

Arva, Ontario Functional Stormwater Management Report



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Arva, Ontario, Functional Stormwater Management Report

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1 Introduction

Stantec Consulting Ltd. (Stantec) was retained by York Developments to assist with the engineering services for the proposed subdivision on the property located in Medway Road West, Arva, Ontario (Site). The purpose of this Functional Stormwater Management report is to present the preliminary stormwater management (SWM) strategy for the Site which has been developed to mitigate the potential impacts of the development on the receiving watercourses.

1.1 Overview

The site comprises single-family and semi-detached residential lots, along with medium-density townhouse blocks, SWM blocks, and two open space blocks (Blocks 2 and 29). Together, the site spans approximately 23.52 ha.

The proposed development will direct stormwater runoff from the developed areas in both the southern and northern portions of the site to two stormwater management facilities (SWMFs). One SWMF will be located in the southern portion at the corner of Streets B, D and E, while the other will be situated in the western part of the northern portion of the site. These SWMFs will be designed to accommodate runoff from the proposed multi-block townhomes, as well as from the surrounding residential and external land uses.

The development falls under the jurisdiction of the Upper Thames River Conservation Authority (UTRCA). The site is not located within any mapped Provincially Significant Wetlands or Areas of Natural and Scientific Interest (ANSI, Ontario GeoHub, 2024).

1.2 Study Approach

A Stormwater Management (SWM) strategy for the site has been developed to mitigate potential offsite water quality and quantity impacts associated with the development of the subject lands.

The SWM design includes the following study components:

- Complete a hydrologic study to determine the existing site conditions with respect to topography, soils information, and existing land uses.
- Prepare an existing and proposed development condition hydrologic model using SWMHYMO to determine runoff volumes and peak flow rates.
- Complete the preliminary design of the SWMF to provide sufficient water quality and water quantity control to meet the SWM design criteria and achieve target rates to downstream receivers.
- Summarize the study through preliminary design and recommendations.



1.3 Background Documents

The following data sources, background reports and technical guidelines were referenced in the completion of the proposed SWM design:

- *Erosion and Sediment Control Guide for Urban Construction*, Toronto and Region Conservation Authority, 2019.
- *Preliminary Geotechnical Investigation & Slope Stability Assessment*, EXP Services Inc., March 2023.
- *Hydrogeological Assessment Final Report*, EXP Services Inc., February 2025.
- *Group 1 Subwatersheds, Medway, Stanton, and Mud Creeks*, City of London Subwatershed Studies, May 1995.
- *Middlesex Centre Infrastructure Design Standards*, Municipality of Middlesex Centre, June 2011, Revision January 2018
- *Stormwater Management Policy Manual Municipality of Middlesex Centre*, Stantec Consulting Ltd., June 2011
- *Design Specifications & Requirements Manual*, City of London, October 2003, Updated January 2024.
- *MTO Drainage Management Manual*, Ontario Ministry of Transportation, 1997.
- *Stormwater Management Planning and Design (SWMPD) Manual*, Ministry of the Environment, Conservation and Parks (MECP), March 2003

1.4 Stormwater Management Criteria

The SWM criteria for the subject lands were established through above-mentioned documentation.

The SWM criteria are as follows:

- **Water Quality** – Provide sufficient permanent pool and extended detention volume to meet the Ministry of the Environment, Conservation and Parks, (MECP) Enhanced (80% TSS Removal) criteria and promote the at-source removal of potential contaminants.
- **Water Quantity** – Provide water quantity control through attenuation of post development peak flow rates to the calculated 2-year existing target rate for the full range of flows from the 2- to 100-year storm events, while safely passing the 250-year event.
- **Erosion Control** – Provide sufficient extended detention for the 25 mm storm event with a minimum 24-hour drawdown period.



- **Erosion and Sediment Control** – Provide appropriate erosion and sediment control during construction/area grading to protect adjacent properties from potential siltation.



2 Existing Conditions

2.1 Topographic and Surface Drainage

The ground elevations within the study area range from approximately 257 m to 271 m AMSL (Above Mean Sea Level), resulting in an overall grade change of about 14 m. The area generally slopes westward, with drainage from the site flowing partially to the north but primarily to the west, towards Medway Creek.

2.2 Existing Landuse

The lands within the site consist of agricultural areas and open spaces adjacent to Medway Creek. Details of the existing drainage conditions are provided in Figure 1, attached.

2.3 Hydrogeological and Geotechnical Information

The site is located within the Medway Creek subwatershed, which consists primarily of agricultural land and rural development. The area is characterized by large till, sand, and clay plains, locally interrupted by terminal moraines and sand-covered valleys. The Medway Creek Subwatershed is dominated by glacial deposits from the Huron Lobe, particularly the sandy silt loam till of the Arva Moraine (City of London, 1995). Based on regional geological investigations, the soil types in the study area correspond to Hydrologic Soil Groups AB, BC, and C, as classified in the MTO Hydrologic Soil Classification (MTO, 1997), due to the variety of soil types present.

EXP Services Inc. conducted geotechnical investigations at the site to assess soil and groundwater conditions (EXP, 2023). The fieldwork included the drilling of eleven boreholes and ten test pits within the proposed development limits, with borehole depths ranging from 3.0 m to 12.2 m and test pits from 2.5 m to 3.0 m below ground surface (BGS). The soil conditions encountered included topsoil and/or silty fill overlying sand, gravel, and sandy silt in ten boreholes, with clayey silt till found in one borehole. Groundwater measurements taken between March 2021 and September 2022 indicated saturated conditions at elevations of 256.5 m to 269.9 m AMSL. Water levels were recorded at a depth of 4.6 m BGS in one borehole, and between 1.2 m and 1.3 m BGS in four test pits upon completion. Note: *Groundwater levels are subject to seasonal fluctuations and local variations.*



3 Stormwater Management Design

3.1 Hydrologic Modeling

A hydrologic model was prepared using SWMHYMO to simulate drainage conditions for the development (site), and its tributary area, under existing and proposed development conditions. The model was employed to predict and design SWM systems to ensure the criteria identified above are achieved.

Model results were obtained for the existing and proposed conditions for the following events:

- 25 mm, 4-hour, and 2-, 5-, 10-, 25-, 50-, 100-, and 250-year, 3-hour Chicago distributions derived using the City of London IDF Curve parameters provided in Table 1.

Table 1: IDF Parameters City of London

Return Period	IDF Parameters		
	A	B	C
25 mm	538.85	6.331	0.809
2-year	754.36	6.011	0.810
5-year	1183.74	7.641	0.838
10-year	1574.382	9.025	0.860
25-year	2019.372	9.824	0.875
50-year	2270.665	9.984	0.876
100-year	2619.363	10.5	0.884
250-year	3048.22	10.03	0.888

3.2 Existing Hydrologic Model

A hydrologic model was prepared to simulate existing conditions for the site. Input and output files for the SWMHYMO model as well as the Existing Conditions Schematic are provided in the attachments. Soil Conservation Service (SCS) Curve Numbers and catchment parameters were calculated for each existing catchment based on land use and soil type and are also included in the attachments.

Delineation of existing drainage catchments is provided on Figure 1, Pre-Development Drainage and is summarized below:

- **Catchment 101** – 1.27 ha of undeveloped land draining north to Medway Creek.
- **Catchment 102** – 7.30 ha of existing agricultural land draining primarily west to Medway Creek.



- **Catchment 103** – 4.63 ha of existing agricultural land draining southwest to adjacent lands to the west.
- **Catchment 104** – 8.23 ha of existing agricultural land draining southwest to Medway Creek.
- **Catchment 105** – 0.81 ha of existing agricultural land draining north to the ditch along the Medway Road right-of-way.
- **Catchment 106** – 1.27 ha of existing agricultural and undeveloped lands draining west to Medway Creek.
- **Catchment EXT. 301** – 0.99 ha of commercial land, including parking lots, draining partially north and partially west to adjacent lands.
- **Catchment EXT. 302** – 0.87 ha of cemetery, including a dirt road, draining west to adjacent lands.
- **Catchment EXT. 303** – 1.04 ha of church, parking lots, and rural residential area draining south to adjacent lands.

3.3 Proposed Hydrologic Model

A hydrologic model was prepared to simulate proposed conditions for the site to estimate the size of the SWMF. Input and output files for the SWMHYMO model as well as the Proposed Conditions Schematic are provided in the attachments. Soil Conservation Service (SCS) Curve Numbers and catchment parameters were calculated for each proposed catchment based on land use and soil type and are also included in the attachments.

The proposed development includes a residential area and two SWMFs. The SWMF in the southern portion will discharge into Medway Creek, providing both water quality and quantity control for the southern part of the development. In the northern portion, water quantity will be managed by an on-site SWMF, discharge to Medway Creek, and water quality control will be provided by an Oil and Grit Separator (OGS).

The delineation of the proposed drainage catchments is provided on Figure 2, Post Development Drainage and is summarized as follows:

- **Catchment 201:** 0.58 ha of undeveloped land draining north to Medway Creek.
- **Catchment 202:** 5.48 ha of proposed low- and medium-density residential blocks, including a stormwater management pond block, a utility block, and pumping station, draining through the storm outlet easement in the northwest into Medway Creek.
- **Catchment 203:** 1.55 ha of proposed medium-density Block 11, draining to the private lane in the west.



- **Catchment 204:** 0.97 ha of proposed medium-density Block 8, draining to the private lane in the east.
- **Catchment 205:** 0.18 ha of undeveloped land draining west to Medway Creek.
- **Catchment 206:** 12.83 ha of proposed development, consisting of the majority of medium- and low-density residential blocks, including a stormwater management pond block, draining through the storm outlet easement in the southwest to Medway Creek.
- **Catchment 207:** 1.94 ha of proposed medium/high-density Block 23, draining south and west to Streets B and C, respectively.
- **Catchment EXT. 301** – 0.99 ha of commercial land, including parking lots, draining partially north and partially west to adjacent lands.
- **Catchment EXT. 302** – 0.87 ha of cemetery, including a dirt road, draining west to adjacent lands.
- **Catchment EXT. 303** – 1.04 ha of church, parking lots, and rural residential area draining south to adjacent lands.

3.4 Proposed SWM Strategy

The proposed SWM strategy for the site lands incorporates minor system conveyance via storm sewer networks and major system conveyance via private roads and swales to the proposed SWMFs and OGS for water quality and quantity control. The SWM strategy has been developed in accordance with the objectives and criteria previously listed.

3.5 Stormwater Management Facility

3.5.1 Northern Stormwater Management Facility

The northern SWMF is designed to provide water quantity control for the development north of the Medway Road, as well as the external lands located between the proposed development and Richmond Street. This facility will attenuate post-development runoff to match pre-development 2-year peak flows to Medway Creek, for storm events ranging from the 2-year to 100-year design storms. The total contributing area to the SWMF is 9.57 ha, with a weighted impervious percentage of 60%.

Both medium-density Blocks 8 and 11 are designed to have their runoff controlled to the pre-development 2-year rates, requiring storage volumes of 470 m³ for Block 8 and 750 m³ for Block 11. These controls will discharge into the downstream collection system which outlets to a 2 m deep dry SWMF on Block 30, providing 2,850 m³ of storage. This facility will remain privately controlled.

Existing and proposed conditions model outputs are summarized in Table 2.



Table 2: Existing and Proposed Peak Flows and Northern SWMF Operating Characteristics

Storm Event	2-year	5-year	10-year	25-year	50-year	100-year	250-year
Existing Total Flows	0.261	0.351	0.413	0.498	0.563	0.626	0.755
Proposed Total Flows to SWMF (m ³ /s)	1.303	1.747	2.040	2.473	2.787	3.096	3.737
Proposed Flows from Catchment 201 Open Space to Medway Creek (m ³ /s)	0.013	0.024	0.034	0.047	0.057	0.068	0.087
Proposed Flows from SWMF to Medway Creek (m ³ /s)	0.241	0.241	0.241	0.241	0.241	0.241	0.848
Total Proposed Flows to Medway Creek (m ³ /s)	0.254	0.265	0.275	0.288	0.298	0.309	0.933
Maximum Storage Volume Used (m ³)	566	959	1267	1671	1981	2309	2350

As observed in the table above, water quantity targets have been achieved as the proposed peak flow rates from the northern portion of the site, through the northern SWMF towards the Medway Creek are below 2-year existing level, and total flow meeting the target rates.

3.5.2 Southern Stormwater Management Facility

The southern SWMF is designed to provide both water quality treatment and extended detention (active) storage, based on the characteristics of the contributing catchment area. The facility will accommodate a permanent pool volume that meets the 'Enhanced' (80% Total Suspended Solids) water quality criteria required by the Municipality. Additionally, the SWMF is designed to attenuate post-development runoff to the pre-development 2-year peak flow into Medway Creek, for storm events ranging from the 2-year to 100-year storm.

The total contributing area to the SWMF is 16.86 ha, with a weighted impervious percentage of 61%. The proposed wet SWMF is located in the southwest portion of the site, bordered by the proposed Streets B, D, and E. According to MECP volume requirements for enhanced quality control, the required permanent pool volume is 2,800 m³, and 8,600 m³ of active storage is provided to control runoff from the 100-year storm event.

The SWM block is 0.93 ha in size, accounting for 5.5% of the total drainage area. This block is designed to provide 4,200 m³ of permanent pool storage (1.5 m deep) and 9,150 m³ of active storage (1.5 m deep). The facility also includes sufficient extended detention storage, enabling a 24-hour drawdown of the 4-hour Chicago 25 mm event, which will be designed during detail design. Design characteristics for the proposed SWMF are summarized in Table 3.



Table 3: Southern SWMF Design Attributes

Attribute	Basin Characteristics
Total Contributing Area (quality and quantity)	16.86 ha
Total Percent Impervious to SWMF	61%
Quality Control:	
Unit Area Storage Requirement- Enhanced Treatment	204 m ³
Total Volume Required- Enhanced Treatment	3454 m ³
Permanent Pool Volume Required- Enhanced Treatment	2779 m ³
Permanent Pool Volume Provided	2800 m ³
Permanent Pool Depth	1.5 m
MECP Extended Detention Volume Required (40 m ³ /ha)	674 m ³
4-hour, 25 mm Chicago Event Extended Detention Drawdown Time	24.0 hrs.

Existing and proposed conditions model outputs are summarized in Table 4.

Table 4: Existing and Proposed Peak Flows and Southern SWMF Operating Characteristics

Storm Event	2-year	5-year	10-year	25-year	50-year	100-year	250-year
Existing Total Flows	0.212	0.398	0.551	0.754	0.917	1.090	1.373
Proposed Total Flows to SWMF (m ³ /s)	3.172	4.257	4.971	5.984	6.748	7.484	9.019
Proposed Flows from Catchment 205 Open Space to Medway Creek (m ³ /s)	0.003	0.006	0.008	0.011	0.014	0.017	0.022
Proposed Flows from SWMF to Medway Creek (m ³ /s)	0.212	0.212	0.212	0.212	0.212	0.212	1.441
Total Proposed Flows to Medway Creek (m ³ /s)	0.215	0.218	0.220	0.223	0.226	0.229	1.457
Maximum Storage Volume Used (m ³)	2025	3211	4121	5263	6156	7078	7100

As observed in the table above, water quantity targets have been achieved as the proposed peak flow rates from the southern portion of the site, through the southern SWMF towards the Medway Creek are below 2-year existing level, and total flow meeting the target rates.

3.5.3 Infiltration Targets

The Hydrogeological Assessment (EXP, 2025) indicates that the proposed development would have a deficit to existing infiltration rates of 24,000 m³ per year and a minimum of 16,000 m³ per year would need to be infiltrated to offset this deficit. Infiltration measures will be examined at detail design, but may include measures such as increased topsoil depths, exfiltration systems, SWMF measures and on-site galleries on the medium and high density blocks.



4 Erosion and Sediment Control Plan

The release of sediment-laden runoff can have a range of adverse impacts on the natural environment and surrounding lands. Erosion and Sediment Controls (ESC), or best management practices (BMPs) are applied to construction sites to prevent the release of sediment by way of mitigating erosion potential.

4.1 Erosion Risk Classification

The *Toronto and Region Conservation Authority's Erosion and Sediment Control Guide for Urban Construction (2019)* is used to determine the erosion risk of the Site. The erosion risk during construction can be estimated through determining factors such as slope gradient, slope length and soil type. Classification of erosion risk implies the appropriate level of erosion control methods (BMPs) to apply throughout construction. The determination of erosion risk classification is provided in Table 5:

Table 5: Erosion Risk Classification

Erosion Factor	Value	Erosion Risk Classification
Slope Gradient	2-10%	High
Slope Length	Generally > 30m	Moderate to High
Soil Type	Silty Sand	High

Therefore, based on this classification, the Site has moderate to high erosion potential.

4.2 Erosion and Sedimentation Control Plan

Effective ESC plans mitigate sediment migration offsite by preventing erosion and applying BMPs to intercept the sediment. The following ESC plan employs a multi-barrier approach to control erosion at the source and minimize potential impacts associated with offsite transport of sediment to downstream receivers.

Prior to any grading or servicing works commencing onsite, erosion and sedimentation control measures shall be implemented as detailed on the Site Pre-grading, Erosion and Sedimentation Control Plans. The ESC plan includes the following items:

1. Steep slopes (>3:1) shall have erosion blankets.
2. Storm service outlets will be installed during servicing and roadworks construction to provide lot level dead and live storage.
3. Erosion control berms/swales will be located in appropriate (critical) areas to divert flows to temporary sediment basins.



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Erosion and Sediment Control Plan

4. A construction entrance feature ("mud-mat") will be provided at all Site entrances to minimize the offsite transport of sediment via construction vehicles.
5. Swales constructed onsite will have temporary rock check dams to help attenuate flows and encourage deposition of suspended sediment where appropriate.
6. Light and/or heavy-duty silt fencing will be erected on all Site boundaries and proposed stockpile/staging area where there is potential for runoff to be discharged offsite, to protect adjacent downstream lands from migration of sediment in overland flow. The location of this fencing will be adjacent to the limit of grading. Silt fence attached to paige wire fencing will be installed throughout the Site adjacent to sensitive areas. Silt fencing should be erected before grading begins.
7. All disturbed areas where construction is not expected for 30 days shall be re-vegetated with 50 mm of topsoil and hydro-seeding according to OPSS 572.
8. During construction, all catchbasins are to be sealed until roads are paved to prevent sediment deposition in the catchbasin's sumps and conveyance of silt to the SWMF.
9. Following completion of construction, defined as 90% house construction, and Site stabilization, all erosion and sediment control measures and accumulated sediment are to be removed.

The ESC measures shall be maintained in good repair during the entire construction period until assumption. Temporary ESC measures shall only be removed when contributing drainage areas are restored and stabilized. All ESC measures should be inspected once per week during construction and quarterly after construction is complete, until assumption or after any significant rainfall events (>25mm). In addition, the condition of erosion control works, their overall performance, and any repairs, replacement or modifications to the installed item shall be noted in monitoring reports submitted to Municipality of Middlesex Center and UTRCA. Monitoring reports should be submitted bi-monthly (quarterly during periods of inactivity or house construction). It is the responsibility of the Site owner to carry out the ESC measures noted above and/or as specified by the engineer until assumption by the municipality.



5 Conclusions and Recommendations

Based on the preceding, the following summary can be drawn for the site:

- The proposed dry pond SWMF provides water quantity control for the northern portion of the development and contributing external area:
 - An OGS unit will provide water quality control for the area north of Medway Road.
 - The proposed dry SWMF provides sufficient storage to control post-development flows to the 2-year pre-development target flow rate criteria.
- The proposed wet pond SWMF provides water quantity and water quality control for the southern portion of the proposed development and contributing external area:
 - Sufficient permanent pool in the proposed wet SWMF is provided to achieve an 'Enhanced' water quality control for the area south of Medway Road, as required by MECP water quality requirements.
 - The proposed wet SWMF provides sufficient storage to control post-development flows to the 2-year pre-development target flow rate criteria.
- It is recommended that the erosion and sediment control measures documented herein be implemented.
- It is recommended that this report be used as a basis for the required regulatory approvals for the SWMFs.



Appendices

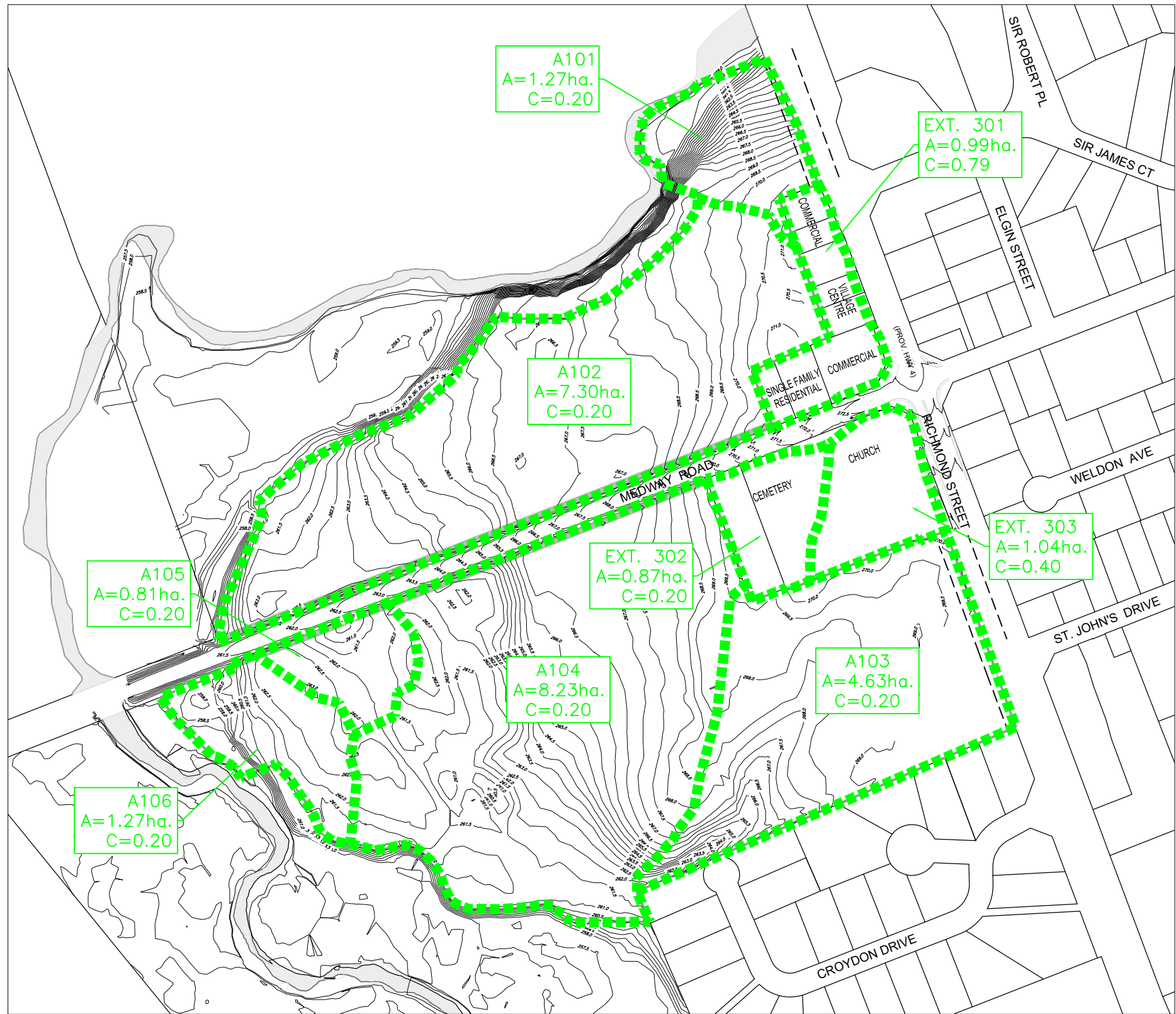


Appendix A Figures

A.1 Pre-Development Drainage



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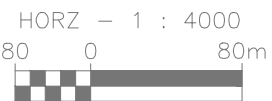
DRAINAGE AREA

A1
A=0.26ha.
C=0.67

DRAINAGE AREA IDENTIFIER
AREA IN HECTARES
AREA COEFFICIENT

NOTES

SCALE



ARVA, ON

Figure No.

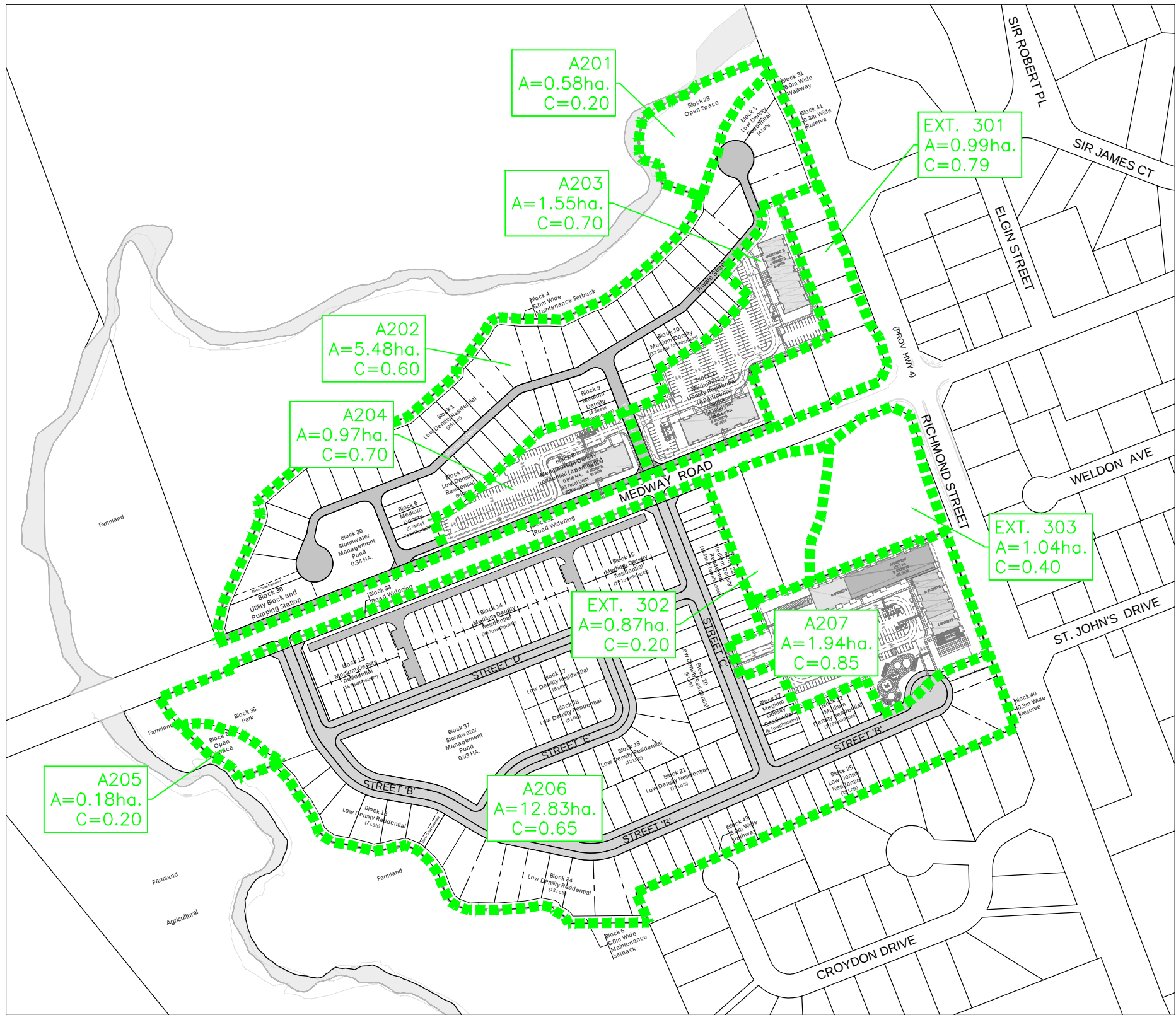
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PRE-DEVELOPMENT DRAINAGE

A.2 Post Development Drainage



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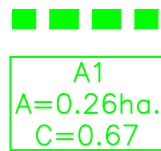


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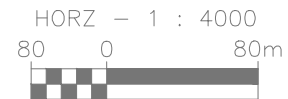


DRAINAGE AREA

DRAINAGE AREA IDENTIFIER
AREA IN HECTARES
AREA COEFFICIENT

NOTES

SCALE



Client/Project

ARVA, ON

Figure No.

Title

POST DEVELOPMENT DRAINAGE

Appendix B SWMHYMO Parameters

B.1 NRCS (SCS) Curve Number Determination



161414396 - Arva
NRCS (SCS) Curve Number Determination

TABLE OF CURVE NUMBERS (CN's)								
Land Use	Hydrologic Soil Type							Manning's 'n'
	A	AB	B	BC	C	CD	D	
Meadow "Good"	30.0	44.0	58.0	64.5	71.0	74.5	78.0	0.40
Woodlot "Fair"	36.0	48.0	60.0	66.5	73.0	76.0	79.0	0.40
Gravel	76.0	80.5	85.0	87.0	89.0	90.0	91.0	0.30
Lawns "Good"	39.0	50.0	61.0	67.5	74.0	77.0	80.0	0.25
Pasture/Range	58.0	61.5	65.0	70.5	76.0	78.5	81.0	0.17
Crop	66.0	70.0	74.0	78.0	82.0	84.0	86.0	0.13
Fallow (Bare)	77.0	82.0	86.0	89.0	91.0	93.0	94.0	0.05
Impervious	98.0	98.0	98.0	98.0	98.0	98.0	98.0	0.01

1. MTO Drainage Manual (1997), Design Chart 1.09-Soil/Land Use Curve Numbers

2. Chin (2000), Water-Resources Engineering, Table 6.13-Curve Numbers for Various Urban Land Uses

HYDROLOGIC SOIL TYPE (%)								
Catchment	Hydrologic Soil Type							TOTAL
	A	AB	B	BC	C	CD	D	
Existing Conditions								
Catchment 101					100			100
Catchment 102		12.5		37.5	50			100
Catchment 103				75	25			100
Catchment 104		25		75				100
Catchment 105		100						100
Catchment 106		100						100
Catchment EXT. 301					100			100
Catchment EXT. 302				100				100
Catchment EXT. 303				25	75			100
Proposed Conditions								
Catchment 201					100			100
Catchment 202		20		20	60			100
Catchment 203				50	50			100
Catchment 204				100				100
Catchment 205		100						100
Catchment 206		45		55				100
Catchment 207				70	30			100
Catchment EXT. 301					100			100
Catchment EXT. 302				100				100
Catchment EXT. 303				25	75			100

LAND USE (%)									
Catchment	Meadow	Woodlot	Gravel	Lawns	Pasture Range	Crop	Fallow (Bare)	Impervious (see note)	Total
Existing Conditions									
Catchment 101					95	5			100
Catchment 102						100			100
Catchment 103				7	13	73		6.3	100
Catchment 104						100			100
Catchment 105						100			100
Catchment 106					30	70			100
Catchment EXT. 301				28				72	100
Catchment EXT. 302				95			5		100
Catchment EXT. 303				71			0	28	100
Proposed Conditions									
Catchment 201					100				100
Catchment 202				44				56	100
Catchment 203				33				67	100
Catchment 204				30				70	100
Catchment 205					100				100
Catchment 206				36				64	100
Catchment 207				7				93	100
Catchment EXT. 301				28				72	100
Catchment EXT. 302				95			5		100
Catchment EXT. 303				71			0	28	100

CURVE NUMBER (CN)										
Catchment	Meadow	Woodlot	Gravel	Lawns	Pasture Range	Crop	Fallow (Bare)	Impervious	Weighted CN	Pervious CN
Existing Conditions										
Catchment 101	0	0	0	0	72	4	0	0	76.3	76.3
Catchment 102	0	0	0	0	0	79	0	0	79.0	79.0
Catchment 103	0	0	0	5	9	58	0	6	78.5	77.2
Catchment 104	0	0	0	0	0	76	0	0	76.0	76.0
Catchment 105	0	0	0	0	0	70	0	0	70.0	70.0
Catchment 106	0	0	0	0	18	49	0	0	67.5	67.5
Catchment EXT. 301	0	0	0	21	0	0	0	70	91.2	74.0
Catchment EXT. 302	0	0	0	64	0	0	4	0	68.5	68.5
Catchment EXT. 303	0	0	0	52	0	0	0	28	79.7	72.5
Proposed Conditions										
Catchment 201	0	0	0	0	76	0	0	0	76.0	76.0
Catchment 202	0	0	0	30	0	0	0	55	84.8	67.9
Catchment 203	0	0	0	23	0	0	0	66	89.0	70.8
Catchment 204	0	0	0	20	0	0	0	69	88.9	67.5
Catchment 205	0	0	0	0	62	0	0	0	61.5	61.5
Catchment 206	0	0	0	21	0	0	0	63	84.2	59.6
Catchment 207	0	0	0	5	0	0	0	91	96.0	69.5
Catchment EXT. 301	0	0	0	21	0	0	0	71	91.3	74.0
Catchment EXT. 302	0	0	0	64	0	0	4	0	68.5	68.5
Catchment EXT. 303	0	0	0	52	0	0	0	28	79.7	72.5

** AMC II assumed

** Hydrological Soil Group taken from MTO Drainage Manual for each soil type

B.2 SWMHYMO Input Parameters



161414396 - Arva
SWMHYMO Parameters

Area Description	Catchment ID	SWMHYMO Command	RC	Area (ha)	CN	Slope IMP (%)	Slope (%)	Length IMP (m)	Length (m)	XIMP	TIMP	Tc (hrs)	Tp (hrs)
Pre-Development													
North of Commercial Area draining west	Catchment 101	CALIB NASHYD	0.20	1.27	76.3	NA	7.99	NA	162	NA	NA	0.31	0.21
North of Medway Rd. draining northwest	Catchment 102	CALIB NASHYD	0.20	7.30	79.0	NA	1.83	NA	570	NA	NA	0.96	0.64
West of Richmond St. draining south	Catchment 103	CALIB NASHYD	0.20	4.63	78.5	NA	2.05	NA	413	NA	NA	0.78	0.52
South of Medway Rd. draining southwest.	Catchment 104	CALIB NASHYD	0.20	8.23	76.0	NA	2.39	NA	398	NA	NA	0.73	0.49
South of Medway Rd. draining to the Medway Rd. ditch.	Catchment 105	CALIB NASHYD	0.20	0.81	70.0	NA	3.71	NA	70	NA	NA	0.27	0.18
East of Medway Creek draining west	Catchment 106	CALIB NASHYD	0.20	1.27	67.5	NA	5.14	NA	106	NA	NA	0.29	0.20
EXT Area - Commercial Area on the North of Medway Rd.	Catchment EXT. 301	CALIB STANDHYD	0.79	0.99	74.0	2.00	1.51	25	15	84	84	0.01	0.01
EXT Area - Cemetery South of Medway Rd.	Catchment EXT. 302	CALIB NASHYD	0.20	0.87	68.5	NA	2.30	NA	124	NA	NA	0.41	0.28
EXT Area - Church West of Richmond St.	Catchment EXT. 303	CALIB STANDHYD	0.40	1.04	72.5	2.00	1.90	103	137	29	29	0.36	0.24

Area Description	Catchment ID	SWMHYMO Command	RC	Area (ha)	CN	Slope IMP (%)	Slope (%)	Length IMP (m)	Length (m)	XIMP	TIMP	Tc (hrs)	Tp (hrs)
Post-Development													
Open Space North	Catchment 201	CALIB NASHYD	0.20	0.58	76.0	NA	7.99	NA	162	NA	NA	0.31	0.21
South of Medway Creek	Catchment 202	CALIB STANDHYD	0.60	5.48	67.9	2.00	2.00	110	25	57	57	0.02	0.01
West of Commercial Area	Catchment 203	CALIB STANDHYD	0.70	1.55	70.8	2.00	2.00	110	25	71	71	0.02	0.01
North of Medway Rd.	Catchment 204	CALIB STANDHYD	0.70	0.97	67.5	2	2.00	110	25	71	71	0.02	0.01
Open Space West	Catchment 205	CALIB NASHYD	0.20	0.18	61.5	NA	2.00	NA	25	NA	NA	0.19	0.13
South of Medway Creek	Catchment 206	CALIB STANDHYD	0.65	12.83	59.6	2.00	2.00	110	25	64	64	0.02	0.01
South of Church	Catchment 207	CALIB STANDHYD	0.85	1.94	69.5	2.00	2.00	110	25	93	93	0.02	0.01
EXT Area - Commercial Area on the North of Medway Rd.	Catchment EXT. 301	CALIB STANDHYD	0.79	0.99	74.0	2.00	1.51	25	15	84	84	0.01	0.01
EXT Area - Cemetery South of Medway Rd.	Catchment EXT. 302	CALIB NASHYD	0.20	0.87	68.5	NA	2.30	NA	124	NA	NA	0.41	0.28
EXT Area - Church West of Richmond St.	Catchment EXT. 303	CALIB STANDHYD	0.40	1.04	72.5	2.00	1.90	103	137	29	29	0.36	0.24

Notes:

CN is a Weighted average for CALIB NASHYD and Pervious for CALIB STANDHYD

<i>TIMP</i>	→	Total percent impervious
<i>XIMP</i>	→	Percent impervious directly connected
<i>Time of Concentration calculated using the Airport Method</i>	→	$Tc = [3.26 (1.1 - C) L^{0.5}] / S^{0.33}$ Where: <i>C</i> = Runoff Coefficient according to MTO Design chart 1.07 for 'cultivated' on loam soil <i>L</i> = Length of Overland Flow (m) <i>S</i> = Slope (%)
<i>Time of Concentration calculated using the Bransby Williams Method</i>	→	$Tc = [0.057 L / (S w^{0.2} A^{0.1})]$ Where: <i>A</i> = Catchment Area (ha) <i>L</i> = Length of Overland Flow (m) <i>Sw</i> = Slope (%)
<i>Time to Peak (hr)</i>	→	$Tp = 0.6Tc$
<i>Initial Abstraction (mm)</i>	→	<i>I</i> A for Impervious = 2 <i>I</i> A for Pervious = 5

