FUNCTIONAL SERVICING AND STORMWATER MANAGEMENT REPORT

IN SUPPORT OF ZONING BYLAW AMENDMANT AND DRAFT PLAN OF SUBDIVISION

2238, 2252, 2264, 2280, 2288 & 2290 Dundas Street West and 104 & 105 Ritchie Avenue M6R 1X3
City of Toronto – Toronto & East York District, Ward 4 (Parkdale-High Park)

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Prepared For:

Choice Properties Limited Partnership

ChoiceProperties

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1.0 INTRODUCTION

1.1 BACKGROUND

This Functional Servicing and Stormwater Management Report ('FSSR') has been prepared in support of a zoning bylaw amendment application ('ZBA') and a draft plan of sub-division application ('DPS) for the proposed development located at 2238, 2252, 2264, 2280, 2288 & 2290 Dundas Street West and 104 & 105 Ritchie Avenue within the City of Toronto ('The Site'). The 4.39 hectare (+/- 10.85 acres) subject site is located on the east side of Dundas Street West between Bloor Street West and Roncesvalles Avenue, within Ward 4 of the Toronto & East York district of the City of Toronto. The site is surrounded by an existing school to the north, existing residential with some mixed commercial to the south side of the property, Dundas Street West to the west limit of the property and a Metrolinx rail corridor to the east of the property. The site currently consists of various commercial, retail, and residential buildings with a paved parking lot and a small green space at the southeast corner of the site. Refer to **Figure 1** for a key plan of the subject site relative to surrounding conditions.

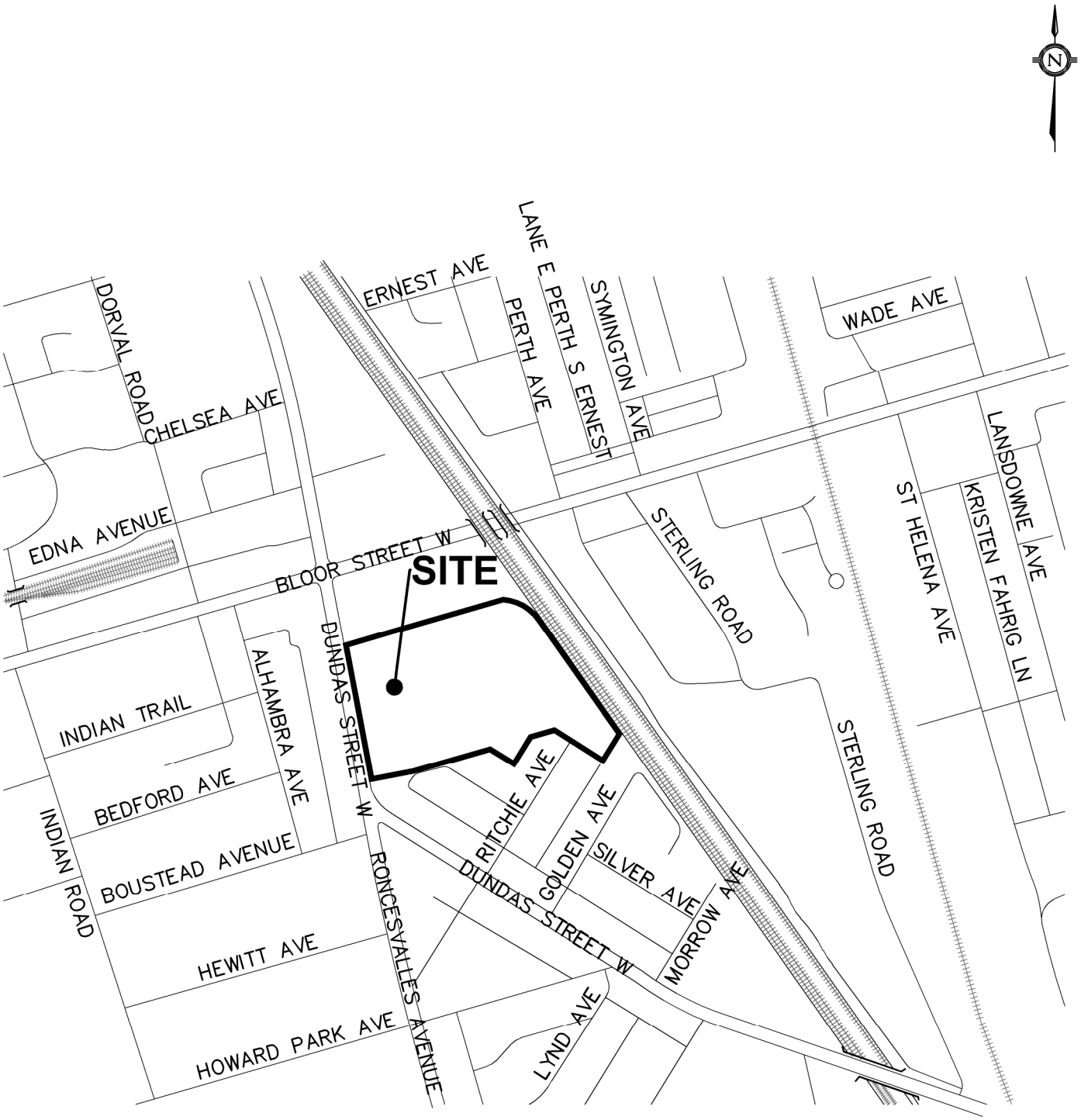
The proposed re-development concept has been prepared by Hariri Pontarini Architects Inc. ('HPA'). Two new public roads (Street 'A' and Street 'B' – 1.15ha) are proposed that create a loop within the site boundaries and has two vehicular connections into Dundas Street West with a third connection to Ritchie Avenue. A portion of the development lands are proposed to be conveyed to the City as a road widening along Dundas Street west. These lands are described as 'Block 8' (0.01ha), 'Block 9' (0.02ha) and 'Block 10' (0.02ha) on the DPS (Refer to DPS attached in Appendix A). Additionally, 'Block 11' (0.01ha) is a portion of the site fronting Herman Avenue that will also be conveyed to the City to facilitate a standard lane. A park block has been proposed ('Block 3' – 0.44ha) in the centre of the new public loop road. The remainder of the site consists of five separate residential, commercial, and open space development blocks. The architectural concept plan proposes 8 new residential towers, 1 office tower, a food store, and various commercial units. The development concept is as follows:

