> *#-----|-----|-----|-----|
00184> *#-----|-----|-----|-----|
00185> *#-----|-----|-----|-----|
00186> *#-----|-----|-----|-----|
00187> *#-----|-----|-----|-----|
00188> *#-----|-----|-----|-----|
00189> *#-----|-----|-----|-----|
00190> *#-----|-----|-----|-----|
00191> *#-----|-----|-----|-----|
00192> *#-----|-----|-----|-----|
00193> *#-----|-----|-----|-----|
00194> *#-----|-----|-----|-----|
00195> *#-----|-----|-----|-----|
00196> *#-----|-----|-----|-----|
00197> *#-----|-----|-----|-----|
00198> *#-----|-----|-----|-----|
00199> *#-----|-----|-----|-----|
02000> *#-----|-----|-----|-----|
02001> *#-----|-----|-----|-----|
02002> *#-----|-----|-----|-----|
02003> *#-----|-----|-----|-----|
02004> *#-----|-----|-----|-----|
02005> *#-----|-----|-----|-----|

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00001> =====
00002>
00003> SSSSS W W M M H H Y Y M M O O 999 999 =====
00004> S W W M M H H Y Y M M O O 9 9 9 9
00005> SSSSS W W M M M H H H Y Y M M O O ## 9 9 9 9 Ver 4.05
00006> S W W M M H H Y Y M M O O 9999 9999 Sept 2011
00007> SSSSS W W M M H H Y Y M M O O 9 9 9 9 =====
00008> 9 9 9 9 # 4730904
00009> StormWater Management Hydrologic Model 999 999 =====
00010>
00011> *****
00012> ***** SWMHYMO Ver/4.05 *****
00013> ***** A single event and continuous hydrologic simulation model *****
00014> ***** based on the principles of HYMO and its successors *****
00015> ***** OTHYMO-83 and OTHYMO-89. *****
00016> *****
00017> ***** Distributed by: J.F. Sabourin and Associates Inc. *****
00018> ***** Ottawa, Ontario: (613) 836-3884 *****
00019> ***** Gatineau, Quebec: (819) 243-6858 *****
00020> ***** E-Mail: swmhymo@fesa.Com *****
00021> *****
00022>
00023> *****
00024> ***** Licensed user: Stantec Consulting Ltd. (Kitchener) *****
00025> ***** Kitchener SERIAL#:4730904 *****
00026> *****
00027> *****
00028> *****
00029> ***** PROGRAM ARRAY DIMENSIONS *****
00030> ***** Maximum value for ID numbers : 10 *****
00031> ***** Max. number of rainfall points: 105408 *****
00032> ***** Max. number of flow points : 105408 *****
00033> *****
00034> *****
00035> ***** D E T A I L E D O U T P U T *****
00037> *****
00038> * DATE: 2023-10-20 TIME: 14:10:25 RUN COUNTER: 000150 *
00039> *****
00040> * Input filename: C:\MODELL-1\13832\SWMHYMO\2023UP-1\202310pr.dat *
00041> * Output filename: C:\MODELL-1\13832\SWMHYMO\2023UP-1\202310pr.out *
00042> * Summary filename: C:\MODELL-1\13832\SWMHYMO\2023UP-1\202310pr.sum *
00043> * User comments: *
00044> * 1: *
00045> * 2: *
00046> * 3: *
00047> *****
00048>
00049>
00050> 001:0001-----
00051> *****
00052> *# Project Name: [3080 Bostwick BLK 5] Project Number: [161413832]
00053> *# Date : 2023-10-13
00054> *# Modeller : [AKK]
00055> *# Company : Stantec Consulting Ltd. (London)
00056> *# License # : 4730904
00057> *****
00058> *# *****
00059> *# *****
00060> *# This model represents the hydrologic characteristics of the proposed conditio
00061> *# with 100% volume capture to the 100 year event.
00062> *# Storm events modeled are:
00063> *# 25mm and 2YR to 250YR 3hr Chicago STORMS (London, ONT. IDF)
00064> *# *****
00065> *****
00066> *****
00067> | START | Project dir.: C:\MODELL-1\13832\SWMHYMO\2023UP-1\
00068> | Rainfall dir.: C:\MODELL-1\13832\SWMHYMO\2023UP-1\
00069> | TZERO = .00 hrs on 0
00070> | METOUT= 2 (output = METRIC)
00071> | NRUN = 001
00072> | NSTORM= 1
00073> | # 1=1dn25mm.3hr
00074> *****
00075> 001:0002-----
00076> *****
00077> | READ STORM | Filename: LONDON 25mm 3 HOUR CHICAGO STORM
00078> | Ptotal= 25.00 mm | Comments: LONDON 25mm 3 HOUR CHICAGO STORM
00079> *****
00080> *****
00081> *****
00082> *****
00083> *****
00084> *****
00085> *****
00086> *****
00087> *****
00088> *****
00089> *****
00090> *****
00091> *****
00092> *****
00093> 001:0003-----
00094> *****
00095> *# North Commercial Roof
00096> *****
00097> *****
00098> | CALIB STANDHYD | Area (ha)= .09
00099> | 01:NRoof DT= 1.00 | Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00
0100> *****
01001> *****
01002> ***** IMPERVIOUS PERVIOUS (i)
01003> ***** Surface Area (ha)= .09 .00
01004> ***** Dep. Storage (mm)= 2.00 5.00
01005> ***** Average Slope (%)= .01 .01
01006> ***** Length (m)= 10.00 10.00
01007> ***** Mannings n = .040 .240
01008> ***** Max.eff.Inten.(mm/hr)= 62.45 10.48
01009> ***** over (min) 6.00 42.00
01010> ***** Storage Coeff. (min)= 6.05 (ii) 42.27 (ii)
01011> ***** Unit Hyd. Tpeak (min)= 6.00 42.00
01012> ***** Unit Hyd. peak (cms)= .19 .03
01013> ***** *TOTALS*
01014> ***** PEAK FLOW (cms)= .01 .00 .011 (iii)
01015> ***** TIME TO PEAK (hrs)= 1.23 2.07 1.233
01016> ***** RUNOFF VOLUME (mm)= 23.00 3.66 22.805
01017> ***** TOTAL RAINFALL (mm)= 25.00 25.00 24.998
01018> ***** RUNOFF COEFFICIENT = .92 .15 .912
01019> *****
01020> ***** (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
01021> ***** CN* = 74.0 Ia = Dep. Storage (Above)
01022> ***** (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
01023> ***** THAN THE STORAGE COEFFICIENT.
01024> ***** (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01025> *****
01026> *****
01027> 001:0004-----

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00128> -----
00129> | ROUTE RESERVOIR | Requested routing time step = 1.0 min.
00130> | IN>01:(NRoof) |
00131> | OUT<06:(NRoofs) | ***** OUTFLOW STORAGE TABLE *****
00132> -----
00133> OUTFLOW STORAGE | OUTFLOW STORAGE
00134> (cms) (ha.m.) | (cms) (ha.m.)
00135> .000 .0000E+00 | .010 .5000E-02
00136> .010 .1000E-04 | .000 .0000E+00
00137> -----
00138> ROUTING RESULTS AREA QPEAK TPEAK R.V.
00139> (ha) (cms) (hrs) (mm)
00140> INFLOW >01: (NRoof) .09 .011 1.233 22.805
00141> OUTFLOW<06: (NRoofs) .09 .010 1.200 22.805
00142> OVERFLOW<07: (Noops) .00 .000 .000 .000
00143> -----
00144> TOTAL NUMBER OF SIMULATED OVERFLOWS = 0
00145> CUMULATIVE TIME OF OVERFLOWS (hours)= .00
00146> PERCENTAGE OF TIME OVERFLOWING (%)= .00
00147> -----
00148> PEAK FLOW REDUCTION [Qout/Qin] (%)= 93.446
00149> TIME SHIFT OF PEAK FLOW (min)= -2.200
00150> MAXIMUM STORAGE USED (ha.m.)=.2145E-04
00151> -----
00152> -----
00153> 001:0005-----
00154> *****
00155> *# Gas Property
00156> *****
00157> *****
00158> | CALIB STANDHYD | Area (ha)= .18
00159> | 01:Gas DT= 1.00 | Total Imp(%)= 50.00 Dir. Conn.(%)= 30.00
00160> *****
00161> ***** IMPERVIOUS PERVIOUS (i)
00162> ***** Surface Area (ha)= .09 .09
00163> ***** Dep. Storage (mm)= 2.00 5.00
00164> ***** Average Slope (%)= .50 .50
00165> ***** Length (m)= 50.00 10.00
00166> ***** Mannings n = .040 .240
00167> ***** Max.eff.Inten.(mm/hr)= 68.98 12.07
00168> ***** over (min) 5.00 15.00
00169> ***** Storage Coeff. (min)= 4.73 (ii) 15.31 (ii)
00170> ***** Unit Hyd. Tpeak (min)= 5.00 15.00
00171> ***** Unit Hyd. peak (cms)= .23 .07
00172> ***** *TOTALS*
00173> ***** PEAK FLOW (cms)= .01 .00 .008 (iii)
00174> ***** TIME TO PEAK (hrs)= 1.22 1.47 1.217
00175> ***** RUNOFF VOLUME (mm)= 23.00 5.39 10.673
00176> ***** TOTAL RAINFALL (mm)= 25.00 25.00 24.998
00177> ***** RUNOFF COEFFICIENT = .92 .22 .427
00178> *****
00179> ***** (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
00180> ***** CN* = 74.0 Ia = Dep. Storage (Above)
00181> ***** (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
00182> ***** THAN THE STORAGE COEFFICIENT.
00183> ***** (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00184> *****
00185> *****
00186> *****
00187> 001:0006-----
00188> *****
00189> *# North Parking Lot
00190> *****
00191> *****
00192> | CALIB STANDHYD | Area (ha)= .37
00193> | 02:NPLot DT= 1.00 | Total Imp(%)= 95.00 Dir. Conn.(%)= 95.00
00194> *****
00195> ***** IMPERVIOUS PERVIOUS (i)
00196> ***** Surface Area (ha)= .35 .02
00197> ***** Dep. Storage (mm)= 2.00 5.00
00198> ***** Average Slope (%)= 1.00 2.00
00199> ***** Length (m)= 75.00 10.00
00200> ***** Mannings n = .013 .240
00201> ***** Max.eff.Inten.(mm/hr)= 68.98 6.00
00202> ***** over (min) 2.00 12.00
00203> ***** Storage Coeff. (min)= 2.49 (ii) 11.73 (ii)
00204> ***** Unit Hyd. Tpeak (min)= 2.00 12.00
00205> ***** Unit Hyd. peak (cms)= .48 .10
00206> ***** *TOTALS*
00207> ***** PEAK FLOW (cms)= .06 .00 .060 (iii)
00208> ***** TIME TO PEAK (hrs)= 1.17 1.42 1.167
00209> ***** RUNOFF VOLUME (mm)= 23.00 3.66 22.031
00210> ***** TOTAL RAINFALL (mm)= 25.00 25.00 24.998
00211> ***** RUNOFF COEFFICIENT = .92 .15 .881
00212> *****
00213> ***** (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
00214> ***** CN* = 74.0 Ia = Dep. Storage (Above)
00215> ***** (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
00216> ***** THAN THE STORAGE COEFFICIENT.
00217> ***** (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00218> *****
00219> *****
00220> *****
00221> 001:0007-----
00222> *****
00223> *# North Green Space
00224> *****
00225> *****
00226> | CALIB STANDHYD | Area (ha)= .10
00227> | 03:Green DT= 1.00 | Total Imp(%)= 25.00 Dir. Conn.(%)= 10.00
00228> *****
00229> ***** IMPERVIOUS PERVIOUS (i)
00230> ***** Surface Area (ha)= .03 .08
00231> ***** Dep. Storage (mm)= 2.00 5.00
00232> ***** Average Slope (%)= 1.00 2.00
00233> ***** Length (m)= 15.00 15.00
00234> ***** Mannings n = .013 .240
00235> ***** Max.eff.Inten.(mm/hr)= 68.98 9.72
00236> ***** over (min) 1.00 11.00
00237> ***** Storage Coeff. (min)= 1.00 (ii) 10.67 (ii)
00238> ***** Unit Hyd. Tpeak (min)= 1.00 11.00
00239> ***** Unit Hyd. peak (cms)= 1.11 .11
00240> ***** *TOTALS*
00241> ***** PEAK FLOW (cms)= .00 .00 .002 (iii)
00242> ***** TIME TO PEAK (hrs)= 1.17 1.38 1.167
00243> ***** RUNOFF VOLUME (mm)= 23.00 4.56 6.402
00244> ***** TOTAL RAINFALL (mm)= 25.00 25.00 24.998
00245> ***** RUNOFF COEFFICIENT = .92 .18 .256
00246> *****
00247> ***** (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
00248> ***** CN* = 74.0 Ia = Dep. Storage (Above)
00249> ***** (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
00250> ***** THAN THE STORAGE COEFFICIENT.
00251> ***** (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00252> *****
00253> *****
00254> *****

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00255> 001:0008-----
00256> | ADD HYD (North ) | ID: NHYD      AREA   QPEAK   TPEAK   R.V.   DWF
00258> -----
00259>      ID1 01:Gas      .18     .008    1.22   10.67   .000
00260>      +ID2 02:NPlot   .37     .060    1.17   22.03   .000
00261>      +ID3 03:NGreen   .10     .002    1.17   6.40    .000
00262>      +ID4 06:NRoofSTG .09     .010    1.20   22.80   .000
00263>      +ID5 07:Noops    .00     .000    .00    .00     .000
00264> -----
00265>      SUM 09:North    .74     .076    1.17   17.25   .000
00266> -----
00267> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
00268> -----
00269> -----
00270> 001:0009-----
00271> *****
00272> *# North Storage with 0.030 m³/s outlet to storm sewer
00273> *****
00274> -----
00275> | ROUTE RESERVOIR | Requested routing time step = 1.0 min.
00276> | IN>09:(North ) |
00277> | OUT<01:(NBlo ) |
00278> -----
00279>      ===== OUTFLOW STORAGE TABLE =====
00280>      OUTFLOW STORAGE | OUTFLOW STORAGE
00281>      (cms) (ha.m.) | (cms) (ha.m.)
00282>      .000 .0000E+00 | .030 .3000E-01
00283>      .015 .1000E-02 | .110 .3100E-01
00284> -----
00285> ROUTING RESULTS      AREA   QPEAK   TPEAK   R.V.
00286> -----
00287>      (ha) (cms) (hrs) (mm)
00288> INFLOW >09:(North ) .74     .076    1.167   17.251
00289> OUTFLOW<01:(NBlo ) .74     .017   1.533   17.251
00290> OVERFLOW<02:(N-OLF ) .00     .000    .000    .000
00291> -----
00292> TOTAL NUMBER OF SIMULATED OVERFLOWS = 0
00293> CUMULATIVE TIME OF OVERFLOWS (hours)= .00
00294> PERCENTAGE OF TIME OVERFLOWING (%) = .00
00295> -----
00296> PEAK FLOW REDUCTION [Qout/Qin] (%) = 22.328
00297> TIME SHIFT OF PEAK FLOW (min) = 22.00
00298> MAXIMUM STORAGE USED (ha.m.) = 5.004E-02
00299> -----
00300> 001:0010-----
00301> *****
00302> *# South Residential Roof
00303> *****
00304> | CALIB STANDHYD | Area (ha)= .16
00305> | 01:SRoof DT= 1.00 | Total Imp(%) = 99.00 Dir. Conn.(%) = 99.00
00306> -----
00307> IMPERVIOUS PERVIOUS (i)
00308> Surface Area (ha)= .16 .00
00309> Dep. Storage (mm)= 2.00 5.00
00310> Average Slope (%) = .01 .01
00311> Length (m) = 10.00 10.00
00312> Mannings n = .040 .240
00313> -----
00314> Max.eff.Inten.(mm/hr)= 62.45 10.48
00315> over (min) = 6.00 42.00
00316> Storage Coeff. (min)= 6.05 (ii) 42.27 (ii)
00317> Unit Hyd. Tpeak (min)= 6.00 42.00
00318> Unit Hyd. peak (cms)= .19 .03
00319> -----
00320> PEAK FLOW (cms)= .02 .00 *TOTALS*
00321> TIME TO PEAK (hrs)= 1.23 2.07 1.233
00322> RUNOFF VOLUME (mm)= 23.00 3.66 22.805
00323> TOTAL RAINFALL (mm)= 25.00 25.00 24.998
00324> RUNOFF COEFFICIENT = .92 .15 .912
00325> -----
00326> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
00327> CN* = 74.0 Ia = Dep. Storage (Above)
00328> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
00329> THAN THE STORAGE COEFFICIENT.
00330> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00331> -----
00332> -----
00333> 001:0011-----
00334> -----
00335> | ROUTE RESERVOIR | Requested routing time step = 1.0 min.
00336> | IN>01:(SRoof ) |
00337> | OUT<06:(SRoofs ) |
00338> -----
00339>      ===== OUTFLOW STORAGE TABLE =====
00340>      OUTFLOW STORAGE | OUTFLOW STORAGE
00341>      (cms) (ha.m.) | (cms) (ha.m.)
00342>      .000 .0000E+00 | .010 .9000E-02
00343>      .010 .1000E-04 | .000 .0000E+00
00344> -----
00345> ROUTING RESULTS      AREA   QPEAK   TPEAK   R.V.
00346> -----
00347>      (ha) (cms) (hrs) (mm)
00348> INFLOW >01:(SRoof ) .16     .019   1.233   22.805
00349> OUTFLOW<06:(SRoofs) .16     .010   1.133   22.805
00350> OVERFLOW<07:(Scoops) .00     .000    .000    .000
00351> -----
00352> TOTAL NUMBER OF SIMULATED OVERFLOWS = 0
00353> CUMULATIVE TIME OF OVERFLOWS (hours)= .00
00354> PERCENTAGE OF TIME OVERFLOWING (%) = .00
00355> -----
00356> PEAK FLOW REDUCTION [Qout/Qin] (%) = 52.566
00357> TIME SHIFT OF PEAK FLOW (min) = -6.00
00358> MAXIMUM STORAGE USED (ha.m.) = 5.186E-03
00359> -----
00360> 001:0012-----
00361> *****
00362> *# South Parking Lot
00363> *****
00364> | CALIB STANDHYD | Area (ha)= .25
00365> | 02:SRoof DT= 1.00 | Total Imp(%) = 95.00 Dir. Conn.(%) = 95.00
00366> -----
00367> IMPERVIOUS PERVIOUS (i)
00368> Surface Area (ha)= .24 .01
00369> Dep. Storage (mm)= 2.00 5.00
00370> Average Slope (%) = 1.00 2.00
00371> Length (m) = 75.00 10.00
00372> Mannings n = .013 .240
00373> -----
00374> Max.eff.Inten.(mm/hr)= 68.98 6.00
00375> over (min) = 2.00 12.00
00376> Storage Coeff. (min)= 2.49 (ii) 11.73 (ii)
00377> Unit Hyd. Tpeak (min)= 2.00 12.00
00378> Unit Hyd. peak (cms)= .48 .10
00379> -----
00380> PEAK FLOW (cms)= .04 .00 *TOTALS*
00381> TIME TO PEAK (hrs)= 1.17 1.42 1.167 (iii)

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00382> RUNOFF VOLUME (mm)= 23.00 3.66 22.031
00383> TOTAL RAINFALL (mm)= 25.00 25.00 24.998
00384> RUNOFF COEFFICIENT = .92 .15 .881
00385> -----
00386> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
00387> CN* = 74.0 Ia = Dep. Storage (Above)
00388> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
00389> THAN THE STORAGE COEFFICIENT.
00390> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00391> -----
00392> -----
00393> 001:0013-----
00394> *****
00395> *# South Green Space
00396> *****
00397> -----
00398> | CALIB STANDHYD | Area (ha)= .19
00399> | 03:SGreen DT= 1.00 | Total Imp(%) = 25.00 Dir. Conn.(%) = 10.00
00400> -----
00401> IMPERVIOUS PERVIOUS (i)
00402> Surface Area (ha)= .05 .14
00403> Dep. Storage (mm)= 2.00 5.00
00404> Average Slope (%) = 1.00 2.00
00405> Length (m) = 15.00 15.00
00406> Mannings n = .013 .240
00407> -----
00408> Max.eff.Inten.(mm/hr)= 68.98 9.72
00409> over (min) = 1.00 11.00
00410> Storage Coeff. (min)= .95 (ii) 10.67 (ii)
00411> Unit Hyd. Tpeak (min)= 1.00 11.00
00412> Unit Hyd. peak (cms)= 1.11 .11
00413> -----
00414> PEAK FLOW (cms)= .00 .00 .004 (iii)
00415> TIME TO PEAK (hrs)= 1.17 1.38 1.167
00416> RUNOFF VOLUME (mm)= 23.00 4.56 6.402
00417> TOTAL RAINFALL (mm)= 25.00 25.00 24.998
00418> RUNOFF COEFFICIENT = .92 .18 .256
00419> -----
00420> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
00421> CN* = 74.0 Ia = Dep. Storage (Above)
00422> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
00423> THAN THE STORAGE COEFFICIENT.
00424> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00425> -----
00426> -----
00427> 001:0014-----
00428> -----
00429> | ADD HYD (South ) | ID: NHYD      AREA   QPEAK   TPEAK   R.V.   DWF
00430> -----
00431>      ID1 02:SPlot   .25     .040    1.17   22.03   .000
00432>      +ID2 03:SGreen .19     .004    1.17   6.40    .000
00433>      +ID3 06:SRoofSTG .16     .010    1.13   22.80   .000
00434>      +ID4 07:Soops    .00     .000    .00    .00     .000
00435> -----
00436>      SUM 09:South    .60     .055    1.17   17.29   .000
00437> -----
00438> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
00439> -----
00440> -----
00441> 001:0015-----
00442> *****
00443> *# South Bioswale with 0.030 m³/s outlet to storm sewer
00444> *****
00445> -----
00446> | ROUTE RESERVOIR | Requested routing time step = 1.0 min.
00447> | IN>09:(South ) |
00448> | OUT<01:(SBio ) |
00449> -----
00450>      ===== OUTFLOW STORAGE TABLE =====
00451>      OUTFLOW STORAGE | OUTFLOW STORAGE
00452>      (cms) (ha.m.) | (cms) (ha.m.)
00453>      .000 .0000E+00 | .032 .4800E-01
00454>      .001 .1600E-01 | .113 .4900E-01
00455>      .032 .1700E-01 | .113 .5200E-01
00456> -----
00457> ROUTING RESULTS      AREA   QPEAK   TPEAK   R.V.
00458> -----
00459>      (ha) (cms) (hrs) (mm)
00460> INFLOW >09:(South ) .60     .055   1.167   17.288
00461> OUTFLOW<01:(SBio ) .60     .001   3.200   17.285
00462> OVERFLOW<02:(S-OLF) .00     .000    .000    .000
00463> -----
00464> TOTAL NUMBER OF SIMULATED OVERFLOWS = 0
00465> CUMULATIVE TIME OF OVERFLOWS (hours)= .00
00466> PERCENTAGE OF TIME OVERFLOWING (%) = .00
00467> -----
00468> PEAK FLOW REDUCTION [Qout/Qin] (%) = 1.030
00469> TIME SHIFT OF PEAK FLOW (min) = 122.00
00470> MAXIMUM STORAGE USED (ha.m.) = .9997E-02
00471> -----
00472> 001:0016-----
00473> ** END OF RUN : 1
00474> *****
00475> -----
00476> -----
00477> -----
00478> -----
00479> -----
00480> -----
00481> | START | Project dir.: C:\MODELL-1\13832\SWMHYMO\2023UP-1\
00482> | Rainfall dir.: C:\MODELL-1\13832\SWMHYMO\2023UP-1\
00483> | TZERO = .00 hrs on 0
00484> | METOUT= 2 (output = METRIC)
00485> | NRUN = 002
00486> | NSTORM= 1
00487> | # 1=1dn2yr.3hr
00488> -----
00489> 002:0002-----
00490> *****
00491> *# Project Name: [2030 Bostwick BLK 5] Project Number: [161413832]
00492> *# Date : [2023-10-13]
00493> *# Modeller : [AKK]
00494> *# Company : [Stantec Consulting Ltd. (London)]
00495> *# License # : [4730904]
00496> *****
00497> -----
00498> -----
00499> *# This model represents the hydrologic characteristics of the proposed conditio
00500> *# with 100% volume capture to the 100 year event.
00501> *# Storm events modeled are:
00502> *# 25mm and 2YR to 250YR 3hr Chicago STORMS (London, ONT. IDP)
00503> *#
00504> *****
00505> -----
00506> 002:0002-----
00507> -----
00508> | READ STORM | Filename: 2-yr, 3hr Chicago Storm from 2021 London