Appendix C SWMHYMO Model

C.1 Existing Conditions Model



```
00001> 2 Metric units
00002> *#*****
00003> *# Project Name: [Arva] Project Number: [161414396]
00004> *# Date : 2024-09-09
00005> *# Modeller : [AA, AKK]
00006> *# Company : Stantec Consulting Ltd. (London)
00007> *# License # : 4730904
00008> *#*****
00009> *#
00010> *# Arva
00011> *# 25 mm 4-hr, 2, 5, 10, 25, 50, 100, and 250-year, 3-hr Chicago Storm
00012> *#
00013> *#*****
00014> *#*****
00015> *#
00016> *#
00017> *# Existing Conditions
00018> *#
00019> *#
00020> *#*****
00021> START TZERO=[0.0], METOUT=[2], NSTORM=[1], NRUN=[1]
00022> *# ["25mm.4hr"] <--storm filename, one per line for NSTORM tim
00023> *#-----|
00024> READ STORM STORM_FILENAME=["STORM.001"]
00025> *#-----|
00026> *#*****
00027> *#
00028> *# North of Medway
00029> *#
00030> *#*****
00031> CALIB NASHYD ID=[01], NHYD=["101"], DT=[1]min, AREA=[1.27] (ha),
00032> DWF=[0.0] (cms), CN/C=[76.3], IA=[5] (mm),
00033> N=[3], TP=[0.21]hrs,
00034> RAINFALL=[ , , , , ] (mm/hr), END=-1
00035> *#-----|
00036> CALIB NASHYD ID=[02], NHYD=["102"], DT=[1]min, AREA=[7.30] (ha),
00037> DWF=[0.0] (cms), CN/C=[79], IA=[5] (mm),
00038> N=[3], TP=[0.64]hrs,
00039> RAINFALL=[ , , , , ] (mm/hr), END=-1
00040> *#-----|
00041> CALIB STANDHYD ID=[03], NHYD=["EX301"], DT=[1] (min), AREA=[0.99] (ha),
00042> XIMP=[.84], TIMP=[.84], DWF=[0] (cms), LOSS=[2],
00043> SCS curve number CN=[74],
00044> Pervious surfaces: IAPer=[5] (mm), SLPP=[1.51] (%),
00045> LGP=[15] (m), MNP=[0.024], SCP=[0] (min),
00046> Impervious surfaces: IAimp=[2] (mm), SLPI=[2] (%),
00047> LGI=[25] (m), MNI=[0.0013], SCI=[0] (min)
00048> RAINFALL=[ , , , , ] (mm/hr) , END=-1
00049> *#-----|
00050> ADD HYD Idsum=[09], NHYD=["NorthEx"], IDs to add=[01+02+03]
00051> *#-----|
00052> *#
00053> *#*****
00054> *#
00055> *# South of Medway
00056> *#
00057> *#*****
00058> CALIB NASHYD ID=[01], NHYD=["103"], DT=[1]min, AREA=[4.63] (ha),
00059> DWF=[0.0] (cms), CN/C=[78.5], IA=[5] (mm),
00060> N=[3], TP=[0.52]hrs,
00061> RAINFALL=[ , , , , ] (mm/hr), END=-1
00062> *#-----|
00063> CALIB NASHYD ID=[02], NHYD=["104"], DT=[1]min, AREA=[8.23] (ha),
00064> DWF=[0.0] (cms), CN/C=[76], IA=[5] (mm),
00065> N=[3], TP=[0.49]hrs,
00066> RAINFALL=[ , , , , ] (mm/hr), END=-1
00067> *#-----|
00068> CALIB NASHYD ID=[03], NHYD=["105"], DT=[1]min, AREA=[0.81] (ha),
00069> DWF=[0.0] (cms), CN/C=[70], IA=[5] (mm),
00070> N=[3], TP=[0.18]hrs,
00071> RAINFALL=[ , , , , ] (mm/hr), END=-1
00072> *#-----|
00073> CALIB NASHYD ID=[04], NHYD=["106"], DT=[1]min, AREA=[1.27] (ha),
00074> DWF=[0.0] (cms), CN/C=[67.5], IA=[5] (mm),
00075> N=[3], TP=[0.20]hrs,
00076> RAINFALL=[ , , , , ] (mm/hr), END=-1
00077> *#-----|
00078> CALIB NASHYD ID=[05], NHYD=["EX302"], DT=[1]min, AREA=[0.87] (ha),
00079> DWF=[0.0] (cms), CN/C=[68.5], IA=[5] (mm),
00080> N=[3], TP=[0.26]hrs,
00081> RAINFALL=[ , , , , ] (mm/hr), END=-1
00082> *#-----|
00083> CALIB STANDHYD ID=[06], NHYD=["EX303"], DT=[1] (min), AREA=[1.04] (ha),
00084> XIMP=[.29], TIMP=[.29], DWF=[0] (cms), LOSS=[2],
00085> SCS curve number CN=[72.5],
00086> Pervious surfaces: IAPer=[5] (mm), SLPP=[1] (%),
00087> LGP=[50] (m), MNP=[0.024], SCP=[0] (min),
00088> Impervious surfaces: IAimp=[2] (mm), SLPI=[2] (%),
00089> LGI=[25] (m), MNI=[0.0013], SCI=[0] (min)
00090> RAINFALL=[ , , , , ] (mm/hr) , END=-1
00091> *#-----|
00092> ADD HYD Idsum=[08], NHYD=["SouthEx"], IDs to add=[01+02+03+04+05+06]
00093> *#-----|
00094> START TZERO=[0.0], METOUT=[2], NSTORM=[1], NRUN=[2]
00095> *# ["1dn2.3hr"] <--storm filename, one per line for NSTORM time
00096> *#-----|
00097> START TZERO=[0.0], METOUT=[2], NSTORM=[1], NRUN=[5]
00098> *# ["1dn5.3hr"] <--storm filename, one per line for NSTORM time
00099> *#-----|
00100> START TZERO=[0.0], METOUT=[2], NSTORM=[1], NRUN=[10]
00101> *# ["1dn10.3hr"] <--storm filename, one per line for NSTORM tim
00102> *#-----|
00103> START TZERO=[0.0], METOUT=[2], NSTORM=[1], NRUN=[25]
00104> *# ["1dn25.3hr"] <--storm filename, one per line for NSTORM tim
00105> *#-----|
00106> START TZERO=[0.0], METOUT=[2], NSTORM=[1], NRUN=[50]
00107> *# ["1dn50.3hr"] <--storm filename, one per line for NSTORM tim
00108> *#-----|
00109> START TZERO=[0.0], METOUT=[2], NSTORM=[1], NRUN=[100]
00110> *# ["1dn100.3hr"] <--storm filename, one per line for NSTORM ti
00111> *#-----|
00112> START TZERO=[0.0], METOUT=[2], NSTORM=[1], NRUN=[250]
00113> *# ["1dn250.3hr"] <--storm filename, one per line for NSTORM ti
00114> *#-----|
00115> FINISH
00116>
00117>
00118>
00119>
00120>
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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 M M O O ## 9 9 9 9 Ver 4.05
00006> S W W M M H H Y M M O O 9999 9999 Sept 2011
00007> SSSSS W W M M H H Y M M O O 9 9 9 =====
00008> 9 9 9 9 # 4730904
00009> StormWater Management Hydrologic Model 999 999 =====
00010>
00011> *****
00012> ***** SWMMHYMO Ver/4.05 *****
00013> ***** A single event and continuous hydrologic simulation model *****
00014> ***** based on the principles of HYMO and its successors *****
00015> ***** OTTHYMO-83 and OTTHYMO-89. *****
00016> *****
00017> ***** Distributed by: J.F. Gabourin and Associates Inc. *****
00018> ***** Ottawa, Ontario: (613) 836-3884 *****
00019> ***** Gatineau, Quebec: (819) 243-6858 *****
00020> ***** E-Mail: swmhyo@jfsa.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 *****
00036> *****
00037> *****
00038> * DATE: 2024-09-10 TIME: 10:57:46 RUN COUNTER: 000205 *
00039> *****
00040> * Input filename: C:\MODELL-1\14396\SWMMHYMO\swmex1.dat *
00041> * Output filename: C:\MODELL-1\14396\SWMMHYMO\swmex1.out *
00042> * Summary filename: C:\MODELL-1\14396\SWMMHYMO\swmex1.sum *
00043> * User comments: *
00044> * 1: *
00045> * 2: *
00046> * 3: *
00047> *****
00048>
00049>
00050> 001:0001-----
00051> *# Project Name: [Arva] Project Number: [161414396]
00052> *# Date : 2024-09-09
00053> *# Modeller : [AA, AKK]
00054> *# Company : Stantec Consulting Ltd. (London)
00055> *# License # : 4730904
00056> *#
00057> *#
00058> *#
00059> *# Arva
00060> *# 25 mm 4-hr, 2, 5, 10, 25, 50, 100, and 250-year, 3-hr Chicago Storm
00061> *#
00062> *#
00063> *#
00064> *#
00065> *#
00066> *# Existing Conditions
00067> *#
00068> *#
00069> *#
00070>
00071> | START | Project dir.: C:\MODELL-1\14396\SWMMHYMO\
00072> | Rainfall dir.: C:\MODELL-1\14396\SWMMHYMO\
00073> | TZERO = .00 hrs on 0
00074> | METOUT= 2 (output = METRIC)
00075> | NRUN = 001
00076> | NSTORM= 1
00077> | # l=25mm.4hr
00078>
00079> 001:0002-----
00080>
00081> | READ STORM | Filename: CHICAGO STORM
00082> | Ptotal= 25.05 mm | Comments: CHICAGO STORM
00083>
00084>
00085>
00086>
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00091>
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00096>
00097>
00098>
00099>
00100> 001:0003-----
00101> *#
00102> *#
00103> *# North of Medway
00104> *#
00105> *#
00106> *#
00107> | CALIB NASHYD | Area (ha)= 1.27 Curve Number (CN)=76.30
00108> | 01:101 DT= 1.00 | Ia (mm)= 5.000 # of Linear Res. (N)= 3.00
00109> | U.H. Tp(hrs)= .210
00110>
00111> Unit Hyd Qpeak (cms)= .231
00112>
00113> PEAK FLOW (cms)= .014 (i)
00114> TIME TO PEAK (hrs)= 1.650
00115> RUNOFF VOLUME (mm)= 4.062
00116> TOTAL RAINFALL (mm)= 25.048
00117> RUNOFF COEFFICIENT = .162
00118>
00119> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00120>
00121>
00122> 001:0004-----
00123>
00124> | CALIB NASHYD | Area (ha)= 7.30 Curve Number (CN)=79.00
00125> | 02:102 DT= 1.00 | Ia (mm)= 5.000 # of Linear Res. (N)= 3.00
00126> | U.H. Tp(hrs)= .640
00127>
00128> Unit Hyd Qpeak (cms)= .436
00129>
00130> PEAK FLOW (cms)= .046 (i)
00131> TIME TO PEAK (hrs)= 2.293
00132> RUNOFF VOLUME (mm)= 4.590
00133> TOTAL RAINFALL (mm)= 25.048
00134> RUNOFF COEFFICIENT = .183
00135>
00136> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00137>
00138>
00139> 001:0005-----
00140>
00141> | CALIB STANDHYD | Area (ha)= .99
00142> | 03:EX301 DT= 1.00 | Total Imp(%)= 84.00 Dir. Conn.(%)= 84.00
00143>
00144>
00145> IMPERVIOUS PERVIOUS (i)
00146> Surface Area (ha)= .83 .16
00147> Dep. Storage (mm)= 2.00 5.00
00148> Average Slope (%)= 2.00 1.51
00149> Length (m)= 25.00 15.00
00150> Mannings n = .001 .024
00151>
00152> Max.eff.Inten.(mm/hr)= 75.61 8.55
00153> over (min) 1.00 3.00
00154> Storage Coeff. (min)= .25 (ii) 3.05 (ii)
00155> Unit Hyd. Tpeak (min)= 1.00 3.00
00156> Unit Hyd. peak (cms)= 1.67 .37
00157>
00158> PEAK FLOW (cms)= .17 .00 *TOTALS*
00159> TIME TO PEAK (hrs)= 1.33 1.37 .177 (iii)
00160> RUNOFF VOLUME (mm)= 23.05 3.68 19.948
00161> TOTAL RAINFALL (mm)= 25.05 25.05 25.048
00162> RUNOFF COEFFICIENT = .92 .15 .796
00163>
00164> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
00165> CN* = 74.0 Ia = Dep. Storage (Above)
00166> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
00167> THAN THE STORAGE COEFFICIENT.
00168> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00169>
00170> 001:0006-----
00171>
00172> | ADD HYD (NorthEx ) | ID: NHYD AREA QPEAK TPEAK R.V. DWF
00173> | (ha) (cms) (hrs) (mm) (cms)
00174> | ID1 01:101 1.27 .014 1.65 4.06 .000
00175> | +ID2 02:102 7.30 .046 2.28 4.59 .000
00176> | +ID3 03:EX301 .99 .177 1.33 19.95 .000
00177>
00178> SUM 09:NorthEx 9.56 .178 1.33 6.11 .000
00179>
00180> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
00181>
00182>
00183> 001:0007-----
00184>
00185> *#
00186> *# South of Medway
00187> *#
00188> *#
00189>
00190> | CALIB NASHYD | Area (ha)= 4.63 Curve Number (CN)=78.50
00191> | 01:103 DT= 1.00 | Ia (mm)= 5.000 # of Linear Res. (N)= 3.00
00192> | U.H. Tp(hrs)= .520
00193>
00194> Unit Hyd Qpeak (cms)= .340
00195>
00196> PEAK FLOW (cms)= .033 (i)
00197> TIME TO PEAK (hrs)= 2.100
00198> RUNOFF VOLUME (mm)= 4.495
00199> TOTAL RAINFALL (mm)= 25.048
00200> RUNOFF COEFFICIENT = .179
00201>
00202> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00203>
00204>
00205> 001:0008-----
00206>
00207> | CALIB NASHYD | Area (ha)= 8.23 Curve Number (CN)=76.00
00208> | 02:104 DT= 1.00 | Ia (mm)= 5.000 # of Linear Res. (N)= 3.00
00209> | U.H. Tp(hrs)= .490
00210>
00211> Unit Hyd Qpeak (cms)= .642
00212>
00213> PEAK FLOW (cms)= .053 (i)
00214> TIME TO PEAK (hrs)= 2.067
00215> RUNOFF VOLUME (mm)= 4.009
00216> TOTAL RAINFALL (mm)= 25.048
00217> RUNOFF COEFFICIENT = .160
00218>
00219> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00220>
00221>
00222> 001:0009-----
00223>
00224> | CALIB NASHYD | Area (ha)= .81 Curve Number (CN)=70.00
00225> | 03:105 DT= 1.00 | Ia (mm)= 5.000 # of Linear Res. (N)= 3.00
00226> | U.H. Tp(hrs)= .180
00227>
00228> Unit Hyd Qpeak (cms)= .172
00229>
00230> PEAK FLOW (cms)= .007 (i)
00231> TIME TO PEAK (hrs)= 1.600
00232> RUNOFF VOLUME (mm)= 3.117
00233> TOTAL RAINFALL (mm)= 25.048
00234> RUNOFF COEFFICIENT = .124
00235>
00236> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00237>
00238>
00239> 001:0010-----
00240>
00241> | CALIB NASHYD | Area (ha)= 1.27 Curve Number (CN)=67.50
00242> | 04:106 DT= 1.00 | Ia (mm)= 5.000 # of Linear Res. (N)= 3.00
00243> | U.H. Tp(hrs)= .200
00244>
00245> Unit Hyd Qpeak (cms)= .243
00246>
00247> PEAK FLOW (cms)= .010 (i)
00248> TIME TO PEAK (hrs)= 1.633
00249> RUNOFF VOLUME (mm)= 2.823
00250> TOTAL RAINFALL (mm)= 25.048
00251> RUNOFF COEFFICIENT = .113
00252>
00253> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00254>

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00255>-----
00256> 001:0011-----
00257> | CALIB NASHYD | Area (ha)= .87 Curve Number (CN)=68.50
00258> | 05:EX302 DT= 1.00 | Ia (mm)= 5.000 # of Linear Res. (N)= 3.00
00259> | U.H. Tp(hrs)= .260
00260>-----
00261> Unit Hyd Qpeak (cms)= .128
00262>-----
00263> PEAK FLOW (cms)= .006 (i)
00264> TIME TO PEAK (hrs)= 1.733
00265> RUNOFF VOLUME (mm)= 2.936
00266> TOTAL RAINFALL (mm)= 25.048
00267> RUNOFF COEFFICIENT = .117
00268>-----
00269> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00270>-----
00271>-----
00272>-----
00273> 001:0012-----
00274>-----
00275> | CALIB STANDHYD | Area (ha)= 1.04
00276> | 06:EX303 DT= 1.00 | Total Imp(%)= 29.00 Dir. Conn.(%)= 29.00
00277>-----
00278> IMPERVIOUS PERVIOUS (i)
00279> Surface Area (ha)= .30 .74
00280> Dep. Storage (mm)= 2.00 5.00
00281> Average Slope (%)= 2.00 1.00
00282> Length (m)= 25.00 50.00
00283> Mannings n = .001 .024
00284>-----
00285> Max.eff.Inten.(mm/hr)= 75.61 6.32
00286> over (min) 1.00 8.00
00287> Storage Coeff. (min)= .25 (ii) 7.60 (ii)
00288> Unit Hyd. Tpeak (min)= 1.00 8.00
00289> Unit Hyd. peak (cms)= 1.67 .15
00290>-----
00291> PEAK FLOW (cms)= .06 .01 *TOTALS*
00292> TIME TO PEAK (hrs)= 1.32 1.52 1.333
00293> RUNOFF VOLUME (mm)= 23.05 3.45 9.136
00294> TOTAL RAINFALL (mm)= 25.05 25.05 25.048
00295> RUNOFF COEFFICIENT = .92 .14 .365
00296>-----
00297> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
00298> CN* = 72.5 Ia = Dep. Storage (Above)
00299> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
00300> THAN THE STORAGE COEFFICIENT.
00301> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00302>-----
00303>-----
00304> 001:0013-----
00305>-----
00306> | ADD HYD (SouthEx ) | ID: NHYD AREA QPEAK TPEAK R.V. DWF
00307> (ha) (cms) (hrs) (mm) (cms)
00308> ID1 01:103 4.63 .033 2.10 4.48 .000
00309> +ID2 02:104 8.23 .053 2.07 4.01 .000
00310> +ID3 03:105 .81 .007 1.60 3.12 .000
00311> +ID4 04:106 1.27 .010 1.63 2.82 .000
00312> +ID5 05:EX302 .87 .006 1.73 2.94 .000
00313> +ID6 06:EX303 1.04 .065 1.33 9.14 .000
00314>-----
00315> SUM 08:SouthEx 16.85 .107 1.98 4.27 .000
00316>-----
00317> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
00318>-----
00319>-----
00320> 001:0014-----
00321> ** END OF RUN : 1
00322>-----
00323>-----
00324>-----
00325>-----
00326>-----
00327>-----
00328>-----
00329>-----
00330> | START | Project dir.: C:\MODELL-1\14396\SWMHYMO\
00331> | Rainfall dir.: C:\MODELL-1\14396\SWMHYMO\
00332> TZERO = .00 hrs on 0
00333> METOUT= 2 (output= METRIC)
00334> NRUN = 002
00335> NSTORM= 1
00336> # 1=1dn2,3hr
00337>-----
00338> 002:0002-----
00339> *#-----
00340> *# Project Name: [Arva] Project Number: [161414396]
00341> *# Date : 2024-09-09
00342> *# Modeller : [AA, AKK]
00343> *# Company : Stantec Consulting Ltd. (London)
00344> *# License # : 4730904
00345> *#-----
00346> *#
00347> *# Arva
00348> *# 25 mm 4-hr, 2, 5, 10, 25, 50, 100, and 250-year, 3-hr Chicago Storm
00349> *#
00350> *#-----
00351> *#-----
00352> *#
00353> *#
00354> *# Existing Conditions
00355> *#
00356> *#
00357> *#-----
00358> *#-----
00359> 002:0002-----
00360>-----
00361> | READ STORM | Filename: 2-yr, 3hr Chicago Storm from 2021 London
00362> | Ptotal= 32.83 mm | Comments: 2-yr, 3hr Chicago Storm from 2021 London
00363>-----
00364> TIME RAIN | TIME RAIN | TIME RAIN | TIME RAIN | TIME RAIN
00365> hrs mm/hr | hrs mm/hr | hrs mm/hr | hrs mm/hr | hrs mm/hr
00366> .08 2.574 | .83 14.974 | 1.58 7.501 | 2.33 3.414
00367> .17 2.812 | .92 35.641 | 1.67 6.585 | 2.42 3.229
00368> .25 3.105 | 1.00 108.068 | 1.75 5.876 | 2.50 3.064
00369> .33 3.472 | 1.08 46.277 | 1.83 5.310 | 2.58 2.917
00370> .42 3.949 | 1.17 25.470 | 1.92 4.849 | 2.67 2.784
00371> .50 4.594 | 1.25 17.290 | 2.00 4.465 | 2.75 2.663
00372> .58 5.517 | 1.33 13.030 | 2.08 4.141 | 2.83 2.554
00373> .67 6.947 | 1.42 10.448 | 2.17 3.864 | 2.92 2.454
00374> .75 9.460 | 1.50 8.726 | 2.25 3.624 | 3.00 2.362
00375>-----
00376>-----
00377> 002:0003-----
00378> *#-----
00379> *#
00380> *# North of Midway
00381> *#

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00382> *#-----
00383>-----
00384> | CALIB NASHYD | Area (ha)= 1.27 Curve Number (CN)=76.30
00385> | 01:101 DT= 1.00 | Ia (mm)= 5.000 # of Linear Res. (N)= 3.00
00386> | U.H. Tp(hrs)= .210
00387>-----
00388> Unit Hyd Qpeak (cms)= .231
00389>-----
00390> PEAK FLOW (cms)= .028 (i)
00391> TIME TO PEAK (hrs)= 1.300
00392> RUNOFF VOLUME (mm)= 7.259
00393> TOTAL RAINFALL (mm)= 32.834
00394> RUNOFF COEFFICIENT = .221
00395>-----
00396> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00397>-----
00398>-----
00399> 002:0004-----
04000>-----
04001> | CALIB NASHYD | Area (ha)= 7.30 Curve Number (CN)=79.00
04002> | 02:102 DT= 1.00 | Ia (mm)= 5.000 # of Linear Res. (N)= 3.00
04003> | U.H. Tp(hrs)= .640
04004>-----
04005> Unit Hyd Qpeak (cms)= .436
04006>-----
04007> PEAK FLOW (cms)= .092 (i)
04008> TIME TO PEAK (hrs)= 1.900
04009> RUNOFF VOLUME (mm)= 8.125
04010> TOTAL RAINFALL (mm)= 32.834
04011> RUNOFF COEFFICIENT = .247
04012>-----
04013> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
04014>-----
04015>-----
04016> 002:0005-----
04017>-----
04018> | CALIB STANDHYD | Area (ha)= .99
04019> | 03:EX301 DT= 1.00 | Total Imp(%)= 84.00 Dir. Conn.(%)= 84.00
04020>-----
04021> IMPERVIOUS PERVIOUS (i)
04022> Surface Area (ha)= .83 .16
04023> Dep. Storage (mm)= 2.00 5.00
04024> Average Slope (%)= 2.00 1.51
04025> Length (m)= 25.00 15.00
04026> Mannings n = .001 .024
04027>-----
04028> Max.eff.Inten.(mm/hr)= 108.07 20.58
04029> over (min) 1.00 2.00
04030> Storage Coeff. (min)= .22 (ii) 2.19 (ii)
04031> Unit Hyd. Tpeak (min)= 1.00 2.00
04032> Unit Hyd. peak (cms)= 1.68 .53
04033>-----
04034> PEAK FLOW (cms)= .25 .01 *TOTALS*
04035> TIME TO PEAK (hrs)= .98 1.02 .256 (iii)
04036> RUNOFF VOLUME (mm)= 30.83 6.62 26.959
04037> TOTAL RAINFALL (mm)= 32.83 32.83 32.834
04038> RUNOFF COEFFICIENT = .94 .20 .821
04039>-----
04040> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
04041> CN* = 74.0 Ia = Dep. Storage (Above)
04042> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
04043> THAN THE STORAGE COEFFICIENT.
04044> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
04045>-----
04046>-----
04047> 002:0006-----
04048>-----
04049> | ADD HYD (NorthEx ) | ID: NHYD AREA QPEAK TPEAK R.V. DWF
04050> (ha) (cms) (hrs) (mm) (cms)
04051> ID1 01:101 1.27 .028 1.30 7.26 .000
04052> +ID2 02:102 7.30 .092 1.90 8.12 .000
04053> +ID3 03:EX301 .99 .256 1.00 26.96 .000
04054>-----
04055> SUM 09:NorthEx 9.56 .261 1.00 9.96 .000
04056>-----
04057> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
04058>-----
04059>-----
04060> 002:0007-----
04061> *#-----
04062> *#
04063> *# South of Midway
04064> *#
04065> *#-----
04066> *#-----
04067> | CALIB NASHYD | Area (ha)= 4.63 Curve Number (CN)=78.50
04068> | 01:103 DT= 1.00 | Ia (mm)= 5.000 # of Linear Res. (N)= 3.00
04069> | U.H. Tp(hrs)= .520
04070>-----
04071> Unit Hyd Qpeak (cms)= .340
04072>-----
04073> PEAK FLOW (cms)= .065 (i)
04074> TIME TO PEAK (hrs)= 1.733
04075> RUNOFF VOLUME (mm)= 7.954
04076> TOTAL RAINFALL (mm)= 32.834
04077> RUNOFF COEFFICIENT = .242
04078>-----
04079> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
04080>-----
04081>-----
04082> 002:0008-----
04083>-----
04084> | CALIB NASHYD | Area (ha)= 8.23 Curve Number (CN)=76.00
04085> | 02:104 DT= 1.00 | Ia (mm)= 5.000 # of Linear Res. (N)= 3.00
04086> | U.H. Tp(hrs)= .490
04087>-----
04088> Unit Hyd Qpeak (cms)= .642
04089>-----
04090> PEAK FLOW (cms)= .108 (i)
04091> TIME TO PEAK (hrs)= 1.700
04092> RUNOFF VOLUME (mm)= 7.171
04093> TOTAL RAINFALL (mm)= 32.834
04094> RUNOFF COEFFICIENT = .218
04095>-----
04096> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
04097>-----
04098>-----
04099> 002:0009-----
05000>-----
05001> | CALIB NASHYD | Area (ha)= .81 Curve Number (CN)=70.00
05002> | 03:105 DT= 1.00 | Ia (mm)= 5.000 # of Linear Res. (N)= 3.00
05003> | U.H. Tp(hrs)= .180
05004>-----
05005> Unit Hyd Qpeak (cms)= .172
05006>-----
05007> PEAK FLOW (cms)= .015 (i)
05008> TIME TO PEAK (hrs)= 1.250

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00509> RUNOFF VOLUME (mm)= 5.667
00510> TOTAL RAINFALL (mm)= 32.834
00511> RUNOFF COEFFICIENT = .173
00512>
00513> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00514>
00515>
00516> 002:0010-----
00517>
00518> | CALIB NASHYD | Area (ha)= 1.27 Curve Number (CN)=67.50
00519> | 04:106 DT= 1.00 | Ia (mm)= 5.000 # of Linear Res. (N)= 3.00
00520> | U.H. Tp(hrs)= .200
00521>
00522> Unit Hyd Qpeak (cms)= .243
00523>
00524> PEAK FLOW (cms)= .020 (i)
00525> TIME TO PEAK (hrs)= 1.283
00526> RUNOFF VOLUME (mm)= 5.160
00527> TOTAL RAINFALL (mm)= 32.834
00528> RUNOFF COEFFICIENT = .157
00529>
00530> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00531>
00532>
00533> 002:0011-----
00534>
00535> | CALIB NASHYD | Area (ha)= .87 Curve Number (CN)=68.50
00536> | 05:EX302 DT= 1.00 | Ia (mm)= 5.000 # of Linear Res. (N)= 3.00
00537> | U.H. Tp(hrs)= .260
00538>
00539> Unit Hyd Qpeak (cms)= .128
00540>
00541> PEAK FLOW (cms)= .012 (i)
00542> TIME TO PEAK (hrs)= 1.367
00543> RUNOFF VOLUME (mm)= 5.356
00544> TOTAL RAINFALL (mm)= 32.834
00545> RUNOFF COEFFICIENT = .163
00546>
00547> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00548>
00549>
00550> 002:0012-----
00551>
00552> | CALIB STANDHYD | Area (ha)= 1.04
00553> | 06:EX303 DT= 1.00 | Total Imp(%)= 29.00 Dir. Conn.(%)= 29.00
00554>
00555> IMPERVIOUS PERVIOUS (i)
00556> Surface Area (ha)= .30 .74
00557> Dep. Storage (mm)= 2.00 5.00
00558> Average Slope (%)= 2.00 1.00
00559> Length (m)= 25.00 50.00
00560> Mannings n = .001 .024
00561>
00562> Max.eff.Inten.(mm/hr)= 108.07 14.84
00563> over (min) 1.00 5.00
00564> Storage Coeff. (min)= .22 (ii) 5.44 (ii)
00565> Unit Hyd. Tpeak (min)= 1.00 5.00
00566> Unit Hyd. peak (cms)= 1.68 .21
00567>
00568> PEAK FLOW (cms)= .09 .02 *TOTALS*
00569> TIME TO PEAK (hrs)= .98 1.10 .101 (iii)
00570> RUNOFF VOLUME (mm)= 30.83 6.24 13.372
00571> TOTAL RAINFALL (mm)= 32.83 32.83 32.834
00572> RUNOFF COEFFICIENT = .94 .19 .407
00573>
00574> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
00575> CN* = 72.5 Ia = Dep. Storage (Above)
00576> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
00577> THAN THE STORAGE COEFFICIENT.
00578> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00579>
00580>
00581> 002:0013-----
00582>
00583> | ADD HYD (SouthEx ) | ID: NHYD AREA QPEAK TPEAK R.V. DWF
00584> (ha) (cms) (hrs) (mm) (cms)
00585> |ID1 01:103 4.63 .065 1.73 7.95 .000
00586> +ID2 02:104 8.23 .108 1.70 7.17 .000
00587> +ID3 03:105 .81 .015 1.25 5.67 .000
00588> +ID4 04:106 1.27 .020 1.28 5.16 .000
00589> +ID5 05:EX302 .87 .012 1.37 5.36 .000
00590> +ID6 06:EX303 1.04 .101 1.00 13.37 .000
00591>
00592> SUM 08:SouthEx 16.85 .212 1.58 7.45 .000
00593>
00594> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
00595>
00596>
00597> 002:0014-----
00598>
00599> 002:0002-----
00600> ** END OF RUN : 4
00601>
00602> *****
00603>
00604>
00605>
00606>
00607>
00608>
00609> | START | Project dir.: C:\MODELL-1\14396\SWMHYMO\
00610> Rainfall dir.: C:\MODELL-1\14396\SWMHYMO\
00611> TZERO = .00 hrs on 0
00612> METOUT= 2 (output= METRIC)
00613> NRUN = 005
00614> NSTORM= 1
00615> # 1=1dn5.3hr
00616>
00617> 005:0002-----
00618>
00619> *# Project Name: [Arva] Project Number: [161414396]
00620> *# Date : 2024-09-09
00621> *# Modeller : [AA, AKK]
00622> *# Company : Stantec Consulting Ltd. (London)
00623> *# License # : 4730904
00624> *#
00625> *#
00626> *# Arva
00627> *# 25 mm 4-hr, 2, 5, 10, 25, 50, 100, and 250-year, 3-hr Chicago Storm
00628> *#
00629> *#
00630> *#
00631> *#
00632> *#
00633> *# Existing Conditions
00634> *#
00635> *#

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00636> *#*****
00637>
00638> 005:0002-----
00639>
00640> | READ STORM | Filename: CHICAGO STORM
00641> | Ptotal= 44.19 mm | Comments: CHICAGO STORM
00642>
00643>
00644> TIME RAIN | TIME RAIN | TIME RAIN | TIME RAIN
00645> hrs mm/hr | hrs mm/hr | hrs mm/hr | hrs mm/hr
00646> .08 3.164 | .83 21.025 | 1.58 10.072 | 2.33 4.293
00647> .17 3.481 | .92 50.463 | 1.67 8.751 | 2.42 4.042
00648> .25 3.874 | 1.00 141.242 | 1.75 7.736 | 2.50 3.819
00649> .33 4.373 | 1.08 65.260 | 1.83 6.932 | 2.58 3.620
00650> .42 5.028 | 1.17 36.321 | 1.92 6.282 | 2.67 3.443
00651> .50 5.925 | 1.25 24.430 | 2.00 5.745 | 2.75 3.282
00652> .58 7.226 | 1.33 18.167 | 2.08 5.294 | 2.83 3.137
00653> .67 9.274 | 1.42 14.372 | 2.17 4.910 | 2.92 3.005
00654> .75 12.926 | 1.50 11.853 | 2.25 4.580 | 3.00 2.884
00655>
00656> 005:0003-----
00657> *#
00658> *# North of Midway
00659> *#
00660> *#
00661> *#*****
00662>
00663> | CALIB NASHYD | Area (ha)= 1.27 Curve Number (CN)=76.30
00664> | 01:101 DT= 1.00 | Ia (mm)= 5.000 # of Linear Res. (N)= 3.00
00665> | U.H. Tp(hrs)= .210
00666>
00667> Unit Hyd Qpeak (cms)= .231
00668>
00669> PEAK FLOW (cms)= .054 (i)
00670> TIME TO PEAK (hrs)= 1.283
00671> RUNOFF VOLUME (mm)= 13.004
00672> TOTAL RAINFALL (mm)= 44.186
00673> RUNOFF COEFFICIENT = .294
00674>
00675> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00676>
00677>
00678> 005:0004-----
00679>
00680> | CALIB NASHYD | Area (ha)= 7.30 Curve Number (CN)=79.00
00681> | 02:102 DT= 1.00 | Ia (mm)= 5.000 # of Linear Res. (N)= 3.00
00682> | U.H. Tp(hrs)= .640
00683>
00684> Unit Hyd Qpeak (cms)= .436
00685>
00686> PEAK FLOW (cms)= .170 (i)
00687> TIME TO PEAK (hrs)= 1.867
00688> RUNOFF VOLUME (mm)= 14.391
00689> TOTAL RAINFALL (mm)= 44.186
00690> RUNOFF COEFFICIENT = .326
00691>
00692> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00693>
00694>
00695> 005:0005-----
00696>
00697> | CALIB STANDHYD | Area (ha)= .99
00698> | 03:EX301 DT= 1.00 | Total Imp(%)= 84.00 Dir. Conn.(%)= 84.00
00699>
00700> IMPERVIOUS PERVIOUS (i)
00701> Surface Area (ha)= .83 .16
00702> Dep. Storage (mm)= 2.00 5.00
00703> Average Slope (%)= 2.00 1.51
00704> Length (m)= 25.00 15.00
00705> Mannings n = .001 .024
00706>
00707> Max.eff.Inten.(mm/hr)= 141.24 37.63
00708> over (min) 1.00 2.00
00709> Storage Coeff. (min)= .20 (ii) 1.74 (ii)
00710> Unit Hyd. Tpeak (min)= 1.00 2.00
00711> Unit Hyd. peak (cms)= 1.69 .61
00712>
00713> PEAK FLOW (cms)= .33 .01 *TOTALS*
00714> TIME TO PEAK (hrs)= .98 1.02 1.000
00715> RUNOFF VOLUME (mm)= 42.19 11.96 37.349
00716> TOTAL RAINFALL (mm)= 44.19 44.19 44.186
00717> RUNOFF COEFFICIENT = .95 .27 .845
00718>
00719> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
00720> CN* = 74.0 Ia = Dep. Storage (Above)
00721> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
00722> THAN THE STORAGE COEFFICIENT.
00723> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00724>
00725>
00726> 005:0006-----
00727>
00728> | ADD HYD (NorthEx ) | ID: NHYD AREA QPEAK TPEAK R.V. DWF
00729> (ha) (cms) (hrs) (mm) (cms)
00730> |ID1 01:101 1.27 .054 1.28 13.00 .000
00731> +ID2 02:102 7.30 .170 1.87 14.39 .000
00732> +ID3 03:EX301 .99 .340 1.00 37.35 .000
00733>
00734> SUM 09:NorthEx 9.56 .351 1.00 16.58 .000
00735>
00736> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
00737>
00738>
00739> 005:0007-----
00740> *#
00741> *# South of Midway
00742> *#
00743> *#
00744> *#*****
00745>
00746> | CALIB NASHYD | Area (ha)= 4.63 Curve Number (CN)=78.50
00747> | 01:103 DT= 1.00 | Ia (mm)= 5.000 # of Linear Res. (N)= 3.00
00748> | U.H. Tp(hrs)= .520
00749>
00750> Unit Hyd Qpeak (cms)= .340
00751>
00752> PEAK FLOW (cms)= .122 (i)
00753> TIME TO PEAK (hrs)= 1.700
00754> RUNOFF VOLUME (mm)= 14.119
00755> TOTAL RAINFALL (mm)= 44.186
00756> RUNOFF COEFFICIENT = .320
00757>
00758> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00759>
00760>
00761> 005:0008-----
00762>

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00763> | CALIB NASHYD | Area (ha)= 8.23 Curve Number (CN)=76.00
00764> | 02:104 DT= 1.00 | Ia (mm)= 5.000 # of Linear Res. (N)= 3.00
00765> | U.H. Tp(hrs)= .490
00766>
00767> Unit Hyd Qpeak (cms)= .642
00768>
00769> PEAK FLOW (cms)= .204 (i)
00770> TIME TO PEAK (hrs)= 1.667
00771> RUNOFF VOLUME (mm)= 12.861
00772> TOTAL RAINFALL (mm)= 44.186
00773> RUNOFF COEFFICIENT = .291
00774>
00775> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00776>
00777>
00778> 005:0009-----
00779>
00780> | CALIB NASHYD | Area (ha)= .81 Curve Number (CN)=70.00
00781> | 03:105 DT= 1.00 | Ia (mm)= 5.000 # of Linear Res. (N)= 3.00
00782> | U.H. Tp(hrs)= .180
00783>
00784> Unit Hyd Qpeak (cms)= .172
00785>
00786> PEAK FLOW (cms)= .029 (i)
00787> TIME TO PEAK (hrs)= 1.250
00788> RUNOFF VOLUME (mm)= 10.372
00789> TOTAL RAINFALL (mm)= 44.186
00790> RUNOFF COEFFICIENT = .235
00791>
00792> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00793>
00794>
00795> 005:0010-----
00796>
00797> | CALIB NASHYD | Area (ha)= 1.27 Curve Number (CN)=67.50
00798> | 04:106 DT= 1.00 | Ia (mm)= 5.000 # of Linear Res. (N)= 3.00
00799> | U.H. Tp(hrs)= .200
00800>
00801> Unit Hyd Qpeak (cms)= .243
00802>
00803> PEAK FLOW (cms)= .040 (i)
00804> TIME TO PEAK (hrs)= 1.283
00805> RUNOFF VOLUME (mm)= 9.509
00806> TOTAL RAINFALL (mm)= 44.186
00807> RUNOFF COEFFICIENT = .215
00808>
00809> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00810>
00811>
00812> 005:0011-----
00813>
00814> | CALIB NASHYD | Area (ha)= .87 Curve Number (CN)=68.50
00815> | 05:EX302 DT= 1.00 | Ia (mm)= 5.000 # of Linear Res. (N)= 3.00
00816> | U.H. Tp(hrs)= .260
00817>
00818> Unit Hyd Qpeak (cms)= .128
00819>
00820> PEAK FLOW (cms)= .024 (i)
00821> TIME TO PEAK (hrs)= 1.367
00822> RUNOFF VOLUME (mm)= 9.844
00823> TOTAL RAINFALL (mm)= 44.186
00824> RUNOFF COEFFICIENT = .223
00825>
00826> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00827>
00828>
00829> 005:0012-----
00830>
00831> | CALIB STANDHYD | Area (ha)= 1.04
00832> | 06:EX303 DT= 1.00 | Total Imp(%)= 29.00 Dir. Conn.(%)= 29.00
00833>
00834> IMPERVIOUS PERVIOUS (i)
00835> Surface Area (ha)= .30 .74
00836> Dep. Storage (mm)= 2.00 5.00
00837> Average Slope (%)= 2.00 1.00
00838> Length (m)= 25.00 50.00
00839> Mannings n = .001 .024
00840>
00841> Max.eff.Inten.(mm/hr)= 141.24 30.63
00842> over (min) 1.00 4.00
00843> Storage Coeff. (min)= .20 (ii) 4.11 (ii)
00844> Unit Hyd. Tpeak (min)= 1.00 4.00
00845> Unit Hyd. peak (cms)= 1.69 .28
00846>
00847> PEAK FLOW (cms)= .12 .04
00848> TIME TO PEAK (hrs)= .98 1.05
00849> RUNOFF VOLUME (mm)= 42.19 11.33
00850> TOTAL RAINFALL (mm)= 44.19 44.19
00851> RUNOFF COEFFICIENT = .95 .26
00852>
00853> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
00854> CN* = 72.5 Ia = Dep. Storage (Above)
00855> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
00856> THAN THE STORAGE COEFFICIENT.
00857> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00858>
00859>
00860> 005:0013-----
00861>
00862> | ADD HYD (SouthEx ) | ID: NHYD AREA QPEAK TPEAK R.V. DWF
00863> (ha) (cms) (hrs) (mm) (cms)
00864> ID1 01:103 4.63 .122 1.70 14.12 .000
00865> +ID2 02:104 8.23 .204 1.67 12.86 .000
00866> +ID3 03:105 .81 .029 1.25 10.37 .000
00867> +ID4 04:106 1.27 .040 1.28 9.51 .000
00868> +ID5 05:EX302 .87 .024 1.37 9.84 .000
00869> +ID6 06:EX303 1.04 .149 1.00 20.28 .000
00870>
00871> SUM 08:SouthEx 16.85 .398 1.58 13.14 .000
00872>
00873> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
00874>
00875>
00876> 005:0014-----
00877>
00878> 005:0002-----
00879>
00880> 005:0002-----
00881> ** END OF RUN : 9
00882>
00883>
00884>
00885>
00886>
00887>
00888>
00889>

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00890> | START | Project dir.: C:\MODELL-1\14396\SWMHYMO\
00891> Rainfall dir.: C:\MODELL-1\14396\SWMHYMO\
00892> TZERO = .00 hrs on 0
00893> METOUT= 2 (output = METRIC)
00894> NRUN = 010
00895> NSTORM= 1
00896> # 1=ldn10.3hr
00897>
00898> 010:0002-----
00899>
00900> ** Project Name: [Arva] Project Number: [161414396]
00901> ** Date : 2024-09-09
00902> ** Modeller : [AA, AKK]
00903> ** Company : Stantec Consulting Ltd. (London)
00904> ** License # : 4730904
00905>
00906>
00907> ** Arva
00908> ** 25 mm 4-hr, 2, 5, 10, 25, 50, 100, and 250-year, 3-hr Chicago Storm
00909>
00910>
00911>
00912>
00913>
00914> ** Existing Conditions
00915>
00916>
00917>
00918>
00919> 010:0002-----
00920>
00921> READ STORM | Filename: CHICAGO STORM
00922> | Ptotal= 52.05 mm | Comments: CHICAGO STORM
00923>
00924>
00925> TIME RAIN | TIME RAIN | TIME RAIN | TIME RAIN
00926> hrs mm/hr | hrs mm/hr | hrs mm/hr | hrs mm/hr
00927> .08 3.462 | .83 25.620 | 1.58 11.888 | 2.33 4.796
00928> .17 3.833 | .92 61.474 | 1.67 10.245 | 2.42 4.496
00929> .25 4.297 | 1.00 162.470 | 1.75 8.987 | 2.50 4.231
00930> .33 4.891 | 1.08 79.139 | 1.83 7.997 | 2.58 3.997
00931> .42 5.677 | 1.17 44.600 | 1.92 7.200 | 2.67 3.788
00932> .50 6.765 | 1.25 29.885 | 2.00 6.545 | 2.75 3.600
00933> .58 8.360 | 1.33 22.041 | 2.08 5.998 | 2.83 3.430
00934> .67 10.955 | 1.42 17.275 | 2.17 5.535 | 2.92 3.276
00935> .75 15.461 | 1.50 14.115 | 2.25 5.139 | 3.00 3.135
00936>
00937> 010:0003-----
00938>
00939>
00940> ** North of Medway
00941>
00942>
00943>
00944> | CALIB NASHYD | Area (ha)= 1.27 Curve Number (CN)=76.30
00945> | 01:101 DT= 1.00 | Ia (mm)= 5.000 # of Linear Res. (N)= 3.00
00946> | U.H. Tp(hrs)= .210
00947>
00948> Unit Hyd Qpeak (cms)= .231
00949>
00950> PEAK FLOW (cms)= .076 (i)
00951> TIME TO PEAK (hrs)= 1.283
00952> RUNOFF VOLUME (mm)= 17.574
00953> TOTAL RAINFALL (mm)= 52.045
00954> RUNOFF COEFFICIENT = .338
00955>
00956> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00957>
00958>
00959> 010:0004-----
00960>
00961> | CALIB NASHYD | Area (ha)= 7.30 Curve Number (CN)=79.00
00962> | 02:102 DT= 1.00 | Ia (mm)= 5.000 # of Linear Res. (N)= 3.00
00963> | U.H. Tp(hrs)= .640
00964>
00965> Unit Hyd Qpeak (cms)= .436
00966>
00967> PEAK FLOW (cms)= .234 (i)
00968> TIME TO PEAK (hrs)= 1.850
00969> RUNOFF VOLUME (mm)= 19.319
00970> TOTAL RAINFALL (mm)= 52.045
00971> RUNOFF COEFFICIENT = .371
00972>
00973> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00974>
00975>
00976> 010:0005-----
00977>
00978> | CALIB STANDHYD | Area (ha)= .99
00979> | 03:EX301 DT= 1.00 | Total Imp(%)= 84.00 Dir. Conn.(%)= 84.00
00980>
00981> IMPERVIOUS PERVIOUS (i)
00982> Surface Area (ha)= .83 .16
00983> Dep. Storage (mm)= 2.00 5.00
00984> Average Slope (%)= 2.00 1.51
00985> Length (m)= 25.00 15.00
00986> Mannings n = .001 .024
00987>
00988> Max.eff.Inten.(mm/hr)= 162.47 50.71
00989> over (min) 1.00 2.00
00990> Storage Coeff. (min)= .19 (ii) 1.56 (ii)
00991> Unit Hyd. Tpeak (min)= 1.00 2.00
00992> Unit Hyd. peak (cms)= 1.69 .65
00993>
00994> PEAK FLOW (cms)= .38 .02
00995> TIME TO PEAK (hrs)= .98 1.02
00996> RUNOFF VOLUME (mm)= 50.05 16.24
00997> TOTAL RAINFALL (mm)= 52.05 52.05
00998> RUNOFF COEFFICIENT = .96 .31
00999>
01000> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
01001> CN* = 74.0 Ia = Dep. Storage (Above)
01002> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
01003> THAN THE STORAGE COEFFICIENT.
01004> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01005>
01006>
01007> 010:0006-----
01008>
01009> | ADD HYD (NorthEx ) | ID: NHYD AREA QPEAK TPEAK R.V. DWF
01010> (ha) (cms) (hrs) (mm) (cms)
01011> ID1 01:101 1.27 .076 1.28 17.57 .000
01012> +ID2 02:102 7.30 .234 1.85 19.32 .000
01013> +ID3 03:EX301 .99 .394 1.00 44.64 .000
01014>
01015> SUM 09:NorthEx 9.56 .413 1.00 21.71 .000
01016>

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01017> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
01018> -----
01019> 010:0007-----
01020> *# South of Midway
01021> *#
01022> *#
01023> *#
01024> *#
01025> *#
01026> -----
01027> | CALIB NASHYD | Area (ha)= 4.63 Curve Number (CN)=78.50
01028> | 01:103 DT= 1.00 | Ia (mm)= 5.000 # of Linear Res. (N)= 3.00
01029> | U.H. Tp(hrs)= .520
01030> -----
01031> Unit Hyd Qpeak (cms)= .340
01032> -----
01033> PEAK FLOW (cms)= .168 (i)
01034> TIME TO PEAK (hrs)= 1.700
01035> RUNOFF VOLUME (mm)= 18.980
01036> TOTAL RAINFALL (mm)= 52.045
01037> RUNOFF COEFFICIENT = .365
01038> -----
01039> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01040> -----
01041> 010:0008-----
01042> *#
01043> *#
01044> | CALIB NASHYD | Area (ha)= 8.23 Curve Number (CN)=76.00
01045> | 02:104 DT= 1.00 | Ia (mm)= 5.000 # of Linear Res. (N)= 3.00
01046> | U.H. Tp(hrs)= .490
01047> -----
01048> Unit Hyd Qpeak (cms)= .642
01049> -----
01050> PEAK FLOW (cms)= .284 (i)
01051> TIME TO PEAK (hrs)= 1.667
01052> RUNOFF VOLUME (mm)= 17.392
01053> TOTAL RAINFALL (mm)= 52.045
01054> RUNOFF COEFFICIENT = .334
01055> -----
01056> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01057> -----
01058> 010:0009-----
01059> *#
01060> *#
01061> | CALIB NASHYD | Area (ha)= .81 Curve Number (CN)=70.00
01062> | 03:105 DT= 1.00 | Ia (mm)= 5.000 # of Linear Res. (N)= 3.00
01063> | U.H. Tp(hrs)= .180
01064> -----
01065> Unit Hyd Qpeak (cms)= .172
01066> -----
01067> PEAK FLOW (cms)= .042 (i)
01068> TIME TO PEAK (hrs)= 1.250
01069> RUNOFF VOLUME (mm)= 14.196
01070> TOTAL RAINFALL (mm)= 52.045
01071> RUNOFF COEFFICIENT = .273
01072> -----
01073> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01074> -----
01075> 010:0010-----
01076> *#
01077> *#
01078> | CALIB NASHYD | Area (ha)= 1.27 Curve Number (CN)=67.50
01079> | 04:106 DT= 1.00 | Ia (mm)= 5.000 # of Linear Res. (N)= 3.00
01080> | U.H. Tp(hrs)= .200
01081> -----
01082> Unit Hyd Qpeak (cms)= .243
01083> -----
01084> PEAK FLOW (cms)= .056 (i)
01085> TIME TO PEAK (hrs)= 1.283
01086> RUNOFF VOLUME (mm)= 13.070
01087> TOTAL RAINFALL (mm)= 52.045
01088> RUNOFF COEFFICIENT = .251
01089> -----
01090> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01091> -----
01092> 010:0011-----
01093> *#
01094> *#
01095> | CALIB NASHYD | Area (ha)= .87 Curve Number (CN)=68.50
01096> | 05:EX302 DT= 1.00 | Ia (mm)= 5.000 # of Linear Res. (N)= 3.00
01097> | U.H. Tp(hrs)= .260
01098> -----
01099> Unit Hyd Qpeak (cms)= .128
01100> -----
01101> PEAK FLOW (cms)= .034 (i)
01102> TIME TO PEAK (hrs)= 1.367
01103> RUNOFF VOLUME (mm)= 13.508
01104> TOTAL RAINFALL (mm)= 52.045
01105> RUNOFF COEFFICIENT = .260
01106> -----
01107> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01108> -----