- BLOCK 1 - Building 1A (22 storeys) and Building 1B (32 storeys), connected with an 8 storey podium. Building 2 (38 Storeys) and ground floor townhouses (2 Storey). All buildings in Block 1 are connected via common underground parking garage (2 levels).
- BLOCK 2 – Building 3 (24 storeys) and Office Tower (6 storeys), connected with a podium at floor 3. Building 3 also includes the 2 storey food store as week as commercial space on the ground floor. All buildings in Block 2 are connected via common underground parking garage (3 levels).
- BLOCK 4 – Building 4 (28 storeys) with a 6 storey podium and ground floor townhouses (2 Storey). All buildings in Block 4 are connected via common underground (2 levels).
- BLOCK 5 - Building 5 (10 storeys) with commercial retail space on the ground floor level. Building 6 (6 storeys) with ground floor townhouses (2 Storey). Building 7 (8 storeys) with ground floor townhouses (2 Storey). All buildings in Block 5 are connected via common underground parking garage (2 levels).

Refer to **Appendix A** for architectural plans and statistics (provided under separate cover). Refer to **Table 1** for a summary of block and building statistics as provided by HPA.

Table 1: Site Statistics

Block	Building	Use	+/- Block Area (ha)	Residential Units
1	Building 1A & 1B	Residential/Retail	0.427	557
1	Building 2	Residential	0.375	410
2	Building 3	Residential/Retail/Office	0.562	220
4	Building 4	Residential	0.194	334
5	Building 5	Residential/Retail	0.318	177
5	Building 6	Residential	0.238	84
5	Building 7	Residential	0.418	141
6	n/a	Open Space	0.230	n/a
Sub-Total – Development Blocks:			**2.75**	**1,923**
7 (Street A & Street B)	n/a	Public Roads	1.150	n/a
3	n/a	Park	0.440	n/a
8	n/a	Road Widening	0.007	n/a
9	n/a	Road Widening	0.021	n/a
10	n/a	Road Widening	0.018	n/a
11	n/a	Lane Widening	0.010	n/a
Sub-Total – Public Roads & Park:			**1.64**	**0**
Totals:			**4.39**	**1,923**



SITE LOCATION PLAN

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DEVELOPMENT PROJECT
AT 2280 DUNDAS STREET WEST

TORONTO, ONTARIO

DRAWING BY: VM	DATE: JUNE 2022
CHECKED BY: GD	PROJECT NO.: 22027
SCALE: N.T.S.	FIGURE NO.: 1

The purpose of this FSSR is to:

- Complete a concept design of new public infrastructure within the proposed development limits;
- Provide a high-level summary of on-site infrastructure requirements, at the block level and for the public roads, prior to the detailed design which would typically occur as part of a plan of subdivision application.

1.2 STUDY PARAMETERS

The background documents listed below have been considered in the preparation of this FSSR:

- Architectural plans and inputs prepared by Hariri Pontarini Architects Inc.
- City of Toronto Design Criteria for Sewers and Watermains, January 2021;
- City of Toronto Wet Weather Flow Management Guidelines ('WWFMG'), November 2006;
- Toronto Green Standard v4.
- Toronto Green Roof By-Law, 2009.
- Fire Underwriters Survey, 1999;
- Various plan and profile drawings obtained from the City of Toronto;
- DMOG information obtained from the City of Toronto;
- Hydrant Flow Test Prepared by Lozzi Aqua Check, May 2022;

2.0 STORMWATER MANAGEMENT

2.1 EXISTING CONDITIONS

The subject site is currently occupied by various commercial, retail and residential buildings with a paved parking lot and a small green space at the southeast corner of the site. Based on a subsurface utility investigation (QL-B) performed by Mark It Locates Inc., onsite private storm sewer infrastructure was identified.