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00509> | Ptotal= 32.83 mm)      Comments: 2-yr, 3hr Chicago Storm from 2021 London
00510> -----
00511>      TIME RAIN | TIME RAIN | TIME RAIN | TIME RAIN
00512>      hrs mm/hr | hrs mm/hr | hrs mm/hr | hrs mm/hr
00513>      .08 2.574 | .83 14.974 | 1.58 7.501 | 2.33 3.414
00514>      .17 2.812 | .92 35.641 | 1.67 6.585 | 2.42 3.229
00515>      .25 3.105 | 1.00 108.068 | 1.75 5.876 | 2.50 3.064
00516>      .33 3.472 | 1.08 46.277 | 1.83 5.310 | 2.58 2.917
00517>      .42 3.949 | 1.17 25.470 | 1.92 4.849 | 2.67 2.784
00518>      .50 4.594 | 1.25 17.290 | 2.00 4.465 | 2.75 2.663
00519>      .58 5.517 | 1.33 13.030 | 2.08 4.141 | 2.83 2.554
00520>      .67 6.947 | 1.42 10.448 | 2.17 3.864 | 2.92 2.454
00521>      .75 9.460 | 1.50 8.726 | 2.25 3.624 | 3.00 2.362
00522> -----
00523> -----
00524> 002:0003-----
00525> *#*****
00526> *# North Commercial Roof
00527> *#*****
00528> -----
00529> | CALIB STANDHYD | Area (ha)= .09
00530> | 01:NRoof DT= 1.00 | Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00
00531> -----
00532> -----
00533> IMPERVIOUS PERVIOUS (i)
00534> Surface Area (ha)= .09 .00
00535> Dep. Storage (mm)= 2.00 5.00
00536> Average Slope (%)= .01 .01
00537> Length (m)= 10.00 10.00
00538> Mannings n = .040 .240
00539> -----
00540> Max.eff.Inten.(mm/hr)= 108.07 18.93
00541> over (min) = 5.00 33.00
00542> Storage Coeff. (min)= 4.86 (ii) 33.45 (ii)
00543> Unit Hyd. Tpeak (min)= 5.00 33.00
00544> Unit Hyd. peak (cms)= .23 .04
00545> -----
00546> PEAK FLOW (cms)= .02 .00 *TOTALS*
00547> TIME TO PEAK (hrs)= 1.05 1.67 .018 (iii)
00548> RUNOFF VOLUME (mm)= 30.83 6.62 30.592
00549> TOTAL RAINFALL (mm)= 32.83 32.83 32.834
00550> RUNOFF COEFFICIENT = .94 .20 .932
00551> -----
00552> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
00553> CN* = 74.0 Ia = Dep. Storage (Above)
00554> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
00555> THAN THE STORAGE COEFFICIENT.
00556> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00557> -----
00558> 002:0004-----
00559> -----
00560> | ROUTE RESERVOIR | Requested routing time step = 1.0 min.
00561> | IN<01: (NRoof ) |
00562> | OUT<06: (NRoofs) |
00563> -----
00564> ===== OUTFLOW STORAGE TABLE =====
00565> OUTFLOW STORAGE | OUTFLOW STORAGE
00566> (cms) (ha.m.) | (cms) (ha.m.)
00567> .000 .0000E+00 | .010 .5000E-02
00568> .010 .1000E-04 | .000 .0000E+00
00569> -----
00570> ROUTING RESULTS AREA QPEAK TPEAK R.V.
00571> (ha) (cms) (hrs) (mm)
00572> INFLOW >01: (NRoof ) .09 .018 1.050 30.592
00573> OUTFLOW<06: (NRoofs) .09 .010 .983 30.592
00574> OVERFLOW<07: (Noops ) .00 .000 .000 .000
00575> -----
00576> TOTAL NUMBER OF SIMULATED OVERFLOWS = 0
00577> CUMULATIVE TIME OF OVERFLOWS (hours)= .00
00578> PERCENTAGE OF TIME OVERFLOWING (%)= .00
00579> -----
00580> PEAK FLOW REDUCTION [Qout/Qin] (%)= 55.971
00581> TIME SHIFT OF PEAK FLOW (min)= -4.00
00582> MAXIMUM STORAGE USED (ha.m.)=.3653E-03
00583> -----
00584> 002:0005-----
00585> *#*****
00586> *# Gas Property
00587> *#*****
00588> -----
00589> | CALIB STANDHYD | Area (ha)= .18
00590> | 01:Gas DT= 1.00 | Total Imp(%)= 50.00 Dir. Conn.(%)= 30.00
00591> -----
00592> -----
00593> IMPERVIOUS PERVIOUS (i)
00594> Surface Area (ha)= .09 .09
00595> Dep. Storage (mm)= 2.00 5.00
00596> Average Slope (%)= .50 .50
00597> Length (m)= 50.00 10.00
00598> Mannings n = .040 .240
00599> -----
00600> Max.eff.Inten.(mm/hr)= 108.07 25.65
00601> over (min) = 4.00 12.00
00602> Storage Coeff. (min)= 3.95 (ii) 11.78 (ii)
00603> Unit Hyd. Tpeak (min)= 4.00 12.00
00604> Unit Hyd. peak (cms)= .28 .10
00605> -----
00606> PEAK FLOW (cms)= .01 .00 *TOTALS*
00607> TIME TO PEAK (hrs)= 1.03 1.23 1.033 (iii)
00608> RUNOFF VOLUME (mm)= 30.83 9.21 15.695
00609> TOTAL RAINFALL (mm)= 32.83 32.83 32.834
00610> RUNOFF COEFFICIENT = .94 .28 .478
00611> -----
00612> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
00613> CN* = 74.0 Ia = Dep. Storage (Above)
00614> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
00615> THAN THE STORAGE COEFFICIENT.
00616> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00617> -----
00618> 002:0006-----
00619> *#*****
00620> *# North Parking Lot
00621> *#*****
00622> -----
00623> | CALIB STANDHYD | Area (ha)= .37
00624> | 02:NPlot DT= 1.00 | Total Imp(%)= 95.00 Dir. Conn.(%)= 95.00
00625> -----
00626> -----
00627> IMPERVIOUS PERVIOUS (i)
00628> Surface Area (ha)= .35 .02
00629> Dep. Storage (mm)= 2.00 5.00
00630> Average Slope (%)= 1.00 2.00
00631> Length (m)= 75.00 10.00
00632> Mannings n = .013 .240
00633> -----
00634> Max.eff.Inten.(mm/hr)= 108.07 14.03
00635> over (min) = 2.00 9.00
00636> Storage Coeff. (min)= 2.08 (ii) 8.66 (ii)

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00637> Unit Hyd. Tpeak (min)= 2.00 9.00
00638> Unit Hyd. peak (cms)= .54 .13
00639> -----
00640> *TOTALS*
00641> PEAK FLOW (cms)= .10 .00 .097 (iii)
00642> TIME TO PEAK (hrs)= 1.00 1.18 1.000
00643> RUNOFF VOLUME (mm)= 30.83 6.62 29.623
00644> TOTAL RAINFALL (mm)= 32.83 32.83 32.834
00645> RUNOFF COEFFICIENT = .94 .20 .902
00646> -----
00647> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
00648> CN* = 74.0 Ia = Dep. Storage (Above)
00649> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
00650> THAN THE STORAGE COEFFICIENT.
00651> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00652> -----
00653> 002:0007-----
00654> *#*****
00655> *# North Green Space
00656> *#*****
00657> | CALIB STANDHYD | Area (ha)= .10
00658> | 03:NGreen DT= 1.00 | Total Imp(%)= 25.00 Dir. Conn.(%)= 10.00
00659> -----
00660> -----
00661> IMPERVIOUS PERVIOUS (i)
00662> Surface Area (ha)= .03 .08
00663> Dep. Storage (mm)= 2.00 5.00
00664> Average Slope (%)= 1.00 2.00
00665> Length (m)= 15.00 15.00
00666> Mannings n = .013 .240
00667> -----
00668> Max.eff.Inten.(mm/hr)= 108.07 21.29
00669> over (min) = 1.00 8.00
00670> Storage Coeff. (min)= .79 (ii) 7.89 (ii)
00671> Unit Hyd. Tpeak (min)= 1.00 8.00
00672> Unit Hyd. peak (cms)= 1.22 .14
00673> -----
00674> PEAK FLOW (cms)= .00 .00 .004 (iii)
00675> TIME TO PEAK (hrs)= 1.00 1.15 1.000
00676> RUNOFF VOLUME (mm)= 30.83 7.98 10.262
00677> TOTAL RAINFALL (mm)= 32.83 32.83 32.834
00678> RUNOFF COEFFICIENT = .94 .24 .313
00679> -----
00680> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
00681> CN* = 74.0 Ia = Dep. Storage (Above)
00682> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
00683> THAN THE STORAGE COEFFICIENT.
00684> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00685> -----
00686> 002:0008-----
00687> -----
00688> | ADD HYD (North ) | ID: NHYD AREA QPEAK TPEAK R.V. DWF
00689> (ha) (cms) (hrs) (mm) (cms)
00690> ID1 01:Gas .18 .013 1.03 15.70 .000
00691> +ID2 02:NPlot .37 .097 1.00 29.62 .000
00692> +ID3 03:NGreen .10 .004 1.00 10.26 .000
00693> +ID4 06:NRoofSTG .09 .010 .98 30.59 .000
00694> +ID5 07:Noops .00 .000 .00 .00 .000
00695> =====
00696> SUM 09:North .74 .122 1.00 23.74 .000
00697> -----
00698> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
00699> -----
00700> -----
00701> 002:0009-----
00702> *#*****
00703> *# North Storage with 0.030 m³/s outlet to storm sewer
00704> *#*****
00705> -----
00706> | ROUTE RESERVOIR | Requested routing time step = 1.0 min.
00707> | IN<09: (North ) |
00708> | OUT<01: (NBio ) |
00709> -----
00710> ===== OUTFLOW STORAGE TABLE =====
00711> OUTFLOW STORAGE | OUTFLOW STORAGE
00712> (cms) (ha.m.) | (cms) (ha.m.)
00713> .000 .0000E+00 | .030 .3000E-01
00714> .015 .1000E-02 | .110 .3100E-01
00715> -----
00716> ROUTING RESULTS AREA QPEAK TPEAK R.V.
00717> (ha) (cms) (hrs) (mm)
00718> INFLOW >09: (North ) .74 .122 1.000 23.737
00719> OUTFLOW<01: (NBio ) .74 .019 1.450 23.737
00720> OVERFLOW<02: (N-OLF) .00 .000 .000 .000
00721> -----
00722> TOTAL NUMBER OF SIMULATED OVERFLOWS = 0
00723> CUMULATIVE TIME OF OVERFLOWS (hours)= .00
00724> PERCENTAGE OF TIME OVERFLOWING (%)= .00
00725> -----
00726> PEAK FLOW REDUCTION [Qout/Qin] (%)= 15.567
00727> TIME SHIFT OF PEAK FLOW (min)= 27.00
00728> MAXIMUM STORAGE USED (ha.m.)=.8762E-02
00729> -----
00730> 002:0010-----
00731> *#*****
00732> *# South Residential Roof
00733> *#*****
00734> -----
00735> | CALIB STANDHYD | Area (ha)= .16
00736> | 01:SRoof DT= 1.00 | Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00
00737> -----
00738> -----
00739> IMPERVIOUS PERVIOUS (i)
00740> Surface Area (ha)= .16 .00
00741> Dep. Storage (mm)= 2.00 5.00
00742> Average Slope (%)= .01 .01
00743> Length (m)= 10.00 10.00
00744> Mannings n = .040 .240
00745> -----
00746> Max.eff.Inten.(mm/hr)= 108.07 18.93
00747> over (min) = 5.00 33.00
00748> Storage Coeff. (min)= 4.86 (ii) 33.45 (ii)
00749> Unit Hyd. Tpeak (min)= 5.00 33.00
00750> Unit Hyd. peak (cms)= .23 .04
00751> -----
00752> PEAK FLOW (cms)= .03 .00 .032 (iii)
00753> TIME TO PEAK (hrs)= 1.05 1.67 1.050
00754> RUNOFF VOLUME (mm)= 30.83 6.62 30.592
00755> TOTAL RAINFALL (mm)= 32.83 32.83 32.834
00756> RUNOFF COEFFICIENT = .94 .20 .932
00757> -----
00758> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
00759> CN* = 74.0 Ia = Dep. Storage (Above)
00760> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
00761> THAN THE STORAGE COEFFICIENT.
00762> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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00763>-----
00764> 002:0011-----
00765> | ROUTE RESERVOIR | Requested routing time step = 1.0 min.
00766> | IN>01: (SRoof ) |
00767> | OUT<06: (SRoofs) |
00768> |=====  

00769> | OUTFLOW STORAGE TABLE |=====  

00770> | OUTFLOW STORAGE | OUTFLOW STORAGE |
00771> | (cms) (ha.m.) | (cms) (ha.m.) |
00772> | .000 .0000E+00 | .010 .9000E-02 |
00773> | .010 .1000E-04 | .000 .0000E+00 |
00774>-----
00775> ROUTING RESULTS AREA QPEAK TPEAK R.V.
00776> |-----| (ha) (cms) (hrs) (mm)
00777> | INFLOW >01: (SRoof ) | .16 .032 1.050 30.592
00778> | OUTFLOW<06: (SRoofs) | .16 .010 .933 30.622
00779> | OVERFLOW<07: (Sooops) | .00 .000 .000 .000
00780>-----
00781> TOTAL NUMBER OF SIMULATED OVERFLOWS = 0
00782> CUMULATIVE TIME OF OVERFLOWS (hours) = .00
00783> PERCENTAGE OF TIME OVERFLOWING (%) = .00
00784>-----
00785> PEAK FLOW REDUCTION [Qout/Qin] (%) = 31.485
00786> TIME SHIFT OF PEAK FLOW (min) = -7.00
00787> MAXIMUM STORAGE USED (ha.m.) = .1456E-02
00788>-----
00790> 002:0012-----
00791> *# South Parking Lot
00792> *#-----
00793> *#-----
00794>-----
00795> | CALIB STANDHYD | Area (ha) = .25
00796> | 02:SPlot DT= 1.00 | Total Imp (%) = 95.00 Dir. Conn. (%) = 95.00
00797>-----
00798> IMPERVIOUS PERVIOUS (i)
00799> Surface Area (ha) = .24 .01
00800> Dep. Storage (mm) = 2.00 5.00
00801> Average Slope (%) = 1.00 2.00
00802> Length (m) = 75.00 10.00
00803> Mannings n = .013 .240
00804>-----
00805> Max.eff.Inten.(mm/hr) = 108.07 14.03
00806> over (min) = 2.00 9.00
00807> Storage Coeff. (min) = 2.08 (ii) 8.66 (ii)
00808> Unit Hyd. Tpeak (min) = 2.00 9.00
00809> Unit Hyd. peak (cms) = .54 .13
00810>-----
00811> PEAK FLOW (cms) = .07 .00 .065 (iii)
00812> TIME TO PEAK (hrs) = 1.00 1.18 1.000
00813> RUNOFF VOLUME (mm) = 30.83 6.62 29.623
00814> TOTAL RAINFALL (mm) = 32.83 32.83 32.834
00815> RUNOFF COEFFICIENT = .94 .20 .902
00816>-----
00817> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
00818> CN* = 74.0 Ia = Dep. Storage (Above)
00819> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
00820> THAN THE STORAGE COEFFICIENT.
00821> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00822>-----
00823>-----
00824> 002:0013-----
00825> *# South Green Space
00826> *#-----
00827> *#-----
00828>-----
00829> | CALIB STANDHYD | Area (ha) = .19
00830> | 03:SGreen DT= 1.00 | Total Imp (%) = 25.00 Dir. Conn. (%) = 10.00
00831>-----
00832> IMPERVIOUS PERVIOUS (i)
00833> Surface Area (ha) = .05 .14
00834> Dep. Storage (mm) = 2.00 5.00
00835> Average Slope (%) = 1.00 2.00
00836> Length (m) = 15.00 15.00
00837> Mannings n = .013 .240
00838>-----
00839> Max.eff.Inten.(mm/hr) = 108.07 21.29
00840> over (min) = 1.00 8.00
00841> Storage Coeff. (min) = .79 (ii) 7.89 (ii)
00842> Unit Hyd. Tpeak (min) = 1.00 8.00
00843> Unit Hyd. peak (cms) = 1.22 .14
00844>-----
00845> PEAK FLOW (cms) = .01 .01 .007 (iii)
00846> TIME TO PEAK (hrs) = 1.00 1.15 1.000
00847> RUNOFF VOLUME (mm) = 30.83 7.98 10.262
00848> TOTAL RAINFALL (mm) = 32.83 32.83 32.834
00849> RUNOFF COEFFICIENT = .94 .24 .313
00850>-----
00851> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
00852> CN* = 74.0 Ia = Dep. Storage (Above)
00853> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
00854> THAN THE STORAGE COEFFICIENT.
00855> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00856>-----
00857>-----
00858> 002:0014-----
00859>-----
00860> | ADD HYD (South ) | ID: NHYD AREA QPEAK TPEAK R.V. DMF
00861> |-----| (ha) (cms) (hrs) (mm) (cms)
00862> | ID1 02:SPlot | .25 .065 1.00 29.62 .000
00863> | +ID2 03:SGreen | .19 .007 1.00 10.26 .000
00864> | +ID3 06:SRoofSTG | .16 .010 .93 30.62 .000
00865> | +ID4 07:Sooops | .00 .000 .00 .00 .000
00866>-----
00867> | SUM 09:South | .60 .083 1.00 23.76 .000
00868>-----
00869> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
00870>-----
00871>-----
00872> 002:0015-----
00873> *# South Bioswale with 0.030 m/s outlet to storm sewer
00874> *#-----
00875> *#-----
00876>-----
00877> | ROUTE RESERVOIR | Requested routing time step = 1.0 min.
00878> | IN>09: (South ) |
00879> | OUT<01: (SBio ) |
00880> |=====  

00881> | OUTFLOW STORAGE TABLE |=====  

00882> | OUTFLOW STORAGE | OUTFLOW STORAGE |
00883> | (cms) (ha.m.) | (cms) (ha.m.) |
00884> | .000 .0000E+00 | .032 .4800E-01 |
00885> | .001 .1600E-01 | .113 .4900E-01 |
00886> | .032 .1700E-01 | .113 .5200E-01 |
00887>-----
00888> ROUTING RESULTS AREA QPEAK TPEAK R.V.
00889> |-----| (ha) (cms) (hrs) (mm)
00890> | INFLOW >09: (South ) | .60 .083 1.000 23.759
00891> | OUTFLOW<01: (SBio ) | .60 .001 3.133 23.756

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00890> OVERFLOW<02: (S-OLF ) .00 .000 .000 .000
00891>-----
00892> TOTAL NUMBER OF SIMULATED OVERFLOWS = 0
00893> CUMULATIVE TIME OF OVERFLOWS (hours) = .00
00894> PERCENTAGE OF TIME OVERFLOWING (%) = .00
00895>-----
00896>-----
00897> PEAK FLOW REDUCTION [Qout/Qin] (%) = .935
00898> TIME SHIFT OF PEAK FLOW (min) = 128.00
00899> MAXIMUM STORAGE USED (ha.m.) = .1373E-01
00900>-----
00901>-----
00902> 002:0016-----
00903>-----
00904> 002:0002-----
00905> ** END OF RUN : 4
00906>-----
00907>-----
00908>-----
00909>-----
00910>-----
00911>-----
00912>-----
00913>-----
00914> | START | Project dir.: C:\MODELL-1\13832\SWMHYMO\2023UF-1\
00915> |-----| Rainfall dir.: C:\MODELL-1\13832\SWMHYMO\2023UF-1\
00916> | TZERO = .00 hrs on 0
00917> | METOUT= 2 (output = METRIC)
00918> | NRUN = 005
00919> | NSTORM= 1
00920> |-----| # 1-ldn5yr.3hr
00921>-----
00922> 005:0002-----
00923> *#-----
00924> *# Project Name: [3080 Bostwick BLK 5] Project Number: [161413832]
00925> *# Date : 2023-10-13
00926> *# Modeller : [AKK]
00927> *# Company : Stantec Consulting Ltd. (London)
00928> *# License # : 4730904
00929> *#-----
00930> *#-----
00931> *#-----
00932> *# This model represents the hydrologic characteristics of the proposed conditio
00933> *# with 100% volume capture to the 100 year event.
00934> *# Storm events modeled are:
00935> *# 25mm and 2YR to 250YR 3hr Chicago STORMS (London, ONT. IDF)
00936> *#-----
00937> *#-----
00938>-----
00939> 005:0002-----
00940>-----
00941> | READ STORM | Filename: 5-yr, 3hr Chicago Storm from London IDF
00942> | Ptotal= 45.37 mm | Comments: 5-yr, 3hr Chicago Storm from London IDF
00943>-----
00944> TIME RAIN | TIME RAIN | TIME RAIN | TIME RAIN
00945> | hrs mm/hr | hrs mm/hr | hrs mm/hr | hrs mm/hr
00946> | .08 3.038 | .83 21.781 | 1.58 10.023 | 2.33 4.120
00947> | .17 3.356 | .92 53.191 | 1.67 8.657 | 2.42 3.868
00948> | .25 3.752 | 1.00 149.041 | 1.75 7.613 | 2.50 3.646
00949> | .33 4.257 | 1.08 68.676 | 1.83 6.790 | 2.58 3.449
00950> | .42 4.925 | 1.17 37.777 | 1.92 6.127 | 2.67 3.273
00951> | .50 5.845 | 1.25 25.123 | 2.00 5.581 | 2.75 3.114
00952> | .58 7.190 | 1.33 18.497 | 2.08 5.125 | 2.83 2.971
00953> | .67 9.326 | 1.42 14.506 | 2.17 4.739 | 2.92 2.841
00954> | .75 13.171 | 1.50 11.874 | 2.25 4.407 | 3.00 2.722
00955>-----
00956>-----
00957> 005:0003-----
00958> *#-----
00959> *# North Commercial Roof
00960> *#-----
00961>-----
00962> | CALIB STANDHYD | Area (ha) = .09
00963> | 01:NRoof DT= 1.00 | Total Imp (%) = 99.00 Dir. Conn. (%) = 99.00
00964>-----
00965> IMPERVIOUS PERVIOUS (i)
00966> Surface Area (ha) = .09 .00
00967> Dep. Storage (mm) = 2.00 5.00
00968> Average Slope (%) = .01 .01
00969> Length (m) = 10.00 10.00
00970> Mannings n = .040 .240
00971>-----
00972> Max.eff.Inten.(mm/hr) = 149.04 14.37
00973> over (min) = 4.00 36.00
00974> Storage Coeff. (min) = 4.27 (ii) 36.20 (ii)
00975> Unit Hyd. Tpeak (min) = 4.00 36.00
00976> Unit Hyd. peak (cms) = .27 .03
00977>-----
00978> PEAK FLOW (cms) = .03 .00 .027 (iii)
00979> TIME TO PEAK (hrs) = 1.03 1.68 1.033
00980> RUNOFF VOLUME (mm) = 43.37 12.57 43.058
00981> TOTAL RAINFALL (mm) = 45.37 45.37 45.366
00982> RUNOFF COEFFICIENT = .96 .28 .949
00983>-----
00984> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
00985> CN* = 74.0 Ia = Dep. Storage (Above)
00986> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
00987> THAN THE STORAGE COEFFICIENT.
00988> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00989>-----
00990>-----
00991> 005:0004-----
00992>-----
00993> | ROUTE RESERVOIR | Requested routing time step = 1.0 min.
00994> | IN>01: (NRoof ) |
00995> | OUT<06: (NRoofs) |
00996> |=====  

00997> | OUTFLOW STORAGE TABLE |=====  

00998> | OUTFLOW STORAGE | OUTFLOW STORAGE |
00999> | (cms) (ha.m.) | (cms) (ha.m.) |
01000> | .000 .0000E+00 | .010 .5000E-02 |
01001> | .010 .1000E-04 | .000 .0000E+00 |
01002>-----
01003> ROUTING RESULTS AREA QPEAK TPEAK R.V.
01004> |-----| (ha) (cms) (hrs) (mm)
01005> | INFLOW >01: (NRoof ) | .09 .027 1.033 43.058
01006> | OUTFLOW<06: (NRoofs) | .09 .010 .933 43.062
01007> | OVERFLOW<07: (Noops) | .00 .000 .000 .000
01008>-----
01009> TOTAL NUMBER OF SIMULATED OVERFLOWS = 0
01010> CUMULATIVE TIME OF OVERFLOWS (hours) = .00
01011> PERCENTAGE OF TIME OVERFLOWING (%) = .00
01012>-----
01013> PEAK FLOW REDUCTION [Qout/Qin] (%) = 37.539
01014> TIME SHIFT OF PEAK FLOW (min) = -6.00
01015> MAXIMUM STORAGE USED (ha.m.) = .9611E-03
01016>-----