01109> 010:0012-----
01110> *#
01111> *#
01112> | CALIB STANDHYD | Area (ha)= 1.04 Dir. Conn. (%) = 29.00
01113> | 06:EX303 DT= 1.00 | Total Imp (%) = 29.00
01114> -----
01115> IMPERVIOUS PERVIOUS (i)
01116> Surface Area (ha)= .30 .74
01117> Dep. Storage (mm)= 2.00 5.00
01118> Average Slope (%) = 2.00 1.00
01119> Length (m)= 25.00 50.00
01120> Mannings n = .001 .024
01121> -----
01122> Max.eff.Inten.(mm/hr)= 162.47 42.03
01123> over (min) 1.00 4.00
01124> Storage Coeff. (min)= .19 (ii) 3.63 (ii)
01125> Unit Hyd. Tpeak (min)= 1.00 4.00
01126> Unit Hyd. peak (cms)= 1.69 .30
01127> -----
01128> PEAK FLOW (cms)= .14 .06 *TOTALS*
01129> TIME TO PEAK (hrs)= .98 1.05 .183 (iii)
01130> RUNOFF VOLUME (mm)= 50.05 15.44 25.472
01131> TOTAL RAINFALL (mm)= 52.05 52.05 52.045
01132> RUNOFF COEFFICIENT = .96 .30 .489
01133> -----
01134> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
01135> CN* = 72.5 Ia = Dep. Storage (Above)
01136> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
01137> THAN THE STORAGE COEFFICIENT.
01138> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01139> -----
01140> 010:0013-----
01141> *#
01142> *#
01143> | ADD HYD (SouthEx ) | ID: NHYD AREA QPEAK TPEAK R.V. DWF

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01144> -----
01145> (ha) (cms) (hrs) (mm) (cms)
01146> ID1 01:103 4.63 .168 1.70 18.98 .000
01147> +ID2 02:104 8.23 .284 1.67 17.39 .000
01148> +ID3 03:105 .81 .042 1.25 14.20 .000
01149> +ID4 04:106 1.27 .056 1.28 13.07 .000
01150> +ID5 05:EX302 .87 .034 1.37 13.51 .000
01151> +ID6 06:EX303 1.04 .183 1.00 25.47 .000
01152> -----
01153> SUM 08:SouthEx 16.85 .551 1.58 17.65 .000
01154> -----
01155> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
01156> -----
01157> 010:0014-----
01158> -----
01159> 010:0002-----
01160> -----
01161> 010:0002-----
01162> -----
01163> 010:0002-----
01164> ** END OF RUN : 24
01165> -----
01166> -----
01167> -----
01168> -----
01169> -----
01170> -----
01171> -----
01172> -----
01173> | Project dir.: C:\MODELL-1\14396\SNMHYMO\
01174> | Rainfall dir.: C:\MODELL-1\14396\SNMHYMO\
01175> TZERO = .00 hrs on 0
01176> METOUT= 2 (output = METRIC)
01177> NRUN = 025
01178> NSTORM= 1
01179> # 1=ldn25.3hr
01180> -----
01181> 025:0002-----
01182> *#
01183> *# Project Name: [Arva] Project Number: [161414396]
01184> *# Date : 2024-09-09
01185> *# Modeller : [AA, AKK]
01186> *# Company : Stantec Consulting Ltd. (London)
01187> *# License # : 4730904
01188> *#
01189> *#
01190> *# Arva
01191> *# 25 mm 4-hr, 2, 5, 10, 25, 50, 100, and 250-year, 3-hr Chicago Storm
01192> *#
01193> *#
01194> *#
01195> *#
01196> *#
01197> *# Existing Conditions
01198> *#
01199> *#
01200> *#
01201> -----
01202> 025:0002-----
01203> -----
01204> | READ STORM | Filename: CHICAGO STORM
01205> | Ptotal= 61.48 mm | Comments: CHICAGO STORM
01206> -----
01207> TIME RAIN | TIME RAIN | TIME RAIN | TIME RAIN
01208> hrs mm/hr | hrs mm/hr | hrs mm/hr | hrs mm/hr
01209> .08 3.863 | .83 30.802 | 1.58 13.993 | 2.33 5.432
01210> .17 4.298 | .92 74.085 | 1.67 11.991 | 2.42 5.077
01211> .25 4.843 | 1.00 190.819 | 1.75 10.465 | 2.50 4.766
01212> .33 5.545 | 1.08 95.197 | 1.83 9.267 | 2.58 4.490
01213> .42 6.481 | 1.17 53.926 | 1.92 8.306 | 2.67 4.244
01214> .50 7.783 | 1.25 36.022 | 2.00 7.519 | 2.75 4.024
01215> .58 9.705 | 1.33 26.421 | 2.08 6.864 | 2.83 3.826
01216> .67 12.783 | 1.42 20.579 | 2.17 6.312 | 2.92 3.646
01217> .75 18.359 | 1.50 16.712 | 2.25 5.840 | 3.00 3.483
01218> -----
01219> -----
01220> 025:0003-----
01221> *#
01222> *#
01223> *# North of Midway
01224> *#
01225> *#
01226> -----
01227> | CALIB NASHYD | Area (ha)= 1.27 Curve Number (CN)=76.30
01228> | 01:101 DT= 1.00 | Ia (mm)= 5.000 # of Linear Res. (N)= 3.00
01229> | U.H. Tp(hrs)= .210
01230> -----
01231> Unit Hyd Qpeak (cms)= .231
01232> -----
01233> PEAK FLOW (cms)= .104 (i)
01234> TIME TO PEAK (hrs)= 1.293
01235> RUNOFF VOLUME (mm)= 23.564
01236> TOTAL RAINFALL (mm)= 61.480
01237> RUNOFF COEFFICIENT = .383
01238> -----
01239> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01240> -----
01241> 025:0004-----
01242> *#
01243> *#
01244> | CALIB NASHYD | Area (ha)= 7.30 Curve Number (CN)=79.00
01245> | 02:102 DT= 1.00 | Ia (mm)= 5.000 # of Linear Res. (N)= 3.00
01246> | U.H. Tp(hrs)= .640
01247> -----
01248> Unit Hyd Qpeak (cms)= .436
01249> -----
01250> PEAK FLOW (cms)= .317 (i)
01251> TIME TO PEAK (hrs)= 1.833
01252> RUNOFF VOLUME (mm)= 25.726
01253> TOTAL RAINFALL (mm)= 61.480
01254> RUNOFF COEFFICIENT = .418
01255> -----
01256> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01257> -----
01258> 025:0005-----
01259> *#
01260> *#
01261> | CALIB STANDHYD | Area (ha)= .99 Dir. Conn. (%) = 84.00
01262> | 03:EX301 DT= 1.00 | Total Imp (%) = 84.00
01263> -----
01264> IMPERVIOUS PERVIOUS (i)
01265> Surface Area (ha)= .83 .16
01266> Dep. Storage (mm)= 2.00 5.00
01267> Average Slope (%) = 2.00 1.51
01268> Length (m)= 25.00 15.00
01269> Mannings n = .001 .024
01270> -----

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01271> Max.eff.Inten.(mm/hr)= 190.82 72.69
01272> over (min)= 1.00 1.00
01273> Storage Coeff. (min)= .18 (ii) 1.36 (ii)
01274> Unit Hyd. Tpeak (min)= 1.00 1.00
01275> Unit Hyd. peak (cms)= 1.69 .88
01276>
01277> PEAK FLOW (cms)= .44 .03 *.TOTALS*
01278> TIME TO PEAK (hrs)= .97 1.00 1.000
01279> RUNOFF VOLUME (mm)= 59.48 21.89 53.466
01280> TOTAL RAINFALL (mm)= 61.48 61.48 61.480
01281> RUNOFF COEFFICIENT = .97 .36 .870
01282>
01283> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
01284> CN* = 74.0 Ia = Dep. Storage (Above)
01285> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
01286> THAN THE STORAGE COEFFICIENT.
01287> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01288>
01289> -----
01290> 025:0006-----
01291>
01292> | ADD HYD (NorthEx ) | ID: NHYD AREA QPEAK TPEAK R.V. DWF
01293> |-----|-----| (ha) (cms) (hrs) (mm) (cms)
01294> | ID1 01:101 1.27 .104 1.28 23.56 .000
01295> | +ID2 02:102 7.30 .317 1.83 25.73 .000
01296> | +ID3 03:EX301 .99 .470 1.00 53.47 .000
01297> |-----|-----|
01298> | SUM 09:NorthEx 9.56 .498 1.00 28.31 .000
01299>
01300> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
01301>
01302> -----
01303> 025:0007-----
01304> *#-----
01305> *#
01306> *# South of Midway
01307> *#
01308> *#-----
01309>
01310> | CALIB NASHYD | Area (ha)= 4.63 Curve Number (CN)=78.50
01311> | 01:103 DT= 1.00 | Ia (mm)= 5.000 # of Linear Res. (N)= 3.00
01312> |-----|-----| U.H. Tp(hrs)= .520
01313>
01314> Unit Hyd Qpeak (cms)= .340
01315>
01316> PEAK FLOW (cms)= .229 (i)
01317> TIME TO PEAK (hrs)= 1.683
01318> RUNOFF VOLUME (mm)= 25.308
01319> TOTAL RAINFALL (mm)= 61.480
01320> RUNOFF COEFFICIENT = .412
01321>
01322> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01323>
01324> -----
01325> 025:0008-----
01326>
01327> | CALIB NASHYD | Area (ha)= 8.23 Curve Number (CN)=76.00
01328> | 02:104 DT= 1.00 | Ia (mm)= 5.000 # of Linear Res. (N)= 3.00
01329> |-----|-----| U.H. Tp(hrs)= .490
01330>
01331> Unit Hyd Qpeak (cms)= .642
01332>
01333> PEAK FLOW (cms)= .390 (i)
01334> TIME TO PEAK (hrs)= 1.550
01335> RUNOFF VOLUME (mm)= 23.338
01336> TOTAL RAINFALL (mm)= 61.480
01337> RUNOFF COEFFICIENT = .380
01338>
01339> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01340>
01341> -----
01342> 025:0009-----
01343>
01344> | CALIB NASHYD | Area (ha)= .81 Curve Number (CN)=70.00
01345> | 03:105 DT= 1.00 | Ia (mm)= 5.000 # of Linear Res. (N)= 3.00
01346> |-----|-----| U.H. Tp(hrs)= .180
01347>
01348> Unit Hyd Qpeak (cms)= .172
01349>
01350> PEAK FLOW (cms)= .058 (i)
01351> TIME TO PEAK (hrs)= 1.250
01352> RUNOFF VOLUME (mm)= 19.294
01353> TOTAL RAINFALL (mm)= 61.480
01354> RUNOFF COEFFICIENT = .314
01355>
01356> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01357>
01358> -----
01359> 025:0010-----
01360>
01361> | CALIB NASHYD | Area (ha)= 1.27 Curve Number (CN)=67.50
01362> | 04:106 DT= 1.00 | Ia (mm)= 5.000 # of Linear Res. (N)= 3.00
01363> |-----|-----| U.H. Tp(hrs)= .200
01364>
01365> Unit Hyd Qpeak (cms)= .243
01366>
01367> PEAK FLOW (cms)= .079 (i)
01368> TIME TO PEAK (hrs)= 1.267
01369> RUNOFF VOLUME (mm)= 17.844
01370> TOTAL RAINFALL (mm)= 61.480
01371> RUNOFF COEFFICIENT = .290
01372>
01373> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01374>
01375> -----
01376> 025:0011-----
01377>
01378> | CALIB NASHYD | Area (ha)= .87 Curve Number (CN)=68.50
01379> | 05:EX302 DT= 1.00 | Ia (mm)= 5.000 # of Linear Res. (N)= 3.00
01380> |-----|-----| U.H. Tp(hrs)= .260
01381>
01382> Unit Hyd Qpeak (cms)= .128
01383>
01384> PEAK FLOW (cms)= .048 (i)
01385> TIME TO PEAK (hrs)= 1.350
01386> RUNOFF VOLUME (mm)= 18.409
01387> TOTAL RAINFALL (mm)= 61.480
01388> RUNOFF COEFFICIENT = .299
01389>
01390> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01391>
01392> -----
01393> 025:0012-----
01394>
01395> | CALIB STANDHYD | Area (ha)= 1.04
01396> | 06:EX303 DT= 1.00 | Total Imp(%)= 29.00 Dir. Conn.(%)= 29.00
01397> |-----|-----|

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01398> IMPERVIOUS PERVIOUS (i)
01399> Surface Area (ha)= .30 .74
01400> Dep. Storage (mm)= 2.00 5.00
01401> Average Slope (%)= 2.00 1.00
01402> Length (m)= 25.00 50.00
01403> Mannings n = .001 .024
01404>
01405> Max.eff.Inten.(mm/hr)= 190.82 62.00
01406> over (min)= 1.00 3.00
01407> Storage Coeff. (min)= .18 (ii) 3.12 (ii)
01408> Unit Hyd. Tpeak (min)= 1.00 3.00
01409> Unit Hyd. peak (cms)= 1.69 .37
01410>
01411> PEAK FLOW (cms)= .16 .09 *.TOTALS*
01412> TIME TO PEAK (hrs)= .98 1.03 1.000
01413> RUNOFF VOLUME (mm)= 59.48 20.87 32.070
01414> TOTAL RAINFALL (mm)= 61.48 61.48 61.480
01415> RUNOFF COEFFICIENT = .97 .34 .522
01416>
01417> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
01418> CN* = 72.5 Ia = Dep. Storage (Above)
01419> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
01420> THAN THE STORAGE COEFFICIENT.
01421> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01422>
01423> -----
01424> 025:0013-----
01425>
01426> | ADD HYD (SouthEx ) | ID: NHYD AREA QPEAK TPEAK R.V. DWF
01427> |-----|-----| (ha) (cms) (hrs) (mm) (cms)
01428> | ID1 01:103 4.63 .229 1.68 25.31 .000
01429> | +ID2 02:104 8.23 .390 1.65 23.34 .000
01430> | +ID3 03:105 .81 .058 1.25 19.29 .000
01431> | +ID4 04:106 1.27 .079 1.27 17.84 .000
01432> | +ID5 05:EX302 .87 .048 1.35 18.41 .000
01433> | +ID6 06:EX303 1.04 .242 1.00 32.07 .000
01434> |-----|-----|
01435> | SUM 08:SouthEx 16.85 .754 1.57 23.56 .000
01436>
01437> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
01438>
01439> -----
01440> 025:0014-----
01441>
01442> 025:0002-----
01443>
01444> 025:0002-----
01445>
01446> 025:0002-----
01447>
01448> 025:0002-----
01449> ** END OF RUN : 49
01450>
01451> *****
01452>
01453>
01454>
01455>
01456>
01457> -----
01458> | START | Project dir.: C:\MODELL-1\14396\SWMHYMO\
01459> |-----|-----| Rainfall dir.: C:\MODELL-1\14396\SWMHYMO\
01460> | TZERO = .00 hrs on 0
01461> | METOUT= 2 (output = METRIC)
01462> | NRUN = 050
01463> | NSTORM= 1
01464> | # 1=ldn50.3hr
01465>
01466> 050:0002-----
01467> *#-----
01468> *# Project Name: [Arva] Project Number: [161414396]
01469> *# Date : 2024-09-09
01470> *# Modeller : [AA, AKK]
01471> *# Company : Stantec Consulting Ltd. (London)
01472> *# License # : 4730904
01473> *#-----
01474> *#
01475> *# Arva
01476> *# 25 mm 4-hr, 2, 5, 10, 25, 50, 100, and 250-year, 3-hr Chicago Storm
01477> *#
01478> *#-----
01479> *#-----
01480> *#
01481> *#
01482> *# Existing Conditions
01483> *#
01484> *#
01485> *#-----
01486>
01487> 050:0002-----
01488>
01489> | READ STORM | Filename: CHICAGO STORM
01490> | Ptotal= 68.72 mm | Comments: CHICAGO STORM
01491>
01492> TIME RAIN | TIME RAIN | TIME RAIN | TIME RAIN
01493> hrs mm/hr | hrs mm/hr | hrs mm/hr | hrs mm/hr
01494> .08 4.313 | .83 34.573 | 1.58 15.695 | 2.33 6.074
01495> .17 4.801 | .92 82.919 | 1.67 13.445 | 2.42 5.676
01496> .25 5.412 | 1.00 211.984 | 1.75 11.729 | 2.50 5.326
01497> .33 6.201 | 1.08 106.433 | 1.83 10.383 | 2.58 5.017
01498> .42 7.252 | 1.17 60.466 | 1.92 9.302 | 2.67 4.741
01499> .50 8.715 | 1.25 40.428 | 2.00 8.418 | 2.75 4.494
01500> .58 10.876 | 1.33 29.658 | 2.08 7.682 | 2.83 4.272
01501> .67 14.336 | 1.42 23.098 | 2.17 7.062 | 2.92 4.070
01502> .75 20.603 | 1.50 18.752 | 2.25 6.532 | 3.00 3.887
01503>
01504>
01505> 050:0003-----
01506> *#-----
01507> *#
01508> *# North of Midway
01509> *#
01510> *#-----
01511>
01512> | CALIB NASHYD | Area (ha)= 1.27 Curve Number (CN)=76.30
01513> | 01:101 DT= 1.00 | Ia (mm)= 5.000 # of Linear Res. (N)= 3.00
01514> |-----|-----| U.H. Tp(hrs)= .210
01515>
01516> Unit Hyd Qpeak (cms)= .231
01517>
01518> PEAK FLOW (cms)= .127 (i)
01519> TIME TO PEAK (hrs)= 1.283
01520> RUNOFF VOLUME (mm)= 28.469
01521> TOTAL RAINFALL (mm)= 68.719
01522> RUNOFF COEFFICIENT = .414
01523>
01524> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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01525>
01526>
01527> 050:0004-----
01528>
01529> | CALIB NASHYD | Area (ha)= 7.30 Curve Number (CN)=79.00
01530> | 02:102 DT= 1.00 | Ia (mm)= 5,000 # of Linear Res. (N)= 3.00
01531> | U.H. Tp(hrs)= .640
01532>
01533> Unit Hyd Qpeak (cms)= .436
01534>
01535> PEAK FLOW (cms)= .384 (i)
01536> TIME TO PEAK (hrs)= 1.833
01537> RUNOFF VOLUME (mm)= 30.937
01538> TOTAL RAINFALL (mm)= 68.719
01539> RUNOFF COEFFICIENT = .450
01540>
01541> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01542>
01543>
01544> 050:0005-----
01545>
01546> | CALIB STANDHYD | Area (ha)= .99
01547> | 03:EX301 DT= 1.00 | Total Imp(%)= 84.00 Dir. Conn.(%)= 84.00
01548>
01549>
01550> IMPERVIOUS PVIOUS (i)
01551> Surface Area (ha)= .83 .16
01552> Dep. Storage (mm)= 2.00 5.00
01553> Average Slope (%)= 2.00 1.51
01554> Length (m)= 25.00 15.00
01555> Mannings n = .001 .024
01556>
01557> Max.eff.Inten.(mm/hr)= 211.98 88.22
01558> over (min)= 1.00 1.00
01559> Storage Coeff. (min)= .17 (ii) 1.27 (ii)
01560> Unit Hyd. Tpeak (min)= 1.00 1.00
01561> Unit Hyd. peak (cms)= 1.69 .93
01562>
01563> PEAK FLOW (cms)= .49 .04
01564> TIME TO PEAK (hrs)= .97 1.00
01565> RUNOFF VOLUME (mm)= 66.72 26.54
01566> TOTAL RAINFALL (mm)= 68.72 68.72
01567> RUNOFF COEFFICIENT = .97 .39
01568>
01569> *TOTALS*
01570> PEAK FLOW (cms)= .49 .04
01571> TIME TO PEAK (hrs)= .97 1.00
01572> RUNOFF VOLUME (mm)= 66.72 26.54
01573> TOTAL RAINFALL (mm)= 68.72 68.72
01574> RUNOFF COEFFICIENT = .97 .39
01575>
01576> (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:
01577> CN* = 74.0 Ia = Dep. Storage (Above)
01578> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
01579> THAN THE STORAGE COEFFICIENT.
01580> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01581>
01582>
01583> 050:0006-----
01584>
01585> | ADD HYD (NorthEx ) | ID: NHYD AREA QPEAK TPEAK R.V. DWF
01586> | (ha) (cms) (hrs) (mm) (cms)
01587> ID1 01:101 1.27 .127 1.28 28.47 .000
01588> +ID2 02:102 7.30 .384 1.83 30.94 .000
01589> +ID3 03:EX301 .99 .525 1.00 60.29 .000
01590>
01591> SUM 09:NorthEx 9.56 .563 1.00 33.65 .000
01592>
01593> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
01594>
01595> 050:0007-----
01596>
01597> | CALIB NASHYD | Area (ha)= 4.63 Curve Number (CN)=78.50
01598> | 01:103 DT= 1.00 | Ia (mm)= 5,000 # of Linear Res. (N)= 3.00
01599> | U.H. Tp(hrs)= .520
01600>
01601> Unit Hyd Qpeak (cms)= .340
01602>
01603> PEAK FLOW (cms)= .278 (i)
01604> TIME TO PEAK (hrs)= 1.683
01605> RUNOFF VOLUME (mm)= 30.461
01606> TOTAL RAINFALL (mm)= 68.719
01607> RUNOFF COEFFICIENT = .443
01608>
01609> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01610>
01611>
01612> 050:0008-----
01613>
01614> | CALIB NASHYD | Area (ha)= 8.23 Curve Number (CN)=76.00
01615> | 02:104 DT= 1.00 | Ia (mm)= 5,000 # of Linear Res. (N)= 3.00
01616> | U.H. Tp(hrs)= .490
01617>
01618> Unit Hyd Qpeak (cms)= .642
01619>
01620> PEAK FLOW (cms)= .474 (i)
01621> TIME TO PEAK (hrs)= 1.650
01622> RUNOFF VOLUME (mm)= 28.209
01623> TOTAL RAINFALL (mm)= 68.719
01624> RUNOFF COEFFICIENT = .410
01625>
01626> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01627>
01628>
01629> 050:0009-----
01630>
01631> | CALIB NASHYD | Area (ha)= .81 Curve Number (CN)=70.00
01632> | 03:105 DT= 1.00 | Ia (mm)= 5,000 # of Linear Res. (N)= 3.00
01633> | U.H. Tp(hrs)= .180
01634>
01635> Unit Hyd Qpeak (cms)= .172
01636>
01637> PEAK FLOW (cms)= .071 (i)
01638> TIME TO PEAK (hrs)= 1.233
01639> RUNOFF VOLUME (mm)= 23.526
01640> TOTAL RAINFALL (mm)= 68.719
01641> RUNOFF COEFFICIENT = .342
01642>
01643> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01644>
01645>
01646> 050:0010-----
01647>
01648> | CALIB NASHYD | Area (ha)= 1.27 Curve Number (CN)=67.50
01649> | 04:106 DT= 1.00 | Ia (mm)= 5,000 # of Linear Res. (N)= 3.00
01650> | U.H. Tp(hrs)= .200
01651>
01652> Unit Hyd Qpeak (cms)= .243

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01652> PEAK FLOW (cms)= .097 (i)
01653> TIME TO PEAK (hrs)= 1.267
01654> RUNOFF VOLUME (mm)= 21.826
01655> TOTAL RAINFALL (mm)= 68.719
01656> RUNOFF COEFFICIENT = .318
01657>
01658> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01659>
01660>
01661> 050:0011-----
01662>
01663> | CALIB NASHYD | Area (ha)= .87 Curve Number (CN)=68.50
01664> | 05:EX302 DT= 1.00 | Ia (mm)= 5,000 # of Linear Res. (N)= 3.00
01665> | U.H. Tp(hrs)= .260
01666>
01667> Unit Hyd Qpeak (cms)= .128
01668>
01669> PEAK FLOW (cms)= .059 (i)
01670> TIME TO PEAK (hrs)= 1.350
01671> RUNOFF VOLUME (mm)= 22.491
01672> TOTAL RAINFALL (mm)= 68.719
01673> RUNOFF COEFFICIENT = .327
01674>
01675> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01676>
01677>
01678> 050:0012-----
01679>
01680> | CALIB STANDHYD | Area (ha)= 1.04
01681> | 06:EX303 DT= 1.00 | Total Imp(%)= 29.00 Dir. Conn.(%)= 29.00
01682>
01683> IMPERVIOUS PVIOUS (i)
01684> Surface Area (ha)= .30 .74
01685> Dep. Storage (mm)= 2.00 5.00
01686> Average Slope (%)= 2.00 1.00
01687> Length (m)= 25.00 50.00
01688> Mannings n = .001 .024
01689>
01690> Max.eff.Inten.(mm/hr)= 211.98 75.93
01691> over (min)= 1.00 3.00
01692> Storage Coeff. (min)= .17 (ii) 2.89 (ii)
01693> Unit Hyd. Tpeak (min)= 1.00 3.00
01694> Unit Hyd. peak (cms)= 1.69 .38
01695>
01696> PEAK FLOW (cms)= .18 .12
01697> TIME TO PEAK (hrs)= .98 1.03
01698> RUNOFF VOLUME (mm)= 66.72 25.37
01699> TOTAL RAINFALL (mm)= 68.72 68.72
01700> RUNOFF COEFFICIENT = .97 .37
01701>
01702> (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:
01703> CN* = 72.5 Ia = Dep. Storage (Above)
01704> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
01705> THAN THE STORAGE COEFFICIENT.
01706> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01707>
01708>
01709> 050:0013-----
01710>
01711> | ADD HYD (SouthEx ) | ID: NHYD AREA QPEAK TPEAK R.V. DWF
01712> | (ha) (cms) (hrs) (mm) (cms)
01713> ID1 01:103 4.63 .278 1.68 30.46 .000
01714> +ID2 02:104 8.23 .474 1.65 28.21 .000
01715> +ID3 03:105 .81 .071 1.29 23.53 .000
01716> +ID4 04:106 1.27 .097 1.27 21.83 .000
01717> +ID5 05:EX302 .87 .059 1.35 22.49 .000
01718> +ID6 06:EX303 1.04 .283 1.00 37.36 .000
01719>
01720> SUM 08:SouthEx 16.85 .917 1.57 28.39 .000
01721>
01722> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
01723>
01724>
01725> 050:0014-----
01726>
01727> 050:0002-----
01728>
01729> 050:0002-----
01730>
01731> 050:0002-----
01732>
01733> 050:0002-----
01734>
01735> 050:0002-----
01736> ** END OF RUN : 99
01737>
01738>
01739>
01740>
01741>
01742>
01743>
01744> | START | Project dir.: C:\MODELL-1\14396\SWMHYMO\
01745> | Rainfall dir.: C:\MODELL-1\14396\SWMHYMO\
01746>
01747> TZERO = .00 hrs on 0
01748> METOUT= 2 (output = METRIC)
01749> NRUN = 100
01750> NSTORM= 1
01751> # 1=ldn100.3hr
01752>
01753> 100:0002-----
01754>
01755> Project Name: [Arva] Project Number: [161414396]
01756> Date : 2024-09-09
01757> Modeller : [AA, AKK]
01758> Company : Stantec Consulting Ltd. (London)
01759> License # : 4730904
01760>
01761>
01762> Arva
01763> # 25 mm 4-hr, 2, 5, 10, 25, 50, 100, and 250-year, 3-hr Chicago Storm
01764>
01765>
01766>
01767>
01768>
01769> Existing Conditions
01770>
01771>
01772>
01773>
01774> 100:0002-----
01775>
01776> READ STORM | Filename: CHICAGO STORM
01777> Ptotal= 75.83 mm | Comments: CHICAGO STORM
01778>

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01779>      TIME    RAIN    TIME    RAIN    TIME    RAIN    TIME    RAIN
01780>      hrs     mm/hr   hrs     mm/hr   hrs     mm/hr   hrs     mm/hr
01781>      .08     4.623   .83    38.591   1.58   17.341   2.33   6.569
01782>      .17     5.160   .92    92.413   1.67   14.811   2.42   6.128
01783>      .25     5.836   1.00   232.243   1.75   12.884   2.50   5.740
01784>      .33     6.709   1.08   118.408   1.83   11.375   2.58   5.398
01785>      .42     7.878   1.17   67.596   1.92   10.166   2.67   5.094
01786>      .50     9.510   1.25   45.175   2.00   9.178   2.75   4.822
01787>      .58    11.928   1.33   33.066   2.08   8.357   2.83   4.577
01788>      .67    15.813   1.42   25.678   2.17   7.666   2.92   4.356
01789>      .75    22.868   1.50   20.783   2.25   7.077   3.00   4.155
01790>
01791>-----
01792> 100:0003-----
01793> *#-----
01794> *#
01795> *# North of Medway
01796> *#
01797> *#-----
01798>-----
01799> | CALIB NASHYD | Area (ha)= 1.27 Curve Number (CN)=76.30
01800> | 01:101 DT= 1.00 | Ia (mm)= 5.000 # of Linear Res. (N)= 3.00
01801>-----
01802>-----
01803> Unit Hyd Qpeak (cms)= .231
01804>
01805> PEAK FLOW (cms)= .151 (i)
01806> TIME TO PEAK (hrs)= 1.267
01807> RUNOFF VOLUME (mm)= 33.508
01808> TOTAL RAINFALL (mm)= 75.831
01809> RUNOFF COEFFICIENT = .442
01810>
01811> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01812>
01813>-----
01814> 100:0004-----
01815>-----
01816> | CALIB NASHYD | Area (ha)= 7.30 Curve Number (CN)=79.00
01817> | 02:102 DT= 1.00 | Ia (mm)= 5.000 # of Linear Res. (N)= 3.00
01818>-----
01819>-----
01820> Unit Hyd Qpeak (cms)= .436
01821>
01822> PEAK FLOW (cms)= .454 (i)
01823> TIME TO PEAK (hrs)= 1.817
01824> RUNOFF VOLUME (mm)= 36.263
01825> TOTAL RAINFALL (mm)= 75.831
01826> RUNOFF COEFFICIENT = .478
01827>
01828> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01829>
01830>-----
01831> 100:0005-----
01832>-----
01833> | CALIB STANDHYD | Area (ha)= .99
01834> | 03:EX301 DT= 1.00 | Total Imp(%)= 84.00 Dir. Conn.(%)= 84.00
01835>-----
01836>-----
01837> IMPERVIOUS PERVIOUS (i)
01838> Surface Area (ha)= .83 .16
01839> Dep. Storage (mm)= 2.00 5.00
01840> Average Slope (%)= 2.00 1.51
01841> Length (m)= 25.00 15.00
01842> Mannings n = .001 .024
01843>
01844> Max.eff.Inten.(mm/hr)= 232.24 103.99
01845> over (min)= 1.00 1.00
01846> Storage Coeff. (min)= .16 (ii) 1.19 (ii)
01847> Unit Hyd. Tpeak (min)= 1.00 1.00
01848> Unit Hyd. peak (cms)= 1.70 .97
01849>
01850> PEAK FLOW (cms)= .54 .04 *TOTALS*
01851> TIME TO PEAK (hrs)= .97 1.00 1.000
01852> RUNOFF VOLUME (mm)= 73.83 31.34 67.033
01853> TOTAL RAINFALL (mm)= 75.83 75.83 75.831
01854> RUNOFF COEFFICIENT = .97 .41 .884
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>-----
01863> 100:0006-----
01864> | ADD HYD (NorthEx ) | ID: NHYD AREA QPEAK TPEAK R.V. DWF
01865>-----
01866> ID1 01:101 1.27 .151 1.27 33.51 .000
01867> +ID2 02:102 7.30 .454 1.82 36.26 .000
01868> +ID3 03:EX301 .99 .579 1.00 67.03 .000
01869>-----
01870> SUM 09:NorthEx 9.56 .626 1.00 39.08 .000
01871>
01872> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
01873>
01874>-----
01875> 100:0007-----
01876> *#-----
01877> *#
01878> *# South of Medway
01879> *#
01880> *#-----
01881>-----
01882> | CALIB NASHYD | Area (ha)= 4.63 Curve Number (CN)=78.50
01883> | 01:103 DT= 1.00 | Ia (mm)= 5.000 # of Linear Res. (N)= 3.00
01884>-----
01885>-----
01886> Unit Hyd Qpeak (cms)= .340
01887>
01888> PEAK FLOW (cms)= .329 (i)
01889> TIME TO PEAK (hrs)= 1.667
01890> RUNOFF VOLUME (mm)= 35.734
01891> TOTAL RAINFALL (mm)= 75.831
01892> RUNOFF COEFFICIENT = .471
01893>
01894> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01895>
01896>-----
01897> 100:0008-----
01898>-----
01899> | CALIB NASHYD | Area (ha)= 8.23 Curve Number (CN)=76.00
01900> | 02:104 DT= 1.00 | Ia (mm)= 5.000 # of Linear Res. (N)= 3.00
01901>-----
01902>-----
01903> Unit Hyd Qpeak (cms)= .642
01904>
01905> PEAK FLOW (cms)= .564 (i)

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01906> TIME TO PEAK (hrs)= 1.633
01907> RUNOFF VOLUME (mm)= 33.216
01908> TOTAL RAINFALL (mm)= 75.831
01909> RUNOFF COEFFICIENT = .438
01910>
01911> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01912>
01913>-----
01914> 100:0009-----
01915>-----
01916> | CALIB NASHYD | Area (ha)= .81 Curve Number (CN)=70.00
01917> | 03:105 DT= 1.00 | Ia (mm)= 5.000 # of Linear Res. (N)= 3.00
01918>-----
01919>-----
01920> Unit Hyd Qpeak (cms)= .172
01921>
01922> PEAK FLOW (cms)= .086 (i)
01923> TIME TO PEAK (hrs)= 1.233
01924> RUNOFF VOLUME (mm)= 27.921
01925> TOTAL RAINFALL (mm)= 75.831
01926> RUNOFF COEFFICIENT = .368
01927>
01928> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01929>
01930>-----
01931> 100:0010-----
01932>-----
01933> | CALIB NASHYD | Area (ha)= 1.27 Curve Number (CN)=67.50
01934> | 04:106 DT= 1.00 | Ia (mm)= 5.000 # of Linear Res. (N)= 3.00
01935>-----
01936>-----
01937> Unit Hyd Qpeak (cms)= .243
01938>
01939> PEAK FLOW (cms)= .117 (i)
01940> TIME TO PEAK (hrs)= 1.267
01941> RUNOFF VOLUME (mm)= 25.978
01942> TOTAL RAINFALL (mm)= 75.831
01943> RUNOFF COEFFICIENT = .343
01944>
01945> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01946>
01947>-----
01948> 100:0011-----
01949>-----
01950> | CALIB NASHYD | Area (ha)= .87 Curve Number (CN)=68.50
01951> | 05:EX302 DT= 1.00 | Ia (mm)= 5.000 # of Linear Res. (N)= 3.00
01952>-----
01953>-----
01954> Unit Hyd Qpeak (cms)= .128
01955>
01956> PEAK FLOW (cms)= .071 (i)
01957> TIME TO PEAK (hrs)= 1.350
01958> RUNOFF VOLUME (mm)= 26.738
01959> TOTAL RAINFALL (mm)= 75.831
01960> RUNOFF COEFFICIENT = .353
01961>
01962> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01963>
01964>-----
01965> 100:0012-----
01966>-----
01967> | CALIB STANDHYD | Area (ha)= 1.04
01968> | 06:EX303 DT= 1.00 | Total Imp(%)= 29.00 Dir. Conn.(%)= 29.00
01969>-----
01970>-----
01971> IMPERVIOUS PERVIOUS (i)
01972> Surface Area (ha)= .30 .74
01973> Dep. Storage (mm)= 2.00 5.00
01974> Average Slope (%)= 2.00 1.00
01975> Length (m)= 25.00 50.00
01976> Mannings n = .001 .024
01977>
01978> Max.eff.Inten.(mm/hr)= 232.24 90.21
01979> over (min)= 1.00 3.00
01980> Storage Coeff. (min)= .16 (ii) 2.70 (ii)
01981> Unit Hyd. Tpeak (min)= 1.00 3.00
01982> Unit Hyd. peak (cms)= 1.70 .40
01983>
01984> PEAK FLOW (cms)= .19 .14 *TOTALS*
01985> TIME TO PEAK (hrs)= .97 1.03 1.000
01986> RUNOFF VOLUME (mm)= 73.83 30.01 42.718
01987> TOTAL RAINFALL (mm)= 75.83 75.83 75.831
01988> RUNOFF COEFFICIENT = .97 .40 .563
01989>
01990> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
01991> CN* = 72.5 Ia = Dep. Storage (Above)
01992> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
01993> THAN THE STORAGE COEFFICIENT.
01994> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01995>
01996>-----
01997> 100:0013-----
01998>-----
01999> | ADD HYD (SouthEx ) | ID: NHYD AREA QPEAK TPEAK R.V. DWF
02000>-----
02001> ID1 01:103 4.63 .329 1.67 35.73 .000
02002> +ID2 02:104 8.23 .564 1.63 33.22 .000
02003> +ID3 03:105 .81 .086 1.23 27.92 .000
02004> +ID4 04:106 1.27 .117 1.27 25.98 .000
02005> +ID5 05:EX302 .87 .071 1.35 26.74 .000
02006> +ID6 06:EX303 1.04 .324 1.00 42.72 .000
02007>-----
02008> SUM 08:SouthEx 16.85 1.090 1.55 33.36 .000
02009>
02010> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
02011>
02012>-----
02013> 100:0014-----
02014> 100:0002-----
02015>-----
02016> 100:0002-----
02017>-----
02018> 100:0002-----
02019>-----
02020> 100:0002-----
02021>-----
02022> 100:0002-----
02023>-----
02024> 100:0002-----
02025> ** END OF RUN : 249
02026>-----
02027>-----
02028>-----
02029>-----
02030>-----
02031>-----
02032>-----

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02033> -----
02034> | START | Project dir.: C:\MODELL-1\14396\SWMHYMO\
02035> | Rainfall dir.: C:\MODELL-1\14396\SWMHYMO\
02036> TZERO = .00 hrs on
02037> METOUT= 2 (output = METRIC)
02038> NRUN = 250
02039> NSTORM= 1
02040> # 1=1dn250.3hr
02041> -----
02042> 250:0002-----
02043> *#-----
02044> *# Project Name: [Arva] Project Number: [161414396]
02045> *# Date : 2024-09-09
02046> *# Modeller : [AA, AKK]
02047> *# Company : Stantec Consulting Ltd. (London)
02048> *# License # : 4730904
02049> *#-----
02050> *#
02051> *# Arva
02052> *# 25 mm 4-hr, 2, 5, 10, 25, 50, 100, and 250-year, 3-hr Chicago Storm
02053> *#
02054> *#-----
02055> *#-----
02056> *#
02057> *#
02058> *# Existing Conditions
02059> *#
02060> *#
02061> *#-----
02062> *#-----
02063> 250:0002-----
02064> *#-----
02065> | READ STORM | Filename: 250-yr, 3hr Chicago Storm from London ID
02066> | Ptotal= 86.60 mm | Comments: 250-yr, 3hr Chicago Storm from London ID
02067> *#-----
02068> TIME RAIN | TIME RAIN | TIME RAIN | TIME RAIN
02069> hrs mm/hr | hrs mm/hr | hrs mm/hr | hrs mm/hr
02070> .08 5.095 | .83 43.425 | 1.58 19.302 | 2.33 7.254
02071> .17 5.690 | .92 106.077 | 1.67 16.460 | 2.42 6.764
02072> .25 6.440 | 1.00 274.730 | 1.75 14.300 | 2.50 6.334
02073> .33 7.410 | 1.08 136.668 | 1.83 12.612 | 2.58 5.955
02074> .42 8.710 | 1.17 76.864 | 1.92 11.261 | 2.67 5.617
02075> .50 10.529 | 1.25 50.954 | 2.00 10.158 | 2.75 5.316
02076> .58 13.230 | 1.33 37.106 | 2.08 9.244 | 2.83 5.044
02077> .67 17.585 | 1.42 28.713 | 2.17 8.474 | 2.92 4.799
02078> .75 25.536 | 1.50 23.179 | 2.25 7.819 | 3.00 4.577
02079> *#-----
02080> *#-----
02081> 250:0003-----
02082> *#-----
02083> *#
02084> *# North of Medway
02085> *#
02086> *#-----
02087> *#-----
02088> | CALIB NASHYD | Area (ha)= 1.27 Curve Number (CN)=76.30
02089> | 01:101 DT= 1.00 | Ia (mm)= 5.000 # of Linear Res. (N)= 3.00
02090> | U.H. Tp(hrs)= .210
02091> *#-----
02092> Unit Hyd Qpeak (cms)= .231
02093> *#-----
02094> PEAK FLOW (cms)= .193 (i)
02095> TIME TO PEAK (hrs)= 1.267
02096> RUNOFF VOLUME (mm)= 41.489
02097> TOTAL RAINFALL (mm)= 86.603
02098> RUNOFF COEFFICIENT = .479
02099> *#-----
02100> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02101> *#-----
02102> 250:0004-----
02103> *#-----
02104> *#-----
02105> | CALIB NASHYD | Area (ha)= 7.30 Curve Number (CN)=79.00
02106> | 02:102 DT= 1.00 | Ia (mm)= 5.000 # of Linear Res. (N)= 3.00
02107> | U.H. Tp(hrs)= .640
02108> *#-----
02109> Unit Hyd Qpeak (cms)= .436
02110> *#-----
02111> PEAK FLOW (cms)= .567 (i)
02112> TIME TO PEAK (hrs)= 1.817
02113> RUNOFF VOLUME (mm)= 44.655
02114> TOTAL RAINFALL (mm)= 86.603
02115> RUNOFF COEFFICIENT = .516
02116> *#-----
02117> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02118> *#-----
02119> *#-----
02120> 250:0005-----
02121> *#-----
02122> | CALIB STANDHYD | Area (ha)= .99
02123> | 03:EX301 DT= 1.00 | Total Imp(%)= 84.00 Dir. Conn.(%)= 84.00
02124> *#-----
02125> IMPERVIOUS PERVIOUS (i)
02126> Surface Area (ha)= .83 .16
02127> Dep. Storage (mm)= 2.00 5.00
02128> Average Slope (%)= 2.00 1.51
02129> Length (m)= 25.00 15.00
02130> Mannings n = .001 .024
02131> *#-----
02132> Max.eff.Inten.(mm/hr)= 274.73 136.11
02133> over (min) 1.00 1.00
02134> Storage Coeff. (min)= .15 (ii) 1.08 (ii)
02135> Unit Hyd. Tpeak (min)= 1.00 1.00
02136> Unit Hyd. peak (cms)= 1.70 1.03
02137> *#-----
02138> PEAK FLOW (cms)= .63 .06 *TOTALS*
02139> TIME TO PEAK (hrs)= .97 1.00 .691 (iii)
02140> RUNOFF VOLUME (mm)= 84.60 38.98 77.302
02141> TOTAL RAINFALL (mm)= 86.60 86.60 86.603
02142> RUNOFF COEFFICIENT = .98 .45 .893
02143> *#-----
02144> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
02145> CN* = 74.0 Ia = Dep. Storage (Above)
02146> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
02147> THAN THE STORAGE COEFFICIENT.
02148> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02149> *#-----
02150> 250:0006-----
02151> *#-----
02152> *#-----
02153> | ADD HYD (NorthEx ) | ID: NHYD AREA QPEAK TPEAK R.V. DWF
02154> (ha) (cms) (hrs) (mm) (cms)
02155> ID1 01:101 1.27 .193 1.27 41.49 .000
02156> +ID2 02:102 7.30 .567 1.82 44.65 .000
02157> +ID3 03:EX301 .99 .691 1.00 77.30 .000
02158> *#-----
02159> SUM 09:NorthEx 9.56 .755 1.00 47.62 .000

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02160>
02161> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
02162>
02163> -----
02164> 250:0007-----
02165> *#-----
02166> *#
02167> *# South of Medway
02168> *#
02169> *#-----
02170> *#-----
02171> | CALIB NASHYD | Area (ha)= 4.63 Curve Number (CN)=78.50
02172> | 01:103 DT= 1.00 | Ia (mm)= 5.000 # of Linear Res. (N)= 3.00
02173> | U.H. Tp(hrs)= .520
02174> *#-----
02175> Unit Hyd Qpeak (cms)= .340
02176> *#-----
02177> PEAK FLOW (cms)= .413 (i)
02178> TIME TO PEAK (hrs)= 1.667
02179> RUNOFF VOLUME (mm)= 44.050
02180> TOTAL RAINFALL (mm)= 86.603
02181> RUNOFF COEFFICIENT = .509
02182> *#-----
02183> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02184> *#-----
02185> *#-----
02186> 250:0008-----
02187> *#-----
02188> | CALIB NASHYD | Area (ha)= 8.23 Curve Number (CN)=76.00
02189> | 02:104 DT= 1.00 | Ia (mm)= 5.000 # of Linear Res. (N)= 3.00
02190> | U.H. Tp(hrs)= .490
02191> *#-----
02192> Unit Hyd Qpeak (cms)= .642
02193> *#-----
02194> PEAK FLOW (cms)= .712 (i)
02195> TIME TO PEAK (hrs)= 1.633
02196> RUNOFF VOLUME (mm)= 41.152
02197> TOTAL RAINFALL (mm)= 86.603
02198> RUNOFF COEFFICIENT = .475
02199> *#-----
02200> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02201> *#-----
02202> *#-----
02203> 250:0009-----
02204> *#-----
02205> | CALIB NASHYD | Area (ha)= .81 Curve Number (CN)=70.00
02206> | 03:105 DT= 1.00 | Ia (mm)= 5.000 # of Linear Res. (N)= 3.00
02207> | U.H. Tp(hrs)= .180
02208> *#-----
02209> Unit Hyd Qpeak (cms)= .172
02210> *#-----
02211> PEAK FLOW (cms)= .111 (i)
02212> TIME TO PEAK (hrs)= 1.233
02213> RUNOFF VOLUME (mm)= 34.963
02214> TOTAL RAINFALL (mm)= 86.603
02215> RUNOFF COEFFICIENT = .404
02216> *#-----
02217> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02218> *#-----
02219> *#-----
02220> 250:0010-----
02221> *#-----
02222> | CALIB NASHYD | Area (ha)= 1.27 Curve Number (CN)=67.50
02223> | 04:106 DT= 1.00 | Ia (mm)= 5.000 # of Linear Res. (N)= 3.00
02224> | U.H. Tp(hrs)= .200
02225> *#-----
02226> Unit Hyd Qpeak (cms)= .243
02227> *#-----
02228> PEAK FLOW (cms)= .152 (i)
02229> TIME TO PEAK (hrs)= 1.267
02230> RUNOFF VOLUME (mm)= 32.658
02231> TOTAL RAINFALL (mm)= 86.603
02232> RUNOFF COEFFICIENT = .377
02233> *#-----
02234> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02235> *#-----
02236> *#-----
02237> 250:0011-----
02238> *#-----
02239> | CALIB NASHYD | Area (ha)= .87 Curve Number (CN)=68.50
02240> | 05:EX302 DT= 1.00 | Ia (mm)= 5.000 # of Linear Res. (N)= 3.00
02241> | U.H. Tp(hrs)= .260
02242> *#-----
02243> Unit Hyd Qpeak (cms)= .128
02244> *#-----
02245> PEAK FLOW (cms)= .092 (i)
02246> TIME TO PEAK (hrs)= 1.350
02247> RUNOFF VOLUME (mm)= 33.562
02248> TOTAL RAINFALL (mm)= 86.603
02249> RUNOFF COEFFICIENT = .388
02250> *#-----
02251> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02252> *#-----
02253> *#-----
02254> 250:0012-----
02255> *#-----
02256> | CALIB STANDHYD | Area (ha)= 1.04
02257> | 06:EX303 DT= 1.00 | Total Imp(%)= 29.00 Dir. Conn.(%)= 29.00
02258> *#-----
02259> IMPERVIOUS PERVIOUS (i)
02260> Surface Area (ha)= .30 .74
02261> Dep. Storage (mm)= 2.00 5.00
02262> Average Slope (%)= 2.00 1.00
02263> Length (m)= 25.00 50.00
02264> Mannings n = .001 .024
02265> *#-----
02266> Max.eff.Inten.(mm/hr)= 274.73 124.74
02267> over (min) 1.00 2.00
02268> Storage Coeff. (min)= .15 (ii) 2.38 (ii)
02269> Unit Hyd. Tpeak (min)= 1.00 2.00
02270> Unit Hyd. peak (cms)= 1.70 .50
02271> *#-----
02272> PEAK FLOW (cms)= .23 .20 *TOTALS*
02273> TIME TO PEAK (hrs)= .97 1.02 1.000
02274> RUNOFF VOLUME (mm)= 84.60 37.42 51.104
02275> TOTAL RAINFALL (mm)= 86.60 86.60 86.603
02276> RUNOFF COEFFICIENT = .98 .43 .590
02277> *#-----
02278> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
02279> CN* = 72.5 Ia = Dep. Storage (Above)
02280> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
02281> THAN THE STORAGE COEFFICIENT.
02282> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02283> *#-----
02284> *#-----
02285> 250:0013-----
02286> *#-----

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02287>	ADD HYD (SouthEx) ID: NHYD	AREA	QPEAK	TPEAK	R.V.	DWF
02288>	-----	(ha)	(cms)	(hrs)	(mm)	(cms)
02289>	ID1 01:103	4.63	.413	1.67	44.05	.000
02290>	+ID2 02:104	8.23	.712	1.63	41.15	.000
02291>	+ID3 03:105	.81	.111	1.23	34.96	.000
02292>	+ID4 04:106	1.27	.152	1.27	32.66	.000
02293>	+ID5 05:EX302	.87	.092	1.35	33.56	.000
02294>	+ID6 06:EX303	1.04	.428	1.00	51.10	.000
02295>	=====					
02296>	SUM 08:SouthEx	16.85	1.373	1.53	41.23	.000
02297>						
02298>	NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.					
02299>						
02300>	-----					
02301>	250:0014-----					
02302>	-----					
02303>	250:0002-----					
02304>	-----					
02305>	250:0002-----					
02306>	-----					
02307>	250:0002-----					
02308>	-----					
02309>	250:0002-----					
02310>	-----					
02311>	250:0002-----					
02312>	-----					
02313>	250:0002-----					
02314>	-----					
02315>	250:0002-----					
02316>	FINISH					
02317>	-----					
02318>	*****					
02319>	WARNINGS / ERRORS / NOTES					
02320>	-----					
02321>	Simulation ended on 2024-09-10 at 10:57:47					
02322>	=====					
02323>						
02324>						

C.2 Proposed Conditions Model