Based on the QL-B investigation prepared by Mark It Locates Inc. as well as a comprehensive existing stormwater drainage assessment (dye test) prepared by I2S Infrastructure Inc., most of the site including the paved parking surface, the LCBO, the mall, and the grocery store drain to (**SWM1** – Area 100, 102 & 103) the onsite private storm sewer system. The onsite private storm sewer system consists of various catchbasins and manholes on site that collect surface runoff with various connections to buildings that convey roof drainage. The onsite private storm sewer discharges to the 375mm diameter combined sewer on Dundas Street West. Additionally, the existing mechanic shop and residential building (**SWM1** – Area 101, 104) convey roof drainage though direct storm sewer service connections to the 375mm diameter combined sewer on Dundas Street West. The existing office building at the southwest corner of the site (**SWM1** – Area 105) conveys roof drainage though direct storm sewer service connections to the 375mm diameter storm sewer on Dundas Street West. A small portion of the site frontage along Dundas Street West (**SWM1** – Area 106) drains overland to the Dundas Street West ROW and is collected by street catchbasins and conveyed to the 375mm diameter storm sewer on Dundas Street West. A small portion of the existing parking lot along the southern frontage of the site (**SWM1** – Area 107) drains overland to the residential area along Herman Avenue and eventually makes its way into the 300mm diameter combined sewer on Herman Avenue. Additional areas of the western frontage (**SWM1** – Area 108 and 109) drain overland into the adjacent rail corridor. Refer to **Table 2** for a summary of existing drainage conditions.

Based on a review of the topographic survey of the site, it was determined that the majority of the site's existing major system overland flow drains to the Herman Avenue ROW (**SWM2** – Area 200). A small portion of site, particularly along the southern frontage of Dundas Street, west drains

major system overland flow to the Dundas Street West ROW (**SWM2** – Area 201). The remaining portions of site drain major overland flow into the adjacent rail corridor along the eastern property boundary (**SWM2** – Area 202 and 203). Refer to **Table 2** for a summary of existing drainage conditions.

Table 2: Summary of Existing Minor/Major System Drainage Conditions

SWM1 Area ID	Plan Reference	Outlet Location
Area 100	Minor System – SWM1	375mm Combined Sewer in Dundas Street West
Area 101	Minor System – SWM1	375mm Combined Sewer in Dundas Street West
Area 102	Minor System – SWM1	375mm Combined Sewer in Dundas Street West
Area 103	Minor System – SWM1	375mm Combined Sewer in Dundas Street West
Area 104	Minor System – SWM1	375mm Combined Sewer in Dundas Street West
Area 105	Minor System – SWM1	450mm Storm Sewer in Dundas Street West
Area 106	Minor System – SWM1	450mm Storm Sewer in Dundas Street West
Area 107	Minor System – SWM1	300mmCombined Sewer in Dundas Street West
Area 108	Minor System – SWM1	Rail Corridor
Area 109	Minor System – SWM1	Rail Corridor
SWM2 Area ID		
Area 200	Major System Area – SWM2	Herman Avenue ROW
Area 201	Major System Area – SWM2	Dundas Street West ROW
Area 202	Major System Area – SWM2	Rail Corridor
Area 203	Major System Area – SWM2	Rail Corridor

External drainage does not appear to enter the site prior to discharge to public infrastructure. Refer to drawings **SWM1** and **SWM2** for the pre-development SWM drainage plans that illustrate existing drainage patterns and existing servicing.

The following sections summarize the various stormwater management requirements and commentary on how the subject site and internal development blocks will adhere to them.

2.2 STORMWATER MANAGEMENT CRITERIA

The City of Toronto's WWFMG document describes a 'hierarchical approach' that should be undertaken when designing an appropriate stormwater management system and controls for a land development project. The hierarchy is summarized as follows:

- **Source Control** - Source controls at the lot level are the preferred method for controlling the impacts of wet weather flow.
- **Conveyance Control** – Conveyance controls, such as roadside ditch/swale and/or infiltration systems, shall be implemented, where new roads are built, to the maximum practicable extent site conditions and soil conditions permit.
- **End-of-Pipe Control** – End-of-pipe controls shall be implemented after source controls and conveyance controls are unable to achieve the necessary level of stormwater quality and quantity control targets.

There are numerous methods for implementing each control in order to provide a 'treatment train' system. The following sections summarize the various stormwater management requirements and provides commentary on how the subject site and internal development blocks will adhere to them. It should be noted that the methods of achieving the stormwater criteria for the site will be further refined at the plan of subdivision level and the site plan level for each development block.