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01017> 005:0005-----
01018> *#*****
01019> *# Gas Property
01020> *#*****
01021>
01022> | CALIB STANDHYD | Area (ha)= .18
01023> | 01:Gas DT= 1.00 | Total Imp(%)= 50.00 Dir. Conn.(%)= 30.00
01024>
01025>
01026> Surface Area (ha)= IMPERVIOUS PERVIOUS (i)
01027> Dep. Storage (mm)= 2.00 5.00
01028> Average Slope (%)= .50 .50
01029> Length (m)= 50.00 10.00
01030> Mannings n = .040 .240
01031>
01032> Max.eff.Inten.(mm/hr)= 149.04 55.48
01033> over (min)= 3.00 9.00
01034> Storage Coeff. (min)= 3.47 (ii) 9.22 (ii)
01035> Unit Hyd. Tpeak (min)= 3.00 9.00
01036> Unit Hyd. peak (cms)= .34 .12
01037>
01038> PEAK FLOW (cms)= .02 .01 *TOTALS*
01039> TIME TO PEAK (hrs)= 1.02 1.17 .021 (iii)
01040> RUNOFF VOLUME (mm)= 43.37 16.55 1.033
01041> TOTAL RAINFALL (mm)= 45.37 45.37 45.366
01042> RUNOFF COEFFICIENT = .96 .36 .542
01043>
01044> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
01045> CN* = 74.0 Ia = Dep. Storage (Above)
01046> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
01047> THAN THE STORAGE COEFFICIENT.
01048> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01049>
01050>
01051> 005:0006-----
01052> *#*****
01053> *# North Parking Lot
01054> *#*****
01055>
01056> | CALIB STANDHYD | Area (ha)= .37
01057> | 02:NPLot DT= 1.00 | Total Imp(%)= 95.00 Dir. Conn.(%)= 95.00
01058>
01059>
01060> Surface Area (ha)= IMPERVIOUS PERVIOUS (i)
01061> Dep. Storage (mm)= 2.00 5.00
01062> Average Slope (%)= 1.00 2.00
01063> Length (m)= 75.00 10.00
01064> Mannings n = .013 .240
01065>
01066> Max.eff.Inten.(mm/hr)= 149.04 30.24
01067> over (min)= 2.00 7.00
01068> Storage Coeff. (min)= 1.83 (ii) 6.67 (ii)
01069> Unit Hyd. Tpeak (min)= 2.00 7.00
01070> Unit Hyd. peak (cms)= .59 .17
01071>
01072> PEAK FLOW (cms)= .14 .00 *TOTALS*
01073> TIME TO PEAK (hrs)= 1.35 1.13 .137 (iii)
01074> RUNOFF VOLUME (mm)= 43.37 12.57 41.826
01075> TOTAL RAINFALL (mm)= 45.37 45.37 45.366
01076> RUNOFF COEFFICIENT = .96 .28 .922
01077>
01078> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
01079> CN* = 74.0 Ia = Dep. Storage (Above)
01080> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
01081> THAN THE STORAGE COEFFICIENT.
01082> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01083>
01084>
01085> 005:0007-----
01086> *#*****
01087> *# North Green Space
01088> *#*****
01089>
01090> | CALIB STANDHYD | Area (ha)= .10
01091> | 03:NGreen DT= 1.00 | Total Imp(%)= 25.00 Dir. Conn.(%)= 10.00
01092>
01093>
01094> Surface Area (ha)= IMPERVIOUS PERVIOUS (i)
01095> Dep. Storage (mm)= 2.00 5.00
01096> Average Slope (%)= 1.00 2.00
01097> Length (m)= 15.00 15.00
01098> Mannings n = .013 .240
01099>
01100> Max.eff.Inten.(mm/hr)= 149.04 45.30
01101> over (min)= 1.00 6.00
01102> Storage Coeff. (min)= .70 (ii) 5.95 (ii)
01103> Unit Hyd. Tpeak (min)= 1.00 6.00
01104> Unit Hyd. peak (cms)= 1.29 .19
01105>
01106> PEAK FLOW (cms)= .00 .01 *TOTALS*
01107> TIME TO PEAK (hrs)= 1.00 1.10 .008 (iii)
01108> RUNOFF VOLUME (mm)= 43.37 14.69 17.555
01109> TOTAL RAINFALL (mm)= 45.37 45.37 45.366
01110> RUNOFF COEFFICIENT = .96 .32 .387
01111>
01112> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
01113> CN* = 74.0 Ia = Dep. Storage (Above)
01114> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
01115> THAN THE STORAGE COEFFICIENT.
01116> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01117>
01118>
01119> 005:0008-----
01120>
01121> | ADD HYD (North ) | ID: NHYD AREA QPEAK TPEAK R.V. DMF
01122> |-----| (ha) (cms) (hrs) (mm) (cms)
01123> ID1 01:Gas .18 .021 1.03 24.60 .000
01124> ID2 02:NPLot .37 .137 1.00 41.83 .000
01125> ID3 03:NGreen .10 .008 1.08 17.56 .000
01126> ID4 06:NRoofSTG .09 .010 .93 43.06 .000
01127> ID5 07:Noops .00 .000 .00 .00 .000
01128>
01129> SUM 09:North .74 .174 1.00 34.51 .000
01130>
01131> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
01132>
01133>
01134> 005:0009-----
01135> *#*****
01136> *# North Storage with 0.030 m/s outlet to storm sewer
01137> *#*****
01138>
01139> | ROUTE RESERVOIR | Requested routing time step = 1.0 min.
01140> | INP>01:(Sroof ) |
01141> | OUT<01:(NBic ) | ===== OUTFLOW STORAGE TABLE =====
01142> |-----| OUTFLOW STORAGE | OUTFLOW STORAGE
01143> | (cms) (ha.m.) | (cms) (ha.m.)
01144> |-----|
01145> |-----|
01146> |-----|
01147> |-----|
01148> |-----|
01149> |-----|
01150> |-----|
01151> |-----|
01152> |-----|
01153> |-----|
01154> |-----|
01155> |-----|
01156> |-----|
01157> |-----|
01158> |-----|
01159> |-----|
01160> |-----|
01161> |-----|
01162> |-----|
01163> 005:0010-----
01164> *#*****
01165> *# South Residential Roof
01166> *#*****
01167>
01168> | CALIB STANDHYD | Area (ha)= .16
01169> | 01:Sroof DT= 1.00 | Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00
01170>
01171>
01172> Surface Area (ha)= IMPERVIOUS PERVIOUS (i)
01173> Dep. Storage (mm)= .16 .00
01174> Average Slope (%)= 2.00 5.00
01175> Length (m)= 10.00 10.00
01176> Mannings n = .040 .240
01177>
01178> Max.eff.Inten.(mm/hr)= 149.04 14.37
01179> over (min)= 4.00 36.00
01180> Storage Coeff. (min)= 4.27 (ii) 36.20 (ii)
01181> Unit Hyd. Tpeak (min)= 4.00 36.00
01182> Unit Hyd. peak (cms)= .27 .03
01183>
01184> PEAK FLOW (cms)= .05 .00 *TOTALS*
01185> TIME TO PEAK (hrs)= 1.03 1.68 .047 (iii)
01186> RUNOFF VOLUME (mm)= 43.37 12.57 1.033
01187> TOTAL RAINFALL (mm)= 45.37 45.37 45.366
01188> RUNOFF COEFFICIENT = .96 .28 .949
01189>
01190> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
01191> CN* = 74.0 Ia = Dep. Storage (Above)
01192> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
01193> THAN THE STORAGE COEFFICIENT.
01194> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01195>
01196>
01197> 005:0011-----
01198>
01199> | ROUTE RESERVOIR | Requested routing time step = 1.0 min.
01200> | INP>01:(Sroof ) |
01201> | OUT<06:(Sroofs) | ===== OUTFLOW STORAGE TABLE =====
01202> |-----| OUTFLOW STORAGE | OUTFLOW STORAGE
01203> | (cms) (ha.m.) | (cms) (ha.m.)
01204> |-----|
01205> |-----|
01206> |-----|
01207> |-----|
01208> |-----|
01209> |-----|
01210> |-----|
01211> |-----|
01212> |-----|
01213> |-----|
01214> |-----|
01215> |-----|
01216> |-----|
01217> |-----|
01218> |-----|
01219> |-----|
01220> |-----|
01221> |-----|
01222> |-----|
01223> 005:0012-----
01224> *#*****
01225> *# South Parking Lot
01226> *#*****
01227>
01228> | CALIB STANDHYD | Area (ha)= .25
01229> | 02:SPLot DT= 1.00 | Total Imp(%)= 95.00 Dir. Conn.(%)= 95.00
01230>
01231>
01232> Surface Area (ha)= IMPERVIOUS PERVIOUS (i)
01233> Dep. Storage (mm)= .24 .01
01234> Average Slope (%)= 2.00 5.00
01235> Length (m)= 75.00 10.00
01236> Mannings n = .013 .240
01237>
01238> Max.eff.Inten.(mm/hr)= 149.04 30.24
01239> over (min)= 2.00 7.00
01240> Storage Coeff. (min)= 1.83 (ii) 6.67 (ii)
01241> Unit Hyd. Tpeak (min)= 2.00 7.00
01242> Unit Hyd. peak (cms)= .59 .17
01243>
01244> PEAK FLOW (cms)= .09 .00 *TOTALS*
01245> TIME TO PEAK (hrs)= 1.00 1.13 .093 (iii)
01246> RUNOFF VOLUME (mm)= 43.37 12.57 41.826
01247> TOTAL RAINFALL (mm)= 45.37 45.37 45.366
01248> RUNOFF COEFFICIENT = .96 .28 .922
01249>
01250> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
01251> CN* = 74.0 Ia = Dep. Storage (Above)
01252> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
01253> THAN THE STORAGE COEFFICIENT.
01254> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01255>
01256>
01257> 005:0013-----
01258> *#*****
01259> *# South Green Space
01260> *#*****
01261>
01262> | CALIB STANDHYD | Area (ha)= .19
01263> | 03:SGreen DT= 1.00 | Total Imp(%)= 25.00 Dir. Conn.(%)= 10.00
01264>
01265>
01266> Surface Area (ha)= IMPERVIOUS PERVIOUS (i)
01267> Dep. Storage (mm)= .05 .14
01268> Average Slope (%)= 2.00 5.00
01269> Length (m)= 15.00 15.00
01270> Mannings n = .013 .240

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01144> .000 .0000E+00 | .030 .3000E-01
01145> .015 .1000E-02 | .110 .3100E-01
01146>
01147>
ROUTING RESULTS AREA QPEAK TPEAK R.V.
01148> (ha) (cms) (hrs) (mm)
01149> INFLOW >09: (North ) .74 .174 1.000 34.505
01150> OUTFLOW<01: (NBic ) .74 .022 1.717 34.505
01151> OVERFLOW<02: (N-OLF ) .00 .000 .000 .000
01152>
01153> TOTAL NUMBER OF SIMULATED OVERFLOWS = 0
01154> CUMULATIVE TIME OF OVERFLOWS (hours)= .00
01155> PERCENTAGE OF TIME OVERFLOWING (%)= .00
01156>
01157>
PEAK FLOW REDUCTION [Qout/Qin] (%)= 12.610
01159> TIME SHIFT OF PEAK FLOW (min)= 43.00
01160> MAXIMUM STORAGE USED (ha.m.)=.1446E-01
01161>
01162>
01163> 005:0010-----
01164> *#*****
01165> *# South Residential Roof
01166> *#*****
01167>
01168> | CALIB STANDHYD | Area (ha)= .16
01169> | 01:Sroof DT= 1.00 | Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00
01170>
01171>
01172> Surface Area (ha)= IMPERVIOUS PERVIOUS (i)
01173> Dep. Storage (mm)= .16 .00
01174> Average Slope (%)= 2.00 5.00
01175> Length (m)= 10.00 10.00
01176> Mannings n = .040 .240
01177>
01178> Max.eff.Inten.(mm/hr)= 149.04 14.37
01179> over (min)= 4.00 36.00
01180> Storage Coeff. (min)= 4.27 (ii) 36.20 (ii)
01181> Unit Hyd. Tpeak (min)= 4.00 36.00
01182> Unit Hyd. peak (cms)= .27 .03
01183>
01184> PEAK FLOW (cms)= .05 .00 *TOTALS*
01185> TIME TO PEAK (hrs)= 1.03 1.68 .047 (iii)
01186> RUNOFF VOLUME (mm)= 43.37 12.57 1.033
01187> TOTAL RAINFALL (mm)= 45.37 45.37 45.366
01188> RUNOFF COEFFICIENT = .96 .28 .949
01189>
01190> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
01191> CN* = 74.0 Ia = Dep. Storage (Above)
01192> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
01193> THAN THE STORAGE COEFFICIENT.
01194> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01195>
01196>
01197> 005:0011-----
01198>
01199> | ROUTE RESERVOIR | Requested routing time step = 1.0 min.
01200> | INP>01:(Sroof ) |
01201> | OUT<06:(Sroofs) | ===== OUTFLOW STORAGE TABLE =====
01202> |-----| OUTFLOW STORAGE | OUTFLOW STORAGE
01203> | (cms) (ha.m.) | (cms) (ha.m.)
01204> |-----|
01205> |-----|
01206> |-----|
01207> |-----|
01208> |-----|
01209> |-----|
01210> |-----|
01211> |-----|
01212> |-----|
01213> |-----|
01214> |-----|
01215> |-----|
01216> |-----|
01217> |-----|
01218> |-----|
01219> |-----|
01220> |-----|
01221> |-----|
01222> |-----|
01223> 005:0012-----
01224> *#*****
01225> *# South Parking Lot
01226> *#*****
01227>
01228> | CALIB STANDHYD | Area (ha)= .25
01229> | 02:SPLot DT= 1.00 | Total Imp(%)= 95.00 Dir. Conn.(%)= 95.00
01230>
01231>
01232> Surface Area (ha)= IMPERVIOUS PERVIOUS (i)
01233> Dep. Storage (mm)= .24 .01
01234> Average Slope (%)= 2.00 5.00
01235> Length (m)= 75.00 10.00
01236> Mannings n = .013 .240
01237>
01238> Max.eff.Inten.(mm/hr)= 149.04 30.24
01239> over (min)= 2.00 7.00
01240> Storage Coeff. (min)= 1.83 (ii) 6.67 (ii)
01241> Unit Hyd. Tpeak (min)= 2.00 7.00
01242> Unit Hyd. peak (cms)= .59 .17
01243>
01244> PEAK FLOW (cms)= .09 .00 *TOTALS*
01245> TIME TO PEAK (hrs)= 1.00 1.13 .093 (iii)
01246> RUNOFF VOLUME (mm)= 43.37 12.57 41.826
01247> TOTAL RAINFALL (mm)= 45.37 45.37 45.366
01248> RUNOFF COEFFICIENT = .96 .28 .922
01249>
01250> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
01251> CN* = 74.0 Ia = Dep. Storage (Above)
01252> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
01253> THAN THE STORAGE COEFFICIENT.
01254> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01255>
01256>
01257> 005:0013-----
01258> *#*****
01259> *# South Green Space
01260> *#*****
01261>
01262> | CALIB STANDHYD | Area (ha)= .19
01263> | 03:SGreen DT= 1.00 | Total Imp(%)= 25.00 Dir. Conn.(%)= 10.00
01264>
01265>
01266> Surface Area (ha)= IMPERVIOUS PERVIOUS (i)
01267> Dep. Storage (mm)= .05 .14
01268> Average Slope (%)= 2.00 5.00
01269> Length (m)= 15.00 15.00
01270> Mannings n = .013 .240

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01271> Max.eff.Inten.(mm/hr)= 149.04 45.30
01272> over (min) = 1.00 6.00
01273> Storage Coeff.(min)= .70 (ii) 5.95 (ii)
01275> Unit Hyd. Tpeak (min)= 1.00 6.00
01276> Unit Hyd. peak (cms)= 1.29 .19
01277>
01278> PEAK FLOW (cms)= .01 .01 *TOTALS*
01279> TIME TO PEAK (hrs)= 1.00 1.10 .016 (iii)
01280> RUNOFF VOLUME (mm)= 43.37 14.69 17.555
01281> TOTAL RAINFALL (mm)= 45.37 45.37 45.366
01282> RUNOFF COEFFICIENT = .96 .32 .387
01283>
01284> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
01285> CN* = 74.0 Ia = Dep. Storage (Above)
01286> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
01287> THAN THE STORAGE COEFFICIENT.
01288> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01289>
01290> -----
01291> 005:0014-----
01292>
01293> | ADD HYD (South ) | ID: NHYD AREA QPEAK TPEAK R.V. DWF
01294> (cms) (ha.) (cms) (hrs) (mm) (cms)
01295> ID1 02:SPLot .25 .093 1.00 41.83 .000
01296> ID2 03:SGreen .19 .016 1.08 17.56 .000
01297> ID3 06:SROofSTG .16 .010 .88 43.10 .000
01298> ID4 07:Soops .00 .000 .00 .00 .000
01299>
01300> SUM 09:South .60 .116 1.00 34.48 .000
01301>
01302> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
01303>
01304> -----
01305> 005:0015-----
01306> *-----
01307> *# South Bogsale with 0.030 m³/s outlet to storm sewer
01308> *-----
01309>
01310> | ROUTE RESERVOIR | Requested routing time step = 1.0 min.
01311> | IN>09:(South ) |
01312> | OUT<01:(SBio ) |
01313>
01314> ===== OUTFLOW STORAGE TABLE =====
01315> OUTFLOW STORAGE | OUTFLOW STORAGE
01316> (cms) (ha.m.) | (cms) (ha.m.)
01317> .000 .0000E+00 | .032 .4800E-01
01318> .001 .1600E-01 | .113 .4900E-01
01319> .032 .1700E-01 | .113 .5200E-01
01320>
01321> ROUTING RESULTS AREA QPEAK TPEAK R.V.
01322> (ha) (cms) (hrs) (mm)
01323> INFLOW >01:(South ) .60 .116 1.000 34.481
01324> OUTFLOW<01:(SBio ) .60 .015 2.200 34.478
01325> OVERFLOW<02:(S-OLF ) .00 .000 .000 .000
01326>
01327> TOTAL NUMBER OF SIMULATED OVERFLOWS = 0
01328> CUMULATIVE TIME OF OVERFLOWS (hours)= .00
01329> PERCENTAGE OF TIME OVERFLOWING (%)= .00
01330>
01331> PEAK FLOW REDUCTION [Qout/Qin] (%)= 12.617
01332> TIME SHIFT OF PEAK FLOW (min)= 72.00
01333> MAXIMUM STORAGE USED (ha.m.)=.1644E-01
01334>
01335> -----
01336> 005:0016-----
01337> 005:0002-----
01338>
01339> 005:0002-----
01340> ** END OF RUN : 9
01341>
01342> *-----
01343>
01344>
01345>
01346>
01347>
01348>
01349> | START | Project dir.: C:\MODELL-1\13832\SWMHYMO\2023UP-1\
01350> |-----| Rainfall dir.: C:\MODELL-1\13832\SWMHYMO\2023UP-1\
01351> TZERO = .00 hrs on 0
01352> METOUT= 2 (output = METRIC)
01353> NRUN = 010
01354> NSTORM= 1
01355> # 1=ldn10yr.3hr
01356>
01357> 010:0002-----
01358> *-----
01359> *# Project Name: [3080 Bostwick BLK 5] Project Number: [161413832]
01360> *# Date : 2023-10-13
01361> *# Modeller : [AKK]
01362> *# Company : Stantec Consulting Ltd. (London)
01363> *# License # : 4730904
01364> *-----
01365> *-----
01366> *#
01367> *# This model represents the hydrologic characteristics of the proposed conditio
01368> *# with 100% volume capture to the 100 year event.
01369> *# Storm events modeled are:
01370> *# 25mm and 2YR to 250YR 3hr Chicago STORMS (London, ONT. IDF)
01371> *#
01372> *-----
01373>
01374> 010:0002-----
01375>
01376> | READ STORM | Filename: 10-yr, 3hr Chicago Storm - London IDF pa
01377> | Ptotal= 52.59 mm | Comments: 10-yr, 3hr Chicago Storm - London IDF pa
01378>
01379>
01380> TIME RAIN | TIME RAIN | TIME RAIN | TIME RAIN
01381> hrs mm/hr | hrs mm/hr | hrs mm/hr | hrs mm/hr
01382> .17 3.907 | .92 60.893 | 1.67 9.886 | 2.42 4.490
01383> .25 4.357 | 1.00 178.745 | 1.75 8.714 | 2.50 4.237
01384> .33 4.931 | 1.08 79.026 | 1.83 7.789 | 2.58 4.013
01385> .42 5.686 | 1.17 42.842 | 1.92 7.043 | 2.67 3.812
01386> .50 6.725 | 1.25 28.407 | 2.00 6.428 | 2.75 3.631
01387> .58 8.239 | 1.33 20.928 | 2.08 5.913 | 2.83 3.467
01388> .67 10.636 | 1.42 16.445 | 2.17 5.476 | 2.92 3.318
01389> .75 14.947 | 1.50 13.493 | 2.25 5.101 | 3.00 3.182
01390>
01391> -----
01392> 010:0003-----
01393> *-----
01394> *# North Commercial Roof
01395> *-----
01396>
01397> | CALIB STANDHYD | Area (ha)= .09

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01398> | 01:NRoof DT= 1.00 | Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00
01399> -----
01400> IMPERVIOUS PERVIOUS (i)
01401> Surface Area (ha)= .09
01402> Dep. Storage (mm)= 2.00 5.00
01403> Average Slope (%)= .01 .01
01404> Length (m)= 10.00 10.00
01405> Mannings n = .040 .240
01406>
01407> Max.eff.Inten.(mm/hr)= 178.75 21.05
01408> over (min) = 4.00 31.00
01409> Storage Coeff. (min)= 3.37 (ii) 31.38 (ii)
01410> Unit Hyd. Tpeak (min)= 4.00 31.00
01411> Unit Hyd. peak (cms)= .28 .04
01412>
01413> PEAK FLOW (cms)= .03 .00 *TOTALS*
01414> TIME TO PEAK (hrs)= 1.03 1.58 .032 (iii)
01415> RUNOFF VOLUME (mm)= 50.59 16.55 50.249
01416> TOTAL RAINFALL (mm)= 52.59 52.59 52.590
01417> RUNOFF COEFFICIENT = .96 .31 .955
01418>
01419> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
01420> CN* = 74.0 Ia = Dep. Storage (Above)
01421> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
01422> THAN THE STORAGE COEFFICIENT.
01423> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01424>
01425> -----
01426> 010:0004-----
01427>
01428> | ROUTE RESERVOIR | Requested routing time step = 1.0 min.
01429> | IN>01:(NRoof ) |
01430> | OUT<06:(NRoofs) | ===== OUTFLOW STORAGE TABLE =====
01431> OUTFLOW STORAGE | OUTFLOW STORAGE
01432> (cms) (ha.m.) | (cms) (ha.m.)
01433> .000 .0000E+00 | .010 .5000E-02
01434> .010 .1000E-04 | .000 .0000E+00
01435>
01436> ROUTING RESULTS AREA QPEAK TPEAK R.V.
01437> (ha) (cms) (hrs) (mm)
01438> INFLOW >01:(NRoof ) .09 .032 1.033 50.249
01439> OUTFLOW<06:(NRoofs) .09 .010 .917 50.271
01440> OVERFLOW<07:(Noops ) .00 .000 .000 .000
01441>
01442> TOTAL NUMBER OF SIMULATED OVERFLOWS = 0
01443> CUMULATIVE TIME OF OVERFLOWS (hours)= .00
01444> PERCENTAGE OF TIME OVERFLOWING (%)= .00
01445>
01446>
01447> PEAK FLOW REDUCTION [Qout/Qin] (%)= 30.863
01448> TIME SHIFT OF PEAK FLOW (min)= -7.00
01449> MAXIMUM STORAGE USED (ha.m.)=.1346E-02
01450>
01451> -----
01452> 010:0005-----
01453> *-----
01454> *# Gas Property
01455> *-----
01456>
01457> | CALIB STANDHYD | Area (ha)= .18
01458> | 01:Gas DT= 1.00 | Total Imp(%)= 50.00 Dir. Conn.(%)= 30.00
01459> -----
01460> IMPERVIOUS PERVIOUS (i)
01461> Surface Area (ha)= .50
01462> Dep. Storage (mm)= 2.00 5.00
01463> Average Slope (%)= .50 .50
01464> Length (m)= 50.00 10.00
01465> Mannings n = .040 .240
01466>
01467> Max.eff.Inten.(mm/hr)= 178.75 76.62
01468> over (min) = 3.00 8.00
01469> Storage Coeff. (min)= 3.23 (ii) 8.28 (ii)
01470> Unit Hyd. Tpeak (min)= 3.00 8.00
01471> Unit Hyd. peak (cms)= .36 .14
01472>
01473> PEAK FLOW (cms)= .02 .01 *TOTALS*
01474> TIME TO PEAK (hrs)= 1.02 1.13 .028 (iii)
01475> RUNOFF VOLUME (mm)= 50.59 21.31 30.093
01476> TOTAL RAINFALL (mm)= 52.59 52.59 52.590
01477> RUNOFF COEFFICIENT = .96 .41 .572
01478>
01479> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
01480> CN* = 74.0 Ia = Dep. Storage (Above)
01481> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
01482> THAN THE STORAGE COEFFICIENT.
01483> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01484>
01485> -----
01486> 010:0006-----
01487> *-----
01488> *# North Parking Lot
01489> *-----
01490>
01491> | CALIB STANDHYD | Area (ha)= .37
01492> | 02:NPlot DT= 1.00 | Total Imp(%)= 95.00 Dir. Conn.(%)= 95.00
01493> -----
01494> IMPERVIOUS PERVIOUS (i)
01495> Surface Area (ha)= .35 .02
01496> Dep. Storage (mm)= 2.00 5.00
01497> Average Slope (%)= 1.00 2.00
01498> Length (m)= 75.00 10.00
01499> Mannings n = .013 .240
01500>
01501> Max.eff.Inten.(mm/hr)= 178.75 43.68
01502> over (min) = 2.00 6.00
01503> Storage Coeff. (min)= 1.70 (ii) 5.88 (ii)
01504> Unit Hyd. Tpeak (min)= 2.00 6.00
01505> Unit Hyd. peak (cms)= .62 .19
01506>
01507> PEAK FLOW (cms)= .17 .00 *TOTALS*
01508> TIME TO PEAK (hrs)= 1.00 1.08 1.000
01509> RUNOFF VOLUME (mm)= 50.59 16.55 48.888
01510> TOTAL RAINFALL (mm)= 52.59 52.59 52.590
01511> RUNOFF COEFFICIENT = .96 .31 .930
01512>
01513> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
01514> CN* = 74.0 Ia = Dep. Storage (Above)
01515> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
01516> THAN THE STORAGE COEFFICIENT.
01517> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01518>
01519> -----
01520> 010:0007-----
01521> *-----
01522> *# North Green Space
01523> *-----
01524>