```
00001> 2 Metric units
00002> *****
00003> *# Project Name: [Arva] Project Number: [161414396]
00004> *# Date : 2025-02-03
00005> *# Modeller : [AA, AKK]
00006> *# Company : Stantec Consulting Ltd. (London)
00007> *# License # : 4730904
00008> *****
00009> *#
00010> *# Arva
00011> *# 25 mm 4-hr, 2, 5, 10, 25, 50, 100, and 250-year, 3-hr Chicago Storm
00012> *#
00013> *****
00014> *# Proposed Conditions
00015> *#
00016> *#
00017> *#
00018> *#
00019> *#
00020> *****
00021> *# START
00022> *# TZERO=[0.0], METOUT=[2], NSTORM=[1], NRUN=[1]
00023> *# ["25mm.4hr"] <--storm filename, one per line for NSTORM tim
00024> *#-----
00025> *# READ STORM STORM_FILENAME=["STORM.001"]
00026> *#-----
00027> *#
00028> *# North of Medway
00029> *#
00030> *****
00031> *# Block 11 PPS Controls
00032> *#
00033> *****
00034> *# CALIB STANDHYD ID=[01], NHYD=["203"], DT=[1] (min), AREA=[1.53] (ha),
00035> *# XIMP=[.71], TIMP=[.71], DWF=[0] (cms), LOSS=[2],
00036> *# SCS curve number CN=[70.8],
00037> *# Pervious surfaces: IAPER=[5] (mm), SLPP=[2] (%),
00038> *# LGP=[25] (m), MNP=[0.024], SCP=[0] (min),
00039> *# Impervious surfaces: IAIMP=[2] (mm), SLPI=[2] (%),
00040> *# LGI=[110] (m), MNI=[0.0013], SCI=[0] (min
00041> *# RAINFALL=[ , , , ] (mm/hr), END=-1
00042> *#-----
00043> *# COMPUTE DUALHYD IDin=[01], CINLET=[0.042] (cms), NINLET=[1],
00044> *# MAJID=[03], MAJNHYD=["203MaJ"],
00045> *# MINID=[02], MinNHYD=["203Min"],
00046> *# TMJSTO=[2000] (cu-m)
00047> *#-----
00048> *#
00049> *# Block 8 PPS Controls
00050> *****
00051> *# CALIB STANDHYD ID=[01], NHYD=["204"], DT=[1] (min), AREA=[0.97] (ha),
00052> *# XIMP=[.71], TIMP=[.71], DWF=[0] (cms), LOSS=[2],
00053> *# SCS curve number CN=[67.5],
00054> *# Pervious surfaces: IAPER=[5] (mm), SLPP=[2] (%),
00055> *# LGP=[25] (m), MNP=[0.024], SCP=[0] (min),
00056> *# Impervious surfaces: IAIMP=[2] (mm), SLPI=[2] (%),
00057> *# LGI=[110] (m), MNI=[0.0013], SCI=[0] (min
00058> *# RAINFALL=[ , , , ] (mm/hr), END=-1
00059> *#-----
00060> *# COMPUTE DUALHYD IDin=[01], CINLET=[0.026] (cms), NINLET=[1],
00061> *# MAJID=[05], MAJNHYD=["204MaJ"],
00062> *# MINID=[04], MinNHYD=["204Min"],
00063> *# TMJSTO=[2000] (cu-m)
00064> *#-----
00065> *#
00066> *# Remaining North Controlled
00067> *****
00068> *# CALIB STANDHYD ID=[01], NHYD=["202"], DT=[1] (min), AREA=[5.48] (ha),
00069> *# XIMP=[.57], TIMP=[.57], DWF=[0] (cms), LOSS=[2],
00070> *# SCS curve number CN=[67.9],
00071> *# Pervious surfaces: IAPER=[5] (mm), SLPP=[1.51] (%),
00072> *# LGP=[25] (m), MNP=[0.024], SCP=[0] (min),
00073> *# Impervious surfaces: IAIMP=[2] (mm), SLPI=[2] (%),
00074> *# LGI=[110] (m), MNI=[0.0013], SCI=[0] (min
00075> *# RAINFALL=[ , , , ] (mm/hr), END=-1
00076> *#-----
00077> *# CALIB STANDHYD ID=[06], NHYD=["EX301"], DT=[1] (min), AREA=[0.99] (ha),
00078> *# XIMP=[.84], TIMP=[.84], DWF=[0] (cms), LOSS=[2],
00079> *# SCS curve number CN=[74],
00080> *# Pervious surfaces: IAPER=[5] (mm), SLPP=[1.51] (%),
00081> *# LGP=[15] (m), MNP=[0.024], SCP=[0] (min),
00082> *# Impervious surfaces: IAIMP=[2] (mm), SLPI=[2] (%),
00083> *# LGI=[25] (m), MNI=[0.0013], SCI=[0] (min
00084> *# RAINFALL=[ , , , ] (mm/hr), END=-1
00085> *#-----
00086> *# ADD HYD IDsum=[09], NHYD=["NtoCont"], IDs to add=[01+02+03+04+05+06]
00087> *#-----
00088> *# COMPUTE DUALHYD IDin=[09], CINLET=[0.241] (cms), NINLET=[1],
00089> *# MAJID=[03], MAJNHYD=["NMaj"],
00090> *# MINID=[02], MinNHYD=["NMin"],
00091> *# TMJSTO=[2350] (cu-m)
00092> *#-----
00093> *#
00094> *# Total Flows from North
00095> *****
00096> *# CALIB NASHYD ID=[01], NHYD=["201"], DT=[1] min, AREA=[0.58] (ha),
00097> *# DWF=[0.0] (cms), CN/C=[76], IA=[5] (mm),
00098> *# N=[3], TP=[0.21] hrs,
00099> *# RAINFALL=[ , , , ] (mm/hr), END=-1
00100> *#-----
00101> *# ADD HYD IDsum=[05], NHYD=["NorthPr"], IDs to add=[01+02+03]
00102> *#-----
00103> *#
00104> *****
00105> *#
00106> *# South of Medway
00107> *#
00108> *****
00109> *#
00110> *# South Controlled
00111> *****
00112> *# CALIB STANDHYD ID=[01], NHYD=["206"], DT=[1] (min), AREA=[12.83] (ha),
00113> *# XIMP=[.64], TIMP=[.64], DWF=[0] (cms), LOSS=[2],
00114> *# SCS curve number CN=[59.6],
00115> *# Pervious surfaces: IAPER=[5] (mm), SLPP=[2] (%),
00116> *# LGP=[25] (m), MNP=[0.024], SCP=[0] (min),
00117> *# Impervious surfaces: IAIMP=[2] (mm), SLPI=[2] (%),
00118> *# LGI=[110] (m), MNI=[0.0013], SCI=[0] (min
00119> *# RAINFALL=[ , , , ] (mm/hr), END=-1
00120> *#-----
00121> *# CALIB STANDHYD ID=[02], NHYD=["207"], DT=[1] (min), AREA=[1.94] (ha),
00122> *# XIMP=[.93], TIMP=[.93], DWF=[0] (cms), LOSS=[2],
00123> *# SCS curve number CN=[69.5],
00124> *# Pervious surfaces: IAPER=[5] (mm), SLPP=[2] (%),
00125> *# LGP=[25] (m), MNP=[0.024], SCP=[0] (min),
00126> *# Impervious surfaces: IAIMP=[2] (mm), SLPI=[2] (%),
00127> *# LGI=[110] (m), MNI=[0.0013], SCI=[0] (min
00128> *# RAINFALL=[ , , , ] (mm/hr), END=-1
00129> *#-----
00130> *# CALIB NASHYD ID=[03], NHYD=["EX302"], DT=[1] min, AREA=[0.87] (ha),
00131> *# DWF=[0.0] (cms), CN/C=[68.5], IA=[5] (mm),
00132> *# N=[3], TP=[0.26] hrs,
00133> *# RAINFALL=[ , , , ] (mm/hr), END=-1
00134> *#-----
00135> *# CALIB STANDHYD ID=[04], NHYD=["EX303"], DT=[1] (min), AREA=[1.04] (ha),
```