2.2.1 Quantity – Flood Flow Management Criteria

The City of Toronto's water quantity targets are intended to focus on flood flow management and erosion control measures, in order to reduce impacts to downstream infrastructure and outlets. Section 2.2.3.1 – Flood Flow Management Criteria of the WWFMG stipulate the following requirements:

- *The required level of peak flow control from a development site contributing flow to a specific watercourse at the point of discharge, shall follow Toronto and Region Conservation Authority (TRCA) Flood Flow Criteria Map (see Appendix C.1).*
- *For development sites within the City's chronic basement flooding areas (see City of Toronto Basement Flooding Relief Work Program Location Map & Schedule in Appendix D), the proponent shall consult Toronto Water - Sewer Asset Planning Section for details of requirements, where applicable.*
- *The City of Toronto has adopted the 100-year storm as the level of protection for properties, where feasible, against surface flooding from ponding on streets, particularly, in areas of the City experiencing chronic basement flooding and/or when a proper major overland flow stormwater*

drainage system does not exist (see Section 2.2.3.8 for overland flow drainage system requirements).

- *For development sites < 2 ha, the proponent may use a simplified approach such as the Rational Method / IDF curves to compute peak flows.*

The subject site is located within a watershed that drains directly to Lake Ontario. Appendix C.1 of the WWFMG does not stipulate flood flow criteria for the subject site. General criteria of post-development major system flows to not exceed pre-development flows to each outlet was adopted.

2.2.2 Quantity – Erosion Control Criteria

The City of Toronto's water quantity targets are intended to focus on flood flow management and erosion control measures, in order to reduce impacts to downstream infrastructure and outlets. Section 2.2.3.3 – Flood Flow Management Criteria of the WWFMG stipulate the following requirements:

- *For Rouge River watershed (within City of Toronto), follow TRCA (Toronto and Region Conservation Authority) erosion control criteria for individual sites, which discharge directly to and/or are in proximity of natural watercourses.*
    - *Detain the post-development rainfall runoff from a 30 mm storm for a minimum of 24 hours for Tributary "B" of the little Rouge Creek.*
    - *Detain the post-development rainfall runoff from a 33 mm storm for a minimum of 48 hours for the Morningside Tributary of the Rouge River.*
- *For all other watersheds where new large development blocks (site area > 5 ha) discharge directly and/or in proximity (within 100 m) of natural watercourses, the proponents are required to complete an Erosion Analysis Report to determine the erosion control criteria for the sites.*
- *For sites where it is not feasible (this condition must be reviewed and agreed by City staff) to complete an Erosion Analysis Report, we typically require that runoff from a 25 mm design storm be detained on-site and released over a minimum of 24 hours.*
- *For small infill/redevelopment sites < 2 ha, erosion control in the form of stormwater detention is normally not required, provided the on-site minimum runoff retention from a small design rainfall event (typically 5 mm) is achieved under the Water Balance Criteria.*

- *New developments shall be designed to minimize the number of new storm outfalls in the valley and all new outfalls shall be designed to minimize potential erosion.*

The subject site has development blocks which are all less than 5 ha in area. In addition, subject site drains to Lake Ontario and not to a watercourse. As such, no erosion criteria apply. However, the water balance criteria will provide erosion control on a block level basis.

Each development block will be less than 2ha in area and will achieve at least the 5mm Water Balance Criteria.

2.2.3 Discharge Criteria to Municipal Infrastructure

Section 2.2.3.7 – Discharge Criteria to Municipal Infrastructure of the WWFMG stipulate the following requirements:

- *The allowable release rate to the municipal storm sewer system (minor system) from the development site during a 2-year design storm event must not exceed the peak runoff rate from the site under pre-development conditions during the same storm event, or existing capacity of the receiving storm sewer, whichever is less.*

Since the site's overall imperviousness under existing condition is greater than 50%, and in accordance with WWFMG, a run-off coefficient of 0.50 and the 2-year storm event was used in calculating the pre-development storm peak runoff during the same event. In addition, considering subject site primarily discharges to a combined sewer, allowable release rate for the site was based on deducting net sanitary peak flow contributions from pre-development storm peak runoff. **Table 3** below summarizes this calculation, which is used to determine the post-development overall allowable release rate from the subject site, with respect to discharge to municipal infrastructure only (not flood protection).

Table 3: Allowable Release Rate to the Municipal Combined Storm Sewer on Dundas Street West

Q_A = C x A x i / 360 (L/s)	
A - Site Area (ha)	3.8
C - Runoff Coefficient	0.5
Tc (min)	10
I - Rainfall Intensity (mm/hr)	88
Q - Rational Flow Rate (l/s)	466
Net Sanitary Flows (l/s)	34
Target Release Rate (l/s)	432

Below in **Tables 4 and 5** is a summary of the peak flow requirements based on the Discharge Criteria and Flood Flow Criteria.

Table 4: Peak Flow Requirements to Municipal Storm Sewer

	Discharge Criteria to the Municipal Storm Sewer (L/s)				
Storm Event	**Dundas St. W Combined Sewer**	**Dundas St. W 450mm STM Sewer**	**Herman Ave**	**Rail Corridor**	**Total Site**
2	432*	26	4	44	505*
5					
10					
25					
50					
100					

*Total allowable release rate to combined sewer is based on Modified Rational peak flow less net proposed sanitary peak flow.