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01525> | CALIB STANDHYD | Area (ha)= .10
01526> | 03:NGreen DT= 1.00 | Total Imp(%)= 25.00 Dir. Conn.(%)= 10.00
01527> -----
01528> IMPERVIOUS PERVIOUS (i)
01529> Surface Area (ha)= .03 .08
01530> Dep. Storage (mm)= 2.00 5.00
01531> Average Slope (%)= 1.00 2.00
01532> Length (m)= 15.00 15.00
01533> Mannings n = .013 .240
01534> -----
01535> Max.eff.Inten.(mm/hr)= 178.75 67.11
01536> over (min) 1.00 5.00
01537> Storage Coeff. (min)= .65 (ii) 5.13 (ii)
01538> Unit Hyd. Tpeak (min)= 1.00 5.00
01539> Unit Hyd. peak (cms)= 1.34 .22
01540> -----
01541> PEAK FLOW (cms)= .00 .01 *TOTALS*
01542> TIME TO PEAK (hrs)= 1.00 1.07 1.067 (iii)
01543> RUNOFF VOLUME (mm)= 50.59 19.10 22.245
01544> TOTAL RAINFALL (mm)= 52.59 52.59 52.590
01545> RUNOFF COEFFICIENT = .96 .36 .423
01546> -----
01547> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
01548> CN* = 74.0 Ia = Dep. Storage (Above)
01549> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
01550> THAN THE STORAGE COEFFICIENT.
01551> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01552> -----
01553>
01554> 010:0008-----
01555> | ADD HYD (North ) | ID: NHYD AREA QPEAK TPEAK R.V. DWF
01556> |-----|-----|-----|-----|-----|-----|
01557> | (ha) (cms) (hrs) (mm) (cms) |
01558> |ID1 01:Gas .18 .028 1.03 30.09 .000
01559> |ID2 02:NPlot .37 .166 1.00 48.89 .000
01560> |ID3 03:NGreen .10 .012 1.07 22.25 .000
01561> |ID4 06:NRoofSTG .09 .010 .92 50.27 .000
01562> |ID5 07:Noops .00 .000 .00 .00 .000
01563> |-----|-----|-----|-----|-----|-----|
01564> |SUM 09:North .74 .212 1.00 40.88 .000
01565> -----
01566> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
01567> -----
01568>
01569> 010:0009-----
01570> *****
01571> *# North Storage with 0.030 m³/s outlet to storm sewer
01572> *****
01573>
01574> | ROUTE RESERVOIR | Requested routing time step = 1.0 min.
01575> | IN>09: (North ) |
01576> | OUT<01: (NBio ) |
01577> |-----|-----|-----|-----|-----|-----|
01578> | OUTFLOW STORAGE | OUTFLOW STORAGE |
01579> | (cms) (ha.m.) | (cms) (ha.m.) |
01580> |.000 .0000E+00 | .030 .3000E-01
01581> |.015 .1000E-02 | .110 .3100E-01
01582> -----
01583> ROUTING RESULTS AREA QPEAK TPEAK R.V.
01584> |-----|-----|-----|-----|-----|
01585> | (ha) (cms) (hrs) (mm) |
01586> |INFLOW >09: (North ) .74 .212 1.000 40.884
01587> |OUTFLOW<01: (NBio ) .74 .024 1.800 40.884
01588> |OVERFLOW<02: (N-OLF) .00 .000 .000 .000
01589> -----
01590> TOTAL NUMBER OF SIMULATED OVERFLOWS = 0
01591> CUMULATIVE TIME OF OVERFLOWS (hours)= .00
01592> PERCENTAGE OF TIME OVERFLOWING (%)= .00
01593> -----
01594> PEAK FLOW REDUCTION [Qout/Qin] (%)= 11.076
01595> TIME SHIFT OF PEAK FLOW (min)= 48.00
01596> MAXIMUM STORAGE USED (ha.m.)=.1748E-01
01597> -----
01598> 010:0010-----
01599> *****
01600> *# South Residential Roof
01601> *****
01602>
01603> | CALIB STANDHYD | Area (ha)= .16
01604> | 01:SRoof DT= 1.00 | Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00
01605> -----
01606> IMPERVIOUS PERVIOUS (i)
01607> Surface Area (ha)= .16 .00
01608> Dep. Storage (mm)= 2.00 5.00
01609> Average Slope (%)= .01 .01
01610> Length (m)= 10.00 10.00
01611> Mannings n = .040 .240
01612> -----
01613> Max.eff.Inten.(mm/hr)= 178.75 21.05
01614> over (min) 4.00 31.00
01615> Storage Coeff. (min)= 3.97 (ii) 31.38 (ii)
01616> Unit Hyd. Tpeak (min)= 4.00 31.00
01617> Unit Hyd. peak (cms)= .28 .04
01618> -----
01619> PEAK FLOW (cms)= .06 .00 *TOTALS*
01620> TIME TO PEAK (hrs)= 1.03 1.58 1.033
01621> RUNOFF VOLUME (mm)= 50.59 16.55 50.249
01622> TOTAL RAINFALL (mm)= 52.59 52.59 52.590
01623> RUNOFF COEFFICIENT = .96 .31 .955
01624> -----
01625> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
01626> CN* = 74.0 Ia = Dep. Storage (Above)
01627> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
01628> THAN THE STORAGE COEFFICIENT.
01629> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01630> -----
01631>
01632> 010:0011-----
01633>
01634> | ROUTE RESERVOIR | Requested routing time step = 1.0 min.
01635> | IN>01: (SRoof ) |
01636> | OUT<06: (SRoofs) |
01637> |-----|-----|-----|-----|-----|-----|
01638> | OUTFLOW STORAGE | OUTFLOW STORAGE |
01639> | (cms) (ha.m.) | (cms) (ha.m.) |
01640> |.000 .0000E+00 | .010 .9000E-02
01641> |.010 .1000E-04 | .000 .0000E+00
01642> -----
01643> ROUTING RESULTS AREA QPEAK TPEAK R.V.
01644> |-----|-----|-----|-----|-----|
01645> | (ha) (cms) (hrs) (mm) |
01646> |INFLOW >01: (SRoof ) .16 .058 1.033 50.249
01647> |OUTFLOW<06: (SRoofs) .16 .010 .867 50.249
01648> |OVERFLOW<07: (Soops) .00 .000 .000 .000
01649> -----
01650> TOTAL NUMBER OF SIMULATED OVERFLOWS = 0
01651> CUMULATIVE TIME OF OVERFLOWS (hours)= .00
01652> PERCENTAGE OF TIME OVERFLOWING (%)= .00

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01652>
01653> PEAK FLOW REDUCTION [Qout/Qin] (%)= 17.361
01654> TIME SHIFT OF PEAK FLOW (min)= -10.00
01655> MAXIMUM STORAGE USED (ha.m.)=-.3591E-02
01656> -----
01657> 010:0012-----
01658> *****
01659> *# South Parking Lot
01660> *****
01661>
01662> | CALIB STANDHYD | Area (ha)= .25
01663> | 02:SPlot DT= 1.00 | Total Imp(%)= 95.00 Dir. Conn.(%)= 95.00
01664> -----
01665> IMPERVIOUS PERVIOUS (i)
01666> Surface Area (ha)= .24 .01
01667> Dep. Storage (mm)= 2.00 5.00
01668> Average Slope (%)= 1.00 2.00
01669> Length (m)= 75.00 10.00
01670> Mannings n = .013 .240
01671> -----
01672> Max.eff.Inten.(mm/hr)= 178.75 43.68
01673> over (min) 2.00 6.00
01674> Storage Coeff. (min)= 1.70 (ii) 5.88 (ii)
01675> Unit Hyd. Tpeak (min)= 2.00 6.00
01676> Unit Hyd. peak (cms)= .62 .19
01677> -----
01678> PEAK FLOW (cms)= .11 .00 *TOTALS*
01679> TIME TO PEAK (hrs)= 1.00 1.08 1.000
01680> RUNOFF VOLUME (mm)= 50.59 16.55 48.888
01681> TOTAL RAINFALL (mm)= 52.59 52.59 52.590
01682> RUNOFF COEFFICIENT = .96 .31 .930
01683> -----
01684> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
01685> CN* = 74.0 Ia = Dep. Storage (Above)
01686> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
01687> THAN THE STORAGE COEFFICIENT.
01688> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01689> -----
01690>
01691> 010:0013-----
01692> *****
01693> *# South Green Space
01694> *****
01695>
01696> | CALIB STANDHYD | Area (ha)= .19
01697> | 03:SGreen DT= 1.00 | Total Imp(%)= 25.00 Dir. Conn.(%)= 10.00
01698> -----
01699> IMPERVIOUS PERVIOUS (i)
01700> Surface Area (ha)= .05 .14
01701> Dep. Storage (mm)= 2.00 5.00
01702> Average Slope (%)= 1.00 2.00
01703> Length (m)= 15.00 15.00
01704> Mannings n = .013 .240
01705> -----
01706> Max.eff.Inten.(mm/hr)= 178.75 67.11
01707> over (min) 1.00 5.00
01708> Storage Coeff. (min)= .65 (ii) 5.13 (ii)
01709> Unit Hyd. Tpeak (min)= 1.00 5.00
01710> Unit Hyd. peak (cms)= 1.34 .22
01711> -----
01712> PEAK FLOW (cms)= .01 .02 *TOTALS*
01713> TIME TO PEAK (hrs)= 1.00 1.07 1.067
01714> RUNOFF VOLUME (mm)= 50.59 19.10 22.245
01715> TOTAL RAINFALL (mm)= 52.59 52.59 52.590
01716> RUNOFF COEFFICIENT = .96 .36 .423
01717> -----
01718> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
01719> CN* = 74.0 Ia = Dep. Storage (Above)
01720> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
01721> THAN THE STORAGE COEFFICIENT.
01722> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01723> -----
01724>
01725> 010:0014-----
01726> *****
01727> | ADD HYD (South ) | ID: NHYD AREA QPEAK TPEAK R.V. DWF
01728> |-----|-----|-----|-----|-----|-----|
01729> | (ha) (cms) (hrs) (mm) (cms) |
01730> |ID1 02:SPlot .25 .112 1.00 48.89 .000
01731> |ID2 03:SGreen .19 .022 1.07 22.25 .000
01732> |ID3 06:SRoofSTG .16 .010 .87 50.25 .000
01733> |ID4 07:Soops .00 .000 .00 .00 .000
01734> |-----|-----|-----|-----|-----|-----|
01735> |SUM 09:South .60 .143 1.00 40.81 .000
01736> -----
01737> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
01738> -----
01739>
01740> 010:0015-----
01741> *****
01742> *# South Bioswale with 0.030 m³/s outlet to storm sewer
01743> *****
01744>
01745> | ROUTE RESERVOIR | Requested routing time step = 1.0 min.
01746> | IN>09: (South ) |
01747> | OUT<01: (SBio ) |
01748> |-----|-----|-----|-----|-----|-----|
01749> | OUTFLOW STORAGE | OUTFLOW STORAGE |
01750> | (cms) (ha.m.) | (cms) (ha.m.) |
01751> |.000 .0000E+00 | .032 .4800E-01
01752> |.001 .1600E-01 | .113 .4900E-01
01753> |.032 .1700E-01 | .113 .5200E-01
01754> -----
01755> ROUTING RESULTS AREA QPEAK TPEAK R.V.
01756> |-----|-----|-----|-----|-----|
01757> | (ha) (cms) (hrs) (mm) |
01758> |INFLOW >09: (South ) .60 .143 1.000 40.814
01759> |OUTFLOW<01: (SBio ) .60 .019 1.783 40.810
01760> |OVERFLOW<02: (S-OLF) .00 .000 .000 .000
01761> -----
01762> TOTAL NUMBER OF SIMULATED OVERFLOWS = 0
01763> CUMULATIVE TIME OF OVERFLOWS (hours)= .00
01764> PERCENTAGE OF TIME OVERFLOWING (%)= .00
01765> -----
01766> PEAK FLOW REDUCTION [Qout/Qin] (%)= 13.148
01767> TIME SHIFT OF PEAK FLOW (min)= 47.00
01768> MAXIMUM STORAGE USED (ha.m.)=-.1657E-01
01769> -----
01770> 010:0016-----
01771>
01772> 010:0002-----
01773>
01774> 010:0002-----
01775> -----
01776> 010:0002-----
01777> ** END OF RUN : 24
01778> -----

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01779> *****
01780>
01781>
01782>
01783>
01784>
01785> -----
01786> | START | Project dir.: C:\MODELL-1\13832\SWMHYMO\2023UP-1\
01787> |-----| Rainfall dir.: C:\MODELL-1\13832\SWMHYMO\2023UP-1\
01788> | TZERO = .00 hrs on 0
01789> | METOUT= 2 (output = METRIC)
01790> | NRUN = 025
01791> | NSTORM = 1
01792> | # 1=ldn25yr.3hr
01793> -----
01794> 025:0002-----
01795> *****
01796> *# Project Name: [3080 Bostwick BLK 5] Project Number: [161413832]
01797> *# Date : 2023-10-13
01798> *# Modeller : [AKK]
01799> *# Company : Stantec Consulting Ltd. (London)
01800> *# License # : 4730904
01801> *****
01802> *****
01803> *#
01804> *# This model represents the hydrologic characteristics of the proposed conditio
01805> *# with 100% volume capture to the 100 year event.
01806> *# Storm events modeled are:
01807> *# 25mm and 2YR to 250YR 3hr Chicago STORMS (London, ONT. IDF)
01808> *#
01809> *****
01810> -----
01811> 025:0002-----
01812> -----
01813> | READ STORM | Filename: 25-yr, 3hr Chicago Storm - London IDF pa
01814> | Ptotal= 60.37 mm | Comments: 25-yr, 3hr Chicago Storm - London IDF pa
01815> -----
01816> | TIME RAIN | TIME RAIN | TIME RAIN | TIME RAIN
01817> | hrs mm/hr | hrs mm/hr | hrs mm/hr | hrs mm/hr
01818> | .08 4.464 | .83 26.338 | 1.58 12.906 | 2.33 5.854
01819> | .17 4.878 | .92 65.076 | 1.67 11.320 | 2.42 5.536
01820> | .25 5.387 | 1.00 220.223 | 1.75 10.095 | 2.50 5.253
01821> | .33 6.027 | 1.08 85.162 | 1.83 9.119 | 2.58 4.999
01822> | .42 6.858 | 1.17 45.078 | 1.92 8.324 | 2.67 4.771
01823> | .50 7.983 | 1.25 30.164 | 2.00 7.664 | 2.75 4.564
01824> | .58 9.594 | 1.33 22.579 | 2.08 7.106 | 2.83 4.376
01825> | .67 12.097 | 1.42 18.039 | 2.17 6.629 | 2.92 4.204
01826> | .75 16.515 | 1.50 15.035 | 2.25 6.216 | 3.00 4.046
01827> -----
01828> 025:0003-----
01829> *****
01830> *#
01831> *# North Commercial Roof
01832> *****
01833> -----
01834> | CALIB STANDHYD | Area (ha)= .09
01835> | 01:NRoof DT= 1.00 | Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00
01836> -----
01837> | IMPERVIOUS PERVIOUS (i)
01838> | Surface Area (ha)= .09 .00
01839> | Dep. Storage (mm)= 2.00 5.00
01840> | Average Slope (%)= .01 .01
01841> | Length (m)= 10.00 10.00
01842> | Mannings n = .040 .240
01843> -----
01844> | Max.eff.Inten.(mm/hr)= 220.22 28.62
01845> | over (min) 4.00 28.00
01846> | Storage Coeff. (min)= 3.66 (ii) 27.89 (ii)
01847> | Unit Hyd. Tpeak (min)= 4.00 28.00
01848> | Unit Hyd. peak (cms)= .30 .04
01849> -----
01850> | PEAK FLOW (cms)= .04 .00 *TOTALS*
01851> | TIME TO PEAK (hrs)= 1.03 1.52 .040 (iii)
01852> | RUNOFF VOLUME (mm)= 58.37 21.20 58.001
01853> | TOTAL RAINFALL (mm)= 60.37 60.37 60.373
01854> | RUNOFF COEFFICIENT = .97 .35 .961
01855> -----
01856> | (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
01857> | CN* = 74.0 Ia = Dep. Storage (Above)
01858> | (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
01859> | THAN THE STORAGE COEFFICIENT.
01860> | (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01861> -----
01862> 025:0004-----
01863> -----
01864> | ROUTE RESERVOIR | Requested routing time step = 1.0 min.
01865> | IN<01:(NRoof) |
01866> | OUT<06:(NRoofs) |
01867> |-----|-----|-----|-----|-----|-----|
01868> | OUTFLOW STORAGE | OUTFLOW STORAGE | OUTFLOW STORAGE |
01869> | (cms) (ha.m.) | (cms) (ha.m.) | (cms) (ha.m.) |
01870> | .000 .0000E+00 | .010 .5000E-02 |
01871> | .010 .1000E-04 | .000 .0000E+00 |
01872> -----
01873> | ROUTING RESULTS | AREA QPEAK TPEAK R.V.
01874> |-----|-----|-----|-----|-----|
01875> | INFLOW >01: (NRoof) | .09 .040 1.033 58.001
01876> | OUTFLOW<06: (NRoofs) | .09 .010 .900 58.001
01877> | OVERFLOW<07: (Noops) | .00 .000 .000 .000
01878> -----
01879> | TOTAL NUMBER OF SIMULATED OVERFLOWS = 0
01880> | CUMULATIVE TIME OF OVERFLOWS (hours)= .00
01881> | PERCENTAGE OF TIME OVERFLOWING (%)= .00
01882> -----
01883> | PEAK FLOW REDUCTION [Qout/Qin] (%)= 25.008
01884> | TIME SHIFT OF PEAK FLOW (min)= -8.00
01885> | MAXIMUM STORAGE USED (ha.m.)=.175E-02
01886> -----
01887> 025:0005-----
01888> *****
01889> *# Gas Property
01890> *****
01891> *#
01892> *****
01893> -----
01894> | CALIB STANDHYD | Area (ha)= .18
01895> | 01:Gas DT= 1.00 | Total Imp(%)= 50.00 Dir. Conn.(%)= 30.00
01896> -----
01897> | IMPERVIOUS PERVIOUS (i)
01898> | Surface Area (ha)= .09 .09
01899> | Dep. Storage (mm)= 2.00 5.00
01900> | Average Slope (%)= .50 .50
01901> | Length (m)= 50.00 10.00
01902> | Mannings n = .040 .240
01903> -----
01904> | Max.eff.Inten.(mm/hr)= 220.22 107.39
01905> | over (min) 3.00 7.00

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01906> Storage Coeff. (min)= 2.97 (ii) 7.39 (ii)
01907> Unit Hyd. Tpeak (min)= 3.00 7.00
01908> Unit Hyd. peak (cms)= .38 .16
01909> -----
01910> | PEAK FLOW (cms)= .03 .02 *TOTALS*
01911> | TIME TO PEAK (hrs)= 1.02 1.10 1.033
01912> | RUNOFF VOLUME (mm)= 58.37 26.76 36.247
01913> | TOTAL RAINFALL (mm)= 60.37 60.37 60.373
01914> | RUNOFF COEFFICIENT = .97 .44 .600
01915> -----
01916> | (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
01917> | CN* = 74.0 Ia = Dep. Storage (Above)
01918> | (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
01919> | THAN THE STORAGE COEFFICIENT.
01920> | (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01921> -----
01922> 025:0006-----
01923> *****
01924> *# North Parking Lot
01925> *****
01926> -----
01927> | CALIB STANDHYD | Area (ha)= .37
01928> | 02:NPLot DT= 1.00 | Total Imp(%)= 95.00 Dir. Conn.(%)= 95.00
01929> -----
01930> | IMPERVIOUS PERVIOUS (i)
01931> | Surface Area (ha)= .35 .02
01932> | Dep. Storage (mm)= 2.00 5.00
01933> | Average Slope (%)= 1.00 2.00
01934> | Length (m)= 75.00 10.00
01935> | Mannings n = .013 .240
01936> -----
01937> | Max.eff.Inten.(mm/hr)= 220.22 66.44
01938> | over (min) 2.00 5.00
01939> | Storage Coeff. (min)= 1.57 (ii) 5.10 (ii)
01940> | Unit Hyd. Tpeak (min)= 2.00 5.00
01941> | Unit Hyd. peak (cms)= .65 .22
01942> -----
01943> | PEAK FLOW (cms)= .21 .00 *TOTALS*
01944> | TIME TO PEAK (hrs)= 1.00 1.07 1.000
01945> | RUNOFF VOLUME (mm)= 58.37 21.20 56.515
01946> | TOTAL RAINFALL (mm)= 60.37 60.37 60.373
01947> | RUNOFF COEFFICIENT = .97 .35 .936
01948> -----
01949> | (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
01950> | CN* = 74.0 Ia = Dep. Storage (Above)
01951> | (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
01952> | THAN THE STORAGE COEFFICIENT.
01953> | (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01954> -----
01955> 025:0007-----
01956> *****
01957> *# North Green Space
01958> *****
01959> -----
01960> | CALIB STANDHYD | Area (ha)= .10
01961> | 03:NGreen DT= 1.00 | Total Imp(%)= 25.00 Dir. Conn.(%)= 10.00
01962> -----
01963> | IMPERVIOUS PERVIOUS (i)
01964> | Surface Area (ha)= .03 .08
01965> | Dep. Storage (mm)= 2.00 5.00
01966> | Average Slope (%)= 1.00 2.00
01967> | Length (m)= 15.00 15.00
01968> | Mannings n = .013 .240
01969> -----
01970> | Max.eff.Inten.(mm/hr)= 220.22 101.28
01971> | over (min) 1.00 4.00
01972> | Storage Coeff. (min)= .60 (ii) 4.40 (ii)
01973> | Unit Hyd. Tpeak (min)= 1.00 4.00
01974> | Unit Hyd. peak (cms)= 1.38 .26
01975> -----
01976> | PEAK FLOW (cms)= .01 .01 *TOTALS*
01977> | TIME TO PEAK (hrs)= 1.00 1.05 1.000
01978> | RUNOFF VOLUME (mm)= 58.37 24.19 27.612
01979> | TOTAL RAINFALL (mm)= 60.37 60.37 60.373
01980> | RUNOFF COEFFICIENT = .97 .40 .457
01981> -----
01982> | (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
01983> | CN* = 74.0 Ia = Dep. Storage (Above)
01984> | (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
01985> | THAN THE STORAGE COEFFICIENT.
01986> | (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01987> -----
01988> 025:0008-----
01989> *****
01990> *#
01991> *****
01992> -----
01993> | ADD HYD (North ) | ID: NHYD AREA QPEAK TPEAK R.V. DWF
01994> |-----|-----|-----|-----|-----|-----|
01995> | ID1 01:Gas .18 .037 1.03 36.25 .000
01996> | +ID2 02:NPLot .37 .207 1.00 56.51 .000
01997> | +ID3 03:NGreen .10 .017 1.00 27.61 .000
01998> | +ID4 06:NRoofSTG .09 .010 .90 58.00 .000
01999> | +ID5 07:Noops .00 .000 .00 .00 .000
02000> -----
02001> | SUM 09:North .74 .267 1.00 47.86 .000
02002> -----
02003> | NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
02004> -----
02005> 025:0009-----
02006> *****
02007> *#
02008> *****
02009> *# North Storage with 0.030 m/s outlet to storm sewer
02010> *****
02011> -----
02012> | ROUTE RESERVOIR | Requested routing time step = 1.0 min.
02013> | IN>09: (North ) |
02014> | OUT<01: (NBio ) |
02015> |-----|-----|-----|-----|-----|-----|
02016> | OUTFLOW STORAGE | OUTFLOW STORAGE | OUTFLOW STORAGE |
02017> | (cms) (ha.m.) | (cms) (ha.m.) | (cms) (ha.m.) |
02018> | .000 .0000E+00 | .030 .3000E-01 |
02019> | .015 .1000E-02 | .110 .3100E-01 |
02020> -----
02021> | ROUTING RESULTS | AREA QPEAK TPEAK R.V.
02022> |-----|-----|-----|-----|-----|
02023> | INFLOW >09: (North ) | .74 .267 1.000 47.860
02024> | OUTFLOW<01: (NBio ) | .74 .025 1.833 47.860
02025> | OVERFLOW<02: (N-OLF) | .00 .000 .000 .000
02026> -----
02027> | TOTAL NUMBER OF SIMULATED OVERFLOWS = 0
02028> | CUMULATIVE TIME OF OVERFLOWS (hours)= .00
02029> | PERCENTAGE OF TIME OVERFLOWING (%)= .00
02030> -----
02031> | PEAK FLOW REDUCTION [Qout/Qin] (%)= 9.399
02032> | TIME SHIFT OF PEAK FLOW (min)= 50.00
02033> | MAXIMUM STORAGE USED (ha.m.)=.2051E-01