```
00136> XIMP=[.29], TIMP=[.29], DWF=[0] (cms), LOSS=[2],
00137> SCS curve number CN=[72.5],
00138> Pervious surfaces: IAPER=[5] (mm), SLPP=[1.9] (%),
00139> LGP=[50] (m), MNP=[0.024], SCP=[0] (min),
00140> Impervious surfaces: IAIMP=[2] (mm), SLPI=[2] (%),
00141> LGI=[25] (m), MNI=[0.0013], SCI=[0] (min)
00142> RAINFALL=[ , , , ] (mm/hr), END=-1
00143> *#-----
00144> *# ADD HYD IDsum=[09], NHYD=["StoCont"], IDs to add=[01+02+03+04]
00145> *#-----
00146> *# COMPUTE DUALHYD IDin=[09], CINLET=[0.212] (cms), NINLET=[1],
00147> *# MAJID=[03], MAJNHYD=["SMaj"],
00148> *# MINID=[02], MinNHYD=["SMin"],
00149> *# TMJSTO=[7100] (cu-m)
00150> *#-----
00151> *#
00152> *# Total Flows from South
00153> *****
00154> *# CALIB NASHYD ID=[01], NHYD=["205"], DT=[1] min, AREA=[0.18] (ha),
00155> *# DWF=[0.0] (cms), CN/C=[61.5], IA=[5] (mm),
00156> *# N=[3], TP=[0.13] hrs,
00157> *# RAINFALL=[ , , , ] (mm/hr), END=-1
00158> *#-----
00159> *# ADD HYD IDsum=[05], NHYD=["SouthPr"], IDs to add=[01+02+03]
00160> *#-----
00161> *#
00162> *# START TZERO=[0.0], METOUT=[2], NSTORM=[1], NRUN=[2]
00163> *# ["ldn2.3hr"] <--storm filename, one per line for NSTORM time
00164> *#-----
00165> *# START TZERO=[0.0], METOUT=[2], NSTORM=[1], NRUN=[5]
00166> *# ["ldn5.3hr"] <--storm filename, one per line for NSTORM time
00167> *#-----
00168> *# START TZERO=[0.0], METOUT=[2], NSTORM=[1], NRUN=[10]
00169> *# ["ldn10.3hr"] <--storm filename, one per line for NSTORM tim
00170> *#-----
00171> *# START TZERO=[0.0], METOUT=[2], NSTORM=[1], NRUN=[25]
00172> *# ["ldn25.3hr"] <--storm filename, one per line for NSTORM tim
00173> *#-----
00174> *# START TZERO=[0.0], METOUT=[2], NSTORM=[1], NRUN=[50]
00175> *# ["ldn50.3hr"] <--storm filename, one per line for NSTORM tim
00176> *#-----
00177> *# START TZERO=[0.0], METOUT=[2], NSTORM=[1], NRUN=[100]
00178> *# ["ldn100.3hr"] <--storm filename, one per line for NSTORM ti
00179> *#-----
00180> *# START TZERO=[0.0], METOUT=[2], NSTORM=[1], NRUN=[250]
00181> *# ["ldn250.3hr"] <--storm filename, one per line for NSTORM ti
00182> *#-----
00183> *# FINISH
00184> *#
00185> *#
00186> *#
00187> *#
00188> *#
00189> *#
00190> *#
00191> *#
00192> *#
00193> *#
00194> *#
00195> *#
00196> *#
00197> *#
00198> *#
00199> *#
00200> *#
00201> *#
00202> *#
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00204> *#
00205> *#
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00207> *#
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00209> *#
00210> *#
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00220> *#
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00222> *#
00223> *#
00224> *#
00225> *#
00226> *#
00227> *#
00228> *#
00229> *#
00230> *#
00231> *#
00232> *#
00233> *#
00234> *#
00235> *#
```

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00001> =====
00002> SSSSS W W M M H H Y Y M M O O 999 999
00003> S W W W M M M H H Y Y M M M O O 9 9 9 9
00004> SSSSS W W W M M M H H H H Y Y M M M O O ## 9 9 9 9 Ver 4.05
00005> S W W M M H H H Y Y M M O O 9999 9999 Sept 2011
00006> SSSSS W W M M H H Y Y M M O O 9 9 9
00007> StormWater Management Hydrologic Model 999 999
00008>
00009>
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> ***** OTTHYMO-83 and OTTHYMO-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: swmhyo@jfsa.Com *****
00021> *****
00022>
00023> *****
00024> ***** Licensed user: Stantec Consulting Ltd. (Kitchener) *****
00025> ***** Kitchener SERIAL#:4730904 *****
00026> *****
00027> *****
00028> ***** PROGRAM ARRAY DIMENSIONS *****
00029> *****
00030> ***** Maximum value for ID numbers : 10 *****
00031> ***** Max. number of rainfall points: 105408 *****
00032> ***** Max. number of flow points : 105408 *****
00033> *****
00034> *****
00035> *****
00036> ***** D E T A I L E D O U T P U T *****
00037> *****
00038> *****
00039> *****
00040> * Input filename: C:\MODELL-1\14396\SWMHYMO\swmpr3.dat *
00041> * Output filename: C:\MODELL-1\14396\SWMHYMO\swmpr3.out *
00042> * Summary filename: C:\MODELL-1\14396\SWMHYMO\swmpr3.sum *
00043> * User comments: *
00044> * 1. *
00045> * 2. *
00046> * 3. *
00047> *****
00048> *****
00049>
00050> 001:0001-----
00051> *****
00052> * Project Name: [Arva] Project Number: [161414396]
00053> * Date : 2025-02-03 TIME: 10:53:30 RUN COUNTER: 000218 *
00054> * Modeller : [AA, AKK]
00055> * Company : Stantec Consulting Ltd. (London)
00056> * License # : 4730904
00057> *****
00058> *
00059> * Arva
00060> * 25 mm 4-hr, 2, 5, 10, 25, 50, 100, and 250-year, 3-hr Chicago Storm
00061> *
00062> *****
00063> *****
00064> *
00065> *
00066> * Proposed Conditions
00067> *
00068> *
00069> *****
00070>
00071> | START | Project dir.: C:\MODELL-1\14396\SWMHYMO\
00072> | TZERO = 00 hrs | Rainfall dir.: C:\MODELL-1\14396\SWMHYMO\
00073> | METOUT= 2 (output = METRIC) |
00074> | NRUN = 001 |
00075> | NSTORM= 1 |
00076> | # 1=25mm.4hr |
00077> *****
00078>
00079> 001:0002-----
00080> *****
00081> | READ STORM | Filename: CHICAGO STORM
00082> | Ptotal= 25.05 mm | Comments: CHICAGO STORM
00083> *****
00084> *****
00085> *****
00086> *****
00087> *****
00088> *****
00089> *****
00090> *****
00091> *****
00092> *****
00093> *****
00094> *****
00095> *****
00096> *****
00097> *****
00098> *****
00099> *****
00100> 001:0003-----
00101> *****
00102> *
00103> * North of Medway
00104> *
00105> *****
00106> *****
00107> * Block 11 PPS Controls
00108> *****
00109> *****
00110> | CALIB STANDHYD | Area (ha)= 1.53
00111> | 01:203 DT= 1.00 | Total Imp(%)= 71.00 Dir. Conn.(%)= 71.00
00112> *****
00113> *****
00114> ***** IMPERVIOUS PERVIOUS (i) *****
00115> *****
00116> *****
00117> *****
00118> *****
00119> *****
00120> *****
00121> *****
00122> *****
00123> *****
00124> *****
00125> *****
00126> *****
00127> *****
00128> *****
00129> *****
00130> *****
00131> *****
00132> *****
00133> *****
00134> *****
00135> *****

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00136> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00137>
00138>
00139> 001:0004-----
00140> *****
00141> | COMPUTE DUALHYD | Average inlet capacities [CINLET] = .042 (cms)
00142> | TotalHyd 01:203 | Number of inlets in system [NINLET] = 1
00143> | | Total minor system capacity = .042 (cms)
00144> | | Total major system storage [TMJSTO] = 2000. (cu.m.)
00145> *****
00146> *****
00147> ***** ID: NHYD AREA QPEAK TPEAK R.V. DWF *****
00148> ***** (ha) (cms) (hrs) (mm) (cms) *****
00149> *****
00150> ***** TOTAL HYD. 01:203 1.53 .231 1.333 17.298 .000 *****
00151> *****
00152> ***** MAJOR SYST 03:203Maj .00 .000 .000 .000 .000 *****
00153> ***** MINOR SYST 02:203Min 1.53 .042 1.183 17.409 .000 *****
00154> *****
00155> ***** NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY. *****
00156> *****
00157> ***** Maximum MAJOR SYSTEM storage used = 91. (cu.m.) *****
00158> *****
00159> *****
00160> *# Block 8 PPS Controls
00161> *****
00162> *****
00163> | CALIB STANDHYD | Area (ha)= .97
00164> | 01:204 DT= 1.00 | Total Imp(%)= 71.00 Dir. Conn.(%)= 71.00
00165> *****
00166> ***** IMPERVIOUS PERVIOUS (i) *****
00167> *****
00168> *****
00169> *****
00170> *****
00171> *****
00172> *****
00173> *****
00174> *****
00175> *****
00176> *****
00177> *****
00178> *****
00179> *****
00180> *****
00181> *****
00182> *****
00183> *****
00184> *****
00185> *****
00186> *****
00187> *****
00188> *****
00189> *****
00190> *****
00191> *****
00192> 001:0006-----
00193> *****
00194> | COMPUTE DUALHYD | Average inlet capacities [CINLET] = .026 (cms)
00195> | TotalHyd 01:204 | Number of inlets in system [NINLET] = 1
00196> | | Total minor system capacity = .026 (cms)
00197> | | Total major system storage [TMJSTO] = 2000. (cu.m.)
00198> *****
00199> *****
00200> ***** ID: NHYD AREA QPEAK TPEAK R.V. DWF *****
00201> ***** (ha) (cms) (hrs) (mm) (cms) *****
00202> *****
00203> ***** TOTAL HYD. 01:204 .97 .146 1.333 17.183 .000 *****
00204> *****
00205> ***** MAJOR SYST 05:204Maj .00 .000 .000 .000 .000 *****
00206> ***** MINOR SYST 04:204Min .97 .026 1.183 17.309 .000 *****
00207> *****
00208> ***** NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY. *****
00209> *****
00210> ***** Maximum MAJOR SYSTEM storage used = 58. (cu.m.) *****
00211> *****
00212> *****
00213> *****
00214> *****
00215> *****
00216> | CALIB STANDHYD | Area (ha)= 5.48
00217> | 01:202 DT= 1.00 | Total Imp(%)= 57.00 Dir. Conn.(%)= 57.00
00218> *****
00219> *****
00220> ***** IMPERVIOUS PERVIOUS (i) *****
00221> *****
00222> *****
00223> *****
00224> *****
00225> *****
00226> *****
00227> *****
00228> *****
00229> *****
00230> *****
00231> *****
00232> *****
00233> *****
00234> *****
00235> *****
00236> *****
00237> *****
00238> *****
00239> *****
00240> *****
00241> *****
00242> *****
00243> *****
00244> *****
00245> 001:0008-----
00246> *****
00247> | CALIB STANDHYD | Area (ha)= .99
00248> | 06:EX301 DT= 1.00 | Total Imp(%)= 84.00 Dir. Conn.(%)= 84.00
00249> *****
00250> *****
00251> ***** IMPERVIOUS PERVIOUS (i) *****
00252> *****
00253> *****
00254> *****
00255> *****
00256> *****
00257> *****
00258> *****
00259> *****
00260> *****
00261> *****
00262> *****
00263> *****
00264> *****
00265> *****
00266> *****
00267> *****
00268> *****
00269> *****
00270> *****

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00271> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
00272> THAN THE STORAGE COEFFICIENT.
00273> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00274>
00275> -----
00276> 001:0009-----
00277> | ADD HYD (NtoCont ) | ID: NHYD AREA OPEAK TPEAK R.V. DWF
00278> | (ha) (cms) (hrs) (mm) (cms)
00279>
00280> ID1 01:202 5.48 .667 1.33 14.37 .000
00281> +ID2 02:203Min 1.53 .042 1.18 17.41 .000
00282> +ID3 03:203Maj .00 .000 .00 .00 .000
00283> +ID4 04:204Min .97 .026 1.18 17.31 .000
00284> +ID5 05:204Maj .00 .000 .00 .00 .000
00285> +ID6 06:EX301 .99 .177 1.33 19.95 .000
00286>
00287> SUM 09:NtoCont 8.97 .912 1.33 15.82 .000
00288>
00289> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
00290>
00291> -----
00292> 001:0010-----
00293> | COMPUTE DUALHYD | Average inlet capacities [CINLET] = .241 (cms)
00294> | TotalHyd 09:NtoCon | Number of inlets in system [NINLET] = 1
00295>
00296> | Total minor system capacity = .241 (cms)
00297> | Total major system storage [TMJSTO] = 2350. (cu.m.)
00298>
00299> ID: NHYD AREA OPEAK TPEAK R.V. DWF
00300> | (ha) (cms) (hrs) (mm) (cms)
00301>
00302> TOTAL HYD. 09:NtoCon 8.97 .912 1.333 15.822 .000
00303>
00304> MAJOR SYST 03:NMAj .00 .000 .000 .000 .000
00305> MINOR SYST 02:NMin 8.97 .241 1.183 15.843 .000
00306>
00307> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
00308>
00309> Maximum MAJOR SYSTEM storage used = 312. (cu.m.)
00310>
00311> -----
00312> 001:0011-----
00313> *# Total Flows from North
00314> *#
00315>
00316> | CALIB NASHYD | Area (ha)= .58 Curve Number (CN)=76.00
00317> | 01:201 DT= 1.00 | Ia (mm)= 5.000 # of Linear Res. (N)= 3.00
00318> | U.H. Tp(hrs)= .210
00319>
00320> Unit Hyd Qpeak (cms)= .105
00321>
00322> PEAK FLOW (cms)= .006 (i)
00323> TIME TO PEAK (hrs)= 1.658
00324> RUNOFF VOLUME (mm)= 4.008
00325> TOTAL RAINFALL (mm)= 25.048
00326> RUNOFF COEFFICIENT = .160
00327>
00328> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00329>
00330> -----
00331> 001:0012-----
00332> | ADD HYD (NorthPr ) | ID: NHYD AREA OPEAK TPEAK R.V. DWF
00333> | (ha) (cms) (hrs) (mm) (cms)
00334>
00335> ID1 01:201 .58 .006 1.65 4.01 .000
00336> +ID2 02:NMin 8.97 .241 1.18 15.84 .000
00337> +ID3 03:NMAj .00 .000 .00 .00 .000
00338>
00339> SUM 05:NorthPr 9.55 .247 1.65 15.12 .000
00340>
00341> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
00342>
00343> -----
00344> 001:0013-----
00345> *#
00346> *#
00347> *# South of Medway
00348> *#
00349> *#
00350> *#
00351> *# South Controlled
00352> *#
00353>
00354> | CALIB STANDHYD | Area (ha)= 12.83
00355> | 01:206 DT= 1.00 | Total Imp(%)= 64.00 Dir. Conn.(%)= 64.00
00356>
00357>
00358> IMPERVIOUS PERVIOUS (i)
00359> Surface Area (ha)= 8.21 4.62
00360> Dep. Storage (mm)= 2.00 5.00
00361> Average Slope (%)= 2.00 2.00
00362> Length (m)= 110.00 25.00
00363> Mannings n = .001 .024
00364>
00365> Max.eff.Inten.(mm/hr)= 75.61 3.93
00366> over (min) 1.00 5.00
00367> Storage Coeff. (min)= .62 (ii) 5.38 (ii)
00368> Unit Hyd. Tpeak (min)= 1.00 5.00
00369> Unit Hyd. peak (cms)= 1.36 .22
00370>
00371> PEAK FLOW (cms)= 1.72 .04
00372> TIME TO PEAK (hrs)= 1.33 1.45
00373> RUNOFF VOLUME (mm)= 23.05 2.09
00374> TOTAL RAINFALL (mm)= 25.05 25.05
00375> RUNOFF COEFFICIENT = .92 .08
00376>
00377> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
00378> CN* = 59.6 Ia = Dep. Storage (Above)
00379> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
00380> THAN THE STORAGE COEFFICIENT.
00381> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00382>
00383> -----
00384> 001:0014-----
00385> | CALIB STANDHYD | Area (ha)= 1.94
00386> | 02:207 DT= 1.00 | Total Imp(%)= 93.00 Dir. Conn.(%)= 93.00
00387>
00388>
00389> IMPERVIOUS PERVIOUS (i)
00390> Surface Area (ha)= 1.80 .14
00391> Dep. Storage (mm)= 2.00 5.00
00392> Average Slope (%)= 2.00 2.00
00393> Length (m)= 110.00 25.00
00394> Mannings n = .001 .024
00395>
00396> Max.eff.Inten.(mm/hr)= 75.61 5.90
00397> over (min) 1.00 5.00
00398> Storage Coeff. (min)= .62 (ii) 4.67 (ii)
00399> Unit Hyd. Tpeak (min)= 1.00 5.00
00400> Unit Hyd. peak (cms)= 1.36 .24
00401>
00402> PEAK FLOW (cms)= .38 .00
00403> TIME TO PEAK (hrs)= 1.33 1.45
00404> RUNOFF VOLUME (mm)= 23.05 3.06
00405> TOTAL RAINFALL (mm)= 25.05 25.05
00406> RUNOFF COEFFICIENT = .92 .12
00407>
00408> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
00409> CN* = 69.5 Ia = Dep. Storage (Above)
00410> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
00411> THAN THE STORAGE COEFFICIENT.
00412> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00413>
00414> -----
00415> 001:0015-----
00416> | CALIB NASHYD | Area (ha)= .87 Curve Number (CN)=68.50
00417> | 03:EX302 DT= 1.00 | Ia (mm)= 5.000 # of Linear Res. (N)= 3.00
00418> | U.H. Tp(hrs)= .260
00419>
00420> Unit Hyd Qpeak (cms)= .128
00421>
00422> PEAK FLOW (cms)= .006 (i)
00423> TIME TO PEAK (hrs)= 1.733 5.00
00424> RUNOFF VOLUME (mm)= 2.936
00425> TOTAL RAINFALL (mm)= 25.048
00426> RUNOFF COEFFICIENT = .117
00427>
00428> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00429>
00430> -----
00431> 001:0016-----
00432> | CALIB STANDHYD | Area (ha)= 1.04
00433> | 04:EX303 DT= 1.00 | Total Imp(%)= 29.00 Dir. Conn.(%)= 29.00
00434>
00435>
00436> IMPERVIOUS PERVIOUS (i)
00437> Surface Area (ha)= .30 .74
00438> Dep. Storage (mm)= 2.00 5.00
00439> Average Slope (%)= 2.00 1.90
00440> Length (m)= 25.00 50.00
00441> Mannings n = .001 .024
00442>
00443> Max.eff.Inten.(mm/hr)= 75.61 6.50
00444> over (min) 1.00 6.00
00445> Storage Coeff. (min)= .25 (ii) 6.25 (ii)
00446> Unit Hyd. Tpeak (min)= 1.00 6.00
00447> Unit Hyd. peak (cms)= 1.67 .18
00448>
00449> PEAK FLOW (cms)= .06 .01
00450> TIME TO PEAK (hrs)= 1.32 1.48
00451> RUNOFF VOLUME (mm)= 23.05 3.45
00452> TOTAL RAINFALL (mm)= 25.05 25.05
00453> RUNOFF COEFFICIENT = .92 .14
00454>
00455> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
00456> CN* = 72.5 Ia = Dep. Storage (Above)
00457> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
00458> THAN THE STORAGE COEFFICIENT.
00459> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00460>
00461> -----
00462> 001:0017-----
00463> | ADD HYD (StoCont ) | ID: NHYD AREA OPEAK TPEAK R.V. DWF
00464> | (ha) (cms) (hrs) (mm) (cms)
00465>
00466> ID1 01:206 12.83 1.739 1.33 15.50 .000
00467> +ID2 02:207 1.94 .380 1.33 21.65 .000
00468> +ID3 03:EX302 .87 .006 1.73 2.94 .000
00469> +ID4 04:EX303 1.04 .066 1.33 9.14 .000
00470>
00471> SUM 09:StoCont 16.68 2.185 1.33 15.17 .000
00472>
00473> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
00474>
00475> -----
00476> 001:0018-----
00477> | COMPUTE DUALHYD | Average inlet capacities [CINLET] = .212 (cms)
00478> | TotalHyd 09:StoCon | Number of inlets in system [NINLET] = 1
00479>
00480> | Total minor system capacity = .212 (cms)
00481> | Total major system storage [TMJSTO] = 7100. (cu.m.)
00482>
00483> ID: NHYD AREA OPEAK TPEAK R.V. DWF
00484> | (ha) (cms) (hrs) (mm) (cms)
00485>
00486> TOTAL HYD. 09:StoCon 16.68 2.185 1.333 15.165 .000
00487>
00488> MAJOR SYST 03:SMaj .00 .000 .000 .000 .000
00489> MINOR SYST 02:SMin 16.68 .212 1.100 15.224 .000
00490>
00491> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
00492>
00493> Maximum MAJOR SYSTEM storage used = 1216. (cu.m.)
00494>
00495> -----
00496> 001:0019-----
00497> *#
00498> *# Total Flows from South
00499> *#
00500>
00501> | CALIB NASHYD | Area (ha)= .18 Curve Number (CN)=61.50
00502> | 01:205 DT= 1.00 | Ia (mm)= 5.000 # of Linear Res. (N)= 3.00
00503> | U.H. Tp(hrs)= .130
00504>
00505> Unit Hyd Qpeak (cms)= .053
00506>
00507> PEAK FLOW (cms)= .001 (i)
00508> TIME TO PEAK (hrs)= 1.533
00509> RUNOFF VOLUME (mm)= 2.243
00510> TOTAL RAINFALL (mm)= 25.048
00511> RUNOFF COEFFICIENT = .090
00512>
00513> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00514>
00515> -----
00516> 001:0020-----
00517> | ADD HYD (SouthPr ) | ID: NHYD AREA OPEAK TPEAK R.V. DWF
00518> | (ha) (cms) (hrs) (mm) (cms)
00519>
00520> ID1 01:205 .18 .001 1.53 2.24 .000
00521> +ID2 02:SMin 16.68 .212 1.10 15.22 .000
00522> +ID3 03:SMaj .00 .000 .00 .00 .000
00523>
00524> SUM 05:SouthPr 16.86 .213 1.53 15.09 .000
00525>
00526> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
00527>
00528> -----
00529> ** END OF RUN : 1
00530>
00531>
00532>
00533>
00534>
00535>
00536>
00537> | START | Project dir.: C:\MODELL-1\14396\SWMHYMO\
00538> | Rainfall dir.: C:\MODELL-1\14396\SWMHYMO\
00539>
00540> TZERO = .00 hrs on 0
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00541> METOUT= 2 (output= METRIC)
00542> NRUN = 002
00543> NSTORM= 1
00544> # 1=ldn2.3hr
00545>
00546> 002:0002-----
00547> *****
00548> * Project Name: [Arva] Project Number: [161414396]
00549> * Date : 2025-02-03
00550> * Modeller : [AA, AKK]
00551> * Company : Stantec Consulting Ltd. (London)
00552> * License # : 4730904
00553> *****
00554>
00555> * Arva
00556> * 25 mm 4-hr, 2, 5, 10, 25, 50, 100, and 250-year, 3-hr Chicago Storm
00557>
00558> *
00559> *****
00560> *
00561> *
00562> * Proposed Conditions
00563> *
00564> *
00565> *****
00566>
00567> 002:0002-----
00568>
00569> READ STORM File: 2-yr, 3hr Chicago Storm from 2021 London
00570> Ptotal= 32.83 mm Comments: 2-yr, 3hr Chicago Storm from 2021 London
00571>
00572> TIME RAIN TIME RAIN TIME RAIN TIME RAIN
00573> hrs mm/hr hrs mm/hr hrs mm/hr hrs mm/hr
00574> .08 2.574 .83 14.974 1.58 7.501 2.33 3.414
00575> .17 2.812 .92 35.641 1.67 6.585 2.42 3.229
00576> .25 3.105 1.00 108.068 1.75 5.876 2.50 3.064
00577> .33 3.472 1.08 46.277 1.83 5.310 2.58 2.917
00578> .42 3.949 1.17 25.470 1.92 4.849 2.67 2.784
00579> .50 4.594 1.25 17.290 2.00 4.465 2.75 2.663
00580> .58 5.517 1.33 13.030 2.08 4.141 2.83 2.554
00581> .67 6.947 1.42 10.448 2.17 3.864 2.92 2.454
00582> .75 9.460 1.50 8.726 2.25 3.624 3.00 2.362
00583>
00584>
00585> 002:0003-----
00586> *****
00587> *
00588> * North of Medway
00589> *
00590> *****
00591>
00592> * Block 11 PPS Controls
00593> *****
00594>
00595> CALIB STANDHYD Area (ha)= 1.53
00596> 01:203 DT= 1.00 Total Imp(%)= 71.00 Dir. Conn.(%)= 71.00
00597>
00598> IMPERVIOUS PERVIOUS (i)
00599> Surface Area (ha)= 1.09 .44
00600> Dep. Storage (mm)= 2.00 5.00
00601> Average Slope (%)= 2.00 2.00
00602> Length (m)= 110.00 25.00
00603> Mannings n = .001 .024
00604>
00605> Max.eff.Inten.(mm/hr)= 108.07 16.46
00606> over (min) 1.00 3.00
00607> Storage Coeff. (min)= .54 (ii) 3.22 (ii)
00608> Unit Hyd. Tpeak (min)= 1.00 3.00
00609> Unit Hyd. peak (cms)= 1.44 .36
00610>
00611> PEAK FLOW (cms)= .33 .01 *TOTALS*
00612> TIME TO PEAK (hrs)= 1.00 1.03 1.000
00613> RUNOFF VOLUME (mm)= 30.83 5.84 23.587
00614> TOTAL RAINFALL (mm)= 32.83 32.83 32.834
00615> RUNOFF COEFFICIENT = .94 .18 .718
00616>
00617> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
00618> CN* = 70.8 Ia = Dep. Storage (Above)
00619> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
00620> THAN THE STORAGE COEFFICIENT.
00621> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00622>
00623>
00624> 002:0004-----
00625>
00626> COMPUTE DUALHYD Average inlet capacities [CINLET] = .042 (cms)
00627> TotalHyd 01:203 Number of inlets in system [NINLET] = 1
00628> Total minor system capacity = .042 (cms)
00629> Total major system storage [TMJSTO] = 2000. (cu.m.)
00630>
00631> ID: NHYD AREA QPEAK TPEAK R.V. DWF
00632> (ha) (cms) (hrs) (mm) (cms)
00633> TOTAL HYD. 01:203 1.53 .337 1.000 23.587 .000
00634>
00635> MAJOR SYST 03:203Maj .00 .000 .000 .000 .000
00636> MINOR SYST 02:203Min 1.53 .042 .767 23.644 .000
00637>
00638> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
00639>
00640> Maximum MAJOR SYSTEM storage used = 161. (cu.m.)
00641>
00642>
00643> 002:0005-----
00644> *****
00645> * Block 8 PPS Controls
00646> *****
00647>
00648> CALIB STANDHYD Area (ha)= .97
00649> 01:204 DT= 1.00 Total Imp(%)= 71.00 Dir. Conn.(%)= 71.00
00650>
00651> IMPERVIOUS PERVIOUS (i)
00652> Surface Area (ha)= .69 .28
00653> Dep. Storage (mm)= 2.00 5.00
00654> Average Slope (%)= 2.00 2.00
00655> Length (m)= 110.00 25.00
00656> Mannings n = .001 .024
00657>
00658> Max.eff.Inten.(mm/hr)= 108.07 14.35
00659> over (min) 1.00 3.00
00660> Storage Coeff. (min)= .54 (ii) 3.37 (ii)
00661> Unit Hyd. Tpeak (min)= 1.00 3.00
00662> Unit Hyd. peak (cms)= 1.44 .35
00663>
00664> PEAK FLOW (cms)= .21 .01 *TOTALS*
00665> TIME TO PEAK (hrs)= 1.00 1.03 1.000
00666> RUNOFF VOLUME (mm)= 30.83 5.16 23.389
00667> TOTAL RAINFALL (mm)= 32.83 32.83 32.834
00668> RUNOFF COEFFICIENT = .94 .16 .712
00669>
00670> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
00671> CN* = 67.5 Ia = Dep. Storage (Above)
00672> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
00673> THAN THE STORAGE COEFFICIENT.
00674> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00675>

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00676>
00677> 002:0006-----
00678>
00679> COMPUTE DUALHYD Average inlet capacities [CINLET] = .026 (cms)
00680> TotalHyd 01:204 Number of inlets in system [NINLET] = 1
00681> Total minor system capacity = .026 (cms)
00682> Total major system storage [TMJSTO] = 2000. (cu.m.)
00683>
00684> ID: NHYD AREA QPEAK TPEAK R.V. DWF
00685> (ha) (cms) (hrs) (mm) (cms)
00686> TOTAL HYD. 01:204 .97 .213 1.000 23.389 .000
00687>
00688> MAJOR SYST 03:204Maj .00 .000 .000 .000 .000
00689> MINOR SYST 04:204Min .97 .026 .767 23.429 .000
00690>
00691> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
00692>
00693> Maximum MAJOR SYSTEM storage used = 102. (cu.m.)
00694>
00695>
00696> 002:0007-----
00697> *****
00698> * Remaining North Controlled
00699> *****
00700>
00701> CALIB STANDHYD Area (ha)= 5.48
00702> 01:202 DT= 1.00 Total Imp(%)= 57.00 Dir. Conn.(%)= 57.00
00703>
00704> IMPERVIOUS PERVIOUS (i)
00705> Surface Area (ha)= 3.12 2.36
00706> Dep. Storage (mm)= 2.00 5.00
00707> Average Slope (%)= 2.00 1.51
00708> Length (m)= 110.00 25.00
00709> Mannings n = .001 .024
00710>
00711> Max.eff.Inten.(mm/hr)= 108.07 13.24
00712> over (min) 1.00 4.00
00713> Storage Coeff. (min)= .54 (ii) 3.72 (ii)
00714> Unit Hyd. Tpeak (min)= 1.00 4.00
00715> Unit Hyd. peak (cms)= 1.44 .30
00716>
00717> PEAK FLOW (cms)= .94 .06 *TOTALS*
00718> TIME TO PEAK (hrs)= 1.00 1.05 1.000
00719> RUNOFF VOLUME (mm)= 30.83 5.24 19.828
00720> TOTAL RAINFALL (mm)= 32.83 32.83 32.834
00721> RUNOFF COEFFICIENT = .94 .16 .604
00722>
00723> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
00724> CN* = 67.9 Ia = Dep. Storage (Above)
00725> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
00726> THAN THE STORAGE COEFFICIENT.
00727> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00728>
00729>
00730> 002:0008-----
00731>
00732> CALIB STANDHYD Area (ha)= .99
00733> 06:EX301 DT= 1.00 Total Imp(%)= 84.00 Dir. Conn.(%)= 84.00
00734>
00735> IMPERVIOUS PERVIOUS (i)
00736> Surface Area (ha)= .83 .16
00737> Dep. Storage (mm)= 2.00 5.00
00738> Average Slope (%)= 2.00 1.51
00739> Length (m)= 25.00 15.00
00740> Mannings n = .001 .024
00741>
00742> Max.eff.Inten.(mm/hr)= 108.07 20.58
00743> over (min) 1.00 2.00
00744> Storage Coeff. (min)= .22 (ii) 2.19 (ii)
00745> Unit Hyd. Tpeak (min)= 1.00 2.00
00746> Unit Hyd. peak (cms)= 1.68 .53
00747>
00748> PEAK FLOW (cms)= .25 .01 *TOTALS*
00749> TIME TO PEAK (hrs)= .98 1.02 1.000
00750> RUNOFF VOLUME (mm)= 30.83 6.62 26.959
00751> TOTAL RAINFALL (mm)= 32.83 32.83 32.834
00752> RUNOFF COEFFICIENT = .94 .20 .821
00753>
00754> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
00755> CN* = 74.0 Ia = Dep. Storage (Above)
00756> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
00757> THAN THE STORAGE COEFFICIENT.
00758> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00759>
00760>
00761> 002:0009-----
00762>
00763> ADD HYD (NtoCont ) ID: NHYD AREA QPEAK TPEAK R.V. DWF
00764> (ha) (cms) (hrs) (mm) (cms)
00765> ID1 01:202 5.48 .979 1.00 19.83 .000
00766> +ID2 02:203Min 1.53 .042 .77 23.64 .000
00767> +ID3 03:203Maj .00 .000 .00 .00 .000
00768> +ID4 04:204Maj .97 .026 .77 23.43 .000
00769> +ID5 05:204Maj .00 .000 .00 .00 .000
00770> +ID6 06:EX301 .99 .256 1.00 26.96 .000
00771>
00772> SUM 09:NtoCont 8.97 1.303 1.00 21.66 .000
00773>
00774> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
00775>
00776>
00777> 002:0010-----
00778>
00779> COMPUTE DUALHYD Average inlet capacities [CINLET] = .241 (cms)
00780> TotalHyd 09:NtoCon Number of inlets in system [NINLET] = 1
00781> Total minor system capacity = .241 (cms)
00782> Total major system storage [TMJSTO] = 2350. (cu.m.)
00783>
00784> ID: NHYD AREA QPEAK TPEAK R.V. DWF
00785> (ha) (cms) (hrs) (mm) (cms)
00786> TOTAL HYD. 09:NtoCon 8.97 1.303 1.000 21.655 .000
00787>
00788> MAJOR SYST 03:NtoCon .00 .000 .000 .000 .000
00789> MINOR SYST 02:NMin 8.97 .241 .850 21.716 .000
00790>
00791> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
00792>
00793> Maximum MAJOR SYSTEM storage used = 566. (cu.m.)
00794>
00795>
00796> 002:0011-----
00797> *****
00798> * Total Flows from North
00799> *****
00800>
00801> CALIB NASHYD Area (ha)= .58 Curve Number (CN)=76.00
00802> 01:201 DT= 1.00 Ia (mm)= 5.000 # of Linear Res. (N)= 3.00
00803> U.H. Tp(hrs)= .210
00804>
00805> Unit Hyd Qpeak (cms)= .105
00806>
00807> PEAK FLOW (cms)= .013 (i)
00808> TIME TO PEAK (hrs)= 1.30
00809> RUNOFF VOLUME (mm)= 7.170
00810> TOTAL RAINFALL (mm)= 32.834

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00811> RUNOFF COEFFICIENT = .218
00812>
00813> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00814>
00815>
00816> 002:0012-----
00817> | ADD HYD (NorthPr) | ID: NHYD AREA QPEAK TPEAK R.V. DWF
00818> (ha) (cms) (hrs) (mm) (cms)
00819> ID1 01:201 .58 .013 1.30 7.17 .000
00820> +ID2 02:NMin 8.97 .241 .85 21.72 .000
00821> +ID3 03:NMaJ .00 .000 .00 .00 .000
00822> SUM 05:NorthPr 9.55 .254 1.30 20.83 .000
00823>
00824> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
00825>
00826>
00827>
00828>
00829> 002:0013-----
00830> *****
00831> *#
00832> *# South of Medway
00833> *#
00834> *#
00835> *#
00836> *# South Controlled
00837> *****
00838> | CALIB STANDHYD | Area (ha)= 12.83
00839> 01:206 DT= 1.00 Total Imp(%)= 64.00 Dir. Conn.(%)= 64.00
00840>
00841>
00842> IMPERVIOUS PERVIOUS (i)
00843> Surface Area (ha)= 8.21 4.62
00844> Dep. Storage (mm)= 2.00 5.00
00845> Average Slope (%)= 2.00 2.00
00846> Length (m)= 110.00 25.00
00847> Mannings n = .001 .024
00848>
00849> Max.eff.Inten.(mm/hr)= 108.07 9.52
00850> over (min) 1.00 4.00
00851> Storage Coeff. (min)= .54 (ii) 3.88 (ii)
00852> Unit Hyd. Tpeak (min)= 1.00 4.00
00853> Unit Hyd. peak (cms)= 1.44 .29
00854>
00855> PEAK FLOW (cms)= 2.46 .09 2.521 (iii)
00856> TIME TO PEAK (hrs)= 1.00 1.05 1.000
00857> RUNOFF VOLUME (mm)= 30.83 3.87 21.128
00858> TOTAL RAINFALL (mm)= 32.83 32.83 32.834
00859> RUNOFF COEFFICIENT = .94 .12 .643
00860>
00861> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
00862> CN* = 59.6 Ia = Dep. Storage (Above)
00863> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
00864> THAN THE STORAGE COEFFICIENT.
00865> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00866>
00867>
00868> 002:0014-----
00869>
00870> | CALIB STANDHYD | Area (ha)= 1.94
00871> 02:207 DT= 1.00 Total Imp(%)= 93.00 Dir. Conn.(%)= 93.00
00872>
00873> IMPERVIOUS PERVIOUS (i)
00874> Surface Area (ha)= 1.80 .14
00875> Dep. Storage (mm)= 2.00 5.00
00876> Average Slope (%)= 2.00 2.00
00877> Length (m)= 110.00 25.00
00878> Mannings n = .001 .024
00879>
00880> Max.eff.Inten.(mm/hr)= 108.07 15.59
00881> over (min) 1.00 3.00
00882> Storage Coeff. (min)= .54 (ii) 3.28 (ii)
00883> Unit Hyd. Tpeak (min)= 1.00 3.00
00884> Unit Hyd. peak (cms)= 1.44 .35
00885>
00886> PEAK FLOW (cms)= .54 .00 .545 (iii)
00887> TIME TO PEAK (hrs)= 1.00 1.03 1.000
00888> RUNOFF VOLUME (mm)= 30.83 5.56 29.065
00889> TOTAL RAINFALL (mm)= 32.83 32.83 32.834
00890> RUNOFF COEFFICIENT = .94 .17 .885
00891>
00892> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
00893> CN* = 69.5 Ia = Dep. Storage (Above)
00894> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
00895> THAN THE STORAGE COEFFICIENT.
00896> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00897>
00898>
00899> 002:0015-----
00900>
00901> | CALIB NASHYD | Area (ha)= .87 Curve Number (CN)=68.50
00902> 03:EX302 DT= 1.00 U.H. Tp(hrs)= 5.000 # of Linear Res. (N)= 3.00
00903> U.H. Tp(hrs)= .260
00904>
00905> Unit Hyd Qpeak (cms)= .128
00906>
00907> PEAK FLOW (cms)= .012 (i)
00908> TIME TO PEAK (hrs)= 1.342
00909> RUNOFF VOLUME (mm)= 5.356
00910> TOTAL RAINFALL (mm)= 32.834
00911> RUNOFF COEFFICIENT = .163
00912>
00913> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00914>
00915>
00916> 002:0016-----
00917> | CALIB STANDHYD | Area (ha)= 1.04
00918> 04:EX303 DT= 1.00 Total Imp(%)= 29.00 Dir. Conn.(%)= 29.00
00919>
00920>
00921> IMPERVIOUS PERVIOUS (i)
00922> Surface Area (ha)= .30 .74
00923> Dep. Storage (mm)= 2.00 5.00
00924> Average Slope (%)= 2.00 1.90
00925> Length (m)= 25.00 50.00
00926> Mannings n = .001 .024
00927>
00928> Max.eff.Inten.(mm/hr)= 108.07 16.10
00929> over (min) 1.00 4.00
00930> Storage Coeff. (min)= .22 (ii) 4.39 (ii)
00931> Unit Hyd. Tpeak (min)= 1.00 4.00
00932> Unit Hyd. peak (cms)= 1.68 .27
00933>
00934> PEAK FLOW (cms)= .09 .02 .105 (iii)
00935> TIME TO PEAK (hrs)= .98 1.05 1.000
00936> RUNOFF VOLUME (mm)= 30.83 6.24 13.372
00937> TOTAL RAINFALL (mm)= 32.83 32.83 32.834
00938> RUNOFF COEFFICIENT = .94 .19 .407
00939>
00940> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
00941> CN* = 72.5 Ia = Dep. Storage (Above)
00942> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
00943> THAN THE STORAGE COEFFICIENT.
00944> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00945>

00946>-----
00947> 002:0017-----
00948>
00949> | ADD HYD (StoCont) | ID: NHYD AREA QPEAK TPEAK R.V. DWF
00950> (ha) (cms) (hrs) (mm) (cms)
00951> ID1 01:206 12.83 2.521 1.00 21.13 .000
00952> +ID2 02:207 1.94 .545 1.00 29.07 .000
00953> +ID3 03:EX302 .87 .012 1.37 5.36 .000
00954> +ID4 04:EX303 1.04 .105 1.00 13.37 .000
00955>-----
00956> SUM 09:StoCont 16.68 3.172 1.00 20.75 .000
00957>
00958> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
00959>
00960>
00961> 002:0018-----
00962> COMPUTE DUALHYD
00963> TotalHyd 09:StoCont | Average inlet capacities [CINLET] = .212 (cms)
00964> | Number of inlets in system [NINLET] = 1
00965> | Total minor system capacity = .212 (cms)
00966> | Total major system storage [TMJSTO] = 7100. (cu.m.)
00967>
00968> ID: NHYD AREA QPEAK TPEAK R.V. DWF
00969> (ha) (cms) (hrs) (mm) (cms)
00970> TOTAL HYD. 09:StoCon 16.68 3.172 1.000 20.745 .000
00971>-----
00972> MAJOR SYST 03:SmaJ .00 .000 .000 .000 .000
00973> MINOR SYST 02:SMin 16.68 .212 .683 20.811 .000
00974>
00975> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
00976>
00977> Maximum MAJOR SYSTEM storage used = 2025. (cu.m.)
00978>
00979>
00980> 002:0019-----
00981> *****
00982> *# Total Flows from South
00983> *****
00984>
00985> | CALIB NASHYD | Area (ha)= .18 Curve Number (CN)=61.50
00986> 01:205 DT= 1.00 Ia (mm)= 5.000 # of Linear Res. (N)= 3.00
00987> U.H. Tp(hrs)= .130
00988>
00989> Unit Hyd Qpeak (cms)= .053
00990>
00991> PEAK FLOW (cms)= .003 (i)
00992> TIME TO PEAK (hrs)= 1.183
00993> RUNOFF VOLUME (mm)= 4.145
00994> TOTAL RAINFALL (mm)= 32.834
00995> RUNOFF COEFFICIENT = .126
00996>
00997> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00998>
00999>
01000> 002:0020-----
01001>
01002> | ADD HYD (SouthPr) | ID: NHYD AREA QPEAK TPEAK R.V. DWF
01003> (ha) (cms) (hrs) (mm) (cms)
01004> ID1 01:205 .18 .003 1.18 4.14 .000
01005> +ID2 02:SMin 16.68 .212 .68 20.81 .000
01006> +ID3 03:SmaJ .00 .000 .00 .00 .000
01007>-----
01008> SUM 05:SouthPr 16.86 .215 1.18 20.63 .000
01009>
01010> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
01011>
01012>
01013> 002:0021-----
01014>
01015> 002:0002-----
01016> ** END OF RUN : 4
01017>
01018>
01019>
01020>
01021>
01022>
01023>
01024>
01025> | START | Project dir.: C:\MODELL-1\14396\SWMHYMO\
01026> | Rainfall dir.: C:\MODELL-1\14396\SWMHYMO\
01027> TZERO = .00 hrs on 0
01028> METOUT= 2 (output= METRIC)
01029> NRUN = 005
01030> NSTORM= 1
01031> # 1=ldn5.3hr
01032>
01033> 005:0002-----
01034> *****
01035> *# Project Name: [Arva] Project Number: [161414396]
01036> *# Date : 2025-02-03
01037> *# Modeller : [AA, AKK]
01038> *# Company : Stantec Consulting Ltd. (London)
01039> *# License # : 4730904
01040> *****
01041> *#
01042> *# Arva
01043> *# 25 mm 4-hr, 2, 5, 10, 25, 50, 100, and 250-year, 3-hr Chicago Storm
01044> *#
01045> *****
01046> *#
01047> *#
01048> *#
01049> *# Proposed Conditions
01050> *#
01051> *#
01052> *****
01053>
01054> 005:0002-----
01055>
01056> | READ STORM | Filename: CHICAGO STORM
01057> | Ptotal= 44.19 mm | Comments: CHICAGO STORM
01058>
01059> TIME RAIN TIME RAIN TIME RAIN
01060> hrs mm/hr hrs mm/hr hrs mm/hr
01061> .08 3.164 .83 21.025 1.58 10.072 2.33 4.293
01062> .17 3.481 .92 50.463 1.67 8.751 2.42 4.042
01063> .25 3.874 1.00 141.242 1.75 7.736 2.50 3.819
01064> .33 4.373 1.08 65.260 1.83 6.932 2.58 3.620
01065> .42 5.028 1.17 36.321 1.92 6.282 2.67 3.443
01066> .50 5.925 1.25 24.430 2.00 5.745 2.75 3.282
01067> .58 7.226 1.33 18.167 2.08 5.294 2.83 3.137
01068> .67 9.274 1.42 14.372 2.17 4.810 2.92 3.005
01069> .75 12.926 1.50 11.853 2.25 4.580 3.00 2.884
01070>
01071>
01072> 005:0003-----
01073> *****
01074> *#
01075> *# North of Medway
01076> *#
01077> *****
01078> *****
01079> *# Block 11 PPS Controls
01080> *****

01081>-----
01082> CALIB STANDHYD Area (ha)= 1.53