Table 5: Peak Flow Requirements based on Flood Flow Criteria

Flood Flow Criteria (L/s)				
Storm Event	**Dundas St. West**	**Herman Ave**	**Rail Corridor**	**Total Site**
2	948	7	49	1004
5	980	466	84	1531
10	1003	787	110	1900
25	1024	1074	134	2233
50	1050	1441	190	2681
100	1069	1715	180	2964

The development shall ensure both criteria are achieved by the proposed stormwater management approach. As seen in the above **Table 4**, the discharge criteria will govern the post-development peak release rates to the municipal storm sewer.

In order to understand the breakdown of release rates within various components of the overall project, we have reviewed the discharge criteria at the block level. The parameters for each development block are discussed later in the report and are also summarized in **Table 12**. The release rates by block were calculated using the same method as described above and are included in **Appendix B**. Stormwater detention storage will be provided at the block level in order to ensure that post-development peak flows during 2-year to 100-year storm events are less than the 2-year peak flow at a run-off co-efficient of 0.50, less net sanitary peak flow. Detailed input such as landscaped areas, uncontrolled drainage, orifice sizing and head values were assumed for the purpose of each block and will be further refined at the detailed design stage of the project. As such, the storage values presented in **Table 12** are not intended to be final and are subject to change.

2.2.4 Water Balance Targets

Section 2.2.1.1 – Water Balance Targets of the WWFMG stipulate the following requirements:

- *Retain stormwater on-site, to the extent practicable, to achieve the same level of annual volume of overland runoff (see Table 3 & Figure 2) allowable from the development site under pre-development (i.e. presently existing site conditions before the new proposed development) conditions.*

- *If the allowable annual runoff volume (see Table 3 & Figure 2) from the development site under post-development conditions is less than the pre-development conditions, then the more stringent runoff volume requirement becomes the governing target for the development site. The maximum allowable annual runoff volume from any development site is 50% of the total average annual rainfall depth.*
- *In most cases, the minimum on-site runoff retention requires the proponent to retain all runoff from a small design rainfall event - typically 5 mm (In Toronto, storms with 24-hour volumes of 5 mm or less contribute about 50% of the total average annual rainfall volume) through infiltration, evapotranspiration and rainwater reuse.*

At a minimum, 50% of the total average rainfall depth will be retained on site through infiltration, evapotranspiration & rainwater reuse.

2.2.5 Water Quality Targets–Total Suspended Solids (TSS)

Section 2.2.2.1 – Water Quality Target – Total Suspended Solids (TSS) of the WWFMG stipulate the following requirements:

- *The wet weather flow (WWF) water quality target is the long-term average removal of 80 % of Total Suspended Solids (TSS) on an annual loading basis from all runoff leaving the proposed development site based on the post-development level of imperviousness.*
- *Overall efficiency in TSS removal can be considered in combination with minimum on-site runoff retention and other conveyance & end-of-pipe controls (i.e., the treatment train)*

A TSS removal of 80% is required, calculated based on a treatment train approach.

Section 2.2.2.3 – Water Quality Target – E.Coli was not reviewed as part of this report as the site does not discharge into a new or existing headwall directly into the Lake or Waterfront area.

2.3 PROPOSED STORM SERVICING (MINOR SYSTEM)

A new storm sewer system is proposed along the new public roads, ‘Street A’ and ‘Street B'. The overall site will connect into the existing 375mm diameter combined sewer on Dundas Street West in two separate locations. One connection will be at the intersection of ‘Street A’ and Dundas Street West and the second will be at the intersection of ‘Street B’ and Dundas Street West. The

new proposed storm sewer will connect to the existing combined sewer on Dundas Street west due to the shallow elevation of the storm sewer along Dundas Street West. A connection into the 450mm diameter storm sewer on Dundas Street West will not allow for adequate servicing of the new public roads and development block on site. Each development block will have at least one connection to this new municipal storm system, in some cases multiple connections depending on the built form and ownership proposed. For the purpose of this submission we have indicated 1 connection per block as shown on the architectural plans. The final location and number of connections for each development block will be determined as part of the detailed design process. For the purpose of this report, we have completed preliminary sizing of storm sewers. Refer to General Public Utility Plan **PUP-1,** the Post-Development Storm Drainage Plan **STM-1** and the storm sewer design sheets included in **Appendix B**.

2.4 PROPOSED STORMWATER MANAGEMENT

2.4.1 Proposed Water Balance

Water balance efforts such as the use of green roofs, landscaped areas, and water reuse cisterns will be provided to achieve the required water balance objectives. As shown in **Table 6**, the proposed stormwater management approach will retain on average 5.0mm of rainfall on site. This achieves the 5.0mm water balance target, which equates to retaining about 50% of the annual rainfall volume on site. Refer to **Table 6** and **Appendix B** for more detail.