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02033>
02034>-----
02035> 025:0010-----
02036> *****
02037> *# South Residential Roof
02038> *****
02039>-----
02040> | CALIB STANDHYD | Area (ha)= .16
02041> | 01:SROof DT= 1.00 | Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00
02042>-----
02043> IMPERVIOUS PERVIOUS (i)
02044> Surface Area (ha)= .16 .00
02045> Dep. Storage (mm)= 2.00 5.00
02046> Average Slope (%)= .01 .01
02047> Length (m)= 10.00 10.00
02048> Mannings n = .040 .240
02049>-----
02050> Max.eff.Inten.(mm/hr)= 220.22 28.62
02051> over (min) 4.00 28.00
02052> Storage Coeff. (min)= 3.66 (ii) 27.89 (ii)
02053> Unit Hyd. Tpeak (min)= 4.00 28.00
02054> Unit Hyd. peak (cms)= .30 .04
02055>-----
02056> PEAK FLOW (cms)= .07 .00 *TOTALS*
02057> TIME TO PEAK (hrs)= 1.03 1.52 1.033 (iii)
02058> RUNOFF VOLUME (mm)= 58.37 21.20 58.001
02059> TOTAL RAINFALL (mm)= 60.37 60.37 60.373
02060> RUNOFF COEFFICIENT = .97 .35 .961
02061>-----
02062> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
02063> CN* = 74.0 Ia = Dep. Storage (Above)
02064> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
02065> THAN THE STORAGE COEFFICIENT.
02066> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02067>-----
02068> 025:0011-----
02069> *****
02070>-----
02071> | ROUTE RESERVOIR | Requested routing time step = 1.0 min.
02072> | IN:01:(SROof ) |
02073> | OUT:06:(SROofs) |
02074>-----
02075> ===== OUTFLOW STORAGE TABLE =====
02076> OUTFLOW STORAGE OUTFLOW STORAGE
02077> (cms) (ha.m.) (cms) (ha.m.)
02078> .000 .0000E+00 | .010 .9000E-02
02079> .010 .1000E-04 | .000 .0000E+00
02080>-----
02081> ROUTING RESULTS AREA QPEAK TPEAK R.V.
02082> (ha) (cms) (hrs) (mm)
02083> INFLOW >01: (SROof) .16 .071 1.033 58.001
02084> OUTFLOW<06: (SROofs) .16 .010 .850 58.005
02085> OVERFLOW<07: (SooPs) .00 .000 .000 .000
02086>-----
02087> TOTAL NUMBER OF SIMULATED OVERFLOWS = 0
02088> CUMULATIVE TIME OF OVERFLOWS (hours)= .00
02089> PERCENTAGE OF TIME OVERFLOWING (%)= .00
02090>-----
02091> PEAK FLOW REDUCTION [Qout/Qin] (%)= 14.067
02092> TIME SHIFT OF PEAK FLOW (min)= -11.00
02093> MAXIMUM STORAGE USED (ha.m.)= .4374E-02
02094>-----
02095> 025:0012-----
02096> *****
02097> *# South Parking Lot
02098> *****
02099>-----
02100> | CALIB STANDHYD | Area (ha)= .25
02101> | 02:SPlot DT= 1.00 | Total Imp(%)= 95.00 Dir. Conn.(%)= 95.00
02102>-----
02103> IMPERVIOUS PERVIOUS (i)
02104> Surface Area (ha)= .24 .01
02105> Dep. Storage (mm)= 2.00 5.00
02106> Average Slope (%)= 1.00 2.00
02107> Length (m)= 75.00 10.00
02108> Mannings n = .013 .240
02109>-----
02110> Max.eff.Inten.(mm/hr)= 220.22 66.44
02111> over (min) 2.00 5.00
02112> Storage Coeff. (min)= 1.57 (ii) 5.10 (ii)
02113> Unit Hyd. Tpeak (min)= 2.00 5.00
02114> Unit Hyd. peak (cms)= .65 .22
02115>-----
02116> PEAK FLOW (cms)= .14 .00 *TOTALS*
02117> TIME TO PEAK (hrs)= 1.00 1.07 1.000
02118> RUNOFF VOLUME (mm)= 58.37 21.20 56.515
02119> TOTAL RAINFALL (mm)= 60.37 60.37 60.373
02120> RUNOFF COEFFICIENT = .97 .35 .936
02121>-----
02122> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
02123> CN* = 74.0 Ia = Dep. Storage (Above)
02124> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
02125> THAN THE STORAGE COEFFICIENT.
02126> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02127>-----
02128> 025:0013-----
02129> *****
02130> *****
02131> *# South Green Space
02132> *****
02133>-----
02134> | CALIB STANDHYD | Area (ha)= .19
02135> | 03:SGreen DT= 1.00 | Total Imp(%)= 25.00 Dir. Conn.(%)= 10.00
02136>-----
02137> IMPERVIOUS PERVIOUS (i)
02138> Surface Area (ha)= .05 .14
02139> Dep. Storage (mm)= 2.00 5.00
02140> Average Slope (%)= 1.00 2.00
02141> Length (m)= 15.00 15.00
02142> Mannings n = .013 .240
02143>-----
02144> Max.eff.Inten.(mm/hr)= 220.22 101.28
02145> over (min) 1.00 4.00
02146> Storage Coeff. (min)= .60 (ii) 4.40 (ii)
02147> Unit Hyd. Tpeak (min)= 1.00 4.00
02148> Unit Hyd. peak (cms)= 1.38 .26
02149>-----
02150> PEAK FLOW (cms)= .01 .03 *TOTALS*
02151> TIME TO PEAK (hrs)= 1.00 1.05 .031 (iii)
02152> RUNOFF VOLUME (mm)= 58.37 24.19 27.612
02153> TOTAL RAINFALL (mm)= 60.37 60.37 60.373
02154> RUNOFF COEFFICIENT = .97 .40 .457
02155>-----
02156> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
02157> CN* = 74.0 Ia = Dep. Storage (Above)
02158> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
02159> THAN THE STORAGE COEFFICIENT.

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02160> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02161>-----
02162> 025:0014-----
02163> *****
02164>-----
02165> | ADD HYD (South ) | ID: NHYD AREA QPEAK TPEAK R.V. DWF
02166>-----
02167> ID1 02:SPlot .25 .140 1.00 56.51 .000
02168> ID2 03:SGreen .19 .031 1.00 27.61 .000
02169> ID3 06:SROofSTG .16 .010 .85 58.00 .000
02170> ID4 07:SooPs .00 .000 .00 00 .000
02171>-----
02172> SUM 09:South .60 .181 1.00 47.76 .000
02173>-----
02174> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
02175>-----
02176>-----
02177> 025:0015-----
02178> *****
02179> *# South Bioswale with 0.030 m³/s outlet to storm sewer
02180> *****
02181>-----
02182> ROUTE RESERVOIR | Requested routing time step = 1.0 min.
02183> IN>09:(South ) |
02184> OUT<01:(SBio ) | ===== OUTFLOW STORAGE TABLE =====
02185> OUTFLOW STORAGE OUTFLOW STORAGE
02186> (cms) (ha.m.) (cms) (ha.m.)
02187> .000 .0000E+00 | .032 .4800E-01
02188> .001 .1600E-01 | .113 .4900E-01
02189> .032 .1700E-01 | .113 .5200E-01
02190>-----
02191> ROUTING RESULTS AREA QPEAK TPEAK R.V.
02192> (ha) (cms) (hrs) (mm)
02193> INFLOW >09: (South ) .60 .181 1.000 47.759
02194> OUTFLOW<01: (SBio ) .60 .026 1.517 47.755
02195> OVERFLOW<02: (S-OLF) .00 .000 .000 .000
02196>-----
02197> TOTAL NUMBER OF SIMULATED OVERFLOWS = 0
02198> CUMULATIVE TIME OF OVERFLOWS (hours)= .00
02199> PERCENTAGE OF TIME OVERFLOWING (%)= .00
02200>-----
02201>-----
02202> PEAK FLOW REDUCTION [Qout/Qin] (%)= 14.322
02203> TIME SHIFT OF PEAK FLOW (min)= 31.90
02204> MAXIMUM STORAGE USED (ha.m.)=.1681E-01
02205>-----
02206>-----
02207> 025:0016-----
02208>-----
02209> 025:0002-----
02210>-----
02211> 025:0002-----
02212>-----
02213> 025:0002-----
02214>-----
02215> 025:0002-----
02216> ** END OF RUN : 49
02217>-----
02218> *****
02219> *****
02220>-----
02221>-----
02222>-----
02223>-----
02224>-----
02225> | START | Project dir.: C:\MODELL-1\13832\SWMHYMO\2023UF-1\
02226> | | Rainfall dir.: C:\MODELL-1\13832\SWMHYMO\2023UF-1\
02227>-----
02228> TZERO = .00 hrs on 0
02229> METOUT= 2 (output = METRIC)
02230> NRUN = 050
02231> NSTORM= 1
02232> # 1=ldn50yr.3hr
02233>-----
02234> 050:0002-----
02235> *****
02236> *# Project Name: [3080 Bostwick BLK 5] Project Number: [161413832]
02237> *# Date: 2023-10-13
02238> *# Modeller: [AKK]
02239> *# Company: Stantec Consulting Ltd. (London)
02240> *# License #: 4730904
02241> *****
02242> *# This model represents the hydrologic characteristics of the proposed conditio
02243> *# with 100% volume capture to the 100 year event.
02244> *# Storm events modeled are:
02245> *# 25mm and 2YR to 250YR 3hr Chicago STORMS (London, ONT. IDF)
02246> *#
02247> *#
02248> *****
02249>-----
02250> 050:0002-----
02251>-----
02252> | READ STORM | Filename: 50-yr, 3hr Chicago Storm - London IDF pa
02253> | Ptotal= 66.11 mm | Comments: 50-yr, 3hr Chicago Storm - London IDF pa
02254>-----
02255> TIME RAIN | TIME RAIN | TIME RAIN | TIME RAIN
02256> hrs mm/hr | hrs mm/hr | hrs mm/hr | hrs mm/hr
02257> .08 5.048 | .83 27.983 | 1.58 14.045 | 2.33 6.561
02258> .17 5.501 | .92 68.751 | 1.67 12.381 | 2.42 6.216
02259> .25 6.054 | 1.00 249.214 | 1.75 11.088 | 2.50 5.909
02260> .33 6.747 | 1.08 90.168 | 1.83 10.056 | 2.58 5.633
02261> .42 7.643 | 1.17 47.427 | 1.92 9.210 | 2.67 5.384
02262> .50 8.846 | 1.25 31.940 | 2.00 8.506 | 2.75 5.158
02263> .58 10.558 | 1.33 24.096 | 2.08 7.909 | 2.83 4.952
02264> .67 13.195 | 1.42 19.393 | 2.17 7.396 | 2.92 4.763
02265> .75 17.808 | 1.50 16.269 | 2.25 6.951 | 3.00 4.590
02266>-----
02267>-----
02268> 050:0003-----
02269> *****
02270> *# North Commercial Roof
02271> *****
02272>-----
02273> | CALIB STANDHYD | Area (ha)= .09
02274> | 01:NROof DT= 1.00 | Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00
02275>-----
02276> IMPERVIOUS PERVIOUS (i)
02277> Surface Area (ha)= .09 .00
02278> Dep. Storage (mm)= 2.00 5.00
02279> Average Slope (%)= .01 .01
02280> Length (m)= 10.00 10.00
02281> Mannings n = .040 .240
02282>-----
02283> Max.eff.Inten.(mm/hr)= 249.21 35.30
02284> over (min) 3.00 26.00
02285> Storage Coeff. (min)= 3.48 (ii) 25.76 (ii)
02286> Unit Hyd. Tpeak (min)= 3.00 26.00

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0228> Unit Hyd. peak (cms) = .34 .04  
0228> PEAK FLOW (cms) = .05 .00 \*TOTALS\*  
0229> TIME TO PEAK (hrs) = 1.02 1.47 .047 (iii)  
0229> RUNOFF VOLUME (mm) = 64.11 24.84 63.720  
0229> TOTAL RAINFALL (mm) = 66.11 66.11 66.112  
0229> RUNOFF COEFFICIENT = .97 .38 .964  
0229> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
0229> CN\* = 74.0 Ia = Dep. Storage (Above)  
0229> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL  
0229> THAN THE STORAGE COEFFICIENT.  
0229> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.  
0230>  
0230> 050:0004-----  
0230> ROUTE RESERVOIR | Requested routing time step = 1.0 min.  
0230> | IN<01:(NRoof) |  
0230> | OUT<06:(NRoofs) |  
0230> \*\*\*\*\* OUTFLOW STORAGE TABLE \*\*\*\*\*  
0230> OUTFLOW STORAGE | OUTFLOW STORAGE  
0230> (cms) (ha.m.) | (cms) (ha.m.)  
0230> .000 .0000E+00 | .010 .5000E-02  
0230> .010 .1000E-04 | .000 .0000E+00  
0231>  
0231> ROUTING RESULTS AREA QPEAK TPEAK R.V.  
0231> (ha) (cms) (hrs) (mm)  
0231> INFLOW >01: (NRoof) .09 .047 1.017 63.720  
0231> OUTFLOW<06: (NRoofs) .09 .010 .883 63.750  
0231> OVERFLOW<07: (Noops) .00 .000 .000 .000  
0231>  
0231> TOTAL NUMBER OF SIMULATED OVERFLOWS = 0  
0231> CUMULATIVE TIME OF OVERFLOWS (hours) = .00  
0231> PERCENTAGE OF TIME OVERFLOWING (%) = .00  
0232>  
0232> PEAK FLOW REDUCTION [Qout/Qin] (%) = 21.234  
0232> TIME SHIFT OF PEAK FLOW (min) = -8.00  
0232> MAXIMUM STORAGE USED (ha.m.) = .2069E-02  
0232>  
0232> 050:0005-----  
0232> \*\*\*\*\*  
0232> \*# Gas Property  
0232> \*\*\*\*\*  
0232> CALIB STANDHYD | Area (ha) = .18  
0232> | 01:Gas DT= 1.00 | Total Imp (%) = 50.00 Dir. Conn. (%) = 30.00  
0233>  
0233> IMPERVIOUS PERVIOUS (i)  
0233> Surface Area (ha) = .09 .09  
0233> Dep. Storage (mm) = 2.00 5.00  
0233> Average Slope (%) = .50 .50  
0233> Length (m) = 50.00 10.00  
0233> Mannings n = .040 .240  
0234>  
0234> Max.eff.Inten.(mm/hr) = 249.21 128.87  
0234> over (min) = 3.00 7.00  
0234> Storage Coeff. (min) = 2.83 (ii) 6.93 (ii)  
0234> Unit Hyd. Tpeak (min) = 3.00 7.00  
0234> Unit Hyd. peak (cms) = .39 .16  
0234>  
0234> PEAK FLOW (cms) = .03 .02 \*TOTALS\*  
0234> TIME TO PEAK (hrs) = 1.02 1.10 .043 (iii)  
0234> RUNOFF VOLUME (mm) = 64.11 30.97 40.914  
0234> TOTAL RAINFALL (mm) = 66.11 66.11 66.112  
0234> RUNOFF COEFFICIENT = .97 .47 .619  
0234>  
0234> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
0234> CN\* = 74.0 Ia = Dep. Storage (Above)  
0234> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL  
0234> THAN THE STORAGE COEFFICIENT.  
0234> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.  
0235>  
0235> 050:0006-----  
0235> \*\*\*\*\*  
0235> \*# North Parking Lot  
0235> \*\*\*\*\*  
0235> CALIB STANDHYD | Area (ha) = .37  
0235> | 02:NPlot DT= 1.00 | Total Imp (%) = 95.00 Dir. Conn. (%) = 95.00  
0236>  
0236> IMPERVIOUS PERVIOUS (i)  
0236> Surface Area (ha) = .35 .02  
0236> Dep. Storage (mm) = 2.00 5.00  
0236> Average Slope (%) = 1.00 2.00  
0236> Length (m) = 75.00 10.00  
0236> Mannings n = .013 .240  
0237>  
0237> Max.eff.Inten.(mm/hr) = 249.21 82.09  
0237> over (min) = 1.00 5.00  
0237> Storage Coeff. (min) = 1.49 (ii) 4.74 (ii)  
0237> Unit Hyd. Tpeak (min) = 1.00 5.00  
0237> Unit Hyd. peak (cms) = .83 .23  
0237>  
0237> PEAK FLOW (cms) = .24 .00 \*TOTALS\*  
0237> TIME TO PEAK (hrs) = 1.00 1.07 1.000 (iii)  
0237> RUNOFF VOLUME (mm) = 64.11 24.84 62.149  
0237> TOTAL RAINFALL (mm) = 66.11 66.11 66.112  
0237> RUNOFF COEFFICIENT = .97 .38 .940  
0237>  
0237> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
0237> CN\* = 74.0 Ia = Dep. Storage (Above)  
0237> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL  
0237> THAN THE STORAGE COEFFICIENT.  
0237> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.  
0238>  
0238> 050:0007-----  
0238> \*\*\*\*\*  
0238> \*# North Green Space  
0238> \*\*\*\*\*  
0238> CALIB STANDHYD | Area (ha) = .10  
0238> | 03:NGreen DT= 1.00 | Total Imp (%) = 25.00 Dir. Conn. (%) = 10.00  
0239>  
0239> IMPERVIOUS PERVIOUS (i)  
0239> Surface Area (ha) = .03 .08  
0239> Dep. Storage (mm) = 2.00 5.00  
0239> Average Slope (%) = 1.00 2.00  
0239> Length (m) = 15.00 15.00  
0239> Mannings n = .013 .240  
0240>  
0240> Max.eff.Inten.(mm/hr) = 249.21 123.82  
0240> over (min) = 1.00 4.00  
0240> Storage Coeff. (min) = .57 (ii) 4.08 (ii)

0241> Unit Hyd. Tpeak (min) = 1.00 4.00  
0241> Unit Hyd. peak (cms) = 1.41 .28 \*TOTALS\*  
0241> PEAK FLOW (cms) = .01 .02 .020 (iii)  
0241> TIME TO PEAK (hrs) = 1.00 1.05 1.000  
0241> RUNOFF VOLUME (mm) = 64.11 28.15 31.746  
0241> TOTAL RAINFALL (mm) = 66.11 66.11 66.112  
0241> RUNOFF COEFFICIENT = .97 .43 .480  
0242>  
0242> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
0242> CN\* = 74.0 Ia = Dep. Storage (Above)  
0242> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL  
0242> THAN THE STORAGE COEFFICIENT.  
0242> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.  
0242>  
0242> 050:0008-----  
0242> \*\*\*\*\*  
0242> \*# North Storage with 0.030 m<sup>3</sup>/s outlet to storm sewer  
0242> \*\*\*\*\*  
0242> ROUTE RESERVOIR | Requested routing time step = 1.0 min.  
0242> | IN<09:(North) |  
0242> | OUT<01:(NBio) |  
0242> \*\*\*\*\* OUTFLOW STORAGE TABLE \*\*\*\*\*  
0242> OUTFLOW STORAGE | OUTFLOW STORAGE  
0242> (cms) (ha.m.) | (cms) (ha.m.)  
0242> .000 .0000E+00 | .030 .3000E-01  
0242> .015 .1000E-02 | .110 .3100E-01  
0243>  
0243> ROUTING RESULTS AREA QPEAK TPEAK R.V.  
0243> (ha) (cms) (hrs) (mm)  
0243> INFLOW >09: (North) .74 .308 1.000 53.070  
0243> OUTFLOW<01: (NBio) .74 .026 1.850 53.070  
0243> OVERFLOW<02: (N-OLF) .00 .000 .000 .000  
0243>  
0243> TOTAL NUMBER OF SIMULATED OVERFLOWS = 0  
0243> CUMULATIVE TIME OF OVERFLOWS (hours) = .00  
0243> PERCENTAGE OF TIME OVERFLOWING (%) = .00  
0243>  
0243> PEAK FLOW REDUCTION [Qout/Qin] (%) = 8.525  
0243> TIME SHIFT OF PEAK FLOW (min) = 51.00  
0243> MAXIMUM STORAGE USED (ha.m.) = .2284E-01  
0243>  
0243> 050:0010-----  
0243> \*\*\*\*\*  
0243> \*# South Residential Roof  
0243> \*\*\*\*\*  
0243> CALIB STANDHYD | Area (ha) = .16  
0243> | 01:SRoof DT= 1.00 | Total Imp (%) = 99.00 Dir. Conn. (%) = 99.00  
0244>  
0244> IMPERVIOUS PERVIOUS (i)  
0244> Surface Area (ha) = .16 .00  
0244> Dep. Storage (mm) = 2.00 5.00  
0244> Average Slope (%) = .01 .01  
0244> Length (m) = 10.00 10.00  
0244> Mannings n = .040 .240  
0245>  
0245> Max.eff.Inten.(mm/hr) = 249.21 35.30  
0245> over (min) = 3.00 26.00  
0245> Storage Coeff. (min) = 3.48 (ii) 25.76 (ii)  
0245> Unit Hyd. Tpeak (min) = 3.00 26.00  
0245> Unit Hyd. peak (cms) = .34 .04 \*TOTALS\*  
0245> PEAK FLOW (cms) = .08 .00 .084 (iii)  
0245> TIME TO PEAK (hrs) = 1.02 1.47 1.017  
0245> RUNOFF VOLUME (mm) = 64.11 24.84 63.720  
0245> TOTAL RAINFALL (mm) = 66.11 66.11 66.112  
0245> RUNOFF COEFFICIENT = .97 .38 .964  
0245>  
0245> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
0245> CN\* = 74.0 Ia = Dep. Storage (Above)  
0245> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL  
0245> THAN THE STORAGE COEFFICIENT.  
0245> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.  
0245>  
0245> 050:0011-----  
0245> \*\*\*\*\*  
0245> \*# South Parking Lot  
0245> \*\*\*\*\*  
0245> ROUTE RESERVOIR | Requested routing time step = 1.0 min.  
0245> | IN<01:(SRoof) |  
0245> | OUT<06:(SRoofs) |  
0245> \*\*\*\*\* OUTFLOW STORAGE TABLE \*\*\*\*\*  
0245> OUTFLOW STORAGE | OUTFLOW STORAGE  
0245> (cms) (ha.m.) | (cms) (ha.m.)  
0245> .000 .0000E+00 | .010 .9000E-02  
0245> .010 .1000E-04 | .000 .0000E+00  
0246>  
0246> ROUTING RESULTS AREA QPEAK TPEAK R.V.  
0246> (ha) (cms) (hrs) (mm)  
0246> INFLOW >01: (SRoof) .16 .084 1.017 63.720  
0246> OUTFLOW<06: (SRoofs) .16 .010 .833 63.747  
0246> OVERFLOW<07: (Soops) .00 .000 .000 .000  
0246>  
0246> TOTAL NUMBER OF SIMULATED OVERFLOWS = 0  
0246> CUMULATIVE TIME OF OVERFLOWS (hours) = .00  
0246> PERCENTAGE OF TIME OVERFLOWING (%) = .00  
0246>  
0246> PEAK FLOW REDUCTION [Qout/Qin] (%) = 11.944  
0246> TIME SHIFT OF PEAK FLOW (min) = -11.00  
0246> MAXIMUM STORAGE USED (ha.m.) = .4972E-02  
0246>  
0246> 050:0012-----  
0246> \*\*\*\*\*  
0246> \*# South Parking Lot  
0246> \*\*\*\*\*  
0246> CALIB STANDHYD | Area (ha) = .25  
0246> | 02:SPlot DT= 1.00 | Total Imp (%) = 95.00 Dir. Conn. (%) = 95.00