01083> 01:203 DT= 1.00 Total Imp(%)= 71.00 Dir. Conn.(%)= 71.00
01084>-----
01085> IMPERVIOUS PERVIOUS (i)
01086> Surface Area (ha)= 1.09 .44
01087> Dep. Storage (mm)= 2.00 5.00
01088> Average Slope (%)= 2.00 2.00
01089> Length (m)= 110.00 25.00
01090> Mannings n = .001 .024
01091>-----
01092> Max.eff.Inten.(mm/hr)= 141.24 30.87
01093> over (min)= 1.00 3.00
01094> Storage Coeff. (min)= .48 (ii) 2.57 (ii)
01095> Unit Hyd. Tpeak (min)= 1.00 3.00
01096> Unit Hyd. peak (cms)= 1.49 .41
01097>-----
01098> PEAK FLOW (cms)= .43 .03 *TOTALS*
01099> TIME TO PEAK (hrs)= 1.00 1.03 1.000 451 (iii)
01100> RUNOFF VOLUME (mm)= 42.19 10.67 33.046
01101> TOTAL RAINFALL (mm)= 44.19 44.19 44.186
01102> RUNOFF COEFFICIENT = .95 .24 .748
01103>-----
01104> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
01105> CN* = 70.8 Ia = Dep. Storage (Above)
01106> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
01107> THAN THE STORAGE COEFFICIENT.
01108> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01109>-----
01110> 005:0004-----
01111>-----
01112> COMPUTE DUALHYD Average inlet capacities [CINLET] = .042 (cms)
01113> TotalHyd 01:203 Number of inlets in system [NINLET] = 1
01114>-----
01115> Total minor system capacity = .042 (cms)
01116> Total major system storage [TMJSTO] = 2000.(cu.m.)
01117>-----
01118> ID: NHYD AREA QPEAK TPEAK R.V. DWF
01119> (ha) (cms) (hrs) (mm) (cms)
01120> TOTAL HYD. 01:203 1.53 .451 1.000 33.046 .000
01121>-----
01122> MAJOR SYST 03:203Maj .00 .000 .000 .000 .000
01123> MINOR SYST 02:203Min 1.53 .042 .767 33.122 .000
01124>-----
01125> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
01126>-----
01127> Maximum MAJOR SYSTEM storage used = 265.(cu.m.)
01128>-----
01129> 005:0005-----
01130> *#*****
01131>-----
01132> *# Block 8 PPS Controls
01133> *#*****
01134>-----
01135> CALIB STANDHYD Area (ha)= .97
01136> 01:204 DT= 1.00 Total Imp(%)= 71.00 Dir. Conn.(%)= 71.00
01137>-----
01138> IMPERVIOUS PERVIOUS (i)
01139> Surface Area (ha)= .69 .28
01140> Dep. Storage (mm)= 2.00 5.00
01141> Average Slope (%)= 2.00 2.00
01142> Length (m)= 110.00 25.00
01143> Mannings n = .001 .024
01144>-----
01145> Max.eff.Inten.(mm/hr)= 141.24 27.12
01146> over (min)= 1.00 3.00
01147> Storage Coeff. (min)= .48 (ii) 2.68 (ii)
01148> Unit Hyd. Tpeak (min)= 1.00 3.00
01149> Unit Hyd. peak (cms)= 1.49 .40
01150>-----
01151> PEAK FLOW (cms)= .27 .02 *TOTALS*
01152> TIME TO PEAK (hrs)= 1.00 1.03 1.000 .284 (iii)
01153> RUNOFF VOLUME (mm)= 42.19 9.51 32.710 .000
01154> TOTAL RAINFALL (mm)= 44.19 44.19 44.186
01155> RUNOFF COEFFICIENT = .95 .22 .740
01156>-----
01157> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
01158> CN* = 67.5 Ia = Dep. Storage (Above)
01159> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
01160> THAN THE STORAGE COEFFICIENT.
01161> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01162>-----
01163> 005:0006-----
01164>-----
01165> COMPUTE DUALHYD Average inlet capacities [CINLET] = .026 (cms)
01166> TotalHyd 01:204 Number of inlets in system [NINLET] = 1
01167>-----
01168> Total minor system capacity = .026 (cms)
01169> Total major system storage [TMJSTO] = 2000.(cu.m.)
01170>-----
01171> ID: NHYD AREA QPEAK TPEAK R.V. DWF
01172> (ha) (cms) (hrs) (mm) (cms)
01173> TOTAL HYD. 01:204 .97 .284 1.000 32.710 .000
01174>-----
01175> MAJOR SYST 05:204Maj .00 .000 .000 .000 .000
01176> MINOR SYST 04:204Min .97 .026 .767 32.867 .000
01177>-----
01178> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
01179>-----
01180> Maximum MAJOR SYSTEM storage used = 167.(cu.m.)
01181>-----
01182> 005:0007-----
01183> *#*****
01184>-----
01185> *# Remaining North Controlled
01186> *#*****
01187>-----
01188> CALIB STANDHYD Area (ha)= 5.48
01189> 01:202 DT= 1.00 Total Imp(%)= 57.00 Dir. Conn.(%)= 57.00
01190>-----
01191> IMPERVIOUS PERVIOUS (i)
01192> Surface Area (ha)= 3.12 2.36
01193> Dep. Storage (mm)= 2.00 5.00
01194> Average Slope (%)= 2.00 1.51
01195> Length (m)= 110.00 25.00
01196> Mannings n = .001 .024
01197>-----
01198> Max.eff.Inten.(mm/hr)= 141.24 27.54
01199> over (min)= 1.00 3.00
01200> Storage Coeff. (min)= .48 (ii) 2.86 (ii)
01201> Unit Hyd. Tpeak (min)= 1.00 3.00
01202> Unit Hyd. peak (cms)= 1.49 .39
01203>-----
01204> PEAK FLOW (cms)= 1.23 .14 *TOTALS*
01205> TIME TO PEAK (hrs)= 1.00 1.03 1.000 1.339 (iii)
01206> RUNOFF VOLUME (mm)= 42.19 9.64 28.192
01207> TOTAL RAINFALL (mm)= 44.19 44.19 44.186
01208> RUNOFF COEFFICIENT = .95 .22 .638
01209>-----
01210> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
01211> CN* = 67.9 Ia = Dep. Storage (Above)
01212> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
01213> THAN THE STORAGE COEFFICIENT.
01214> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01215>-----

01216>-----
01217> 005:0008-----
01218>-----
01219> CALIB STANDHYD Area (ha)= .99
01220> 06:EX301 DT= 1.00 Total Imp(%)= 84.00 Dir. Conn.(%)= 84.00
01221>-----
01222> IMPERVIOUS PERVIOUS (i)
01223> Surface Area (ha)= .83 .16
01224> Dep. Storage (mm)= 2.00 5.00
01225> Average Slope (%)= 2.00 1.51
01226> Length (m)= 25.00 15.00
01227> Mannings n = .001 .024
01228>-----
01229> Max.eff.Inten.(mm/hr)= 141.24 37.63
01230> over (min)= 1.00 2.00
01231> Storage Coeff. (min)= .20 (ii) 1.74 (ii)
01232> Unit Hyd. Tpeak (min)= 1.00 2.00
01233> Unit Hyd. peak (cms)= 1.69 .61
01234>-----
01235> PEAK FLOW (cms)= .33 .01 *TOTALS*
01236> TIME TO PEAK (hrs)= .98 1.02 1.000
01237> RUNOFF VOLUME (mm)= 42.19 11.96 37.349
01238> TOTAL RAINFALL (mm)= 44.19 44.19 44.186
01239> RUNOFF COEFFICIENT = .95 .27 .845
01240>-----
01241> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
01242> CN* = 74.0 Ia = Dep. Storage (Above)
01243> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
01244> THAN THE STORAGE COEFFICIENT.
01245> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01246>-----
01247> 005:0009-----
01248>-----
01249> ADD HYD (NtoCont) ID: NHYD AREA QPEAK TPEAK R.V. DWF
01250> (ha) (cms) (hrs) (mm) (cms)
01251> ID1 01:202 5.48 1.339 1.00 28.19 .000
01252> +ID2 02:203Min 1.53 .042 .77 33.12 .000
01253> +ID3 03:203Maj .00 .000 .00 .00 .000
01254> +ID4 04:204Min .97 .026 .77 32.87 .000
01255> +ID5 05:204Maj .00 .000 .00 .00 .000
01256> +ID6 06:EX301 .99 .340 1.00 37.35 .000
01257>-----
01258> SUM 09:NtoCont 8.97 1.747 1.00 30.55 .000
01259>-----
01260> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
01261>-----
01262> 005:0010-----
01263>-----
01264> COMPUTE DUALHYD Average inlet capacities [CINLET] = .241 (cms)
01265> TotalHyd 09:NtoCon Number of inlets in system [NINLET] = 1
01266>-----
01267> Total minor system capacity = .241 (cms)
01268> Total major system storage [TMJSTO] = 2350.(cu.m.)
01269>-----
01270> ID: NHYD AREA QPEAK TPEAK R.V. DWF
01271> (ha) (cms) (hrs) (mm) (cms)
01272> TOTAL HYD. 09:NtoCon 8.97 1.747 1.000 30.549 .000
01273>-----
01274> MAJOR SYST 03:NMAj .00 .000 .000 .000 .000
01275> MINOR SYST 02:NMin 8.97 .241 .767 30.593 .000
01276>-----
01277> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
01278>-----
01279> Maximum MAJOR SYSTEM storage used = 959.(cu.m.)
01280>-----
01281> 005:0011-----
01282>-----
01283> CALIB NASHHYD Area (ha)= .58 Curve Number (CN)=76.00
01284> 01:201 DT= 1.00 Ia (mm)= 5.000 # of Linear Res.(N)= 3.00
01285> U.H. Tp(hrs)= .210
01286>-----
01287> Unit Hyd Qpeak (cms)= .105
01288>-----
01289> PEAK FLOW (cms)= .024 (i)
01290> TIME TO PEAK (hrs)= 1.283
01291> RUNOFF VOLUME (mm)= 12.860
01292> TOTAL RAINFALL (mm)= 44.186
01293> RUNOFF COEFFICIENT = .291
01294>-----
01295> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01296>-----
01297> 005:0012-----
01298>-----
01299> ADD HYD (NorthPr) ID: NHYD AREA QPEAK TPEAK R.V. DWF
01300> (ha) (cms) (hrs) (mm) (cms)
01301> ID1 01:201 .58 .024 1.28 12.86 .000
01302> +ID2 02:NMin 8.97 .241 .77 30.59 .000
01303> +ID3 03:NMAj .00 .000 .00 .00 .000
01304>-----
01305> SUM 05:NorthPr 9.55 .265 1.28 29.52 .000
01306>-----
01307> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
01308>-----
01309> 005:0013-----
01310>-----
01311> *#*****
01312>-----
01313> *# South of Midway
01314> *#*****
01315>-----
01316> *# Remaining North Controlled
01317> *#*****
01318>-----
01319> CALIB STANDHYD Area (ha)= 12.83
01320> 01:206 DT= 1.00 Total Imp(%)= 64.00 Dir. Conn.(%)= 64.00
01321>-----
01322> IMPERVIOUS PERVIOUS (i)
01323> Surface Area (ha)= 8.21 4.62
01324> Dep. Storage (mm)= 2.00 5.00
01325> Average Slope (%)= 2.00 2.00
01326> Length (m)= 110.00 25.00
01327> Mannings n = .001 .024
01328>-----
01329> Max.eff.Inten.(mm/hr)= 141.24 20.14
01330> over (min)= 1.00 3.00
01331> Storage Coeff. (min)= .48 (ii) 2.96 (ii)
01332> Unit Hyd. Tpeak (min)= 1.00 3.00
01333> Unit Hyd. peak (cms)= 1.49 .38
01334>-----
01335> PEAK FLOW (cms)= 3.22 .19 *TOTALS*
01336> TIME TO PEAK (hrs)= 1.00 1.03 1.000
01337> RUNOFF VOLUME (mm)= 42.19 7.26 29.614
01338> TOTAL RAINFALL (mm)= 44.19 44.19 44.186
01339> RUNOFF COEFFICIENT = .95 .16 .670
01340>-----
01341> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
01342> CN* = 59.6 Ia = Dep. Storage (Above)
01343> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
01344> THAN THE STORAGE COEFFICIENT.
01345>-----

01351> THAN THE STORAGE COEFFICIENT.
01352> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01353>
01354>-----
01355> 005:0014-----
01356> CALIB STANDHYD | Area (ha)= 1.94 | 715 (iii)
01357> | 02:207 DT= 1.00 | Total Imp (%)= 93.00 | Dir. Conn. (%)= 93.00
01358>-----
01359> IMPERVIOUS PERVIOUS (i)
01360> Surface Area (ha)= 1.80 .14
01361> Dep. Storage (mm)= 2.00 5.00
01362> Average Slope (%)= 2.00 25.00
01363> Length (m)= 110.00
01364> Mannings n = .001 .024
01365>
01366> Max.eff.Inten.(mm/hr)= 141.24 29.32
01367> over (min) 1.00 3.00
01368> Storage Coeff. (min)= .48 (ii) 2.61 (ii)
01369> Unit Hyd. Tpeak (min)= 1.00 3.00
01370> Unit Hyd. peak (cms)= 1.49 .41
01371>
01372> PEAK FLOW (cms)= .71 .01 *TOTALS*
01373> TIME TO PEAK (hrs)= 1.00 1.03 1.000
01374> RUNOFF VOLUME (mm)= 42.19 10.19 39.946
01375> TOTAL RAINFALL (mm)= 44.19 44.19 44.186
01376> RUNOFF COEFFICIENT = .95 .23 .904
01377>
01378> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
01379> CN* = 69.5 Ia = Dep. Storage (Above)
01380> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
01381> THAN THE STORAGE COEFFICIENT.
01382> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01383>
01384>-----
01385> 005:0015-----
01386> CALIB NASHYD | Area (ha)= .87 | Curve Number (CN)=68.50
01387> | 03:EX302 DT= 1.00 | Ia (mm)= 5.000 | # of Linear Res. (N)= 3.00
01388> | U.H. Tp(hrs)= .260
01389>-----
01390> Unit Hyd Qpeak (cms)= .128
01391> PEAK FLOW (cms)= .024 (i)
01392> TIME TO PEAK (hrs)= 1.367
01393> RUNOFF VOLUME (mm)= 9.844
01394> TOTAL RAINFALL (mm)= 44.186
01395> RUNOFF COEFFICIENT = .223
01396>
01397> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01398>
01399>-----
01400> 005:0016-----
01401> CALIB STANDHYD | Area (ha)= 1.04 | 29.00
01402> | 04:EX303 DT= 1.00 | Total Imp (%)= 29.00 | Dir. Conn. (%)= 29.00
01403>-----
01404> IMPERVIOUS PERVIOUS (i)
01405> Surface Area (ha)= .30 .74
01406> Dep. Storage (mm)= 2.00 5.00
01407> Average Slope (%)= 2.00 1.90
01408> Length (m)= 25.00 50.00
01409> Mannings n = .001 .024
01410>
01411> Max.eff.Inten.(mm/hr)= 141.24 33.07
01412> over (min) 1.00 3.00
01413> Storage Coeff. (min)= .20 (ii) 3.32 (ii)
01414> Unit Hyd. Tpeak (min)= 1.00 3.00
01415> Unit Hyd. peak (cms)= 1.69 .35
01416>
01417> PEAK FLOW (cms)= .12 .05 *TOTALS*
01418> TIME TO PEAK (hrs)= .98 1.03 1.000
01419> RUNOFF VOLUME (mm)= 42.19 11.33 20.278
01420> TOTAL RAINFALL (mm)= 44.19 44.19 44.186
01421> RUNOFF COEFFICIENT = .95 .26 .459
01422>
01423> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
01424> CN* = 72.5 Ia = Dep. Storage (Above)
01425> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
01426> THAN THE STORAGE COEFFICIENT.
01427> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01428>
01429>-----
01430> 005:0017-----
01431> ADD HYD (StoCont) | ID: NHYD AREA QPEAK TPEAK R.V. DWF
01432> | (ha) (cms) (hrs) (mm) (cms)
01433> ID1 01:206 12.83 3.381 1.00 29.61 .000
01434> +ID2 02:207 1.94 .715 1.00 39.95 .000
01435> +ID3 03:EX302 .87 .024 1.37 9.84 .000
01436> +ID4 04:EX303 1.04 .158 1.00 20.28 .000
01437>-----
01438> SUM 09:StoCont 16.68 4.257 1.00 29.20 .000
01439>
01440> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
01441>
01442>-----
01443> 005:0018-----
01444> COMPUTE DUALHYD | Average inlet capacities [CINLET] = .212 (cms)
01445> | TotalHyd 09:StoCon | Number of inlets in system [NINLET] = 1
01446> | Total minor system capacity = .212 (cms)
01447> | Total major system storage [TMJSTO] = 7100. (cu.m.)
01448>-----
01449> ID: NHYD AREA QPEAK TPEAK R.V. DWF
01450> (ha) (cms) (hrs) (mm) (cms)
01451> TOTAL HYD. 09:StoCon 16.68 4.257 1.000 29.203 .000
01452> MAJOR SYST 03:SMaj .00 .000 .000 .000 .000
01453> MINOR SYST 02:SMIn 16.68 .212 .600 29.206 .000
01454>
01455> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
01456>
01457> Maximum MAJOR SYSTEM storage used = 3211.(cu.m.)
01458>
01459>-----
01460> 005:0019-----
01461> CALIB NASHYD | Area (ha)= .18 | Curve Number (CN)=61.50
01462> | 01:205 DT= 1.00 | Ia (mm)= 5.000 | # of Linear Res. (N)= 3.00
01463> | U.H. Tp(hrs)= .130
01464>-----
01465> Unit Hyd Qpeak (cms)= .053
01466> PEAK FLOW (cms)= .006 (i)
01467> TIME TO PEAK (hrs)= 1.183
01468> RUNOFF VOLUME (mm)= 7.746
01469> TOTAL RAINFALL (mm)= 44.186
01470> RUNOFF COEFFICIENT = .175
01471>
01472> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01473>
01474>-----

01486> 005:0020-----
01487> ADD HYD (SouthPr) | ID: NHYD AREA QPEAK TPEAK R.V. DWF
01488> (ha) (cms) (hrs) (mm) (cms)
01489> ID1 01:205 .18 .006 1.18 7.75 .000
01490> +ID2 02:SMIn 16.68 .212 .60 29.21 .000
01491> +ID3 03:SMaj .00 .000 .00 .00 .000
01492>-----
01493> SUM 05:SouthPr 16.86 .218 1.18 28.98 .000
01494>
01495> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
01496>
01497>-----
01498> 005:0021-----
01499> 005:0002-----
01500> 005:0002-----
01501> ** END OF RUN : 9
01502>
01503>-----
01504> 005:0002-----
01505> ** END OF RUN : 9
01506>
01507>-----
01508> | START | Project dir.: C:\MODELL-1\14396\SWMHYMO\
01509> | Rainfall dir.: C:\MODELL-1\14396\SWMHYMO\
01510> TZERO = .00 hrs on 0
01511> METOUT= 2 (output = METRIC)
01512> NRUN = 010
01513> NSTORM= 1
01514> # 1=ldn10.3hr
01515>-----
01516> 010:0002-----
01517> ** Project Name: [Arval Project Number: [161414396]
01518> ** Date : 2025-02-03
01519> ** Modeller : [AA, AKK]
01520> ** Company : Stantec Consulting Ltd. (London)
01521> ** License # : 4730904
01522>-----
01523> ** Arva
01524> ** 25 mm 4-hr, 2, 5, 10, 25, 50, 100, and 250-year, 3-hr Chicago Storm
01525>-----
01526> ** Proposed Conditions
01527>-----
01528> 010:0002-----
01529> READ STORM Filename: CHICAGO STORM
01530> Ptotal= 52.05 mm Comments: CHICAGO STORM
01531>-----
01532> TIME RAIN TIME RAIN TIME RAIN TIME RAIN
01533> hrs mm/hr hrs mm/hr hrs mm/hr hrs mm/hr
01534> .08 3.462 .83 25.620 1.58 11.888 2.33 4.796
01535> .17 3.833 .92 61.474 1.67 10.245 2.42 4.496
01536> .25 4.297 1.00 162.470 1.75 8.987 2.50 4.231
01537> .33 4.891 1.08 79.139 1.83 7.997 2.58 3.997
01538> .42 5.677 1.17 44.600 1.92 7.200 2.67 3.788
01539> .50 6.765 1.25 29.885 2.00 6.545 2.75 3.600
01540> .58 8.360 1.33 22.041 2.08 5.998 2.83 3.430
01541> .67 10.895 1.42 17.275 2.17 5.535 2.92 3.276
01542> .75 15.461 1.50 14.115 2.25 5.139 3.00 3.135
01543>-----
01544> 010:0003-----
01545> ** North of Medway
01546>-----
01547> 005:0017-----
01548> CALIB STANDHYD | Area (ha)= 1.53 | 71.00
01549> | 01:203 DT= 1.00 | Total Imp (%)= 71.00 | Dir. Conn. (%)= 71.00
01550>-----
01551> IMPERVIOUS PERVIOUS (i)
01552> Surface Area (ha)= 1.09 .44
01553> Dep. Storage (mm)= 2.00 5.00
01554> Average Slope (%)= 2.00 25.00
01555> Length (m)= 110.00
01556> Mannings n = .001 .024
01557>
01558> Max.eff.Inten.(mm/hr)= 162.47 44.85
01559> over (min) 1.00 2.00
01560> Storage Coeff. (min)= .45 (ii) 2.25 (ii)
01561> Unit Hyd. Tpeak (min)= 1.00 2.00
01562> Unit Hyd. peak (cms)= 1.51 .52
01563>
01564> PEAK FLOW (cms)= .49 .04 *TOTALS*
01565> TIME TO PEAK (hrs)= 1.00 1.02 1.000
01566> RUNOFF VOLUME (mm)= 50.05 14.58 39.760
01567> TOTAL RAINFALL (mm)= 52.05 52.05 52.045
01568> RUNOFF COEFFICIENT = .96 .28 .764
01569>
01570> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
01571> CN* = 70.8 Ia = Dep. Storage (Above)
01572> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
01573> THAN THE STORAGE COEFFICIENT.
01574> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01575>
01576>-----
01577> 010:0004-----
01578> COMPUTE DUALHYD | Average inlet capacities [CINLET] = .042 (cms)
01579> | TotalHyd 01:203 | Number of inlets in system [NINLET] = 1
01580> | Total minor system capacity = .042 (cms)
01581> | Total major system storage [TMJSTO] = 2000. (cu.m.)
01582>-----
01583> ID: NHYD AREA QPEAK TPEAK R.V. DWF
01584> (ha) (cms) (hrs) (mm) (cms)
01585> TOTAL HYD. 01:203 1.53 .532 1.000 39.760 .000
01586> MAJOR SYST 03:203Maj .00 .000 .000 .000 .000
01587> MINOR SYST 02:203Min 1.53 .042 .683 39.791 .000
01588>
01589> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
01590>
01591> Maximum MAJOR SYSTEM storage used = 346. (cu.m.)
01592>
01593>-----
01594> 010:0005-----
01595> **-----
01596>

01621> *# Block 8 PPS Controls
01622> *#-----
01623> | CALIB STANDHYD | Area (ha)= .97
01624> | 01:204 DT= 1.00 | Total Imp(%)= 71.00 Dir. Conn.(%)= 71.00
01625> |-----|
01626> IMPERVIOUS PERVIOUS (i)
01627> Surface Area (ha)= .69 .28
01628> Dep. Storage (mm)= 2.00 5.00
01629> Average Slope (%)= 2.00 2.00
01630> Length (m)= 110.00 25.00
01631> Mannings n = .001 .024
01632> Max.eff.Inten.(mm/hr)= 162.47 39.66
01633> over (min) 1.00 2.00
01634> Storage Coeff. (min)= .45 (ii) 2.34 (iii)
01635> Unit Hyd. Tpeak (min)= 1.00 2.00
01636> Unit Hyd. peak (cms)= 1.51 .50
01637> *TOTALS*
01638> PEAK FLOW (cms)= .31 .02 .334 (iii)
01639> TIME TO PEAK (hrs)= 1.00 1.02 1.000
01640> RUNOFF VOLUME (mm)= 50.05 13.07 39.322
01641> TOTAL RAINFALL (mm)= 52.05 52.045 52.045
01642> RUNOFF COEFFICIENT = .96 .25 .756
01643> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
01644> CN* = 67.5 Ia = Dep. Storage (Above)
01645> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
01646> THAN THE STORAGE COEFFICIENT.
01647> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01648> 010:0006
01649> | COMPUTE DUALHYD | Average inlet capacities [CINLET] = .026 (cms)
01650> | TotalHyd 01:204 | Number of inlets in system [NINLET] = 1
01651> |-----| Total minor system capacity = .026 (cms)
01652> | Total major system storage [TMJSTO] = 2000. (cu.m.)
01653> |-----|
01654> ID: NHYD AREA QPEAK TPEAK R.V. DWF
01655> (ha) (cms) (hrs) (mm) (cms)
01656> TOTAL HYD. 01:204 .97 .334 1.000 39.322 .000
01657> MAJOR SYST 05:204Maj .00 .000 .000 .000 .000
01658> MINOR SYST 04:204Min .97 .026 .683 39.369 .000
01659> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
01660> Maximum MAJOR SYSTEM storage used = 218. (cu.m.)
01661> 010:0007
01662> *#-----
01663> *# Remaining North Controlled
01664> *#-----
01665> | CALIB STANDHYD | Area (ha)= 5.48
01666> | 01:202 DT= 1.00 | Total Imp(%)= 57.00 Dir. Conn.(%)= 57.00
01667> |-----|
01668> IMPERVIOUS PERVIOUS (i)
01669> Surface Area (ha)= 3.12 2.36
01670> Dep. Storage (mm)= 2.00 5.00
01671> Average Slope (%)= 2.00 2.00
01672> Length (m)= 110.00 25.00
01673> Mannings n = .001 .024
01674> Max.eff.Inten.(mm/hr)= 162.47 37.76
01675> over (min) 1.00 2.00
01676> Storage Coeff. (min)= .45 (ii) 2.55 (iii)
01677> Unit Hyd. Tpeak (min)= 1.00 3.00
01678> Unit Hyd. peak (cms)= 1.51 .42
01679> *TOTALS*
01680> PEAK FLOW (cms)= 1.41 .19 1.578 (iii)
01681> TIME TO PEAK (hrs)= 1.00 1.03 1.000
01682> RUNOFF VOLUME (mm)= 50.05 13.24 34.220
01683> TOTAL RAINFALL (mm)= 52.05 52.05 52.045
01684> RUNOFF COEFFICIENT = .96 .25 .658
01685> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
01686> CN* = 67.9 Ia = Dep. Storage (Above)
01687> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
01688> THAN THE STORAGE COEFFICIENT.
01689> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01690> 010:0008
01691> | CALIB STANDHYD | Area (ha)= .99
01692> | 06:EX301 DT= 1.00 | Total Imp(%)= 84.00 Dir. Conn.(%)= 84.00
01693> |-----|
01694> IMPERVIOUS PERVIOUS (i)
01695> Surface Area (ha)= .83 .16
01696> Dep. Storage (mm)= 2.00 5.00
01697> Average Slope (%)= 2.00 2.00
01698> Length (m)= 25.00 15.00
01699> Mannings n = .001 .024
01700> Max.eff.Inten.(mm/hr)= 162.47 50.71
01701> over (min) 1.00 2.00
01702> Storage Coeff. (min)= .19 (ii) 1.56 (iii)
01703> Unit Hyd. Tpeak (min)= 1.00 2.00
01704> Unit Hyd. peak (cms)= 1.69 .65
01705> *TOTALS*
01706> PEAK FLOW (cms)= .38 .02 .394 (iii)
01707> TIME TO PEAK (hrs)= .98 1.02 1.000
01708> RUNOFF VOLUME (mm)= 50.05 16.24 44.636
01709> TOTAL RAINFALL (mm)= 52.05 52.05 52.045
01710> RUNOFF COEFFICIENT = .96 .31 .858
01711> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
01712> CN* = 74.0 Ia = Dep. Storage (Above)
01713> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
01714> THAN THE STORAGE COEFFICIENT.
01715> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01716> 010:0009
01717> | ADD HYD (NtoCont) | ID: NHYD AREA QPEAK TPEAK R.V. DWF
01718> (ha) (cms) (hrs) (mm) (cms)
01719> ID1 01:202 5.48 1.578 1.00 34.22 .000
01720> +ID2 02:203Min 1.53 .042 .68 39.79 .000
01721> +ID3 03:203Maj .00 .000 .00 .00 .000
01722> +ID4 04:204Min .97 .026 .68 39.37 .000
01723> +ID5 05:204Maj .00 .000 .00 .00 .000
01724> +ID6 06:EX301 .99 .394 1.00 44.64 .000
01725> SUM 09:NtoCont 8.97 2.040 1.00 36.88 .000
01726> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
01727> 010:0010
01728> | COMPUTE DUALHYD | Average inlet capacities [CINLET] = .241 (cms)

01756> | TotalHyd 09:NtoCon | Number of inlets in system [NINLET] = 1
01757> |-----| Total minor system capacity = .241 (cms)
01758> | Total major system storage [TMJSTO] = 2350. (cu.m.)
01759> |-----|
01760> ID: NHYD AREA QPEAK TPEAK R.V. DWF
01761> (ha) (cms) (hrs) (mm) (cms)
01762> TOTAL HYD. 09:NtoCon 8.97 2.040 1.000 36.877 .000
01763> MAJOR SYST 03:NMaJ .00 .000 .000 .000 .000
01764> MINOR SYST 02:NMin 8.97 .241 .767 36.906 .000
01765> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
01766> Maximum MAJOR SYSTEM storage used = 1267. (cu.m.)
01767> 010:0011
01768> *#-----
01769> *# Total Flows from North
01770> *#-----
01771> | CALIB NASHYD | Area (ha)= .58 Curve Number (CN)=76.00
01772> | 01:201 DT= 1.00 | Ia (mm)= 5.000 # of Linear Res.(N)= 3.00
01773> |-----| U.H. Tp(hrs)= .210
01774> Unit Hyd Qpeak (cms)= .105
01775> PEAK FLOW (cms)= .034 (i)
01776> TIME TO PEAK (hrs)= 1.283
01777> RUNOFF VOLUME (mm)= 17.392
01778> TOTAL RAINFALL (mm)= 52.045
01779> RUNOFF COEFFICIENT = .334
01780> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01781> 010:0012
01782> | ADD HYD (NorthPr) | ID: NHYD AREA QPEAK TPEAK R.V. DWF
01783> (ha) (cms) (hrs) (mm) (cms)
01784> ID1 01:201 .58 .034 1.28 17.39 .000
01785> +ID2 02:NMin 8.97 .241 .77 36.91 .000
01786> +ID3 03:NMaJ .00 .000 .00 .00 .000
01787> SUM 05:NorthPr 9.55 .275 1.28 35.72 .000
01788> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
01789> 010:0013
01790> *#-----
01791> *# South of Midway
01792> *#-----
01793> *#-----
01794> *#-----
01795> *#-----
01796> *#-----
01797> *#-----
01798> *#-----
01799> *#-----
01800> *#-----
01801> *#-----
01802> *#-----
01803> *#-----
01804> *#-----
01805> *#-----
01806> *#-----
01807> *#-----
01808> *#-----
01809> *#-----
01810> *#-----
01811> *#-----
01812> *#-----
01813> *#-----
01814> *#-----
01815> | CALIB STANDHYD | Area (ha)= 12.83
01816> | 01:206 DT= 1.00 | Total Imp(%)= 64.00 Dir. Conn.(%)= 64.00
01817> |-----|
01818> IMPERVIOUS PERVIOUS (i)
01819> Surface Area (ha)= 8.21 4.62
01820> Dep. Storage (mm)= 2.00 5.00
01821> Average Slope (%)= 2.00 2.00
01822> Length (m)= 110.00 25.00
01823> Mannings n = .001 .024
01824> Max.eff.Inten.(mm/hr)= 162.47 27.88
01825> over (min) 1.00 3.00
01826> Storage Coeff. (min)= .45 (ii) 2.63 (iii)
01827> Unit Hyd. Tpeak (min)= 1.00 3.00
01828> Unit Hyd. peak (cms)= 1.51 .41
01829> *TOTALS*
01830> PEAK FLOW (cms)= 3.71 .28 3.945 (iii)
01831> TIME TO PEAK (hrs)= 1.00 1.03 1.000
01832> RUNOFF VOLUME (mm)= 50.05 10.10 35.664
01833> TOTAL RAINFALL (mm)= 52.05 52.05 52.045
01834> RUNOFF COEFFICIENT = .96 .19 .685
01835> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
01836> CN* = 59.6 Ia = Dep. Storage (Above)
01837> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
01838> THAN THE STORAGE COEFFICIENT.
01839> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01840> 010:0014
01841> | CALIB STANDHYD | Area (ha)= 1.94
01842> | 02:207 DT= 1.00 | Total Imp(%)= 93.00 Dir. Conn.(%)= 93.00
01843> |-----|
01844> IMPERVIOUS PERVIOUS (i)
01845> Surface Area (ha)= 1.80 .14
01846> Dep. Storage (mm)= 2.00 5.00
01847> Average Slope (%)= 2.00 2.00
01848> Length (m)= 110.00 25.00
01849> Mannings n = .001 .024
01850> Max.eff.Inten.(mm/hr)= 162.47 42.71
01851> over (min) 1.00 2.00
01852> Storage Coeff. (min)= .45 (ii) 2.29 (iii)
01853> Unit Hyd. Tpeak (min)= 1.00 2.00
01854> Unit Hyd. peak (cms)= 1.51 .51
01855> *TOTALS*
01856> PEAK FLOW (cms)= .81 .01 .826 (iii)
01857> TIME TO PEAK (hrs)= 1.00 1.02 1.000
01858> RUNOFF VOLUME (mm)= 50.05 13.96 47.519
01859> TOTAL RAINFALL (mm)= 52.05 52.05 52.045
01860> RUNOFF COEFFICIENT = .96 .27 .913
01861> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
01862> CN* = 69.5 Ia = Dep. Storage (Above)
01863> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
01864> THAN THE STORAGE COEFFICIENT.
01865> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01866> 010:0015
01867> | CALIB NASHYD | Area (ha)= .87 Curve Number (CN)=68.50
01868> | 03:EX302 DT= 1.00 | Ia (mm)= 5.000 # of Linear Res.(N)= 3.00
01869> |-----| U.H. Tp(hrs)= .260
01870> Unit Hyd Qpeak (cms)= .128
01871> PEAK FLOW (cms)= .034 (i)
01872> TIME TO PEAK (hrs)= 1.367
01873> RUNOFF VOLUME (mm)= 13.508
01874> TOTAL RAINFALL (mm)= 52.045
01875> RUNOFF COEFFICIENT = .260
01876> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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01891>-----
01892> 010:0016-----
01893>-----
01894> | CALIB STANDHYD | Area (ha)= 1.04
01895> | 04:EX303 DT= 1.00 | Total Imp(%)= 29.00 Dir. Conn.(%)= 29.00
01896>-----
01897>-----
01898> Surface Area (ha)= IMPERVIOUS PERVIOUS (i)
01899> Dep. Storage (mm)= 2.00 5.00
01900> Average Slope (%)= 2.00 1.90
01901> Length (m)= 25.00 50.00
01902> Mannings n = .001 .024
01903>-----
01904> Max.eff.Inten.(mm/hr)= 162.47 45.01
01905> over (min)= 1.00 3.00
01906> Storage Coeff. (min)= .19 (ii) 2.95 (iii)
01907> Unit Hyd. Tpeak (min)= 1.00 3.00
01908> Unit Hyd. peak (cms)= 1.69 .38
01909>-----
01910> PEAK FLOW (cms)= .14 .07 .196 (iii)
01911> TIME TO PEAK (hrs)= .98 1.03 1.000
01912> RUNOFF VOLUME (mm)= 50.05 15.44 25.472
01913> TOTAL RAINFALL (mm)= 52.05 52.05 52.045
01914> RUNOFF COEFFICIENT = .96 .30 .489
01915>-----
01916> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
01917> CN* = 72.5 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>-----
01923> 010:0017-----
01924>-----
01925> | ADD HYD (StoCont ) | ID: NHYD AREA QPEAK TPEAK R.V. DWF
01926> | | (ha) (cms) (hrs) (mm) (cms)
01927> | ID1 01:206 | 12.83 3.945 1.00 35.66 .000
01928> | +ID2 02:207 | 1.94 .826 1.00 47.52 .000
01929> | +ID3 03:EX302 | .87 .034 1.37 13.51 .000
01930> | +ID4 04:EX303 | 1.04 .196 1.00 25.47 .000
01931> |=====|
01932> | SUM 09:StoCont | 16.68 4.971 1.00 35.25 .000
01933>-----
01934> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
01935>-----
01936>-----
01937> 010:0018-----
01938>-----
01939> | COMPUTE DUALHYD | Average inlet capacities [CINLET] = .212 (cms)
01940> | TotalHyd 09:StoCon | Number of inlets in system [NINLET] = 1
01941> | | Total minor system capacity = .212 (cms)
01942> | | Total major system storage [TMJSTO] = 7100. (cu.m.)
01943>-----
01944> ID: NHYD AREA QPEAK TPEAK R.V. DWF
01945> (ha) (cms) (hrs) (mm) (cms)
01946> TOTAL HYD. 09:StoCon 16.68 4.971 1.000 35.251 .000
01947>-----
01948> MAJOR SYST 03:SMaJ .00 .000 .000 .000 .000
01949> MINOR SYST 02:SMIn 16.68 .212 .517 35.324 .000
01950>-----
01951> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
01952>-----
01953> Maximum MAJOR SYSTEM storage used = 4121. (cu.m.)
01954>-----
01955>-----
01956> 010:0019-----
01957>-----
01958> * Total Flows from South
01959>-----
01960>-----
01961> | CALIB NASHYD | Area (ha)= .18 Curve Number (CN)=61.50
01962> | 01:205 DT= 1.00 | Ia (mm)= 5.000 # of Linear Res. (N)= 3.00
01963> | U.H. Tp (hrs)= .130
01964>-----
01965> Unit Hyd Qpeak (cms)= .053
01966>-----
01967> PEAK FLOW (cms)= .008 (i)
01968> TIME TO PEAK (hrs)= 1.183 1.030
01969> RUNOFF VOLUME (mm)= 10.740
01970> TOTAL RAINFALL (mm)= 52.045
01971> RUNOFF COEFFICIENT = .206
01972>-----
01973> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01974>-----
01975>-----
01976> 010:0020-----
01977>-----
01978> | ADD HYD (SouthPr ) | ID: NHYD AREA QPEAK TPEAK R.V. DWF
01979> | | (ha) (cms) (hrs) (mm) (cms)
01980> | ID1 01:205 | .18 .008 1.18 10.74 .000
01981> | +ID2 02:SMIn | 16.68 .212 .52 35.32 .000
01982> | +ID3 03:SMaJ | .00 .000 .00 .00 .000
01983> |=====|
01984> | SUM 05:SouthPr | 16.86 .220 1.18 35.06 .000
01985>-----
01986> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
01987>-----
01988>-----
01989> 010:0021-----
01990>-----
01991> 010:0002-----
01992>-----
01993> 010:0002-----
01994>-----
01995> 010:0002-----
01996> ** END OF RUN : 24
01997>-----
01998>-----
01999>-----
02000>-----
02001>-----
02002>-----
02003>-----
02004>-----
02005> | START | Project dir.: C:\MODELL-1\14396\SWMHYMO\
02006> |-----| Rainfall dir.: C:\MODELL-1\14396\SWMHYMO\
02007> TZERO = .00 hrs on 0
02008> METOUT= 2 (output = METRIC)
02009> NRUN = 025
02010> NSTORM= 1
02011> # 1=ldn25.3hr
02012>-----
02013> 025:0002-----
02014>-----
02015> * Project Name: [Arva] Project Number: [161414396]
02016> * Date : 2025-02-03
02017> * Modeller : [AA, AKK]
02018> * Company : Stantec Consulting Ltd. (London)
02019> * License # : 4730904
02020>-----
02021> *
02022> * Arva
02023> * 25 mm 4-hr, 2, 5, 10, 25, 50, 100, and 250-year, 3-hr Chicago Storm
02024> *
02025> *-----

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```

02026> *#-----
02027> *#
02028> *#
02029> *# Proposed Conditions
02030> *#
02031> *#
02032> *#-----
02033>-----
02034> 025:0002-----
02035>-----
02036> | READ STORM | Filename: CHICAGO STORM
02037> | Ptotal= 61.48 mm | Comments: CHICAGO STORM
02038>-----
02039>-----
02040> TIME RAIN TIME RAIN TIME RAIN
02041> hrs mm/hr hrs mm/hr hrs mm/hr
02042> .08 3.863 .83 30.802 1.58 13.993
02043> .17 4.298 .92 74.085 1.67 11.991
02044> .25 4.843 1.00 190.819 1.75 10.465
02045> .33 5.545 1.08 95.197 1.83 9.267
02046> .42 6.481 1.17 53.926 1.92 8.306
02047> .50 7.783 1.25 36.022 2.00 7.519
02048> .58 9.705 1.33 26.421 2.08 6.864
02049> .67 12.783 1.42 20.579 2.17 6.312
02050> .75 18.359 1.50 16.712 2.25 5.840
02051>-----
02052> 025:0003-----
02053> *#-----
02054> *#
02055> *# North of Midway
02056> *#
02057> *#-----
02058>-----
02059> *# Block 11 PPS Controls
02060> *#-----
02061>-----
02062> | CALIB STANDHYD | Area (ha)= 1.53
02063> | 01:203 DT= 1.00 | Total Imp(%)= 71.00 Dir. Conn.(%)= 71.00
02064>-----
02065>-----
02066> Surface Area (ha)= 1.09 .44
02067> Dep. Storage (mm)= 2.00 5.00
02068> Average Slope (%)= 2.00 2.00
02069> Length (m)= 110.00 25.00
02070> Mannings n = .001 .024
02071>-----
02072> Max.eff.Inten.(mm/hr)= 190.82 61.63
02073> over (min)= 1.00 2.00
02074> Storage Coeff. (min)= .43 (ii) 2.01 (ii)
02075> Unit Hyd. Tpeak (min)= 1.00 2.00
02076> Unit Hyd. peak (cms)= 1.54 .56
02077>-----
02078> PEAK FLOW (cms)= .58 .06
02079> TIME TO PEAK (hrs)= 1.00 1.02
02080> RUNOFF VOLUME (mm)= 59.48 19.78
02081> TOTAL RAINFALL (mm)= 61.48 61.48
02082> RUNOFF COEFFICIENT = .97 .32
02083>-----
02084> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
02085> CN* = 70.8 Ia = Dep. Storage (Above)
02086> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
02087> THAN THE STORAGE COEFFICIENT.
02088> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02089>-----
02090>-----
02091> 025:0004-----
02092>-----
02093> | COMPUTE DUALHYD | Average inlet capacities [CINLET] = .042 (cms)
02094> | TotalHyd 01:203 | Number of inlets in system [NINLET] = 1
02095> | | Total minor system capacity = .042 (cms)
02096> | | Total major system storage [TMJSTO] = 2000. (cu.m.)
02097>-----
02098> ID: NHYD AREA QPEAK TPEAK R.V. DWF
02099> (ha) (cms) (hrs) (mm) (cms)
02100> TOTAL HYD. 01:203 1.53 .636 1.000 47.969 .000
02101>-----
02102> MAJOR SYST 03:203MaJ .00 .000 .000 .000 .000
02103> MINOR SYST 02:203Min 1.53 .042 .683 48.118 .000
02104>-----
02105> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
02106>-----
02107> Maximum MAJOR SYSTEM storage used = 449. (cu.m.)
02108>-----
02109>-----
02110> 025:0005-----
02111> *#-----
02112> *# Block 8 PPS Controls
02113> *#-----
02114>-----
02115> | CALIB STANDHYD | Area (ha)= .97
02116> | 01:204 DT= 1.00 | Total Imp(%)= 71.00 Dir. Conn.(%)= 71.00
02117>-----
02118>-----
02119> Surface Area (ha)= .69 .28
02120> Dep. Storage (mm)= 2.00 5.00
02121> Average Slope (%)= 2.00 2.00
02122> Length (m)= 110.00 25.00
02123> Mannings n = .001 .024
02124>-----
02125> Max.eff.Inten.(mm/hr)= 190.82 54.82
02126> over (min)= 1.00 2.00
02127> Storage Coeff. (min)= .43 (ii) 2.09 (ii)
02128> Unit Hyd. Tpeak (min)= 1.00 2.00
02129> Unit Hyd. peak (cms)= 1.54 .54
02130>-----
02131> PEAK FLOW (cms)= .37 .03
02132> TIME TO PEAK (hrs)= 1.00 1.02
02133> RUNOFF VOLUME (mm)= 59.48 17.84
02134> TOTAL RAINFALL (mm)= 61.48 61.48
02135> RUNOFF COEFFICIENT = .97 .29
02136>-----
02137> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
02138> CN* = 67.5 Ia = Dep. Storage (Above)
02139> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
02140> THAN THE STORAGE COEFFICIENT.
02141> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02142>-----
02143>-----
02144> 025:0006-----
02145>-----
02146> | COMPUTE DUALHYD | Average inlet capacities [CINLET] = .026 (cms)
02147> | TotalHyd 01:204 | Number of inlets in system [NINLET] = 1
02148> | | Total minor system capacity = .026 (cms)
02149> | | Total major system storage [TMJSTO] = 2000. (cu.m.)
02150>-----
02151> ID: NHYD AREA QPEAK TPEAK R.V. DWF
02152> (ha) (cms) (hrs) (mm) (cms)
02153> TOTAL HYD. 01:204 .97 .399 1.000 47.406 .000
02154>-----
02155> MAJOR SYST 05:204MaJ .00 .000 .000 .000 .000
02156> MINOR SYST 04:204Min .97 .026 .683 47.510 .000
02157>-----
02158> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
02159>-----
02160> Maximum MAJOR SYSTEM storage used = 283. (cu.m.)