SWM DESIGN CALCULATIONS
Table 6: Water Balance Calculation Results Summary

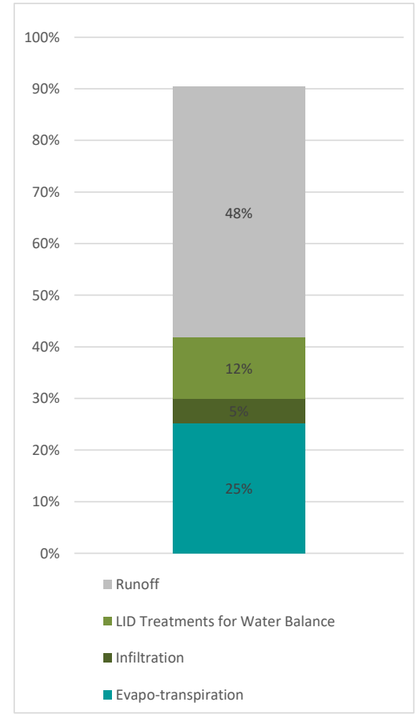
Project Name: 2280 Dundas Street
Municipality: City of Toronto
Project No.: 22027
Date: 28-Jun-22

Prepared by: Y.K.
Checked by: R.K
Last Revised: 30-Jun-22

Soil Type **Silty Loam**
Rainfall (mm) **840**

Block	Area (ha)	Per Individual Site				Per 4.33 ha Entire Site			
		Evapo-transpiration	Infiltration	LID Treatments for Water Balance	Runoff	Evapo-transpiration	Infiltration	LID Treatments for Water Balance	Runoff
Block 1	0.8000	22%	1%	30%	47%	4.1%	0.2%	5.5%	8.7%
Block 2	0.5600	22%	1%	30%	47%	2.9%	0.1%	3.9%	6.1%
Block 3 (Open Space)	0.4400	55%	18%	0%	27%	5.6%	1.9%	0.0%	2.7%
Block 4	0.1800	22%	1%	30%	47%	0.9%	0.0%	1.2%	2.0%
Block 5	0.9700	22%	1%	30%	47%	0.9%	0.0%	1.2%	10.5%
Block 6 (Open Space)	0.2300	55%	18%	0%	27%	2.9%	1.0%	0.0%	1.4%
Right Of Ways (A, B) Excluding External Areas	1.1500	30%	6%	0%	64%	8.0%	1.5%	0.0%	17.1%
Sub-Total	**4.3300**					**25%**	**5%**	**12%**	*** 48%**

* Therefore, in overall the site is able to retain events up to 5.0mm, which is equal to 50% of annual rainfall depth..



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The water balance credits were calculated on a block level based on land-use and soil types, resulting in values for evapotranspiration, infiltration and runoff. A water reuse cistern is suggested as a low-impact development strategy for each of the blocks/block connections that are sized to provide storage for the 5mm storm. Refer to **Appendix B** for the tables summarizing the water balance provided on an individual block level.

2.4.2 Proposed Quality Control

Each block has been evaluated based on land-use to determine the initial TSS removal credit and the amount of remaining TSS removal required. The 5mm water retention provided will capture an average of 50% of annual rainfall, therefore removing this volume out of the runoff discharged, and providing 50% TSS average removal. An OGS unit shall be provided for each combined sewer connection within the right-of-way prior to the system discharging onto Dundas Street West. This will provide an additional 50% TSS removal, to ensure treated flows are entering the storm sewer system within the municipal right-of-way. OGS units proposed in the right-of-way will be sized appropriately at detailed design. As shown in **Table 7**, these efforts will achieve the overall 80% TSS removal target.

SWM DESIGN CALCULATIONS
Table 7: Post-development Water Quality/TSS Removal Calculation Results Summary (using New Jersey Stormwater Best Management Practices Manual , Chapter 4 - TSS Removal Rates for BMP's in Series)

Project Name: 2280 Dundas Street
Municipality: City of Toronto
Project No.: 22027
Date: 28-Jun-22

Prepared by: Y.K.
Checked by: R.K.
Last Revised: 30-Jun-22

Soil Type **Silty Loam**
Rainfall (mm) **840**

TSS Removal Treatment Train Approach

Block	Area (ha)	Stage 1. Land Use (% of area) for TSS Removal Credits							Stage2. Block Level Additional TSS Removal Features						Complete TSS Removal Individual	TSS Removal Credit Per 4.33ha Entire Site
		Landscape (80% TSS Removal Credit)	Green Roof (80% TSS Removal Credit)	Roof (80% TSS Removal Credit)	Roof/Paved to Landscape (80% TSS Removal Credit)	% Paved Area (0% TSS Removal Credit)	Total On-site TSS Removal Credit *	Remained Untreated TSS	* 6 mm Runoff Retention - Minimum 50% TSS Removal Credit	Total Block Level TSS Removal	Remained Untreated TSS	OGS 50% TSS Removal Credit	Total TSS Removal for Blocks	Remained Untreated TSS		
Block 1	0.8000	5%	25%	25%	0%	45%	44%	56%	50%	72%	28%	50%	86%	14%	86%	15.9%
Block 2	0.5600	5%	25%	25%	0%	45%	44%	56%	50%	72%	28%	50%	86%	14%	86%	11.1%
Block 3 (Open Space)	0.4400	95%	0%	0%	0%	5%	76%	24%	-	76%	24%	50%	88%	12%	88%	8.9%
Block 4	0.1800	5%	25%	25%	0%	45%	44%	56%	50%	72%	28%	50%	86%	14%	86%	3.6%
Block 5	0.9700	5%	25%	25%	0%	45%	44%	56%	50%	72%	28%	50%	86%	14%	86%	19.3%
Block 6 (Open Space)	0.2300	95%	0%	0%	0%	5%	76%	24%	-	76%	24%	50%	88%	12%	88%	4.7%
Right Of Ways (A, B) Excluding External Areas	1.1500	30%	0%	0%	15%	55%	36%	64%	50%	68%	32%	50%	84%	16%	84%	22.3%
Sub-Total	**4.3300**															**86%**