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02541>-----
02542> IMPERVIOUS PERVIOUS (i)
02543> Surface Area (ha)= .24 .01
02544> Dep. Storage (mm)= 2.00 5.00
02545> Average Slope (%)= 1.00 2.00
02546> Length (m)= 75.00 10.00
02547> Mannings n = .013 .240
02548>
02549> Max.eff.Inten.(mm/hr)= 249.21 82.09
02550> over (min)= 1.00 5.00
02551> Storage Coeff. (min)= 1.49 (ii) 4.74 (ii)
02552> Unit Hyd. Tpeak (min)= 1.00 5.00
02553> Unit Hyd. peak (cms)= .83 .23
02554>
02555> *TOTALS*
02556> PEAK FLOW (cms)= .16 .00 .161 (iii)
02557> TIME TO PEAK (hrs)= 1.00 1.07 1.000
02558> RUNOFF VOLUME (mm)= 64.11 24.84 62.149
02559> TOTAL RAINFALL (mm)= 66.11 66.11 66.112
02560> RUNOFF COEFFICIENT = .97 .38 .940
02561>
02562> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
02563> CN* = 74.0 Ia = Dep. Storage (Above)
02564> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
02565> THAN THE STORAGE COEFFICIENT.
02566> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02567>-----
02568> 050:0013-----
02569> *#-----
02570> *# South Green Space
02571> *#-----
02572>-----
02573> | CALIB STANDHYD | Area (ha)= .19
02574> | 03:S:Green DT= 1.00 | Total Imp(%)= 25.00 Dir. Conn.(%)= 10.00
02575>-----
02576> IMPERVIOUS PERVIOUS (i)
02577> Surface Area (ha)= .05 .14
02578> Dep. Storage (mm)= 2.00 5.00
02579> Average Slope (%)= 1.00 2.00
02580> Length (m)= 15.00 15.00
02581> Mannings n = .013 .240
02582>
02583> Max.eff.Inten.(mm/hr)= 249.21 123.82
02584> over (min)= 1.00 4.00
02585> Storage Coeff. (min)= .57 (ii) 4.08 (ii)
02586> Unit Hyd. Tpeak (min)= 1.00 4.00
02587> Unit Hyd. peak (cms)= 1.41 .28
02588>
02589> *TOTALS*
02590> PEAK FLOW (cms)= .01 .03 .038 (iii)
02591> TIME TO PEAK (hrs)= 1.00 1.05 1.000
02592> RUNOFF VOLUME (mm)= 64.11 28.15 31.746
02593> TOTAL RAINFALL (mm)= 66.11 66.11 66.112
02594> RUNOFF COEFFICIENT = .97 .43 .480
02595>
02596> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
02597> CN* = 74.0 Ia = Dep. Storage (Above)
02598> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
02599> THAN THE STORAGE COEFFICIENT.
02600> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02601>-----
02602> 050:0014-----
02603>-----
02604> | ADD HYD (South ) | ID: NHYD AREA QPEAK TPEAK R.V. DWF
02605> |-----|-----|-----|-----|-----|-----|
02606> | ID1 02:SPLot .25 .161 1.00 62.15 .000
02607> | +ID2 03:S:Green .19 .038 1.00 31.75 .000
02608> | +ID3 06:S:RoofSTG .16 .010 .83 63.75 .000
02609> | +ID4 07:S:oops .00 .000 .00 .00 .000
02610>-----
02611> | SUM 09:South .60 .210 1.00 52.95 .000
02612>-----
02613> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
02614>-----
02615> 050:0015-----
02616> *#-----
02617> *# South Bioswale with 0.030 m/s outlet to storm sewer
02618> *#-----
02619>-----
02620>-----
02621> | ROUTE RESERVOIR | Requested routing time step = 1.0 min.
02622> | IN>09:(South ) |
02623> | OUT<01:(SBio ) |
02624>-----
02625> ===== OUTFLOW STORAGE TABLE =====
02626> OUTFLOW STORAGE | OUTFLOW STORAGE
02627> (cms) (ha.m.) | (cms) (ha.m.)
02628> .000 .000E+00 | .032 .4800E-01
02629> .001 .1600E-01 | .113 .4900E-01
02630> .032 .1700E-01 | .113 .5200E-01
02631>-----
02632> ROUTING RESULTS AREA QPEAK TPEAK R.V.
02633> (ha) (cms) (hrs) (mm)
02634> INFLOW >09: (South ) .60 .210 1.000 52.947
02635> OUTFLOW<01: (SBio ) .60 .032 1.317 52.943
02636> OVERFLOW<02: (S-OLF ) .00 .000 .000 .000
02637>-----
02638> TOTAL NUMBER OF SIMULATED OVERFLOWS = 0
02639> CUMULATIVE TIME OF OVERFLOWS (hours)= .00
02640> PERCENTAGE OF TIME OVERFLOWING (%)= .00
02641>-----
02642> PEAK FLOW REDUCTION [Qout/Qin] (%)= 15.257
02643> TIME SHIFT OF PEAK FLOW (min)= 19.00
02644> MAXIMUM STORAGE USED (ha.m.)=.1709E-01
02645>-----
02646> 050:0016-----
02647>-----
02648> 050:0002-----
02649>-----
02650> 050:0002-----
02651>-----
02652> 050:0002-----
02653>-----
02654> 050:0002-----
02655>-----
02656> 050:0002-----
02657> ** END OF RUN : 99
02658>-----
02659>-----
02660>-----
02661>-----
02662>-----
02663>-----
02664>-----
02665>-----
02666> | START | Project dir.: C:\MODELL-1\13832\SWMHYMO\2023UP-1\
02667> |-----| Rainfall dir.: C:\MODELL-1\13832\SWMHYMO\2023UP-1\

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02668> TZERO = .00 hrs on 0
02669> METOUT= 2 (output = METRIC)
02670> NRUN = 100
02671> NSTORM= 1
02672> # 1=ldn100YR.3hr
02673>
02674> 100:0002-----
02675> *#-----
02676> *# Project Name: [3080 Bostwick BLK 5] Project Number: [161413832]
02677> *# Date : 2023-10-13
02678> *# Modeller : [AKK]
02679> *# Company : Stantec Consulting Ltd. (London)
02680> *# License # : 4730904
02681> *#-----
02682> *#-----
02683> *#
02684> *# This model represents the hydrologic characteristics of the proposed conditio
02685> *# with 100% volume capture to the 100 year event.
02686> *# Storm events modeled are:
02687> *# 25mm and 2YR to 250YR 3hr Chicago STORMS (London, ONT. IDF)
02688> *#-----
02689> *#-----
02690>-----
02691> 100:0002-----
02692>-----
02693> READ STORM | Filename: 100-yr, 3hr Chicago Storm - London IDF p
02694> | Ptotal= 71.79 mm | Comments: 100-yr, 3hr Chicago Storm - London IDF p
02695>-----
02696>-----
02697> TIME RAIN | TIME RAIN | TIME RAIN | TIME RAIN
02698> hrs mm/hr | hrs mm/hr | hrs mm/hr | hrs mm/hr
02699> .17 6.241 | .92 70.969 | 1.67 13.536 | 2.42 7.017
02700> .25 6.842 | 1.00 279.468 | 1.75 12.190 | 2.50 6.684
02701> .33 7.590 | 1.08 93.045 | 1.83 11.107 | 2.58 6.384
02702> .42 8.550 | 1.17 48.987 | 1.92 10.216 | 2.67 6.113
02703> .50 9.830 | 1.25 33.402 | 2.00 9.469 | 2.75 5.867
02704> .58 11.634 | 1.33 25.503 | 2.08 8.834 | 2.83 5.641
02705> .67 14.380 | 1.42 20.737 | 2.17 8.287 | 2.92 5.435
02706> .75 19.119 | 1.50 17.547 | 2.25 7.809 | 3.00 5.244
02707>-----
02708>-----
02709> 100:0003-----
02710> *#-----
02711> *# North Commercial Roof
02712> *#-----
02713>-----
02714> CALIB STANDHYD | Area (ha)= .09
02715> | 01:N:roof DT= 1.00 | Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00
02716>-----
02717> IMPERVIOUS PERVIOUS (i)
02718> Surface Area (ha)= .09 .00
02719> Dep. Storage (mm)= 2.00 5.00
02720> Average Slope (%)= .01 .01
02721> Length (m)= 10.00 10.00
02722> Mannings n = .040 .240
02723>
02724> Max.eff.Inten.(mm/hr)= 279.47 42.63
02725> over (min)= 3.00 24.00
02726> Storage Coeff. (min)= 3.32 (ii) 23.99 (ii)
02727> Unit Hyd. Tpeak (min)= 3.00 24.00
02728> Unit Hyd. peak (cms)= .35 .05
02729>
02730> *TOTALS*
02731> PEAK FLOW (cms)= .05 .00 .053 (iii)
02732> TIME TO PEAK (hrs)= 1.02 1.42 1.017
02733> RUNOFF VOLUME (mm)= 69.79 28.59 69.379
02734> TOTAL RAINFALL (mm)= 71.79 71.79 71.791
02735> RUNOFF COEFFICIENT = .97 .40 .966
02736>
02737> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
02738> CN* = 74.0 Ia = Dep. Storage (Above)
02739> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
02740> THAN THE STORAGE COEFFICIENT.
02741> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02742>-----
02743> 100:0004-----
02744>-----
02745> ROUTE RESERVOIR | Requested routing time step = 1.0 min.
02746> | IN>01:(N:roof ) |
02747> | OUT<06:(N:roofs) |
02748>-----
02749> ===== OUTFLOW STORAGE TABLE =====
02750> OUTFLOW STORAGE | OUTFLOW STORAGE
02751> (cms) (ha.m.) | (cms) (ha.m.)
02752> .000 .000E+00 | .010 .5000E-02
02753> .010 .1000E-04 | .000 .0000E+00
02754>-----
02755> ROUTING RESULTS AREA QPEAK TPEAK R.V.
02756> (ha) (cms) (hrs) (mm)
02757> INFLOW >01: (N:roof ) .09 .053 1.017 69.379
02758> OUTFLOW<06: (N:roofs) .09 .010 1.883 69.379
02759> OVERFLOW<07: (Noops ) .00 .000 .000 .000
02760>-----
02761> TOTAL NUMBER OF SIMULATED OVERFLOWS = 0
02762> CUMULATIVE TIME OF OVERFLOWS (hours)= .00
02763> PERCENTAGE OF TIME OVERFLOWING (%)= .00
02764>-----
02765> PEAK FLOW REDUCTION [Qout/Qin] (%)= 18.821
02766> TIME SHIFT OF PEAK FLOW (min)= -8.00
02767> MAXIMUM STORAGE USED (ha.m.)=.2357E-02
02768>-----
02769> 100:0005-----
02770> *#-----
02771> *# Gas Property
02772> *#-----
02773>-----
02774> CALIB STANDHYD | Area (ha)= .18
02775> | 01:Gas DT= 1.00 | Total Imp(%)= 50.00 Dir. Conn.(%)= 30.00
02776>-----
02777> IMPERVIOUS PERVIOUS (i)
02778> Surface Area (ha)= .09 .09
02779> Dep. Storage (mm)= 2.00 5.00
02780> Average Slope (%)= .50 .50
02781> Length (m)= 50.00 10.00
02782> Mannings n = .040 .240
02783>
02784> Max.eff.Inten.(mm/hr)= 279.47 163.51
02785> over (min)= 3.00 6.00
02786> Storage Coeff. (min)= 2.70 (ii) 6.43 (ii)
02787> Unit Hyd. Tpeak (min)= 3.00 6.00
02788> Unit Hyd. peak (cms)= .40 .18
02789>
02790> *TOTALS*
02791> PEAK FLOW (cms)= .03 .03 .052 (iii)
02792> TIME TO PEAK (hrs)= 1.02 1.08 1.033
02793> RUNOFF VOLUME (mm)= 69.79 35.27 45.624
02794> TOTAL RAINFALL (mm)= 71.79 71.79 71.791
02795> RUNOFF COEFFICIENT = .97 .49 .636

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02795> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
02796> CN\* = 74.0 Ia = Dep. Storage (Above)  
02797> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL  
02798> THAN THE STORAGE COEFFICIENT.  
02800> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.  
02801> -----  
02802> 100:0006-----  
02803> \*\*\*\*\*  
02804> \*# North Parking Lot  
02806> \*\*\*\*\*  
02807> -----  
02808> | CALIB STANDHYD | Area (ha)= .37  
02809> | 02:NPlot DT= 1.00 | Total Imp(%)= 95.00 Dir. Conn.(%)= 95.00  
02810> -----  
02811> IMPERVIOUS PERVIOUS (i)  
02812> Surface Area (ha)= .35 .02  
02813> Dep. Storage (mm)= 2.00 5.00  
02814> Average Slope (%)= 1.00 2.00  
02815> Length (m)= 75.00 10.00  
02816> Mannings n = .013 .240  
02817> -----  
02818> Max.eff.Inten.(mm/hr)= 279.47 107.28  
02819> over (min) 1.00 4.00  
02820> Storage Coeff. (min)= 1.43 (ii) 4.34 (ii)  
02821> Unit Hyd. Tpeak (min)= 1.00 4.00  
02822> Unit Hyd. peak (cms)= .86 .27  
02823> -----  
02824> PEAK FLOW (cms)= .27 .00 \*TOTALS\*  
02825> TIME TO PEAK (hrs)= 1.00 1.05 1.000  
02826> RUNOFF VOLUME (mm)= 69.79 28.59 67.731  
02827> TOTAL RAINFALL (mm)= 71.79 71.79 71.791  
02828> RUNOFF COEFFICIENT = .97 .40 .943  
02829> -----  
02830> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
02831> CN\* = 74.0 Ia = Dep. Storage (Above)  
02832> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL  
02833> THAN THE STORAGE COEFFICIENT.  
02834> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.  
02835> -----  
02836> 100:0007-----  
02837> \*\*\*\*\*  
02838> \*# North Green Space  
02840> \*\*\*\*\*  
02841> -----  
02842> | CALIB STANDHYD | Area (ha)= .10  
02843> | 03:NGreen DT= 1.00 | Total Imp(%)= 25.00 Dir. Conn.(%)= 10.00  
02844> -----  
02845> IMPERVIOUS PERVIOUS (i)  
02846> Surface Area (ha)= .03 .08  
02847> Dep. Storage (mm)= 2.00 5.00  
02848> Average Slope (%)= 1.00 2.00  
02849> Length (m)= 15.00 15.00  
02850> Mannings n = .013 .240  
02851> -----  
02852> Max.eff.Inten.(mm/hr)= 279.47 148.39  
02853> over (min) 1.00 4.00  
02854> Storage Coeff. (min)= .54 (ii) 3.81 (ii)  
02855> Unit Hyd. Tpeak (min)= 1.00 4.00  
02856> Unit Hyd. peak (cms)= 1.43 .29  
02857> -----  
02858> PEAK FLOW (cms)= .01 .02 \*TOTALS\*  
02859> TIME TO PEAK (hrs)= 1.00 1.03 1.000  
02860> RUNOFF VOLUME (mm)= 69.79 32.21 35.964  
02861> TOTAL RAINFALL (mm)= 71.79 71.79 71.791  
02862> RUNOFF COEFFICIENT = .97 .45 .501  
02863> -----  
02864> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
02865> CN\* = 74.0 Ia = Dep. Storage (Above)  
02866> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL  
02867> THAN THE STORAGE COEFFICIENT.  
02868> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.  
02869> -----  
02870> 100:0008-----  
02871> \*\*\*\*\*  
02872> | ADD HYD (North ) | ID: NHYD AREA QPEAK TPEAK R.V. DWF  
02873> | (ha) (cms) (hrs) (mm) (cms)  
02874> -----  
02875> ID1 01:Gas .18 .052 1.03 45.62 .000  
02876> +ID2 02:NPlot .37 .269 1.00 67.73 .000  
02877> +ID3 03:NGreen .10 .024 1.00 35.96 .000  
02878> +ID4 06:NRoofSTG .09 .010 .88 69.38 .000  
02879> +ID5 07:Noops .00 .000 .00 .00 .000  
02880> -----  
02881> SUM 09:North .74 .351 1.00 58.26 .000  
02882> -----  
02883> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.  
02884> -----  
02885> 100:0009-----  
02886> \*\*\*\*\*  
02887> \*# North Storage with 0.030 m<sup>3</sup>/s outlet to storm sewer  
02888> \*\*\*\*\*  
02889> -----  
02890> | ROUTE RESERVOIR | Requested routing time step = 1.0 min.  
02891> | IN:09:(North ) |  
02892> | OUT:01:(NBio ) |  
02893> |  
02894> ===== OUTFLOW STORAGE TABLE =====  
02895> OUTFLOW STORAGE | OUTFLOW STORAGE  
02896> (cms) (ha.m.) | (cms) (ha.m.)  
02897> .000 .0000E+00 | .030 .3000E-01  
02898> .015 .1000E-02 | .110 .3100E-01  
02899> -----  
02900> ROUTING RESULTS AREA QPEAK TPEAK R.V.  
02901> (ha) (cms) (hrs) (mm)  
02902> INFLOW >09: (North ) .74 .351 1.000 58.261  
02903> OUTFLOW<01: (NBio ) .74 .027 1.883 58.261  
02904> OVERFLOW<02: (N-OLF ) .00 .000 .000 .000  
02905> -----  
02906> TOTAL NUMBER OF SIMULATED OVERFLOWS = 0  
02907> CUMULATIVE TIME OF OVERFLOWS (hours) = .00  
02908> PERCENTAGE OF TIME OVERFLOWING (%) = .00  
02909> -----  
02910> PEAK FLOW REDUCTION [Qout/Qin] (%) = 7.822  
02911> TIME SHIFT OF PEAK FLOW (min) = 53.00  
02912> MAXIMUM STORAGE USED (ha.m.) = .2510E-01  
02913> -----  
02914> 100:0010-----  
02915> \*\*\*\*\*  
02916> \*# South Residential Roof  
02917> \*\*\*\*\*  
02918> -----  
02919> | CALIB STANDHYD | Area (ha)= .16  
02920> | 01:Sroof DT= 1.00 | Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

02922> -----  
02923> IMPERVIOUS PERVIOUS (i)  
02924> Surface Area (ha)= .16 .00  
02925> Dep. Storage (mm)= 2.00 5.00  
02926> Average Slope (%)= .01 .01  
02927> Length (m)= 10.00 10.00  
02928> Mannings n = .040 .240  
02929> -----  
02930> Max.eff.Inten.(mm/hr)= 279.47 42.63  
02931> over (min) 3.00 24.00  
02932> Storage Coeff. (min)= 3.22 (ii) 23.99 (ii)  
02933> Unit Hyd. Tpeak (min)= 3.00 24.00  
02934> Unit Hyd. peak (cms)= .35 .05  
02935> -----  
02936> PEAK FLOW (cms)= .09 .00 \*TOTALS\*  
02937> TIME TO PEAK (hrs)= 1.02 1.42 1.017  
02938> RUNOFF VOLUME (mm)= 69.79 28.59 69.379  
02939> TOTAL RAINFALL (mm)= 71.79 71.79 71.791  
02940> RUNOFF COEFFICIENT = .97 .40 .966  
02941> -----  
02942> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
02943> CN\* = 74.0 Ia = Dep. Storage (Above)  
02944> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL  
02945> THAN THE STORAGE COEFFICIENT.  
02946> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.  
02947> -----  
02948> 100:0011-----  
02949> \*\*\*\*\*  
02950> | ROUTE RESERVOIR | Requested routing time step = 1.0 min.  
02951> | IN:01:(Sroof ) |  
02952> | OUT:06:(Sroofs) |  
02953> ===== OUTFLOW STORAGE TABLE =====  
02954> OUTFLOW STORAGE | OUTFLOW STORAGE  
02955> (cms) (ha.m.) | (cms) (ha.m.)  
02956> .000 .0000E+00 | .010 .9000E-02  
02957> .010 .1000E-04 | .000 .0000E+00  
02958> -----  
02959> ROUTING RESULTS AREA QPEAK TPEAK R.V.  
02960> (ha) (cms) (hrs) (mm)  
02961> INFLOW >01: (Sroof ) .16 .094 1.017 69.379  
02962> OUTFLOW<06: (Sroofs) .16 .010 .817 69.397  
02963> OVERFLOW<07: (Soops) .00 .000 .000 .000  
02964> -----  
02965> TOTAL NUMBER OF SIMULATED OVERFLOWS = 0  
02966> CUMULATIVE TIME OF OVERFLOWS (hours) = .00  
02967> PERCENTAGE OF TIME OVERFLOWING (%) = .00  
02968> -----  
02969> PEAK FLOW REDUCTION [Qout/Qin] (%) = 10.587  
02970> TIME SHIFT OF PEAK FLOW (min) = -12.00  
02971> MAXIMUM STORAGE USED (ha.m.) = .5529E-02  
02972> -----  
02973> 100:0012-----  
02974> \*\*\*\*\*  
02975> \*# South Parking Lot  
02976> \*\*\*\*\*  
02977> -----  
02978> | CALIB STANDHYD | Area (ha)= .25  
02979> | 02:SPlot DT= 1.00 | Total Imp(%)= 95.00 Dir. Conn.(%)= 95.00  
02980> -----  
02981> IMPERVIOUS PERVIOUS (i)  
02982> Surface Area (ha)= .24 .01  
02983> Dep. Storage (mm)= 2.00 5.00  
02984> Average Slope (%)= 1.00 2.00  
02985> Length (m)= 75.00 10.00  
02986> Mannings n = .013 .240  
02987> -----  
02988> Max.eff.Inten.(mm/hr)= 279.47 107.28  
02989> over (min) 1.00 4.00  
02990> Storage Coeff. (min)= 1.43 (ii) 4.34 (ii)  
02991> Unit Hyd. Tpeak (min)= 1.00 4.00  
02992> Unit Hyd. peak (cms)= .86 .27  
02993> -----  
02994> PEAK FLOW (cms)= .18 .05 \*TOTALS\*  
02995> TIME TO PEAK (hrs)= 1.00 1.00 1.000  
02996> RUNOFF VOLUME (mm)= 69.79 28.59 67.731  
02997> TOTAL RAINFALL (mm)= 71.79 71.79 71.791  
02998> RUNOFF COEFFICIENT = .97 .40 .943  
02999> -----  
03000> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
03001> CN\* = 74.0 Ia = Dep. Storage (Above)  
03002> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL  
03003> THAN THE STORAGE COEFFICIENT.  
03004> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.  
03005> -----  
03006> 100:0013-----  
03007> \*\*\*\*\*  
03008> \*# South Green Space  
03009> \*\*\*\*\*  
03010> -----  
03011> | CALIB STANDHYD | Area (ha)= .19  
03012> | 03:SGreen DT= 1.00 | Total Imp(%)= 25.00 Dir. Conn.(%)= 10.00  
03013> -----  
03014> IMPERVIOUS PERVIOUS (i)  
03015> Surface Area (ha)= .05 .14  
03016> Dep. Storage (mm)= 2.00 5.00  
03017> Average Slope (%)= 1.00 2.00  
03018> Length (m)= 15.00 15.00  
03019> Mannings n = .013 .240  
03020> -----  
03021> Max.eff.Inten.(mm/hr)= 279.47 148.39  
03022> over (min) 1.00 4.00  
03023> Storage Coeff. (min)= .54 (ii) 3.81 (ii)  
03024> Unit Hyd. Tpeak (min)= 1.00 4.00  
03025> Unit Hyd. peak (cms)= 1.43 .29  
03026> -----  
03027> PEAK FLOW (cms)= .01 .04 \*TOTALS\*  
03028> TIME TO PEAK (hrs)= 1.00 1.03 1.000  
03029> RUNOFF VOLUME (mm)= 69.79 32.21 35.964  
03030> TOTAL RAINFALL (mm)= 71.79 71.79 71.791  
03031> RUNOFF COEFFICIENT = .97 .45 .501  
03032> -----  
03033> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
03034> CN\* = 74.0 Ia = Dep. Storage (Above)  
03035> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL  
03036> THAN THE STORAGE COEFFICIENT.  
03037> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.  
03038> -----  
03039> 100:0014-----  
03040> \*\*\*\*\*  
03041> \*# ADD HYD (South ) | ID: NHYD AREA QPEAK TPEAK R.V. DWF  
03042> | (ha) (cms) (hrs) (mm) (cms)  
03043> -----  
03044> ID1 02:SPlot .25 .182 1.00 67.73 .000  
03045> +ID2 03:SGreen .19 .046 1.00 35.96 .000