```

02161>
02162>
02163> 025:0007
02164> *****
02165> *# Remaining North Controlled
02166> *****
02167>
02168> | CALIB STANDHYD | Area (ha)= 5.48
02169> | 01:202 DT= 1.00 | Total Imp(%)= 57.00 Dir. Conn.(%)= 57.00
02170>
02171> IMPERVIOUS PERVIOUS (i)
02172> Surface Area (ha)= 3.12 2.36
02173> Dep. Storage (mm)= 2.00 5.00
02174> Average Slope (%)= 2.00 1.51
02175> Length (m)= 110.00 25.00
02176> Mannings n = .001 .024
02177>
02178> Max.eff.Inten.(mm/hr)= 190.82 55.60
02179> over (min) 1.00 2.00
02180> Storage Coeff. (min)= .43 (ii) 2.22 (ii)
02181> Unit Hyd. Tpeak (min)= 1.00 2.00
02182> Unit Hyd. peak (cms)= 1.54 .52
02183>
02184> PEAK FLOW (cms)= 1.66 .29 *TOTALS*
02185> TIME TO PEAK (hrs)= 1.00 1.02 1.935 (iii)
02186> RUNOFF VOLUME (mm)= 59.48 18.07 41.673
02187> TOTAL RAINFALL (mm)= 61.48 61.48 61.480
02188> RUNOFF COEFFICIENT = .97 .29 .678
02189>
02190> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
02191> CN* = 67.9 Ia = Dep. Storage (Above)
02192> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
02193> THAN THE STORAGE COEFFICIENT.
02194> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02195>
02196>
02197> 025:0008
02198>
02199> | CALIB STANDHYD | Area (ha)= .99
02200> | 06:EX301 DT= 1.00 | Total Imp(%)= 84.00 Dir. Conn.(%)= 84.00
02201>
02202> IMPERVIOUS PERVIOUS (i)
02203> Surface Area (ha)= .83 .16
02204> Dep. Storage (mm)= 2.00 5.00
02205> Average Slope (%)= 2.00 1.51
02206> Length (m)= 25.00 15.00
02207> Mannings n = .001 .024
02208>
02209> Max.eff.Inten.(mm/hr)= 190.82 72.69
02210> over (min) 1.00 1.00
02211> Storage Coeff. (min)= .18 (ii) 1.36 (ii)
02212> Unit Hyd. Tpeak (min)= 1.00 1.00
02213> Unit Hyd. peak (cms)= 1.69 .88
02214>
02215> PEAK FLOW (cms)= .44 .03 *TOTALS*
02216> TIME TO PEAK (hrs)= .97 1.00 1.000
02217> RUNOFF VOLUME (mm)= 59.48 21.89 53.466
02218> TOTAL RAINFALL (mm)= 61.48 61.48 61.480
02219> RUNOFF COEFFICIENT = .97 .36 .870
02220>
02221> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
02222> CN* = 74.0 Ia = Dep. Storage (Above)
02223> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
02224> THAN THE STORAGE COEFFICIENT.
02225> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02226>
02227>
02228> 025:0009
02229>
02230> | ADD HYD (NtoCont) | ID: NHYD AREA QPEAK TPEAK R.V. DWF
02231> (ha) (cms) (hrs) (mm) (cms)
02232> ID1 01:202 5.48 1.935 1.00 41.67 .000
02233> +ID2 02:203Min 1.53 .042 .68 48.12 .000
02234> +ID3 03:203Maj .00 .000 .00 .00 .000
02235> +ID4 04:204Min .97 .026 .68 47.51 .000
02236> +ID5 05:204Maj .00 .000 .00 .00 .000
02237> +ID6 06:EX301 .99 .470 1.00 53.47 .000
02238> =====
02239> SUM 09:NtoCont 8.97 2.473 1.00 44.71 .000
02240>
02241> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
02242>
02243>
02244> 025:0010
02245>
02246> | COMPUTE DUALHYD | Average inlet capacities [CINLET] = .241 (cms)
02247> | TotalHyd 09:NtoCon | Number of inlets in system [NINLET] = 1
02248> | Total minor system capacity = .241 (cms)
02249> | Total major system storage [TMJSTO] = 2350. (cu.m.)
02250>
02251> ID: NHYD AREA QPEAK TPEAK R.V. DWF
02252> (ha) (cms) (hrs) (mm) (cms)
02253> TOTAL HYD. 09:NtoCon 8.97 2.473 1.00 44.705 .000
02254> =====
02255> MAJOR SYST 03:NMAj .00 .000 .000 .000 .000
02256> MINOR SYST 02:NMin 8.97 .241 .683 44.805 .000
02257>
02258> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
02259>
02260> Maximum MAJOR SYSTEM storage used = 1671.(cu.m.)
02261>
02262>
02263> 025:0011
02264> *****
02265> *# Total Flows from North
02266> *****
02267>
02268> | CALIB NASHYD | Area (ha)= .58 Curve Number (CN)=76.00
02269> | 01:201 DT= 1.00 | Ia (mm)= 5.000 # of Linear Res.(N)= 3.00
02270> | U.H. Tp(hrs)= .210
02271>
02272> Unit Hyd Qpeak (cms)= .105
02273>
02274> PEAK FLOW (cms)= .047 (i)
02275> TIME TO PEAK (hrs)= 1.283
02276> RUNOFF VOLUME (mm)= 23.337
02277> TOTAL RAINFALL (mm)= 61.480
02278> RUNOFF COEFFICIENT = .380
02279>
02280> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02281>
02282>
02283> 025:0012
02284>
02285> | ADD HYD (NorthPr) | ID: NHYD AREA QPEAK TPEAK R.V. DWF
02286> (ha) (cms) (hrs) (mm) (cms)
02287> ID1 01:201 .58 .047 1.28 23.34 .000
02288> +ID2 02:NMin 8.97 .241 .68 44.81 .000
02289> +ID3 03:NMAj .00 .000 .00 .00 .000
02290> =====
02291> SUM 05:NorthPr 9.55 .288 1.28 43.50 .000
02292>
02293> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
02294>
02295>

02296> 025:0013-----
02297> *#*****
02298> *# South of Medway
02299> *#
02300> *#
02301> *#*****
02302> *#*****
02303> *# South Controlled
02304> *#*****
02305>
02306> | CALIB STANDHYD | Area (ha)= 12.83
02307> | 01:206 DT= 1.00 | Total Imp(%)= 64.00 Dir. Conn.(%)= 64.00
02308>
02309> IMPERVIOUS PERVIOUS (i)
02310> Surface Area (ha)= 8.21 4.62
02311> Dep. Storage (mm)= 2.00 5.00
02312> Average Slope (%)= 2.00 2.00
02313> Length (m)= 110.00 25.00
02314> Mannings n = .001 .024
02315>
02316> Max.eff.Inten.(mm/hr)= 190.82 41.67
02317> over (min) 1.00 2.00
02318> Storage Coeff. (min)= .43 (ii) 2.28 (ii)
02319> Unit Hyd. Tpeak (min)= 1.00 2.00
02320> Unit Hyd. peak (cms)= 1.54 .51
02321>
02322> PEAK FLOW (cms)= 4.35 .42 *TOTALS*
02323> TIME TO PEAK (hrs)= 1.02 1.000
02324> RUNOFF VOLUME (mm)= 59.48 13.95 43.090
02325> TOTAL RAINFALL (mm)= 61.48 61.48 61.480
02326> RUNOFF COEFFICIENT = .97 .23 .701
02327>
02328> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
02329> CN* = 59.6 Ia = Dep. Storage (Above)
02330> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
02331> THAN THE STORAGE COEFFICIENT.
02332> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02333>
02334>
02335> 025:0014-----
02336>
02337> | CALIB STANDHYD | Area (ha)= 1.94
02338> | 02:207 DT= 1.00 | Total Imp(%)= 93.00 Dir. Conn.(%)= 93.00
02339>
02340> IMPERVIOUS PERVIOUS (i)
02341> Surface Area (ha)= 1.80 .14
02342> Dep. Storage (mm)= 2.00 5.00
02343> Average Slope (%)= 2.00 2.00
02344> Length (m)= 110.00 25.00
02345> Mannings n = .001 .024
02346>
02347> Max.eff.Inten.(mm/hr)= 190.82 58.84
02348> over (min) 1.00 2.00
02349> Storage Coeff. (min)= .43 (ii) 2.04 (ii)
02350> Unit Hyd. Tpeak (min)= 1.00 2.00
02351> Unit Hyd. peak (cms)= 1.54 .55
02352>
02353> PEAK FLOW (cms)= .96 .02 *TOTALS*
02354> TIME TO PEAK (hrs)= 1.00 1.02 1.000
02355> RUNOFF VOLUME (mm)= 59.48 18.99 56.646
02356> TOTAL RAINFALL (mm)= 61.48 61.48 61.480
02357> RUNOFF COEFFICIENT = .97 .31 .921
02358>
02359> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
02360> CN* = 69.5 Ia = Dep. Storage (Above)
02361> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
02362> THAN THE STORAGE COEFFICIENT.
02363> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02364>
02365>
02366> 025:0015-----
02367>
02368> | CALIB NASHYD | Area (ha)= .87 Curve Number (CN)=68.50
02369> | 03:EX302 DT= 1.00 | Ia (mm)= 5.000 # of Linear Res.(N)= 3.00
02370> | U.H. Tp(hrs)= .260
02371>
02372> Unit Hyd Qpeak (cms)= .128
02373>
02374> PEAK FLOW (cms)= .048 (i)
02375> TIME TO PEAK (hrs)= 1.350
02376> RUNOFF VOLUME (mm)= 18.409
02377> TOTAL RAINFALL (mm)= 61.480
02378> RUNOFF COEFFICIENT = .299
02379>
02380> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02381>
02382>
02383> 025:0016-----
02384>
02385> | CALIB STANDHYD | Area (ha)= 1.04
02386> | 04:EX303 DT= 1.00 | Total Imp(%)= 29.00 Dir. Conn.(%)= 29.00
02387>
02388> IMPERVIOUS PERVIOUS (i)
02389> Surface Area (ha)= .30 .74
02390> Dep. Storage (mm)= 2.00 5.00
02391> Average Slope (%)= 2.00 1.90
02392> Length (m)= 25.00 50.00
02393> Mannings n = .001 .024
02394>
02395> Max.eff.Inten.(mm/hr)= 190.82 62.00
02396> over (min) 1.00 3.00
02397> Storage Coeff. (min)= .18 (ii) 2.61 (ii)
02398> Unit Hyd. Tpeak (min)= 1.00 3.00
02399> Unit Hyd. peak (cms)= 1.69 .41
02400>
02401> PEAK FLOW (cms)= .16 .10 *TOTALS*
02402> TIME TO PEAK (hrs)= .98 1.03 1.000
02403> RUNOFF VOLUME (mm)= 59.48 20.87 32.070
02404> TOTAL RAINFALL (mm)= 61.48 61.48 61.480
02405> RUNOFF COEFFICIENT = .97 .34 .522
02406>
02407> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
02408> CN* = 72.5 Ia = Dep. Storage (Above)
02409> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
02410> THAN THE STORAGE COEFFICIENT.
02411> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02412>
02413>
02414> 025:0017-----
02415>
02416> | ADD HYD (StoCont) | ID: NHYD AREA QPEAK TPEAK R.V. DWF
02417> (ha) (cms) (hrs) (mm) (cms)
02418> ID1 01:206 12.83 4.756 1.00 43.09 .000
02419> +ID2 02:207 1.94 .974 1.00 56.65 .000
02420> +ID3 03:EX302 .87 .048 1.35 18.41 .000
02421> +ID4 04:EX303 1.04 .248 1.00 32.07 .000
02422> =====
02423> SUM 09:StoCont 16.68 5.984 1.00 42.69 .000
02424>
02425> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
02426>
02427>
02428> 025:0018-----
02429>
02430> | COMPUTE DUALHYD | Average inlet capacities [CINLET] = .212 (cms)

02431> | TotalHyd 09:StoCon | Number of inlets in system [NINLET] = 1
02432> | Total minor system capacity = .212 (cms)
02433> | Total major system storage [TMJSTO] = 7100. (cu.m.)
02434> |
02435> ID: NHYD AREA QPEAK TPEAK R.V. DWF
02436> (ha) (cms) (hrs) (mm) (cms)
02437> TOTAL HYD. 09:StoCon 16.68 5.984 1.000 42.692 .000
02438> MAJOR SYST 03:SMaj .00 .000 .000 .000
02439> MINOR SYST 02:SMin 16.68 .212 .433 42.752 .000
02440> |
02441> |
02442> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
02443> |
02444> Maximum MAJOR SYSTEM storage used = 5263. (cu.m.)
02445> |
02446> |
02447> 025:0019-----
02448> *#-----
02449> *# Total Flows from South
02450> *#-----
02451> |
02452> | CALIB NASHYD | Area (ha)= .18 Curve Number (CN)=61.50
02453> | 01:205 DT= 1.00 | Ia (mm)= 5.000 # of Linear Res. (N)= 3.00
02454> | U.R. Tp (hrs)= .130
02455> |
02456> Unit Hyd Qpeak (cms)= .053
02457> |
02458> PEAK FLOW (cms)= .011 (i)
02459> TIME TO PEAK (hrs)= 1.183
02460> RUNOFF VOLUME (mm)= 14.802
02461> TOTAL RAINFALL (mm)= 61.480
02462> RUNOFF COEFFICIENT = .241
02463> |
02464> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02465> |
02466> |
02467> 025:0020-----
02468> |
02469> | ADD HYD (SouthPr) | ID: NHYD AREA QPEAK TPEAK R.V. DWF
02470> | (ha) (cms) (hrs) (mm) (cms)
02471> | ID1 01:205 .18 .011 1.18 14.80 .000
02472> | +ID2 02:SMin 16.68 .212 .43 42.75 .000
02473> | +ID3 03:SMaj .00 .000 .00 .00 .000
02474> |
02475> | SUM 05:SouthPr 16.86 .223 1.18 42.45 .000
02476> |
02477> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
02478> |
02479> |
02480> 025:0021-----
02481> |
02482> 025:0002-----
02483> |
02484> 025:0002-----
02485> |
02486> 025:0002-----
02487> |
02488> 025:0002-----
02489> ** END OF RUN : 49
02490> |
02491> |
02492> |
02493> |
02494> |
02495> |
02496> |
02497> |
02498> | Project dir.: C:\MODELL-1\14396\SWMHYMO\
02499> | Rainfall dir.: C:\MODELL-1\14396\SWMHYMO\
02500> | TZERO = .00 hrs on 0
02501> | METOUT= 2 (output = METRIC)
02502> | NRUN = 050
02503> | NSTORM= 1
02504> | # 1=1dn50.3hr
02505> |
02506> 050:0002-----
02507> *#-----
02508> *# Project Name: [Arva] Project Number: [161414396]
02509> *# Date : 2025-02-03
02510> *# Modeller : [AA, AKK]
02511> *# Company : Stantec Consulting Ltd. (London)
02512> *# License # : 4730904
02513> *#-----
02514> *#
02515> *# Arva
02516> *# 25 mm 4-hr, 2, 5, 10, 25, 50, 100, and 250-year, 3-hr Chicago Storm
02517> *#
02518> *#-----
02519> *#
02520> *#
02521> *#
02522> *# Proposed Conditions
02523> *#
02524> *#
02525> *#-----
02526> |
02527> 050:0002-----
02528> |
02529> | READ STORM | Filename: CHICAGO STORM
02530> | Ptotal= 68.72 mm | Comments: CHICAGO STORM
02531> |
02532> | TIME RAIN | TIME RAIN | TIME RAIN | TIME RAIN
02533> | hrs mm/hr | hrs mm/hr | hrs mm/hr | hrs mm/hr
02534> | .08 4.313 | .83 34.573 | 1.58 15.695 | 2.33 6.074
02535> | .17 4.801 | .92 82.919 | 1.67 13.445 | 2.42 5.676
02536> | .25 5.412 | 1.00 211.984 | 1.75 11.729 | 2.50 5.326
02537> | .33 6.201 | 1.08 106.433 | 1.83 10.383 | 2.58 5.017
02538> | .42 7.252 | 1.17 60.466 | 1.92 9.302 | 2.67 4.741
02539> | .50 8.715 | 1.25 40.428 | 2.00 8.418 | 2.75 4.494
02540> | .58 10.876 | 1.33 29.658 | 2.08 7.682 | 2.83 4.272
02541> | .67 14.336 | 1.42 23.098 | 2.17 7.062 | 2.92 4.070
02542> | .75 20.603 | 1.50 18.752 | 2.25 6.532 | 3.00 3.887
02543> |
02544> |
02545> 050:0003-----
02546> *#-----
02547> *#
02548> *# North of Medway
02549> *#
02550> *#-----
02551> *#
02552> *# Block 11 PPS Controls
02553> *#-----
02554> |
02555> | CALIB STANDHYD | Area (ha)= 1.53
02556> | 01:203 DT= 1.00 | Total Imp(%)= 71.00 Dir. Conn.(%)= 71.00
02557> |
02558> | IMPERVIOUS PERVIOUS (i)
02559> | Surface Area (ha)= 1.09 .44
02560> | Dep. Storage (mm)= 2.00 5.00
02561> | Average Slope (%)= 2.00 2.00
02562> | Length (m)= 110.00 25.00
02563> | Mannings n = .001 .024
02564> |
02565> | Max.eff.Inten.(mm/hr)= 211.98 75.40

02566> over (min) 1.00 2.00
02567> Storage Coeff. (min)= .41 (ii) 1.87 (ii)
02568> Unit Hyd. Tpeak (min)= 1.00 2.00
02569> Unit Hyd. peak (cms)= 1.55 .58
02570> |
02571> PEAK FLOW (cms)= .64 .08 *TOTALS*
02572> TIME TO PEAK (hrs)= 1.00 1.02 1.000
02573> RUNOFF VOLUME (mm)= 66.72 24.10 54.359
02574> TOTAL RAINFALL (mm)= 68.72 68.72 68.719
02575> RUNOFF COEFFICIENT = .97 .35 .791
02576> |
02577> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
02578> CN* = 70.8 Ia = Dep. Storage (Above)
02579> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
02580> THAN THE STORAGE COEFFICIENT.
02581> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02582> |
02583> |
02584> 050:0004-----
02585> |
02586> | COMPUTE DUALHYD | Average inlet capacities [CINLET] = .042 (cms)
02587> | TotalHyd 01:203 | Number of inlets in system [NINLET] = 1
02588> | Total minor system capacity = .042 (cms)
02589> | Total major system storage [TMJSTO] = 2000. (cu.m.)
02590> |
02591> ID: NHYD AREA QPEAK TPEAK R.V. DWF
02592> (ha) (cms) (hrs) (mm) (cms)
02593> TOTAL HYD. 01:203 1.53 .716 1.000 54.359 .000
02594> MAJOR SYST 03:203Maj .00 .000 .000 .000 .000
02595> MINOR SYST 02:203Min 1.53 .042 .600 54.417 .000
02596> |
02597> |
02598> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
02599> |
02600> Maximum MAJOR SYSTEM storage used = 528. (cu.m.)
02601> |
02602> |
02603> 050:0005-----
02604> *#-----
02605> *# Block 8 PPS Controls
02606> *#-----
02607> |
02608> | CALIB STANDHYD | Area (ha)= .97
02609> | 01:204 DT= 1.00 | Total Imp(%)= 71.00 Dir. Conn.(%)= 71.00
02610> |
02611> IMPERVIOUS PERVIOUS (i)
02612> Surface Area (ha)= .69 .28
02613> Dep. Storage (mm)= 2.00 5.00
02614> Average Slope (%)= 2.00 2.00
02615> Length (m)= 110.00 25.00
02616> Mannings n = .001 .024
02617> |
02618> Max.eff.Inten.(mm/hr)= 211.98 67.34
02619> over (min) 1.00 2.00
02620> Storage Coeff. (min)= .41 (ii) 1.94 (ii)
02621> Unit Hyd. Tpeak (min)= 1.00 2.00
02622> Unit Hyd. peak (cms)= 1.55 .57
02623> |
02624> PEAK FLOW (cms)= .41 .04 *TOTALS*
02625> TIME TO PEAK (hrs)= 1.00 1.02 1.000
02626> RUNOFF VOLUME (mm)= 66.72 21.83 53.700
02627> TOTAL RAINFALL (mm)= 68.72 68.72 68.719
02628> RUNOFF COEFFICIENT = .97 .32 .781
02629> |
02630> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
02631> CN* = 67.5 Ia = Dep. Storage (Above)
02632> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
02633> THAN THE STORAGE COEFFICIENT.
02634> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02635> |
02636> |
02637> 050:0006-----
02638> |
02639> | COMPUTE DUALHYD | Average inlet capacities [CINLET] = .026 (cms)
02640> | TotalHyd 01:204 | Number of inlets in system [NINLET] = 1
02641> | Total minor system capacity = .026 (cms)
02642> | Total major system storage [TMJSTO] = 2000. (cu.m.)
02643> |
02644> ID: NHYD AREA QPEAK TPEAK R.V. DWF
02645> (ha) (cms) (hrs) (mm) (cms)
02646> TOTAL HYD. 01:204 .97 .448 1.000 53.700 .000
02647> MAJOR SYST 05:204Maj .00 .000 .000 .000 .000
02648> MINOR SYST 04:204Min .97 .026 .600 53.811 .000
02649> |
02650> |
02651> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
02652> |
02653> Maximum MAJOR SYSTEM storage used = 332. (cu.m.)
02654> |
02655> |
02656> 050:0007-----
02657> *#-----
02658> *# Remaining North Controlled
02659> *#-----
02660> |
02661> | CALIB STANDHYD | Area (ha)= 5.48
02662> | 01:202 DT= 1.00 | Total Imp(%)= 57.00 Dir. Conn.(%)= 57.00
02663> |
02664> IMPERVIOUS PERVIOUS (i)
02665> Surface Area (ha)= 3.12 2.36
02666> Dep. Storage (mm)= 2.00 5.00
02667> Average Slope (%)= 2.00 1.51
02668> Length (m)= 110.00 25.00
02669> Mannings n = .001 .024
02670> |
02671> Max.eff.Inten.(mm/hr)= 211.98 68.27
02672> over (min) 1.00 2.00
02673> Storage Coeff. (min)= .41 (ii) 2.06 (ii)
02674> Unit Hyd. Tpeak (min)= 1.00 2.00
02675> Unit Hyd. peak (cms)= 1.55 .55
02676> |
02677> PEAK FLOW (cms)= 1.84 .36 *TOTALS*
02678> TIME TO PEAK (hrs)= 1.00 1.02 1.000
02679> RUNOFF VOLUME (mm)= 66.72 22.09 47.528
02680> TOTAL RAINFALL (mm)= 68.72 68.72 68.719
02681> RUNOFF COEFFICIENT = .97 .32 .692
02682> |
02683> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
02684> CN* = 67.9 Ia = Dep. Storage (Above)
02685> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
02686> THAN THE STORAGE COEFFICIENT.
02687> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02688> |
02689> |
02690> 050:0008-----
02691> |
02692> | CALIB STANDHYD | Area (ha)= .99
02693> | 06:EX301 DT= 1.00 | Total Imp(%)= 84.00 Dir. Conn.(%)= 84.00
02694> |
02695> IMPERVIOUS PERVIOUS (i)
02696> Surface Area (ha)= .83 .16
02697> Dep. Storage (mm)= 2.00 5.00
02698> Average Slope (%)= 2.00 1.51
02699> Length (m)= 25.00 15.00
02700> Mannings n = .001 .024

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02701>
02702> Max.eff.Inten.(mm/hr)= 211.98 88.22
02703> over (min) 1.00
02704> Storage Coeff. (min)= .17 (ii) 1.27 (ii)
02705> Unit Hyd. Tpeak (min)= 1.00 1.00
02706> Unit Hyd. peak (cms)= 1.69 .93
02707>
02708> PEAK FLOW (cms)= .49 .04 *TOTALS*
02709> TIME TO PEAK (hrs)= .97 1.00 1.000
02710> RUNOFF VOLUME (mm)= 66.72 26.54 60.291
02711> TOTAL RAINFALL (mm)= 68.72 68.72 68.719
02712> RUNOFF COEFFICIENT = .97 .39 .877
02713>
02714> (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:
02715> CN* = 74.0 Ia = Dep. Storage (Above)
02716> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
02717> THAN THE STORAGE COEFFICIENT.
02718> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02719>
02720>
02721> 050:0009-----
02722> | ADD HYD (NtoCont ) | ID: NHYD AREA QPEAK TPEAK R.V. DWF
02723> | (ha) (cms) (hrs) (mm) (cms)
02724> ID1 01:202 5.48 2.194 1.00 47.53 .000
02725> +ID2 02:203Min 1.53 .042 .60 54.42 .000
02726> +ID3 03:203MaJ .00 .000 .00 .00 .000
02727> +ID4 04:204Min .97 .026 .60 53.81 .000
02728> +ID5 05:204MaJ .00 .000 .00 .00 .000
02729> +ID6 06:EX301 .99 .525 1.00 60.29 .000
02730>
02731> SUM 09:NtoCont 8.97 2.787 1.00 50.79 .000
02732>
02733>
02734> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
02735>
02736>
02737> 050:0010-----
02738>
02739> | COMPUTE DUALHYD | Average inlet capacities [CINLET] = .241 (cms)
02740> | TotalHyd 09:NtoCon | Number of inlets in system [NINLET] = 1
02741> | Total minor system capacity = .241 (cms)
02742> | Total major system storage [TMJSTO] = 2350. (cu.m.)
02743>
02744> ID: NHYD AREA QPEAK TPEAK R.V. DWF
02745> (ha) (cms) (hrs) (mm) (cms)
02746> TOTAL HYD. 09:NtoCon 8.97 2.787 1.000 50.791 .000
02747>
02748> MAJOR SYST 03:SmaJ .000 .000 .000 .000 .000
02749> MINOR SYST 02:NMin 8.97 .241 .683 50.854 .000
02750>
02751> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
02752>
02753> Maximum MAJOR SYSTEM storage used = 1981. (cu.m.)
02754>
02755>
02756> 050:0011-----
02757> *#*****
02758> *# Total Flows from North
02759> *#*****
02760>
02761> | CALIB NASHYD | Area (ha)= .58 Curve Number (CN)=76.00
02762> | 01:201 DT= 1.00 | Ia (mm)= 5.000 # of Linear Res. (N)= 3.00
02763> | U.H. Tp(hrs)= .210
02764>
02765> Unit Hyd Qpeak (cms)= .105
02766>
02767> PEAK FLOW (cms)= .057 (i)
02768> TIME TO PEAK (hrs)= 1.203
02769> RUNOFF VOLUME (mm)= 28.208
02770> TOTAL RAINFALL (mm)= 68.719
02771> RUNOFF COEFFICIENT = .410
02772>
02773> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02774>
02775>
02776> 050:0012-----
02777>
02778> | ADD HYD (NorthPr ) | ID: NHYD AREA QPEAK TPEAK R.V. DWF
02779> | (ha) (cms) (hrs) (mm) (cms)
02780> ID1 01:201 .58 .057 1.28 28.21 .000
02781> +ID2 02:NMin 8.97 .241 .68 50.85 .000
02782> +ID3 03:NMaJ .00 .000 .00 .00 .000
02783>
02784> SUM 05:NorthPr 9.55 .298 1.28 49.48 .000
02785>
02786> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
02787>
02788>
02789> 050:0013-----
02790> *#*****
02791> *# South of Medway
02792> *#
02793> *#
02794> *#
02795> *#
02796> *# South Controlled
02797> *#
02798> *#
02799> | CALIB STANDHYD | Area (ha)= 12.83
02800> | 01:206 DT= 1.00 | Total Imp(%)= 64.00 Dir. Conn.(%)= 64.00
02801>
02802>
02803> IMPERVIOUS PERVIOUS (i)
02804> Surface Area (ha)= 8.21 4.62
02805> Dep. Storage (mm)= 2.00 5.00
02806> Average Slope (%)= 2.00 2.00
02807> Length (m)= 110.00 25.00
02808> Mannings n = .001 .024
02809> Max.eff.Inten.(mm/hr)= 211.98 51.60
02810> over (min) 1.00 2.00
02811> Storage Coeff. (min)= .41 (ii) 2.11 (ii)
02812> Unit Hyd. Tpeak (min)= 1.00 2.00
02813> Unit Hyd. peak (cms)= 1.55 .54
02814>
02815> PEAK FLOW (cms)= 4.84 .53 5.352 (iii)
02816> TIME TO PEAK (hrs)= 1.00 1.02 1.000
02817> RUNOFF VOLUME (mm)= 66.72 17.21 48.896
02818> TOTAL RAINFALL (mm)= 68.72 68.72 68.719
02819> RUNOFF COEFFICIENT = .97 .25 .712
02820>
02821> (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:
02822> CN* = 59.6 Ia = Dep. Storage (Above)
02823> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
02824> THAN THE STORAGE COEFFICIENT.
02825> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02826>
02827>
02828> 050:0014-----
02829>
02830> | CALIB STANDHYD | Area (ha)= 1.94
02831> | 02:207 DT= 1.00 | Total Imp(%)= 93.00 Dir. Conn.(%)= 93.00
02832>
02833>
02834> IMPERVIOUS PERVIOUS (i)
02835> Surface Area (ha)= 1.80 .14
02836> Dep. Storage (mm)= 2.00 5.00

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02971>
02972>-----
02973> 050:0021-----
02974>-----
02975> 050:0002-----
02976>-----
02977> 050:0002-----
02978>-----
02979> 050:0002-----
02980>-----
02981> 050:0002-----
02982>-----
02983> 050:0002-----
02984> ** END OF RUN : 99
02985>-----
02986>-----
02987>-----
02988>-----
02989>-----
02990>-----
02991>-----
02992>-----
02993> | START----- | Project dir.: C:\MODELL-1\14396\SWMHYMO\
02994> |----- | Rainfall dir.: C:\MODELL-1\14396\SWMHYMO\
02995> TZERO = .00 hrs on 0
02996> METOUT= 2 (output= METRIC)
02997> NRUN = 100
02998> NSTORM= 1
02999> # 1=ldn100.3hr
03000>-----
03001> 100:0002-----
03002> *****
03003> *# Project Name: [Arva] Project Number: [161414396]
03004> *# Date : 2025-02-03
03005> *# Modeller : [AA, AKK]
03006> *# Company : Stantec Consulting Ltd. (London)
03007> *# License # : 4730904
03008> *****
03009> *#
03010> *# Arva
03011> *# 25 mm 4-hr, 2, 5, 10, 25, 50, 100, and 250-year, 3-hr Chicago Storm
03012> *#
03013> *#
03014> *#
03015> *#
03016> *#
03017> *# Proposed Conditions
03018> *#
03019> *#
03020> *#
03021>-----
03022> 100:0002-----
03023>-----
03024> | READ STORM | Filename: CHICAGO STORM
03025> | Ptotal= 75.83 mm | Comments: CHICAGO STORM
03026>-----
03027> TIME RAIN | TIME RAIN | TIME RAIN | TIME RAIN
03028> hrs mm/hr | hrs mm/hr | hrs mm/hr | hrs mm/hr
03029> .08 4.623 | .83 38.591 | 1.58 17.341 | 2.33 6.569
03030> .17 5.160 | .92 92.413 | 1.67 14.811 | 2.42 6.128
03031> .25 5.836 | 1.00 232.243 | 1.75 12.884 | 2.50 5.740
03032> .33 6.709 | 1.08 118.408 | 1.83 11.375 | 2.58 5.398
03033> .42 7.878 | 1.17 67.596 | 1.92 10.166 | 2.67 5.094
03034> .50 9.510 | 1.25 45.175 | 2.00 9.178 | 2.75 4.822
03035> .58 11.928 | 1.33 33.066 | 2.08 8.357 | 2.83 4.577
03036> .67 15.813 | 1.42 25.678 | 2.17 7.666 | 2.92 4.356
03037> .75 22.868 | 1.50 20.783 | 2.25 7.077 | 3.00 4.155
03038>-----
03039>-----
03040> 100:0003-----
03041> *****
03042> *#
03043> *# North of Medway
03044> *#
03045> *#
03046> *#
03047> *# Block 11 PPS Controls
03048> *****
03049>-----
03050> | CALIB STANDHYD | Area (ha)= 1.53
03051> | 01:203 DT= 1.00 | Total Imp(%)= 71.00 Dir. Conn.(%)= 71.00
03052>-----
03053> IMPERVIOUS PERVIOUS (i)
03054> Surface Area (ha)= 1.09 .44
03055> Dep. Storage (mm)= 2.00 5.00
03056> Average Slope (%)= 2.00 2.00
03057> Length (m)= 110.00 25.00
03058> Mannings n = .001 .024
03059>-----
03060> Max.eff.Inten.(mm/hr)= 232.24 89.51
03061> over (min) 1.00 2.00
03062> Storage Coeff. (min)= .39 (ii) 1.76 (ii)
03063> Unit Hyd. Tpeak (min)= 1.00 2.00
03064> Unit Hyd. peak (cms)= 1.56 .61
03065>-----
03066> PEAK FLOW (cms)= .70 .09 *TOTALS*
03067> TIME TO PEAK (hrs)= 1.00 1.02 1.000
03068> RUNOFF VOLUME (mm)= 73.83 28.57 60.706
03069> TOTAL RAINFALL (mm)= 75.83 75.83 75.831
03070> RUNOFF COEFFICIENT = .97 .38 .801
03071>-----
03072> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
03073> CN* = 70.8 Ia = Dep. Storage (Above)
03074> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
03075> THAN THE STORAGE COEFFICIENT.
03076> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
03077>-----
03078>-----
03079> 100:0004-----
03080>-----
03081> | COMPUTE DUALHYD | Average inlet capacities [CINLET] = .042 (cms)
03082> | TotalHyd 01:203 | Number of inlets in system [NINLET] = 1
03083> |----- | Total minor system capacity = .042 (cms)
03084> |----- | Total major system storage [TMJSTO] = 2000.(cu.m.)
03085>-----
03086> ID: NHYD AREA QPEAK TPEAK R.V. DWF
03087> (ha) (cms) (hrs) (mm) (cms)
03088> TOTAL HYD. 01:203 1.53 .793 1.000 60.706 .000
03089>-----
03090> MAJOR SYST 03:203Maj .00 .000 .000 .000 .000
03091> MINOR SYST 02:203Min 1.53 .042 .600 60.752 .000
03092>-----
03093> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
03094>-----
03095> Maximum MAJOR SYSTEM storage used = 612.(cu.m.)
03096>-----
03097>-----
03098> 100:0005-----
03099> *****
03100> *# Block 8 PPS Controls
03101> *****
03102>-----
03103> | CALIB STANDHYD | Area (ha)= .97
03104> | 01:204 DT= 1.00 | Total Imp(%)= 71.00 Dir. Conn.(%)= 71.00
03105>-----