* Water Balance Cisterns TSS credit based on 5mm rain event retention, which is equivalent to 50% of annual rainfall depth.
**TSS treatment of last OGS unitS, for ROW's, for upstream released flows from blocks has been ignored in this calculations for a conservative approach.

Reference: **New Jersey Stormwater Best Management Practices Manual**
Chapter 4 - TSS Removal Rates for BMP's in Series

Z:\Shared\Projects\2022\22027_Choice_2280 Dundas Street West\Design\Design\Stormwater Management\[22027_Water Quantity Calculation Results Summary.xlsx]Land Use Matrix Actual Imp

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2.4.3 Proposed Quantity Control and Modeling

The majority of the site will be controlled by the proposed storm sewer system and outlet to the municipal combined sewer on Dundas Street West. Each development block will control post-development release rates for all storms up to the 100-year storm event down to the 2-year allowable release rate at a runoff co-efficient of 0.50, less net sanitary peak flows. The blocks will discharge into the storm sewer system within the right-of-way, which will then be connected to the municipal combined sewer system on Dundas Street West. An orifice plate is proposed at the site outlet maintenance holes (MH2 and MH14) to ensure flows to the minor system, during all design storms, will not exceed allowable release rate of 432 L/s. The orifice will also enhance the site quantity control during major storm events utilizing the available minor system submerged pipe and maintenance hole storage volume. It was calculated that there is about **527m^3** of total available storage within the storm pipes and maintenance holes. Refer to **Appendix B** for the proposed minor system available storage. Refer to the Post-Development Stormwater Management Drainage Plan **SWM3** for an illustration of the post development minor system drainage conditions.

During major storms, the blocks will continue to control the 100-year storm to target release rates for each street, as shown in **Table 8**. Peak flows over capacity of the oversized minor system will drain overland primarily towards Dundas Street West, while a small portion of Street A will drain towards Ritchie Avenue, making its way to Herman Avenue. Please see drawing **SWM4** for details pertaining to the Post Development Drainage Plan (Major System). Note that the landscaped areas and imperviousness values are based on typical land cover assumptions. For a breakdown of the drainage area information, refer to **Table 8** which summarizes the minor drainage area characteristics.

Table 8: Target Release Rates to Combined Sewer

		Post-development to Combined Sewer		
	Pre-development	**Street A**	**Street B**	**Total**
Area (ha)	3.8	1.25	3.31	4.56
Sanitary Flow Rate (l/s)	2.3	28.2	8.37	36.57
Target Release Rate (l/s)	**431.5**	**118.3**	**313.2**	**431.5**

The VISUAL-OTTHYMO Version ('VO6') Model has been employed to analyse the 2-year to 100-year storm events for both pre-development and post-development conditions. The design storm events used in this analysis are based on the 6-hour Chicago storm distribution. The 2-year to 100-year storm events were modelled with a 6-hour duration and a time step of 10 minutes, based on City of Toronto IDF curves, summarized in **Table 9**. Refer also to **Appendix B** for rainfall information inputted into VO6.