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03049> +ID3 06:SRooftG .16 .010 .82 69.40 .000
03050> +ID4 07:Soops .00 .000 .00 .00 .000
03051>
03052> =====
03053> SUM 09:South .60 .238 1.00 58.12 .000
03054>
03055> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
03056>
-----
03057> 100:0015-----
03058> *#*****
03059> *# South Bioswale with 0.030 m³/s outlet to storm sewer
03060> *#*****
03061>
03062> | ROUTE RESERVOIR | Requested routing time step = 1.0 min.
03063> | IN>09:(South ) |
03064> | OUT<01:(SBio ) |
03065> | ===== OUTFLOW STORAGE TABLE =====
03066> | OUTFLOW STORAGE | OUTFLOW STORAGE
03067> | (cms) (ha.m.) | (cms) (ha.m.)
03068> | .000 .0000E+00 | .032 .4800E-01
03069> | .001 .1600E-01 | .113 .4900E-01
03070> | .032 .1700E-01 | .113 .5200E-01
03071>
03072> ROUTING RESULTS AREA QPEAK TPEAK R.V.
03073> (ha) (cms) (hrs) (mm)
03074> INFLOW >09: (South ) .60 .238 1.000 58.116
03075> OUTFLOW<01: (SBio ) .60 .032 1.200 58.111
03076> OVERFLOW<02: (S-OLF ) .00 .000 .000 .000
03077>
03078> TOTAL NUMBER OF SIMULATED OVERFLOWS = 0
03079> CUMULATIVE TIME OF OVERFLOWS (hours) = .00
03080> PERCENTAGE OF TIME OVERFLOWING (%) = .00
03081>
03082> PEAK FLOW REDUCTION [Qout/Qin] (%) = 13.444
03083> TIME SHIFT OF PEAK FLOW (min) = 12.00
03084> MAXIMUM STORAGE USED (ha.m.) = .1789E-01
03085>
-----
03086>
03087> 100:0016-----
03088> *#*****
03089> 100:0002-----
03090>
03091> 100:0002-----
03092> *#*****
03093> 100:0002-----
03094>
03095> 100:0002-----
03096>
03097> 100:0002-----
03098> *#*****
03099> 100:0002-----
03100> ** END OF RUN : 249
03101>
03102> *****
03103>
03104>
03105>
03106>
03107>
03108>
-----
03109> | START | Project dir.: C:\MODELL-1\13832\SWMHYMO\2023UP-1\
03110> | Rainfall dir.: C:\MODELL-1\13832\SWMHYMO\2023UP-1\
03111> | TZERO = .00 hrs on 0
03112> | METOUT = 2 (output = METRIC)
03113> | NRUN = 250
03114> | NSTORM = 1
03115> | # 1=1dn250YR.3hr
03116>
03117> 250:0002-----
03118> *#*****
03119> *# Project Name: [3080 Bostwick BLK 5] Project Number: [161413832]
03120> *# Date : 2023-10-13
03121> *# Modeller : [AKK]
03122> *# Company : Stantec Consulting Ltd. (London)
03123> *# License # : 4730904
03124> *#*****
03125> *# This model represents the hydrologic characteristics of the proposed conditio
03126> *# with 100% volume capture to the 100 year event.
03127> *# Storm events modeled are:
03128> *# 25mm and 2YR to 250YR 3hr Chicago STORMS (London, ONT. IDF)
03129> *#
03130> *#
03131> *#
03132> *#*****
03133>
03134> 250:0002-----
03135>
03136> | READ STORM | Filename: LONDON 250 YEAR 3 HOUR CHICAGO STORM
03137> | Ptotal= 89.35 mm | Comments: LONDON 250 YEAR 3 HOUR CHICAGO STORM
03138>
03139> TIME RAIN | TIME RAIN | TIME RAIN | TIME RAIN
03140> hrs mm/hr | hrs mm/hr | hrs mm/hr | hrs mm/hr
03141> .08 3.680 | .83 20.470 | 1.58 27.260 | 2.33 6.470
03142> .17 4.120 | .92 30.880 | 1.67 21.330 | 2.42 5.860
03143> .25 4.670 | 1.00 53.760 | 1.75 17.260 | 2.50 5.350
03144> .33 5.360 | 1.08 124.690 | 1.83 14.320 | 2.58 4.910
03145> .42 6.240 | 1.17 289.630 | 1.92 12.130 | 2.67 4.530
03146> .50 7.410 | 1.25 147.850 | 2.00 10.440 | 2.75 4.200
03147> .58 9.010 | 1.33 80.800 | 2.08 9.120 | 2.83 3.910
03148> .67 11.310 | 1.42 51.760 | 2.17 8.060 | 2.92 3.650
03149> .75 14.780 | 1.50 36.410 | 2.25 7.190 | 3.00 3.420
03150>
03151>
03152> 250:0003-----
03153> *#*****
03154> *# North Commercial Roof
03155> *#*****
03156>
03157> | CALIB STANDHYD | Area (ha)= .09
03158> | 01:Nroof DT= 1.00 | Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00
03159> *#*****
03160>
03161> IMPERVIOUS PERVIOUS (i)
03162> Surface Area (ha)= .09 .00
03163> Dep. Storage (mm)= 2.00 5.00
03164> Average Slope (%)= .01 .01
03165> Length (m)= 10.00 10.00
03166> Mannings n = .040 .240
03167> Max.eff.Inten.(mm/hr)= 289.63 76.21
03168> over (min)= 3.00 20.00
03169> Storage Coeff. (min)= 3.28 (ii) 19.66 (ii)
03170> Unit Hyd. Tpeak (min)= 3.00 20.00
03171> Unit Hyd. peak (cms)= .35 .06
03172> *#TOTALS*
03173> PEAK FLOW (cms)= .06 .00 .059 (iii)
03174> TIME TO PEAK (hrs)= 1.18 1.53 1.183
03175> RUNOFF VOLUME (mm)= 87.35 40.99 86.890

```