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03106> IMPERVIOUS PERVIOUS (i)
03107> Surface Area (ha)= .69 .28
03108> Dep. Storage (mm)= 2.00 5.00
03109> Average Slope (%)= 2.00 2.00
03110> Length (m)= 110.00 25.00
03111> Mannings n = .001 .024
03112>-----
03113> Max.eff.Inten.(mm/hr)= 232.24 80.25
03114> over (min) 1.00 2.00
03115> Storage Coeff. (min)= .39 (ii) 1.82 (ii)
03116> Unit Hyd. Tpeak (min)= 1.00 2.00
03117> Unit Hyd. peak (cms)= 1.56 .59
03118>-----
03119> PEAK FLOW (cms)= .44 .05 *TOTALS*
03120> TIME TO PEAK (hrs)= 1.00 1.02 1.000
03121> RUNOFF VOLUME (mm)= 73.83 25.98 59.954
03122> TOTAL RAINFALL (mm)= 75.83 75.83 75.831
03123> RUNOFF COEFFICIENT = .97 .34 .791
03124>-----
03125> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
03126> CN* = 67.5 Ia = Dep. Storage (Above)
03127> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
03128> THAN THE STORAGE COEFFICIENT.
03129> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
03130>-----
03131>-----
03132> 100:0006-----
03133>-----
03134> | COMPUTE DUALHYD | Average inlet capacities [CINLET] = .026 (cms)
03135> | TotalHyd 01:204 | Number of inlets in system [NINLET] = 1
03136> |----- | Total minor system capacity = .026 (cms)
03137> |----- | Total major system storage [TMJSTO] = 2000.(cu.m.)
03138>-----
03139> ID: NHYD AREA QPEAK TPEAK R.V. DWF
03140> (ha) (cms) (hrs) (mm) (cms)
03141> TOTAL HYD. 01:204 .97 .496 1.000 59.954 .000
03142>-----
03143> MAJOR SYST 05:204Maj .00 .000 .000 .000 .000
03144> MINOR SYST 04:204Min .97 .026 .600 60.002 .000
03145>-----
03146> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
03147>-----
03148> Maximum MAJOR SYSTEM storage used = 385.(cu.m.)
03149>-----
03150>-----
03151> 100:0007-----
03152> *****
03153> *# Remaining North Controlled
03154> *#
03155>-----
03156> | CALIB STANDHYD | Area (ha)= 5.48
03157> | 01:202 DT= 1.00 | Total Imp(%)= 57.00 Dir. Conn.(%)= 57.00
03158>-----
03159> IMPERVIOUS PERVIOUS (i)
03160> Surface Area (ha)= 3.12 2.36
03161> Dep. Storage (mm)= 2.00 5.00
03162> Average Slope (%)= 2.00 1.51
03163> Length (m)= 110.00 25.00
03164> Mannings n = .001 .024
03165>-----
03166> Max.eff.Inten.(mm/hr)= 232.24 81.32
03167> over (min) 1.00 2.00
03168> Storage Coeff. (min)= .39 (ii) 1.94 (ii)
03169> Unit Hyd. Tpeak (min)= 1.00 2.00
03170> Unit Hyd. peak (cms)= 1.56 .57
03171>-----
03172> PEAK FLOW (cms)= 2.02 .44 *TOTALS*
03173> TIME TO PEAK (hrs)= 1.00 1.02 1.000
03174> RUNOFF VOLUME (mm)= 73.83 26.28 53.384
03175> TOTAL RAINFALL (mm)= 75.83 75.83 75.831
03176> RUNOFF COEFFICIENT = .97 .35 .704
03177>-----
03178> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
03179> CN* = 67.9 Ia = Dep. Storage (Above)
03180> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
03181> THAN THE STORAGE COEFFICIENT.
03182> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
03183>-----
03184>-----
03185> 100:0008-----
03186>-----
03187> | CALIB STANDHYD | Area (ha)= .99
03188> | 06:EX301 DT= 1.00 | Total Imp(%)= 84.00 Dir. Conn.(%)= 84.00
03189>-----
03190> IMPERVIOUS PERVIOUS (i)
03191> Surface Area (ha)= .83 .16
03192> Dep. Storage (mm)= 2.00 5.00
03193> Average Slope (%)= 2.00 1.51
03194> Length (m)= 25.00 15.00
03195> Mannings n = .001 .024
03196>-----
03197> Max.eff.Inten.(mm/hr)= 232.24 103.99
03198> over (min) 1.00 2.00
03199> Storage Coeff. (min)= .16 (ii) 1.19 (ii)
03200> Unit Hyd. Tpeak (min)= 1.00 1.00
03201> Unit Hyd. peak (cms)= 1.70 .97
03202>-----
03203> PEAK FLOW (cms)= .54 .04 *TOTALS*
03204> TIME TO PEAK (hrs)= .97 1.00 1.000
03205> RUNOFF VOLUME (mm)= 73.83 31.34 67.033
03206> TOTAL RAINFALL (mm)= 75.83 75.83 75.831
03207> RUNOFF COEFFICIENT = .97 .41 .884
03208>-----
03209> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
03210> CN* = 74.0 Ia = Dep. Storage (Above)
03211> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
03212> THAN THE STORAGE COEFFICIENT.
03213> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
03214>-----
03215>-----
03216> 100:0009-----
03217>-----
03218> | ADD HYD (NtoCont ) | ID: NHYD AREA QPEAK TPEAK R.V. DWF
03219> (ha) (cms) (hrs) (mm) (cms)
03220> ID1 01:202 5.48 2.449 1.00 53.38 .000
03221> +ID2 02:203Min 1.53 .042 .60 60.75 .000
03222> +ID3 03:203Maj .00 .000 .00 .00 .000
03223> +ID4 04:204Min .97 .026 .60 60.00 .000
03224> +ID5 05:204Maj .00 .000 .00 .00 .000
03225> +ID6 06:EX301 .99 .579 1.00 67.03 .000
03226>-----
03227> SUM 09:NtoCont 8.97 3.096 1.00 56.86 .000
03228>-----
03229> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
03230>-----
03231>-----
03232> 100:0010-----
03233>-----
03234> | COMPUTE DUALHYD | Average inlet capacities [CINLET] = .241 (cms)
03235> | TotalHyd 09:NtoCon | Number of inlets in system [NINLET] = 1
03236> |----- | Total minor system capacity = .241 (cms)
03237> |----- | Total major system storage [TMJSTO] = 2350.(cu.m.)
03238>-----
03239> ID: NHYD AREA QPEAK TPEAK R.V. DWF
03240> (ha) (cms) (hrs) (mm) (cms)

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03241> TOTAL HYD. 09:NtoCon 8.97 3.096 1.000 56.863 .000
03242> =====
03243> MAJOR SYST 03:SMAj 8.97 .000 .000 .000 .000
03244> MINOR SYST 02:SMIn 8.97 .241 .617 56.972 .000
03245>
03246> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
03247>
03248> Maximum MAJOR SYSTEM storage used = 2309.(cu.m.)
03249>
03250> -----
03251> 100:0011-----
03252> *#*****
03253> *# Total Flows from North
03254> *#*****
03255>
03256> CALIB NASHYD Area (ha)= .58 Curve Number (CN)=76.00
03257> 01:201 DT= 1.00 Ia (mm)= 5.000 # of Linear Res. (N)= 3.00
03258> U.H. Tp (hrs)= .210
03259>
03260> Unit Hyd Qpeak (cms)= .105
03261>
03262> PEAK FLOW (cms)= .068 (i)
03263> TIME TO PEAK (hrs)= 1.399
03264> RUNOFF VOLUME (mm)= 33.216
03265> TOTAL RAINFALL (mm)= 75.831
03266> RUNOFF COEFFICIENT = .438
03267>
03268> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
03269>
03270> -----
03271> 100:0012-----
03272> | ADD HYD (NorthPr ) | ID: NHYD AREA QPEAK TPEAK R.V. DWF
03273> | (ha) (cms) (hrs) (mm) (cms)
03274> ID1 01:201 .58 .068 1.27 33.22 .000
03275> +ID2 02:NMin 8.97 .241 .62 56.97 .000
03276> +ID3 03:NMAj .00 .000 .00 .00 .000
03277> +ID3 03:NMAj .00 .000 .00 .00 .000
03278> SUM 05:NorthPr 9.55 .309 1.27 55.53 .000
03279>
03280>
03281> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
03282>
03283> -----
03284> 100:0013-----
03285> *#*****
03286> *#
03287> *# South of Medway
03288> *#
03289> *#
03290> *#
03291> *# South Controlled
03292> *#
03293> *#
03294> CALIB STANDHYD Area (ha)= 12.83
03295> 01:206 DT= 1.00 Total Imp(%)= 64.00 Dir. Conn.(%)= 64.00
03296>
03297> IMPERVIOUS PERVIOUS (i)
03298> Surface Area (ha)= 8.21 4.62
03299> Dep. Storage (mm)= 2.00 5.00
03300> Average Slope (%)= 2.00 2.00
03301> Length (m)= 110.00 25.00
03302> Mannings n = .001 .024
03303>
03304> Max.eff.Inten.(mm/hr)= 232.24 61.94
03305> over (min) 1.00 2.00
03306> Storage Coeff. (min)= .39 (ii) 1.97 (ii)
03307> Unit Hyd. Tpeak (min)= 1.00 2.00
03308> Unit Hyd. peak (cms)= 1.56 .56
03309>
03310> PEAK FLOW (cms)= 5.30 .65 5.935 (iii)
03311> TIME TO PEAK (hrs)= 1.00 1.02 1.000
03312> RUNOFF VOLUME (mm)= 73.83 20.65 54.684
03313> TOTAL RAINFALL (mm)= 75.83 75.83 75.831
03314> RUNOFF COEFFICIENT = .97 .27 .721
03315>
03316> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
03317> CN* = 59.6 Ia = Dep. Storage (Above)
03318> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
03319> THAN THE STORAGE COEFFICIENT.
03320> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
03321>
03322> -----
03323> 100:0014-----
03324> | CALIB STANDHYD Area (ha)= 1.94
03325> | 02:207 DT= 1.00 Total Imp(%)= 93.00 Dir. Conn.(%)= 93.00
03326> |
03327> | IMPERVIOUS PERVIOUS (i)
03328> | Surface Area (ha)= 1.80 .14
03329> | Dep. Storage (mm)= 2.00 5.00
03330> | Average Slope (%)= 2.00 2.00
03331> | Length (m)= 110.00 25.00
03332> | Mannings n = .001 .024
03333> |
03334> | Max.eff.Inten.(mm/hr)= 232.24 85.73
03335> | over (min) 1.00 2.00
03336> | Storage Coeff. (min)= .39 (ii) 1.78 (ii)
03337> | Unit Hyd. Tpeak (min)= 1.00 2.00
03338> | Unit Hyd. peak (cms)= 1.56 .60
03339> |
03340> | PEAK FLOW (cms)= 1.16 .03 1.191 (iii)
03341> | TIME TO PEAK (hrs)= 1.00 1.02 1.000
03342> | RUNOFF VOLUME (mm)= 73.83 27.52 70.589
03343> | TOTAL RAINFALL (mm)= 75.83 75.83 75.831
03344> | RUNOFF COEFFICIENT = .97 .36 .931
03345> |
03346> | (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
03347> | CN* = 69.5 Ia = Dep. Storage (Above)
03348> | (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
03349> | THAN THE STORAGE COEFFICIENT.
03350> | (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
03351> |
03352> |
03353> |
03354> 100:0015-----
03355> | CALIB NASHYD Area (ha)= .87 Curve Number (CN)=68.50
03356> | 03:EX302 DT= 1.00 Ia (mm)= 5.000 # of Linear Res. (N)= 3.00
03357> | U.H. Tp (hrs)= .260
03358> |
03359> |
03360> Unit Hyd Qpeak (cms)= .128
03361>
03362> PEAK FLOW (cms)= .071 (i)
03363> TIME TO PEAK (hrs)= 1.350
03364> RUNOFF VOLUME (mm)= 26.738
03365> TOTAL RAINFALL (mm)= 75.831
03366> RUNOFF COEFFICIENT = .353
03367>
03368> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
03369>
03370> -----
03371> 100:0016-----
03372> | CALIB STANDHYD Area (ha)= 1.04
03373> | 04:EX303 DT= 1.00 Total Imp(%)= 29.00 Dir. Conn.(%)= 29.00
03374> |
03375> |

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03376> IMPERVIOUS PERVIOUS (i)
03377> Surface Area (ha)= .30 .74
03378> Dep. Storage (mm)= 2.00 5.00
03379> Average Slope (%)= 2.00 1.90
03380> Length (m)= 25.00 50.00
03381> Mannings n = .001 .024
03382>
03383> Max.eff.Inten.(mm/hr)= 232.24 94.74
03384> over (min) 1.00 2.00
03385> Storage Coeff. (min)= .16 (ii) 2.21 (ii)
03386> Unit Hyd. Tpeak (min)= 1.00 2.00
03387> Unit Hyd. peak (cms)= 1.70 .52
03388>
03389> PEAK FLOW (cms)= .19 .16 .348 (iii)
03390> TIME TO PEAK (hrs)= .97 1.02 1.000
03391> RUNOFF VOLUME (mm)= 73.83 30.01 42.718
03392> TOTAL RAINFALL (mm)= 75.83 75.83 75.831
03393> RUNOFF COEFFICIENT = .97 .40 .563
03394>
03395> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
03396> CN* = 72.5 Ia = Dep. Storage (Above)
03397> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
03398> THAN THE STORAGE COEFFICIENT.
03399> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
03400>
03401> -----
03402> 100:0017-----
03403> | ADD HYD (StoCont ) | ID: NHYD AREA QPEAK TPEAK R.V. DWF
03404> | (ha) (cms) (hrs) (mm) (cms)
03405> ID1 01:206 12.83 5.935 1.00 54.68 .000
03406> +ID2 02:207 1.94 1.191 1.00 70.59 .000
03407> +ID3 03:EX302 .87 .071 1.35 26.74 .000
03408> +ID4 04:EX303 1.04 .348 1.00 42.72 .000
03409> =====
03410> SUM 09:StoCont 16.68 7.484 1.00 54.33 .000
03411>
03412>
03413> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
03414>
03415> -----
03416> 100:0018-----
03417> | COMPUTE DUALHYD Average inlet capacities [CINLET] = .212 (cms)
03418> | TotalHyd 09:StoCont Number of inlets in system [NINLET] = 1
03419> | Total minor system capacity = .212 (cms)
03420> | Total major system storage [TMJSTO] = 7100.(cu.m.)
03421> |
03422> | ID: NHYD AREA QPEAK TPEAK R.V. DWF
03423> | (ha) (cms) (hrs) (mm) (cms)
03424> TOTAL HYD. 09:StoCon 16.68 7.484 1.000 54.330 .000
03425> =====
03426> MAJOR SYST 03:SMAj .00 .000 .000 .000 .000
03427> MINOR SYST 02:SMIn 16.68 .212 .383 54.366 .000
03428>
03429>
03430> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
03431>
03432> Maximum MAJOR SYSTEM storage used = 7078.(cu.m.)
03433>
03434> -----
03435> 100:0019-----
03436> *#*****
03437> *# Total Flows from South
03438> *#*****
03439>
03440> CALIB NASHYD Area (ha)= .18 Curve Number (CN)=61.50
03441> 01:205 DT= 1.00 Ia (mm)= 5.000 # of Linear Res. (N)= 3.00
03442> U.H. Tp (hrs)= .130
03443>
03444> Unit Hyd Qpeak (cms)= .053
03445>
03446> PEAK FLOW (cms)= .017 (i)
03447> TIME TO PEAK (hrs)= 1.167
03448> RUNOFF VOLUME (mm)= 21.827
03449> TOTAL RAINFALL (mm)= 75.831
03450> RUNOFF COEFFICIENT = .288
03451>
03452> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
03453>
03454> -----
03455> 100:0020-----
03456> | ADD HYD (SouthPr ) | ID: NHYD AREA QPEAK TPEAK R.V. DWF
03457> | (ha) (cms) (hrs) (mm) (cms)
03458> ID1 01:205 .18 .017 1.17 21.83 .000
03459> +ID2 02:SMin 16.68 .212 .38 54.37 .000
03460> +ID3 03:SMAj .00 .000 .00 .00 .000
03461> =====
03462> SUM 05:SouthPr 16.86 .229 1.17 54.02 .000
03463>
03464>
03465> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
03466>
03467> -----
03468> 100:0021-----
03469>
03470> 100:0002-----
03471>
03472> 100:0002-----
03473>
03474> 100:0002-----
03475>
03476> 100:0002-----
03477>
03478> 100:0002-----
03479>
03480> 100:0002-----
03481> ** END OF RUN : 249
03482>
03483> *****
03484>
03485>
03486>
03487>
03488>
03489>
03490> | START | Project dir.: C:\MODELL-1\14396\SWMHYMO\
03491> | Rainfall dir.: C:\MODELL-1\14396\SWMHYMO\
03492> TZERO = .00 hrs on 0
03493> METOUT= 2 (output = METRIC)
03494> NRUN = 250
03495> NSTORM= 1
03496> # 1=1dn250.3hr
03497> -----
03498> 150:0002-----
03499> *#*****
03500> *# Project Name: [Arva] Project Number: [161414396]
03501> *# Date : 2025-02-03
03502> *# Modeller : [AA, AKK]
03503> *# Company : Stantec Consulting Ltd. (London)
03504> *# License # : 4730904
03505> *#*****
03506> *#
03507> *# Arva
03508> *# 25 mm 4-hr, 2, 5, 10, 25, 50, 100, and 250-year, 3-hr Chicago Storm
03509> *#
03510> *#*****

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03511> *****
03512> ##
03513> ##
03514> ## Proposed Conditions
03515> ##
03516> ##
03517> *****
03518> -----
03519> 250:0002-----
03520> -----
03521> | READ STORM | Filename: 250-yr, 3hr Chicago Storm from London ID
03522> | Ptotal= 86.60 mm | Comments: 250-yr, 3hr Chicago Storm from London ID
03523> -----
03524> | TIME RAIN | TIME RAIN | TIME RAIN | TIME RAIN |
03525> | hrs mm/hr | hrs mm/hr | hrs mm/hr | hrs mm/hr |
03526> |.08 5.095 |.83 43.425 |1.58 19.302 |2.33 7.254 |
03527> |.17 5.690 |.92 106.077 |1.67 16.460 |2.42 6.764 |
03528> |.25 6.440 |1.00 274.730 |1.75 14.300 |2.50 6.334 |
03529> |.33 7.410 |1.08 136.668 |1.83 12.612 |2.58 5.955 |
03530> |.42 8.710 |1.17 76.864 |1.92 11.261 |2.67 5.617 |
03531> |.50 10.529 |1.25 50.954 |2.00 10.158 |2.75 5.316 |
03532> |.58 13.230 |1.33 37.106 |2.08 9.244 |2.83 5.044 |
03533> |.67 17.585 |1.42 28.713 |2.17 8.474 |2.92 4.759 |
03534> |.75 25.536 |1.50 23.179 |2.25 7.819 |3.00 4.577 |
03535> -----
03536> -----
03537> 250:0003-----
03538> *****
03539> ##
03540> ## North of Medway
03541> ##
03542> *****
03543> -----
03544> ## Block 11 PPS Controls
03545> *****
03546> -----
03547> | CALIB STANDHYD | Area (ha)= 1.53
03548> | 01:203 DT= 1.00 | Total Imp(%)= 71.00 Dir. Conn.(%)= 71.00
03549> -----
03550> | IMPERVIOUS PERVIOUS (i) |
03551> | Surface Area (ha)= 1.09 .44 |
03552> | Dep. Storage (mm)= 2.00 5.00 |
03553> | Average Slope (%)= 2.00 2.00 |
03554> | Length (m)= 110.00 25.00 |
03555> | Mannings n = .001 .024 |
03556> -----
03557> | Max.eff.Inten.(mm/hr)= 274.73 118.25 |
03558> | over (min)= 1.00 2.00 |
03559> | Storage Coeff. (min)= .37 (ii) 1.59 (ii) |
03560> | Unit Hyd. Tpeak (min)= 1.00 2.00 |
03561> | Unit Hyd. peak (cms)= 1.59 .64 |
03562> -----
03563> | PEAK FLOW (cms)= .83 .13 *TOTALS*
03564> | TIME TO PEAK (hrs)= 1.00 1.00 .955 (iii) |
03565> | RUNOFF VOLUME (mm)= 84.60 35.73 70.430 |
03566> | TOTAL RAINFALL (mm)= 86.60 86.60 86.603 |
03567> | RUNOFF COEFFICIENT = .98 .41 .813 |
03568> -----
03569> | (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES: |
03570> | CN* = 70.8 Ia = Dep. Storage (Above) |
03571> | (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL |
03572> | THAN THE STORAGE COEFFICIENT. |
03573> | (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY. |
03574> -----
03575> -----
03576> 250:0004-----
03577> -----
03578> | COMPUTE DUALHYD | Average inlet capacities [CINLET] = .042 (cms)
03579> | TotalHyd 01:203 | Number of inlets in system [NINLET] = 1
03580> |-----| Total minor system capacity = .042 (cms)
03581> | Total major system storage [TMJSTO] = 2000. (cu.m.) |
03582> -----
03583> | ID: NHYD AREA QPEAK TPEAK R.V. DWF |
03584> | (ha) (cms) (hrs) (mm) (cms) |
03585> | TOTAL HYD. 01:203 1.53 .955 1.000 70.430 .000 |
03586> |-----|-----|-----|-----|-----|
03587> | MAJOR SYST 03:203Maj .00 .000 .000 .000 .000 |
03588> | MINOR SYST 02:203Min 1.53 .042 .600 70.464 .000 |
03589> |-----|-----|-----|-----|-----|
03590> | NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY. |
03591> -----
03592> | Maximum MAJOR SYSTEM storage used = 744. (cu.m.) |
03593> -----
03594> -----
03595> 250:0005-----
03596> *****
03597> ## Block 8 PPS Controls
03598> *****
03599> -----
03600> | CALIB STANDHYD | Area (ha)= .97
03601> | 01:204 DT= 1.00 | Total Imp(%)= 71.00 Dir. Conn.(%)= 71.00
03602> -----
03603> | IMPERVIOUS PERVIOUS (i) |
03604> | Surface Area (ha)= .69 .28 |
03605> | Dep. Storage (mm)= 2.00 5.00 |
03606> | Average Slope (%)= 2.00 2.00 |
03607> | Length (m)= 110.00 25.00 |
03608> | Mannings n = .001 .024 |
03609> -----
03610> | Max.eff.Inten.(mm/hr)= 274.73 106.65 |
03611> | over (min)= 1.00 2.00 |
03612> | Storage Coeff. (min)= .37 (ii) 1.64 (ii) |
03613> | Unit Hyd. Tpeak (min)= 1.00 2.00 |
03614> | Unit Hyd. peak (cms)= 1.59 .63 |
03615> -----
03616> | PEAK FLOW (cms)= .53 .07 *TOTALS*
03617> | TIME TO PEAK (hrs)= 1.00 1.00 .597 (iii) |
03618> | RUNOFF VOLUME (mm)= 84.60 32.66 69.539 |
03619> | TOTAL RAINFALL (mm)= 86.60 86.60 86.603 |
03620> | RUNOFF COEFFICIENT = .98 .38 .803 |
03621> -----
03622> | (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES: |
03623> | CN* = 67.5 Ia = Dep. Storage (Above) |
03624> | (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL |
03625> | THAN THE STORAGE COEFFICIENT. |
03626> | (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY. |
03627> -----
03628> -----
03629> 250:0006-----
03630> -----
03631> | COMPUTE DUALHYD | Average inlet capacities [CINLET] = .026 (cms)
03632> | TotalHyd 01:204 | Number of inlets in system [NINLET] = 1
03633> |-----| Total minor system capacity = .026 (cms)
03634> | Total major system storage [TMJSTO] = 2000. (cu.m.) |
03635> -----
03636> | ID: NHYD AREA QPEAK TPEAK R.V. DWF |
03637> | (ha) (cms) (hrs) (mm) (cms) |
03638> | TOTAL HYD. 01:204 .97 .597 1.000 69.539 .000 |
03639> |-----|-----|-----|-----|-----|
03640> | MAJOR SYST 05:204Maj .00 .000 .000 .000 .000 |
03641> | MINOR SYST 04:204Min .97 .026 .600 69.654 .000 |
03642> |-----|-----|-----|-----|-----|
03643> | NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY. |
03644> -----
03645> | Maximum MAJOR SYSTEM storage used = 467. (cu.m.) |
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03646> -----
03647> -----
03648> 250:0007-----
03649> *****
03650> ## Remaining North Controlled
03651> *****
03652> -----
03653> | CALIB STANDHYD | Area (ha)= 5.48
03654> | 01:202 DT= 1.00 | Total Imp(%)= 57.00 Dir. Conn.(%)= 57.00
03655> -----
03656> | IMPERVIOUS PERVIOUS (i) |
03657> | Surface Area (ha)= 3.12 2.36 |
03658> | Dep. Storage (mm)= 2.00 5.00 |
03659> | Average Slope (%)= 2.00 1.51 |
03660> | Length (m)= 110.00 25.00 |
03661> | Mannings n = .001 .024 |
03662> -----
03663> | Max.eff.Inten.(mm/hr)= 274.73 107.99 |
03664> | over (min)= 1.00 2.00 |
03665> | Storage Coeff. (min)= .37 (ii) 1.74 (ii) |
03666> | Unit Hyd. Tpeak (min)= 1.00 2.00 |
03667> | Unit Hyd. peak (cms)= 1.59 .61 |
03668> -----
03669> | PEAK FLOW (cms)= 2.38 .59 *TOTALS*
03670> | TIME TO PEAK (hrs)= 1.00 1.02 2.978 (iii) |
03671> | RUNOFF VOLUME (mm)= 84.60 33.02 62.421 |
03672> | TOTAL RAINFALL (mm)= 86.60 86.60 86.603 |
03673> | RUNOFF COEFFICIENT = .98 .38 .721 |
03674> -----
03675> | (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES: |
03676> | CN* = 67.9 Ia = Dep. Storage (Above) |
03677> | (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL |
03678> | THAN THE STORAGE COEFFICIENT. |
03679> | (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY. |
03680> -----
03681> -----
03682> 250:0008-----
03683> -----
03684> | CALIB STANDHYD | Area (ha)= .99
03685> | 06:EX301 DT= 1.00 | Total Imp(%)= 84.00 Dir. Conn.(%)= 84.00
03686> -----
03687> | IMPERVIOUS PERVIOUS (i) |
03688> | Surface Area (ha)= .83 .16 |
03689> | Dep. Storage (mm)= 2.00 5.00 |
03690> | Average Slope (%)= 2.00 1.51 |
03691> | Length (m)= 25.00 15.00 |
03692> | Mannings n = .001 .024 |
03693> -----
03694> | Max.eff.Inten.(mm/hr)= 274.73 136.11 |
03695> | over (min)= 1.00 1.00 |
03696> | Storage Coeff. (min)= .15 (ii) 1.08 (ii) |
03697> | Unit Hyd. Tpeak (min)= 1.00 1.00 |
03698> | Unit Hyd. peak (cms)= 1.70 1.03 |
03699> -----
03700> | PEAK FLOW (cms)= .63 .06 *TOTALS*
03701> | TIME TO PEAK (hrs)= .97 1.00 1.000 |
03702> | RUNOFF VOLUME (mm)= 84.60 38.98 77.302 |
03703> | TOTAL RAINFALL (mm)= 86.60 86.60 86.603 |
03704> | RUNOFF COEFFICIENT = .98 .45 .893 |
03705> -----
03706> | (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES: |
03707> | CN* = 74.0 Ia = Dep. Storage (Above) |
03708> | (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL |
03709> | THAN THE STORAGE COEFFICIENT. |
03710> | (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY. |
03711> -----
03712> -----
03713> 250:0009-----
03714> -----
03715> | ADD HYD (NtoCont ) | ID: NHYD AREA QPEAK TPEAK R.V. DWF |
03716> |-----|-----|-----|-----|-----|
03717> | ID1 01:202 5.48 2.978 1.00 62.42 .000 |
03718> | +ID2 02:203Min 1.53 .042 .60 70.46 .000 |
03719> | +ID3 03:203Maj .00 .000 .00 .00 .000 |
03720> | +ID4 04:204Min .97 .026 .60 69.65 .000 |
03721> | +ID5 05:204Maj .00 .000 .00 .00 .000 |
03722> | +ID6 06:EX301 .99 .691 1.00 77.30 .000 |
03723> |-----|-----|-----|-----|-----|
03724> | SUM 09:NtoCont 8.97 3.737 1.00 66.22 .000 |
03725> -----
03726> | NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY. |
03727> -----
03728> -----
03729> 250:0010-----
03730> -----
03731> | COMPUTE DUALHYD | Average inlet capacities [CINLET] = .241 (cms)
03732> | TotalHyd 09:NtoCon | Number of inlets in system [NINLET] = 1
03733> |-----| Total minor system capacity = .241 (cms)
03734> | Total major system storage [TMJSTO] = 2350. (cu.m.) |
03735> -----
03736> | ID: NHYD AREA QPEAK TPEAK R.V. DWF |
03737> | (ha) (cms) (hrs) (mm) (cms) |
03738> | TOTAL HYD. 09:NtoCon 8.97 3.737 1.000 66.218 .000 |
03739> |-----|-----|-----|-----|-----|
03740> | MAJOR SYST 03:NMAj .73 .607 1.217 66.218 .000 |
03741> | MINOR SYST 02:NMin 8.24 .241 .600 66.226 .000 |
03742> |-----|-----|-----|-----|-----|
03743> | NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY. |
03744> -----
03745> | Maximum MAJOR SYSTEM storage used = 2350. (cu.m.) |
03746> -----
03747> -----
03748> 250:0011-----
03749> *****
03750> ## Total Flows from North
03751> *****
03752> -----
03753> | CALIB NASHYD | Area (ha)= .58
03754> | 01:201 DT= 1.00 | Ia (mm)= 5.000 Curve Number (CN)=76.00
03755> | U.H. Tp(hrs)= .210 # of Linear Res.(N)= 3.00 |
03756> -----
03757> | Unit Hyd Qpeak (cms)= .105 |
03758> -----
03759> | PEAK FLOW (cms)= .087 (i) |
03760> | TIME TO PEAK (hrs)= 1.267 |
03761> | RUNOFF VOLUME (mm)= 41.152 |
03762> | TOTAL RAINFALL (mm)= 86.603 |
03763> | RUNOFF COEFFICIENT = .475 |
03764> -----
03765> | (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY. |
03766> -----
03767> -----
03768> 250:0012-----
03769> -----
03770> | ADD HYD (NorthPr ) | ID: NHYD AREA QPEAK TPEAK R.V. DWF |
03771> |-----|-----|-----|-----|-----|
03772> | ID1 01:201 .58 .087 1.27 41.15 .000 |
03773> | +ID2 02:NMin 8.24 .241 .60 66.23 .000 |
03774> | +ID3 03:NMAj .73 .607 1.22 66.22 .000 |
03775> |-----|-----|-----|-----|-----|
03776> | SUM 05:NorthPr 9.55 .933 1.22 64.70 .000 |
03777> -----
03778> | NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY. |
03779> -----
03780> -----
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03781> 250:0013-----
03782> #*****
03783> #
03784> # South of Medway
03785> #
03786> #*****
03787> #*****
03788> # South Controlled
03789> #*****
03790> -----
03791> | CALIB STANDHYD | Area (ha)= 12.83
03792> | 01:206 DT= 1.00 | Total Imp(%)= 64.00 Dir. Conn.(%)= 64.00
03793> -----
03794> IMPERVIOUS PERVIOUS (i)
03795> Surface Area (ha)= 8.21 4.62
03796> Dep. Storage (mm)= 2.00 5.00
03797> Average Slope (%)= 2.00 2.00
03798> Length (m)= 110.00 25.00
03799> Mannings n = .001 .024
03800> -----
03801> Max.eff.Inten.(mm/hr)= 274.73 83.28
03802> over (min) 1.00 2.00
03803> Storage Coeff. (min)= .37 (ii) 1.77 (ii)
03804> Unit Hyd. Tpeak (min)= 1.00 2.00
03805> Unit Hyd. peak (cms)= 1.59 .60
03806> -----
03807> PEAK FLOW (cms)= 6.27 .89 7.152 (iii)
03808> TIME TO PEAK (hrs)= 1.00 1.000
03809> RUNOFF VOLUME (mm)= 84.60 26.24 63.592
03810> TOTAL RAINFALL (mm)= 86.60 86.60 86.603
03811> RUNOFF COEFFICIENT = .98 .30 .734
03812> -----
03813> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
03814> CN* = 59.6 Ia = Dep. Storage (Above)
03815> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
03816> THAN THE STORAGE COEFFICIENT.
03817> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
03818> -----
03819> -----
03820> 250:0014-----
03821> -----
03822> | CALIB STANDHYD | Area (ha)= 1.94
03823> | 02:207 DT= 1.00 | Total Imp(%)= 93.00 Dir. Conn.(%)= 93.00
03824> -----
03825> IMPERVIOUS PERVIOUS (i)
03826> Surface Area (ha)= 1.80 .14
03827> Dep. Storage (mm)= 2.00 5.00
03828> Average Slope (%)= 2.00 2.00
03829> Length (m)= 110.00 25.00
03830> Mannings n = .001 .024
03831> -----
03832> Max.eff.Inten.(mm/hr)= 274.73 113.54
03833> over (min) 1.00 2.00
03834> Storage Coeff. (min)= .37 (ii) 1.61 (ii)
03835> Unit Hyd. Tpeak (min)= 1.00 2.00
03836> Unit Hyd. peak (cms)= 1.59 .64
03837> -----
03838> PEAK FLOW (cms)= 1.38 .04 1.414 (iii)
03839> TIME TO PEAK (hrs)= 1.00 1.000
03840> RUNOFF VOLUME (mm)= 84.60 34.49 81.095
03841> TOTAL RAINFALL (mm)= 86.60 86.60 86.603
03842> RUNOFF COEFFICIENT = .98 .40 .936
03843> -----
03844> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
03845> CN* = 69.5 Ia = Dep. Storage (Above)
03846> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
03847> THAN THE STORAGE COEFFICIENT.
03848> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
03849> -----
03850> -----
03851> 250:0015-----
03852> -----
03853> | CALIB NASHYD | Area (ha)= .87 Curve Number (CN)=68.50
03854> | 03:EX302 DT= 1.00 | Ia (mm)= 5.000 # of Linear Res.(N)= 3.00
03855> | U.H. Tp(hrs)= .260
03856> -----
03857> Unit Hyd Qpeak (cms)= .128
03858> -----
03859> PEAK FLOW (cms)= .092 (i)
03860> TIME TO PEAK (hrs)= 1.350
03861> RUNOFF VOLUME (mm)= 33.562
03862> TOTAL RAINFALL (mm)= 86.603
03863> RUNOFF COEFFICIENT = .388
03864> -----
03865> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
03866> -----
03867> -----
03868> 250:0016-----
03869> -----
03870> | CALIB STANDHYD | Area (ha)= 1.04
03871> | 04:EX303 DT= 1.00 | Total Imp(%)= 29.00 Dir. Conn.(%)= 29.00
03872> -----
03873> IMPERVIOUS PERVIOUS (i)
03874> Surface Area (ha)= .30 .74
03875> Dep. Storage (mm)= 2.00 5.00
03876> Average Slope (%)= 2.00 1.90
03877> Length (m)= 25.00 50.00
03878> Mannings n = .001 .024
03879> -----
03880> Max.eff.Inten.(mm/hr)= 274.73 124.74
03881> over (min) 1.00 2.00
03882> Storage Coeff. (min)= .15 (ii) 1.99 (ii)
03883> Unit Hyd. Tpeak (min)= 1.00 2.00
03884> Unit Hyd. peak (cms)= 1.70 .56
03885> -----
03886> PEAK FLOW (cms)= .23 .21 .440 (iii)
03887> TIME TO PEAK (hrs)= .97 1.02 1.000
03888> RUNOFF VOLUME (mm)= 84.60 37.42 51.104
03889> TOTAL RAINFALL (mm)= 86.60 86.60 86.603
03890> RUNOFF COEFFICIENT = .98 .43 .590
03891> -----
03892> (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
03893> CN* = 72.5 Ia = Dep. Storage (Above)
03894> (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
03895> THAN THE STORAGE COEFFICIENT.
03896> (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
03897> -----
03898> -----
03899> 250:0017-----
03900> -----
03901> | ADD HYD (StoCont) | ID: NHYD AREA QPEAK TPEAK R.V. DWF
03902> | (ha) (cms) (hrs) (mm) (cms)
03903> +ID1 01:206 12.83 7.152 1.00 63.59 .000
03904> +ID2 02:207 1.94 1.414 1.00 81.09 .000
03905> +ID3 03:EX302 .87 .092 1.35 33.56 .000
03906> +ID4 04:EX303 1.04 .440 1.00 51.10 .000
03907> -----
03908> SUM 09:StoCont 16.68 9.019 1.00 63.28 .000
03909> -----
03910> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
03911> -----
03912> -----
03913> 250:0018-----
03914> -----
03915> | COMPUTE DUALHYD | Average inlet capacities [CINLET] = .212 (cms)

03916> | TotalHyd 09:StoCon | Number of inlets in system [NINLET] = 1
03917> Total minor system capacity = .212 (cms)
03918> Total major system storage [TMJSTO] = 7100. (cu.m.)
03919> -----
03920> ID: NHYD AREA QPEAK TPEAK R.V. DWF
03921> (ha) (cms) (hrs) (mm) (cms)
03922> TOTAL HYD. 09:StoCon 16.68 9.019 1.000 63.283 .000
03923> -----
03924> MAJOR SYST 03:SmaJ 2.24 1.229 1.333 63.283 .000
03925> MINOR SYST 02:SMin 14.44 .212 .350 63.296 .000
03926> -----
03927> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
03928> -----
03929> Maximum MAJOR SYSTEM storage used = 7100. (cu.m.)
03930> -----
03931> -----
03932> 250:0019-----
03933> #*# Total Flows from South
03934> #*#-----
03935> -----
03936> -----
03937> | CALIB NASHYD | Area (ha)= .18 Curve Number (CN)=61.50
03938> | 01:205 DT= 1.00 | Ia (mm)= 5.000 # of Linear Res.(N)= 3.00
03939> | U.H. Tp(hrs)= .130
03940> -----
03941> Unit Hyd Qpeak (cms)= .053
03942> -----
03943> PEAK FLOW (cms)= .022 (i)
03944> TIME TO PEAK (hrs)= 1.167
03945> RUNOFF VOLUME (mm)= 27.674
03946> TOTAL RAINFALL (mm)= 86.603
03947> RUNOFF COEFFICIENT = .320
03948> -----
03949> (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
03950> -----
03951> -----
03952> 250:0020-----
03953> -----
03954> | ADD HYD (SouthPr) | ID: NHYD AREA QPEAK TPEAK R.V. DWF
03955> | (ha) (cms) (hrs) (mm) (cms)
03956> ID1 01:205 .18 .022 1.17 27.67 .000
03957> +ID2 02:SMin 14.44 .212 .35 63.30 .000
03958> +ID3 03:SmaJ 2.24 1.229 1.33 63.28 .000
03959> -----
03960> SUM 05:SouthPr 16.86 1.457 1.33 62.91 .000
03961> -----
03962> NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
03963> -----
03964> -----
03965> 250:0021-----
03966> -----
03967> 250:0002-----
03968> -----
03969> 250:0002-----
03970> -----
03971> 250:0002-----
03972> -----
03973> 250:0002-----
03974> -----
03975> 250:0002-----
03976> -----
03977> 250:0002-----
03978> -----
03979> 250:0002-----
03980> FINISH
03981> -----
03982> *****
03983> WARNINGS / ERRORS / NOTES
03984> -----
03985> Simulation ended on 2025-02-03 at 10:53:32
03986> -----
03987> -----



Stantec is a global leader in sustainable architecture, engineering, and environmental consulting. The diverse perspectives of our partners and interested parties drive us to think beyond what's previously been done on critical issues like climate change, digital transformation, and future-proofing our cities and infrastructure. We innovate at the intersection of community, creativity, and client relationships to advance communities everywhere, so that together we can redefine what's possible.