```

03176> TOTAL RAINFALL (mm)= 89.35 89.35 89.353
03177> RUNOFF COEFFICIENT = .98 .46 .972
03178>
03179> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
03180> CN* = 74.0 Ia = Dep. Storage (Above)
03181> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
03182> THAN THE STORAGE COEFFICIENT.
03183> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
03184>
03185>
-----
03186> 250:0004-----
03187> *#*****
03188> | ROUTE RESERVOIR | Requested routing time step = 1.0 min.
03189> | IN>01:(Nroof ) |
03190> | OUT<06:(Nroofs ) |
03191> | ===== OUTFLOW STORAGE TABLE =====
03192> | OUTFLOW STORAGE | OUTFLOW STORAGE
03193> | (cms) (ha.m.) | (cms) (ha.m.)
03194> | .000 .0000E+00 | .010 .5000E-02
03195> | .010 .1000E-04 | .000 .0000E+00
03196>
03197> ROUTING RESULTS AREA QPEAK TPEAK R.V.
03198> (ha) (cms) (hrs) (mm)
03199> INFLOW >01: (Nroof ) .09 .059 1.183 86.890
03200> OUTFLOW<06: (Nroofs ) .09 .010 .983 86.970
03201> OVERFLOW<07: (Nooops ) .00 .000 .000 .000
03202>
03203> TOTAL NUMBER OF SIMULATED OVERFLOWS = 0
03204> CUMULATIVE TIME OF OVERFLOWS (hours) = .00
03205> PERCENTAGE OF TIME OVERFLOWING (%) = .00
03206>
03207> PEAK FLOW REDUCTION [Qout/Qin] (%) = 17.015
03208> TIME SHIFT OF PEAK FLOW (min) = -12.00
03209> MAXIMUM STORAGE USED (ha.m.) = .3696E-02
03210>
03211>
-----
03212> 250:0005-----
03213> *#*****
03214> *# Gas Property
03215> *#*****
03216>
03217> | CALIB STANDHYD | Area (ha)= .18
03218> | 01:Gas DT= 1.00 | Total Imp(%)= 50.00 Dir. Conn.(%)= 30.00
03219> *#*****
03220>
03221> IMPERVIOUS PERVIOUS (i)
03222> Surface Area (ha)= .09 .09
03223> Dep. Storage (mm)= 2.00 5.00
03224> Average Slope (%)= .50 .50
03225> Length (m)= 50.00 10.00
03226> Mannings n = .040 .240
03227> Max.eff.Inten.(mm/hr)= 289.63 212.45
03228> over (min)= 3.00 6.00
03229> Storage Coeff. (min)= 2.66 (ii) 6.02 (ii)
03230> Unit Hyd. Tpeak (min)= 3.00 6.00
03231> Unit Hyd. peak (cms)= .41 .19
03232> *#TOTALS*
03233> PEAK FLOW (cms)= .04 .04 .066 (iii)
03234> TIME TO PEAK (hrs)= 1.18 1.25 1.200
03235> RUNOFF VOLUME (mm)= 87.35 49.21 60.655
03236> TOTAL RAINFALL (mm)= 89.35 89.35 89.353
03237> RUNOFF COEFFICIENT = .98 .55 .679
03238>
03239> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
03240> CN* = 74.0 Ia = Dep. Storage (Above)
03241> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
03242> THAN THE STORAGE COEFFICIENT.
03243> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
03244>
03245>
-----
03246> 250:0006-----
03247> *#*****
03248> *# North Parking Lot
03249> *#*****
03250>
03251> | CALIB STANDHYD | Area (ha)= .37
03252> | 02:NPlot DT= 1.00 | Total Imp(%)= 95.00 Dir. Conn.(%)= 95.00
03253> *#*****
03254>
03255> IMPERVIOUS PERVIOUS (i)
03256> Surface Area (ha)= .35 .02
03257> Dep. Storage (mm)= 2.00 5.00
03258> Average Slope (%)= 1.00 2.00
03259> Length (m)= 75.00 10.00
03260> Mannings n = .013 .240
03261> Max.eff.Inten.(mm/hr)= 289.63 137.27
03262> over (min)= 1.00 4.00
03263> Storage Coeff. (min)= 1.40 (ii) 4.05 (ii)
03264> Unit Hyd. Tpeak (min)= 1.00 4.00
03265> Unit Hyd. peak (cms)= .87 .28
03266> *#TOTALS*
03267> PEAK FLOW (cms)= .28 .01 .282 (iii)
03268> TIME TO PEAK (hrs)= 1.17 1.22 1.167
03269> RUNOFF VOLUME (mm)= 87.35 40.99 85.035
03270> TOTAL RAINFALL (mm)= 89.35 89.35 89.353
03271> RUNOFF COEFFICIENT = .98 .46 .952
03272>
03273> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
03274> CN* = 74.0 Ia = Dep. Storage (Above)
03275> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
03276> THAN THE STORAGE COEFFICIENT.
03277> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
03278>
03279>
-----
03280> 250:0007-----
03281> *#*****
03282> *# North Green Space
03283> *#*****
03284>
03285> | CALIB STANDHYD | Area (ha)= .10
03286> | 03:Green DT= 1.00 | Total Imp(%)= 25.00 Dir. Conn.(%)= 10.00
03287> *#*****
03288>
03289> IMPERVIOUS PERVIOUS (i)
03290> Surface Area (ha)= .03 .08
03291> Dep. Storage (mm)= 2.00 5.00
03292> Average Slope (%)= 1.00 2.00
03293> Length (m)= 15.00 15.00
03294> Mannings n = .013 .240
03295> Max.eff.Inten.(mm/hr)= 289.63 193.11
03296> over (min)= 1.00 3.00
03297> Storage Coeff. (min)= .53 (ii) 3.47 (ii)
03298> Unit Hyd. Tpeak (min)= 1.00 3.00
03299> Unit Hyd. peak (cms)= 1.44 .34
03300> *#TOTALS*
03301> PEAK FLOW (cms)= .01 .03 .035 (iii)
03302> TIME TO PEAK (hrs)= 1.17 1.20 1.167

```

03303> RUNOFF VOLUME (mm) = 87.35 45.48 49.668  
03304> TOTAL RAINFALL (mm) = 89.35 89.35 89.353  
03305> RUNOFF COEFFICIENT = .98 .51 .556  
03306>  
03307> (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
03308> CN\* = 74.0 Ia = Dep. Storage (Above)  
03309> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL  
03310> THAN THE STORAGE COEFFICIENT.  
03311> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.  
03312>  
03313>-----  
03314> 250:0008-----  
03315>-----  
03316> | ADD HYD (North ) | ID: NHYD AREA QPEAK TPEAK R.V. DWF  
03317>-----  
03318> | ID1 01:Gas .18 .066 1.20 60.65 .000  
03319> | +ID2 02:NPlot .37 .282 1.17 85.03 .000  
03320> | +ID3 03:NGreen .10 .035 1.17 49.67 .000  
03321> | +ID4 06:NRoofSTG .09 .010 .98 86.97 .000  
03322> | +ID5 07:Noops .00 .000 .00 .00 .000  
03323>-----  
03324> | SUM 09:North .74 .387 1.17 74.56 .000  
03325>  
03326> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.  
03327>  
03328>-----  
03329> 250:0009-----  
03330> \*#-----  
03331> \*# North Storage with 0.030 m³/s outlet to storm sewer  
03332> \*#-----  
03333>-----  
03334> | ROUTE RESERVOIR | Requested routing time step = 1.0 min.  
03335> | IN>09:(North ) |  
03336> | OUT<01:(NBio ) |  
03337>-----  
03338> | OUTFLOW STORAGE | OUTFLOW STORAGE  
03339> (cms) (ha.m.) | (cms) (ha.m.)  
03340> .000 .0000E+00 | .030 .3000E-01  
03341> .015 .1000E-02 | .110 .3100E-01  
03342>  
03343> ROUTING RESULTS AREA QPEAK TPEAK R.V.  
03344>-----  
03345> | INFLOW >09:(North ) .74 .387 1.167 74.561  
03346> | OUTFLOW<01:(NBio ) .74 .099 1.433 74.561  
03347> | OVERFLOW<02:(N-OLF) .00 .000 .000 .000  
03348>  
03349> TOTAL NUMBER OF SIMULATED OVERFLOWS = 0  
03350> CUMULATIVE TIME OF OVERFLOWS (hours) = .00  
03351> PERCENTAGE OF TIME OVERFLOWING (%) = .00  
03352>  
03353> PEAK FLOW REDUCTION [Qout/Qin] (%) = 25.731  
03354> TIME SHIFT OF PEAK FLOW (min) = 16.00  
03355> MAXIMUM STORAGE USED (ha.m.) = .3087E-01  
03356>  
03357>-----  
03358> 250:0010-----  
03359> \*#-----  
03360> \*# South Residential Roof  
03361> \*#-----  
03362>-----  
03363> | CALIB STANDHYD | Area (ha) = .16  
03364> | 01:SRoof DT= 1.00 | Total Imp (%) = 99.00 Dir. Conn. (%) = 99.00  
03365>  
03366> IMPERVIOUS PERVIOUS (i)  
03367> Surface Area (ha) = .16 .00  
03368> Dep. Storage (mm) = 2.00 5.00  
03369> Average Slope (%) = .01 .01  
03370> Length (m) = 10.00 10.00  
03371> Mannings n = .040 .240  
03372>  
03373> Max.eff.Inten.(mm/hr) = 289.63 76.21  
03374> over (min) = 3.00 20.00  
03375> Storage Coeff. (min) = 3.28 (ii) 19.66 (ii)  
03376> Unit Hyd. Tpeak (min) = 3.00 20.00  
03377> Unit Hyd. peak (cms) = .35 .06  
03378> \*TOTALS\*  
03379> PEAK FLOW (cms) = .10 .00 .104 (iii)  
03380> TIME TO PEAK (hrs) = 1.18 1.53 1.183  
03381> RUNOFF VOLUME (mm) = 87.35 40.99 86.890  
03382> TOTAL RAINFALL (mm) = 89.35 89.35 89.353  
03383> RUNOFF COEFFICIENT = .98 .46 .972  
03384>  
03385> (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
03386> CN\* = 74.0 Ia = Dep. Storage (Above)  
03387> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL  
03388> THAN THE STORAGE COEFFICIENT.  
03389> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.  
03390>  
03391>-----  
03392> 250:0011-----  
03393>-----  
03394> | ROUTE RESERVOIR | Requested routing time step = 1.0 min.  
03395> | IN>01:(SRoof ) |  
03396> | OUT<06:(SRoofs) |  
03397>-----  
03398> | OUTFLOW STORAGE | OUTFLOW STORAGE  
03399> (cms) (ha.m.) | (cms) (ha.m.)  
03400> .010 .0000E+00 | .010 .9000E-02  
03401> .010 .1000E-04 | .000 .0000E+00  
03402>  
03403> ROUTING RESULTS AREA QPEAK TPEAK R.V.  
03404>-----  
03405> | INFLOW >01:(SRoof ) .16 .104 1.183 86.890  
03406> | OUTFLOW<06:(SRoofs) .16 .010 .883 86.980  
03407> | OVERFLOW<07:(Soops ) .00 .000 .000 .000  
03408>  
03409> TOTAL NUMBER OF SIMULATED OVERFLOWS = 0  
03410> CUMULATIVE TIME OF OVERFLOWS (hours) = .00  
03411> PERCENTAGE OF TIME OVERFLOWING (%) = .00  
03412>  
03413> PEAK FLOW REDUCTION [Qout/Qin] (%) = 9.571  
03414> TIME SHIFT OF PEAK FLOW (min) = -18.00  
03415> MAXIMUM STORAGE USED (ha.m.) = .8415E-02  
03416>  
03417>-----  
03418> 250:0012-----  
03419> \*#-----  
03420> \*# South Parking Lot  
03421> \*#-----  
03422>-----  
03423> | CALIB STANDHYD | Area (ha) = .25  
03424> | 02:SPlot DT= 1.00 | Total Imp (%) = 95.00 Dir. Conn. (%) = 95.00  
03425>  
03426> IMPERVIOUS PERVIOUS (i)  
03427> Surface Area (ha) = .24 .01  
03428> Dep. Storage (mm) = 2.00 5.00  
03429> Average Slope (%) = 1.00 2.00

03430> Length (m) = 75.00 10.00  
03431> Mannings n = .013 .240  
03432>  
03433> Max.eff.Inten.(mm/hr) = 289.63 137.27  
03434> over (min) = 1.00 4.00  
03435> Storage Coeff. (min) = 1.40 (ii) 4.05 (ii)  
03436> Unit Hyd. Tpeak (min) = 1.00 4.00  
03437> Unit Hyd. peak (cms) = .87 .28  
03438> \*TOTALS\*  
03439> PEAK FLOW (cms) = .19 .00 .191 (iii)  
03440> TIME TO PEAK (hrs) = 1.17 1.22 1.167  
03441> RUNOFF VOLUME (mm) = 87.35 40.99 85.035  
03442> TOTAL RAINFALL (mm) = 89.35 89.35 89.353  
03443> RUNOFF COEFFICIENT = .98 .46 .952  
03444>  
03445> (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
03446> CN\* = 74.0 Ia = Dep. Storage (Above)  
03447> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL  
03448> THAN THE STORAGE COEFFICIENT.  
03449> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.  
03450>  
03451>-----  
03452> 250:0013-----  
03453> \*#-----  
03454> \*# South Green Space  
03455> \*#-----  
03456>-----  
03457> | CALIB STANDHYD | Area (ha) = .19  
03458> | 03:SGreen DT= 1.00 | Total Imp (%) = 25.00 Dir. Conn. (%) = 10.00  
03459>  
03460> IMPERVIOUS PERVIOUS (i)  
03461> Surface Area (ha) = .05 .14  
03462> Dep. Storage (mm) = 2.00 5.00  
03463> Average Slope (%) = 1.00 2.00  
03464> Length (m) = 15.00 15.00  
03465> Mannings n = .013 .240  
03466>  
03467> Max.eff.Inten.(mm/hr) = 289.63 193.11  
03468> over (min) = 1.00 3.00  
03469> Storage Coeff. (min) = .53 (ii) 3.47 (ii)  
03470> Unit Hyd. Tpeak (min) = 1.00 3.00  
03471> Unit Hyd. peak (cms) = 1.44 .34  
03472> \*TOTALS\*  
03473> PEAK FLOW (cms) = .02 .06 .067 (iii)  
03474> TIME TO PEAK (hrs) = 1.17 1.20 1.167  
03475> RUNOFF VOLUME (mm) = 87.35 45.48 49.668  
03476> TOTAL RAINFALL (mm) = 89.35 89.35 89.353  
03477> RUNOFF COEFFICIENT = .98 .51 .556  
03478>  
03479> (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
03480> CN\* = 74.0 Ia = Dep. Storage (Above)  
03481> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL  
03482> THAN THE STORAGE COEFFICIENT.  
03483> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.  
03484>  
03485>-----  
03486> 250:0014-----  
03487>-----  
03488> | ADD HYD (South ) | ID: NHYD AREA QPEAK TPEAK R.V. DWF  
03489>-----  
03490> | ID1 02:SPlot .25 .191 1.17 85.03 .000  
03491> | +ID2 03:SGreen .19 .067 1.17 49.67 .000  
03492> | +ID3 06:SRoofSTG .16 .010 .88 86.98 .000  
03493> | +ID4 07:Soops .00 .000 .00 .00 .000  
03494>-----  
03495> | SUM 09:South .60 .267 1.17 74.35 .000  
03496>  
03497> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.  
03498>  
03499>-----  
03500> 250:0015-----  
03501> \*#-----  
03502> \*# South Bioswale with 0.030 m³/s outlet to storm sewer  
03503> \*#-----  
03504>-----  
03505> | ROUTE RESERVOIR | Requested routing time step = 1.0 min.  
03506> | IN>09:(South ) |  
03507> | OUT<01:(SBio ) |  
03508>-----  
03509> | OUTFLOW STORAGE | OUTFLOW STORAGE  
03510> (cms) (ha.m.) | (cms) (ha.m.)  
03511> .000 .0000E+00 | .032 .4800E-01  
03512> .001 .1600E-01 | .113 .4900E-01  
03513> .032 .1700E-01 | .113 .5200E-01  
03514>  
03515> ROUTING RESULTS AREA QPEAK TPEAK R.V.  
03516>-----  
03517> | INFLOW >09:(South ) .60 .267 1.167 74.354  
03518> | OUTFLOW<01:(SBio ) .60 .032 1.217 74.345  
03519> | OVERFLOW<02:(S-OLF) .00 .000 .000 .000  
03520>  
03521> TOTAL NUMBER OF SIMULATED OVERFLOWS = 0  
03522> CUMULATIVE TIME OF OVERFLOWS (hours) = .00  
03523> PERCENTAGE OF TIME OVERFLOWING (%) = .00  
03524>  
03525> PEAK FLOW REDUCTION [Qout/Qin] (%) = 11.971  
03526> TIME SHIFT OF PEAK FLOW (min) = 3.00  
03527> MAXIMUM STORAGE USED (ha.m.) = .2457E-01  
03528>  
03529>-----  
03530> 250:0016-----  
03531>-----  
03532> 250:0002-----  
03533> 250:0002-----  
03534> 250:0002-----  
03535> 250:0002-----  
03536> 250:0002-----  
03537> 250:0002-----  
03538> 250:0002-----  
03539> 250:0002-----  
03540> 250:0002-----  
03541> 250:0002-----  
03542> 250:0002-----  
03543> 250:0002-----  
03544> 250:0002-----  
03545> FINISH  
03546>-----  
03547>-----  
03548> WARNINGS / ERRORS / NOTES  
03549>-----  
03550> Simulation ended on 2023-10-20 at 14:10:27  
03551>-----  
03552>-----

Stormceptor® EF Sizing Report

Imbrium® Systems

ESTIMATED NET ANNUAL SEDIMENT (TSS) LOAD REDUCTION

10/20/2023

Province:	Ontario
City:	London
Nearest Rainfall Station:	LONDON CS
Climate Station Id:	6144478
Years of Rainfall Data:	20

Project Name:	Bostwick Block 5
Project Number:	161413832
Designer Name:	Adam Kristoferson
Designer Company:	Stantec Consulting
Designer Email:	adam.kristoferson@stantec.com
Designer Phone:	519-675-6669
EOR Name:	
EOR Company:	
EOR Email:	
EOR Phone:	

Site Name:	Block 5 North - Area 204
------------	--------------------------

Drainage Area (ha):	0.37
---------------------	------

Runoff Coefficient 'c':	0.90
-------------------------	------

Particle Size Distribution:	Fine
-----------------------------	------

Target TSS Removal (%):	80.0
-------------------------	------

Required Water Quality Runoff Volume Capture (%):	90.00
Estimated Water Quality Flow Rate (L/s):	17.95
Oil / Fuel Spill Risk Site?	Yes
Upstream Flow Control?	No
Peak Conveyance (maximum) Flow Rate (L/s):	
Influent TSS Concentration (mg/L):	200
Estimated Average Annual Sediment Load (kg/yr):	490
Estimated Average Annual Sediment Volume (L/yr):	399

Net Annual Sediment (TSS) Load Reduction Sizing Summary	
Stormceptor Model	TSS Removal Provided (%)
EFO4	87
EFO6	94
EFO8	97
EFO10	99
EFO12	100

**Recommended Stormceptor EFO Model: EFO4**  
**Estimated Net Annual Sediment (TSS) Load Reduction (%): 87**  
**Water Quality Runoff Volume Capture (%): > 90**



Stormceptor® **EF** Sizing Report

**THIRD-PARTY TESTING AND VERIFICATION**

► Stormceptor® EF and Stormceptor® EFO are the latest evolutions in the Stormceptor® oil-grit separator (OGS) technology series, and are designed to remove a wide variety of pollutants from stormwater and snowmelt runoff. These technologies have been third-party tested in accordance with the Canadian ETV **Procedure for Laboratory Testing of Oil-Grit Separators** and performance has been third-party verified in accordance with the **ISO 14034 Environmental Technology Verification (ETV)** protocol.

**PERFORMANCE**

► Stormceptor® EF and EFO remove stormwater pollutants through gravity separation and floatation, and feature a patent-pending design that generates positive removal of total suspended solids (TSS) throughout each storm event, including high-intensity storms. Captured pollutants include sediment, free oils, and sediment-bound pollutants such as nutrients, heavy metals, and petroleum hydrocarbons. Stormceptor is sized to remove a high level of TSS from the frequent rainfall events that contribute the vast majority of annual runoff volume and pollutant load. The technology incorporates an internal bypass to convey excessive stormwater flows from high-intensity storms through the device without resuspension and washout (scour) of previously captured pollutants. Proper routine maintenance ensures high pollutant removal performance and protection of downstream waterways.

**PARTICLE SIZE DISTRIBUTION (PSD)**

► The Canadian ETV PSD shown in the table below was used, or in part, for this sizing. This is the identical PSD that is referenced in the Canadian ETV **Procedure for Laboratory Testing of Oil-Grit Separators** for both sediment removal testing and scour testing. The Canadian ETV PSD contains a wide range of particle sizes in the sand and silt fractions, and is considered reasonably representative of the particle size fractions found in typical urban stormwater runoff.

Particle Size (µm)	Percent Less Than	Particle Size Fraction (µm)	Percent
1000	100	500-1000	5
500	95	250-500	5
250	90	150-250	15
150	75	100-150	15
100	60	75-100	10
75	50	50-75	5
50	45	20-50	10
20	35	8-20	15
8	20	5-8	10
5	10	2-5	5
2	5	<2	5

Stormceptor® EF Sizing Report

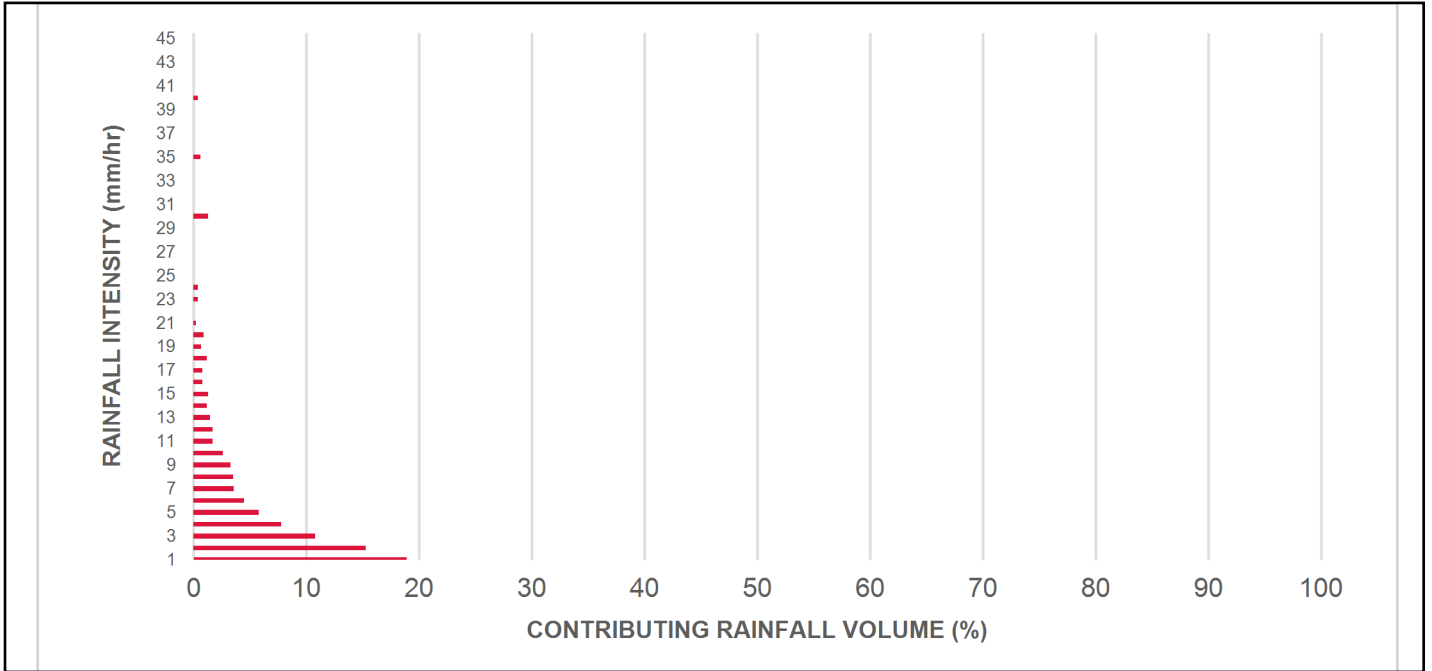
Rainfall Intensity (mm / hr)	Percent Rainfall Volume (%)	Cumulative Rainfall Volume (%)	Flow Rate (L/s)	Flow Rate (L/min)	Surface Loading Rate (L/min/m²)	Removal Efficiency (%)	Incremental Removal (%)	Cumulative Removal (%)
0.50	9.0	9.0	0.46	28.0	23.0	100	9.0	9.0
1.00	18.9	27.8	0.93	56.0	46.0	100	18.9	27.8
2.00	15.3	43.2	1.85	111.0	93.0	97	14.9	42.7
3.00	10.8	53.9	2.78	167.0	139.0	92	9.9	52.7
4.00	7.8	61.7	3.70	222.0	185.0	86	6.7	59.3
5.00	5.8	67.5	4.63	278.0	231.0	82	4.7	64.1
6.00	4.5	72.0	5.55	333.0	278.0	80	3.6	67.6
7.00	3.6	75.6	6.48	389.0	324.0	78	2.8	70.4
8.00	3.5	79.1	7.41	444.0	370.0	75	2.6	73.0
9.00	3.3	82.4	8.33	500.0	417.0	73	2.4	75.4
10.00	2.6	85.0	9.26	555.0	463.0	71	1.9	77.3
11.00	1.7	86.7	10.18	611.0	509.0	69	1.2	78.5
12.00	1.7	88.4	11.11	667.0	555.0	67	1.1	79.6
13.00	1.5	89.8	12.03	722.0	602.0	65	0.9	80.6
14.00	1.2	91.0	12.96	778.0	648.0	64	0.7	81.3
15.00	1.3	92.3	13.89	833.0	694.0	64	0.8	82.1
16.00	0.8	93.0	14.81	889.0	741.0	64	0.5	82.6
17.00	0.8	93.8	15.74	944.0	787.0	63	0.5	83.1
18.00	1.2	95.0	16.66	1000.0	833.0	63	0.7	83.8
19.00	0.7	95.7	17.59	1055.0	879.0	62	0.4	84.3
20.00	0.9	96.6	18.51	1111.0	926.0	62	0.6	84.8
21.00	0.2	96.8	19.44	1166.0	972.0	62	0.1	85.0
22.00	0.0	96.8	20.37	1222.0	1018.0	61	0.0	85.0
23.00	0.4	97.2	21.29	1278.0	1065.0	60	0.3	85.2
24.00	0.4	97.7	22.22	1333.0	1111.0	59	0.3	85.5
25.00	0.0	97.7	23.14	1389.0	1157.0	58	0.0	85.5
30.00	1.3	99.0	27.77	1666.0	1389.0	53	0.7	86.2
35.00	0.6	99.6	32.40	1944.0	1620.0	45	0.3	86.5
40.00	0.4	100.0	37.03	2222.0	1851.0	40	0.2	86.6
45.00	0.0	100.0	41.66	2499.0	2083.0	35	0.0	86.6
<b>Estimated Net Annual Sediment (TSS) Load Reduction =</b>								<b>87 %</b>

Climate Station ID: 6144478 Years of Rainfall Data: 20

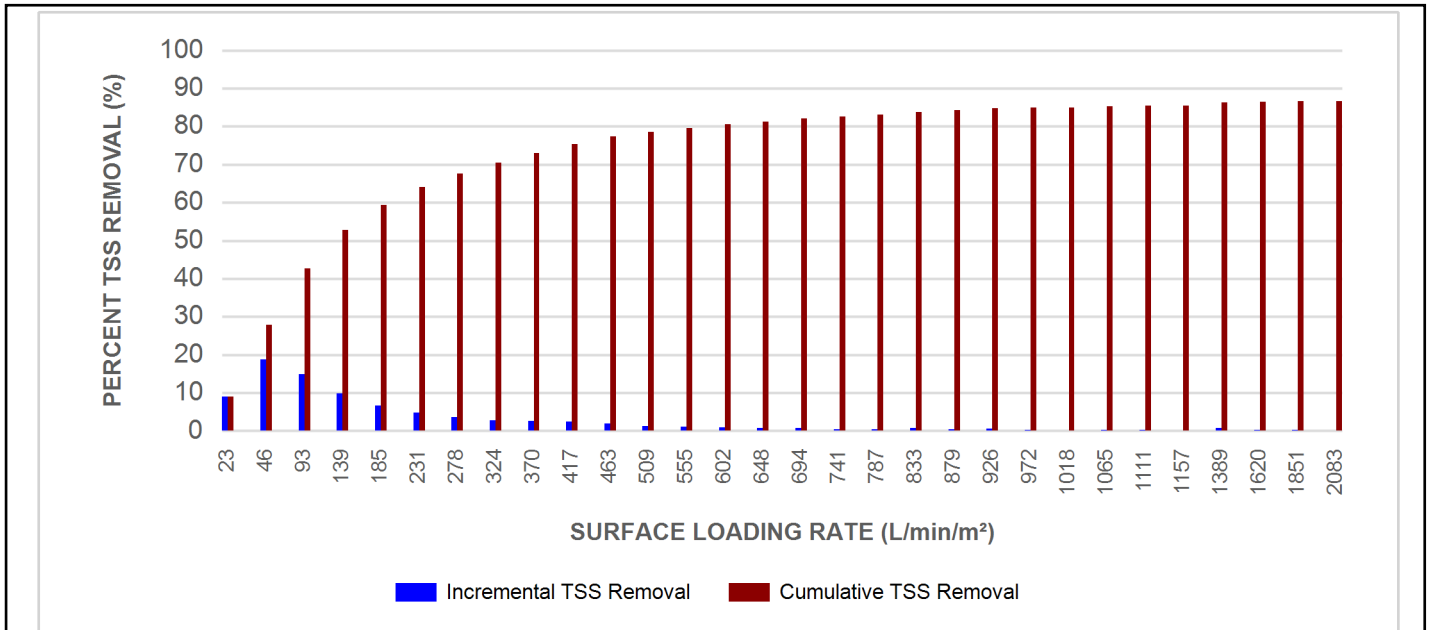


Stormceptor® EF Sizing Report

RAINFALL DATA FROM LONDON CS RAINFALL STATION



INCREMENTAL AND CUMULATIVE TSS REMOVAL FOR THE RECOMMENDED STORMCEPTOR® MODEL



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Maximum Pipe Diameter / Peak Conveyance

Stormceptor EF / EFO	Model Diameter		Min Angle Inlet / Outlet Pipes	Max Inlet Pipe Diameter		Max Outlet Pipe Diameter		Peak Conveyance Flow Rate	
	(m)	(ft)		(mm)	(in)	(mm)	(in)	(L/s)	(cfs)
EF4 / EFO4	1.2	4	90	609	24	609	24	425	15
EF6 / EFO6	1.8	6	90	914	36	914	36	990	35
EF8 / EFO8	2.4	8	90	1219	48	1219	48	1700	60
EF10 / EFO10	3.0	10	90	1828	72	1828	72	2830	100
EF12 / EFO12	3.6	12	90	1828	72	1828	72	2830	100

**SCOUR PREVENTION AND ONLINE CONFIGURATION**

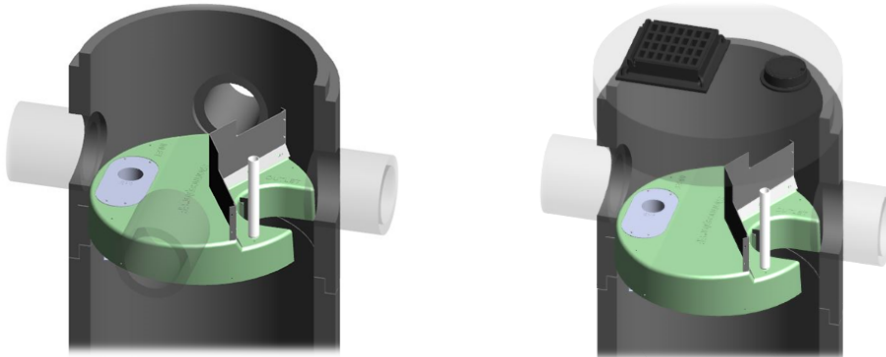
► Stormceptor® EF and EFO feature an internal bypass and superior scour prevention technology that have been demonstrated in third-party testing according to the scour testing provisions of the Canadian ETV **Procedure for Laboratory Testing of Oil-Grit Separators**, and the exceptional scour test performance has been third-party verified in accordance with the ISO 14034 ETV protocol. As a result, Stormceptor EF and EFO are approved for online installation, eliminating the need for costly additional bypass structures, piping, and installation expense.

**DESIGN FLEXIBILITY**

► Stormceptor® EF and EFO offers design flexibility in one simplified platform, accepting stormwater flow from a single inlet pipe or multiple inlet pipes, and/or surface runoff through an inlet grate. The device can also serve as a junction structure, accommodate a 90-degree inlet-to-outlet bend angle, and can be modified to ensure performance in submerged conditions.

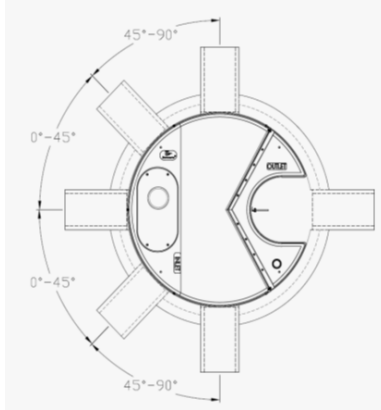
**OIL CAPTURE AND RETENTION**

► While Stormceptor® EF will capture and retain oil from dry weather spills and low intensity runoff, Stormceptor® EFO has demonstrated superior oil capture and greater than 99% oil retention in third-party testing according to the light liquid re-entrainment testing provisions of the Canadian ETV **Procedure for Laboratory Testing of Oil-Grit Separators**. Stormceptor EFO is recommended for sites where oil capture and retention is a requirement.





Stormceptor® EF Sizing Report



**INLET-TO-OUTLET DROP**

Elevation differential between inlet and outlet pipe inverts is dictated by the angle at which the inlet pipe(s) enters the unit.

0° - 45° : The inlet pipe is 1-inch (25mm) higher than the outlet pipe.

45° - 90° : The inlet pipe is 2-inches (50mm) higher than the outlet pipe.

**HEAD LOSS**

The head loss through Stormceptor EF is similar to that of a 60-degree bend structure.

The applicable K value for calculating minor losses through the unit is 1.1.

For submerged conditions the applicable K value is 3.0.

**Pollutant Capacity**

Stormceptor EF / EFO	Model Diameter		Depth (Outlet Pipe Invert to Sump Floor)		Oil Volume		Recommended Sediment Maintenance Depth *		Maximum Sediment Volume *		Maximum Sediment Mass **	
	(m)	(ft)	(m)	(ft)	(L)	(Gal)	(mm)	(in)	(L)	(ft³)	(kg)	(lb)
EF4 / EFO4	1.2	4	1.52	5.0	265	70	203	8	1190	42	1904	5250
EF6 / EFO6	1.8	6	1.93	6.3	610	160	305	12	3470	123	5552	15375
EF8 / EFO8	2.4	8	2.59	8.5	1070	280	610	24	8780	310	14048	38750
EF10 / EFO10	3.0	10	3.25	10.7	1670	440	610	24	17790	628	28464	78500
EF12 / EFO12	3.6	12	3.89	12.8	2475	655	610	24	31220	1103	49952	137875

\*Increased sump depth may be added to increase sediment storage capacity

\*\* Average density of wet packed sediment in sump = 1.6 kg/L (100 lb/ft³ )

Feature	Benefit	Feature Appeals To
Patent-pending enhanced flow treatment and scour prevention technology	Superior, verified third-party performance	Regulator, Specifying & Design Engineer
Third-party verified light liquid capture and retention for EFO version	Proven performance for fuel/oil hotspot locations	Regulator, Specifying & Design Engineer, Site Owner
Functions as bend, junction or inlet structure	Design flexibility	Specifying & Design Engineer
Minimal drop between inlet and outlet	Site installation ease	Contractor
Large diameter outlet riser for inspection and maintenance	Easy maintenance access from grade	Maintenance Contractor & Site Owner

**STANDARD STORMCEPTOR EF/EFO DRAWINGS**

For standard details, please visit <http://www.imbriumsystems.com/stormwater-treatment-solutions/stormceptor-ef>

**STANDARD STORMCEPTOR EF/EFO SPECIFICATION**

For specifications, please visit <http://www.imbriumsystems.com/stormwater-treatment-solutions/stormceptor-ef>

## STANDARD PERFORMANCE SPECIFICATION FOR "OIL GRIT SEPARATOR" (OGS) STORMWATER QUALITY TREATMENT DEVICE

### PART 1 - GENERAL

#### 1.1 WORK INCLUDED

This section specifies requirements for selecting, sizing, and designing an underground Oil Grit Separator (OGS) device for stormwater quality treatment, with third-party testing results and a Statement of Verification in accordance with ISO 14034 Environmental Management - Environmental Technology Verification (ETV).

#### 1.2 REFERENCE STANDARDS & PROCEDURES

ISO 14034:2016 Environmental management - Environmental technology verification (ETV)

Canadian Environmental Technology Verification (ETV) Program's **Procedure for Laboratory Testing of Oil-Grit Separators**

#### 1.3 SUBMITTALS

1.3.1 All submittals, including sizing reports & shop drawings, shall be submitted upon request with each order to the contractor then forwarded to the Engineer of Record for review and acceptance. Shop drawings shall detail all OGS components, elevations, and sequence of construction.

1.3.2 Alternative devices shall have features identical to or greater than the specified device, including: treatment chamber diameter, treatment chamber wet volume, sediment storage volume, and oil storage volume.

1.3.3 Unless directed otherwise by the Engineer of Record, OGS stormwater quality treatment product substitutions or alternatives submitted within ten days prior to project bid shall not be accepted. All alternatives or substitutions submitted shall be signed and sealed by a local registered Professional Engineer, based on the exact same criteria detailed in Section 3, in entirety, subject to review and approval by the Engineer of Record.

### PART 2 - PRODUCTS

#### 2.1 OGS POLLUTANT STORAGE

The OGS device shall include a sump for sediment storage, and a protected volume for the capture and storage of petroleum hydrocarbons and buoyant gross pollutants. The minimum sediment & petroleum hydrocarbon storage capacity shall be as follows:

2.1.1	4 ft (1219 mm) Diameter OGS Units:	1.19 m <sup>3</sup> sediment / 265 L oil
	6 ft (1829 mm) Diameter OGS Units:	3.48 m <sup>3</sup> sediment / 609 L oil
	8 ft (2438 mm) Diameter OGS Units:	8.78 m <sup>3</sup> sediment / 1,071 L oil
	10 ft (3048 mm) Diameter OGS Units:	17.78 m <sup>3</sup> sediment / 1,673 L oil
	12 ft (3657 mm) Diameter OGS Units:	31.23 m <sup>3</sup> sediment / 2,476 L oil

### PART 3 - PERFORMANCE & DESIGN

#### 3.1 GENERAL

The OGS stormwater quality treatment device shall be verified in accordance with ISO 14034:2016 Environmental management - Environmental technology verification (ETV). The OGS stormwater quality treatment device shall

## Stormceptor® EF Sizing Report

remove oil, sediment and gross pollutants from stormwater runoff during frequent wet weather events, and retain these pollutants during less frequent high flow wet weather events below the insert within the OGS for later removal during maintenance. The Manufacturer shall have at least ten (10) years of local experience, history and success in engineering design, manufacturing and production and supply of OGS stormwater quality treatment device systems, acceptable to the Engineer of Record.

### 3.2 SIZING METHODOLOGY

The OGS device shall be engineered, designed and sized to provide stormwater quality treatment based on treating a minimum of 90 percent of the average annual runoff volume and a minimum removal of an annual average 60% of the sediment (TSS) load based on the Particle Size Distribution (PSD) specified in the sizing report for the specified device. Sizing of the OGS shall be determined by use of a minimum ten (10) years of local historical rainfall data provided by Environment Canada. Sizing shall also be determined by use of the sediment removal performance data derived from the ISO 14034 ETV third-party verified laboratory testing data from testing conducted in accordance with the Canadian ETV protocol Procedure for Laboratory Testing of Oil-Grit Separators, as follows:

3.2.1 Sediment removal efficiency for a given surface loading rate and its associated flow rate shall be based on sediment removal efficiency demonstrated at the seven (7) tested surface loading rates specified in the protocol, ranging 40 L/min/m<sup>2</sup> to 1400 L/min/m<sup>2</sup>, and as stated in the ISO 14034 ETV Verification Statement for the OGS device.

3.2.2 Sediment removal efficiency for surface loading rates between 40 L/min/m<sup>2</sup> and 1400 L/min/m<sup>2</sup> shall be based on linear interpolation of data between consecutive tested surface loading rates.

3.2.3 Sediment removal efficiency for surface loading rates less than the lowest tested surface loading rate of 40 L/min/m<sup>2</sup> shall be assumed to be identical to the sediment removal efficiency at 40 L/min/m<sup>2</sup>. No extrapolation shall be allowed that results in a sediment removal efficiency that is greater than that demonstrated at 40 L/min/m<sup>2</sup>.

3.2.4 Sediment removal efficiency for surface loading rates greater than the highest tested surface loading rate of 1400 L/min/m<sup>2</sup> shall assume zero sediment removal for the portion of flow that exceeds 1400 L/min/m<sup>2</sup>, and shall be calculated using a simple proportioning formula, with 1400 L/min/m<sup>2</sup> in the numerator and the higher surface loading rate in the denominator, and multiplying the resulting fraction times the sediment removal efficiency at 1400 L/min/m<sup>2</sup>.

The OGS device shall also have sufficient annual sediment storage capacity as specified and calculated in Section 2.1.

### 3.3 CANADIAN ETV or ISO 14034 ETV VERIFICATION OF SCOUR TESTING

The OGS device shall have Canadian ETV or ISO 14034 ETV Verification of third-party scour testing conducted in accordance with the Canadian ETV Program's **Procedure for Laboratory Testing of Oil-Grit Separators**.

3.3.1 To be acceptable for on-line installation, the OGS device must demonstrate an average scour test effluent concentration less than 10 mg/L at each surface loading rate tested, up to and including 2600 L/min/m<sup>2</sup>.

### 3.4 LIGHT LIQUID RE-ENTRAINMENT SIMULATION TESTING

The OGS device shall have Canadian ETV or ISO 14034 ETV Verification of completed third-party Light Liquid Re-entrainment Simulation Testing in accordance with the Canadian ETV **Program's Procedure for Laboratory Testing of Oil-Grit Separators**, with results reported within the Canadian ETV or ISO 14034 ETV verification. This re-entrainment testing is conducted with the device pre-loaded with low density polyethylene (LDPE) plastic beads as a surrogate for light liquids such as oil and fuel. Testing is conducted on the same OGS unit tested for sediment removal to

Stormceptor® **EF** Sizing Report

assess whether light liquids captured after a spill are effectively retained at high flow rates.

3.4.1 For an OGS device to be an acceptable stormwater treatment device on a site where vehicular traffic occurs and the potential for an oil or fuel spill exists, the OGS device must have reported verified performance results of greater than 99% cumulative retention of LDPE plastic beads for the five specified surface loading rates (ranging 200 L/min/m<sup>2</sup> to 2600 L/min/m<sup>2</sup>) in accordance with the Light Liquid Re-entrainment Simulation Testing within the Canadian ETV Program's **Procedure for Laboratory Testing of Oil-Grit Separators**. However, an OGS device shall not be allowed if the Light Liquid Re-entrainment Simulation Testing was performed with screening components within the OGS device that are effective at retaining the LDPE plastic beads, but would not be expected to retain light liquids such as oil and fuel.