Table 9: City of Toronto Storm Design Parameters

2-year		5-year	10-year	25-year	50-year	100-year
T (min)	I (mm/hr)	I (mm/hr)	I (mm/hr)	I (mm/hr)	I (mm/hr)	I (mm/hr)
0	1.243	1.712	1.938	2.263	2.679	2.989
10	1.324	1.825	2.067	2.415	2.858	3.189
20	1.418	1.956	2.218	2.591	3.066	3.422
30	1.529	2.111	2.396	2.799	3.313	3.697
40	1.662	2.297	2.610	3.049	3.609	4.027
50	1.825	2.525	2.873	3.355	3.971	4.431
60	2.029	2.812	3.203	3.741	4.428	4.941
70	2.295	3.185	3.634	4.244	5.023	5.605
80	2.656	3.693	4.221	4.930	5.836	6.512
90	3.180	4.433	5.079	5.932	7.021	7.835
100	4.025	5.628	6.468	7.554	8.941	9.977
110	5.670	7.962	9.191	10.735	12.706	14.178
120	10.994	15.578	18.144	21.192	25.083	27.990
130	88.189	131.792	162.268	189.522	224.324	250.320
140	12.865	18.261	21.307	24.885	29.455	32.868
150	7.535	10.620	12.304	14.370	17.009	18.980
160	5.534	7.769	8.965	10.471	12.394	13.830
170	4.444	6.221	7.158	8.360	9.896	11.042
180	3.747	5.233	6.008	7.017	8.306	9.269
190	3.258	4.542	5.206	6.080	7.196	8.030
200	2.894	4.029	4.610	5.384	6.373	7.112
210	2.611	3.630	4.149	4.846	5.735	6.400
220	2.385	3.311	3.780	4.415	5.226	5.831
230	2.198	3.050	3.478	4.062	4.808	5.365
240	2.042	2.831	3.225	3.766	4.458	4.975
250	1.910	2.644	3.010	3.515	4.161	4.643
260	1.795	2.484	2.825	3.299	3.905	4.358
270	1.695	2.343	2.663	3.111	3.682	4.109
280	1.607	2.220	2.521	2.945	3.486	3.890
290	1.528	2.111	2.395	2.798	3.312	3.695
300	1.458	2.012	2.283	2.666	3.156	3.522
310	1.395	1.924	2.181	2.548	3.016	3.365
320	1.338	1.844	2.090	2.441	2.889	3.223
330	1.286	1.771	2.006	2.343	2.773	3.095
340	1.238	1.705	1.930	2.254	2.668	2.977
350	1.194	1.643	1.860	2.172	2.571	2.869

The proposed site development drainage areas have been modelled in VO6 using the STANHYD commands with the Modified SCS formula for areas with impervious areas, and NASHYD commands with CN values for landscaped and undeveloped areas. In the post-development conditions, flows from the individual development blocks have been routed through underground storage tanks on each block. The ROUTE RESERVOIR command has been used to model the SWM storage tanks. Refer to **Appendix B** for post-development VO6 model calculations.

The required quantity storage for all development blocks have been provided in **Table 10** below. Refer to **Appendix B** for details and VO6 modeling used to arrive at these storage volumes.

SWM DESIGN CALCULATIONS
Table 10: Water Quantity Calculation Results Summary (SWM Matrix)

Project Name: 2280 Dundas Street
Municipality: City of Toronto
Project No.: 22027
Date: 30-Jun-22

Prepared by: Y.K.
Checked by: R.K.
Last Revised: 30-Jun-22

Block	Drainage Area [ha]	Total Roof Area (ha)	Imp. Side Walk Drain to Grass (ha)	Roof / Imp. Drain to Grass (%)	Green Roof (ha)	Green Roof (% of Roof)	Paved Surface Impervious Area (ha)	Landscape Assumed (ha)	Imperviousness (%)	X-Imperviousness (%)	Water Balance Target (mm)	Water Balance/Cistern Storage Required (m^3)	Quantity Control Storage Utilized (m^3)	Blocks Target Release Rate (L/s)	VO6 Model 100-year Blocks Release Rate (L/s)	Quantity Storage Provided (m^3)
Block 1	0.8000	0.4000	-	-	0.200	50%	0.360	0.040	70	70	6	34	341	98	97	345
Block 2	0.5600	0.2800	-	-	0.140	50%	0.252	0.028	70	70	6	24	239	69	69	240
Block 3 (Open Space)	0.4400	0.0000	-	-	0.000	0%	0.022	0.418	5	5	-	-	-	54	-	-
Block 4	0.1800	0.0900	-	-	0.045	50%	0.081	0.009	70	70	6	8	83	22	21	85
Block 5	0.9700	0.4850	-	-	0.243	50%	0.437	0.049	70	70	6	41	412	119	118	415
Block 6 (Open Space)	0.2300	0.0000	-	-	0.000	0%	0.012	0.219	5	5	-	-	-	54	-	-
Right Of Ways (A, B) Excluding External Areas	1.1500	0.0000	-	-	0.000	0%	0.633	0.518	55	55	N/A	N/A	-	-	-	
The Site SubTotal	4.33	1.26			0.63		1.80	1.28				105	1075			1085

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Table 11: Water Quantity Summary to Site Outlets

	Minor System Flows				Uncontrolled Major System Flows			Total Site Flow [Including Uncontrolled Areas]		
Return Period	Pre-dev	Target	Post-dev Controlled	Post to Pre reduction	Pre-dev	Post-dev	Post to Pre reduction	Pre-dev	Post-dev	Post to Pre reduction
	(m^3/s)	(m^3/s)	(m^3/s)		(m^3/s)	(m^3/s)		(m^3/s)	(m^3/s)	
Dundas St. W Outlet to Combined Sewer										
2-Year	0.897	**0.43**	0.162	-82%	N/A	N/A	N/A	N/A	N/A	N/A
5-Year	0.897		0.255	-72%	N/A	N/A	N/A	N/A	N/A	N/A
10-Year	0.897		0.316	-65%	N/A	N/A	N/A	N/A	N/A	N/A
25-Year	0.897		0.378	-58%	N/A	N/A	N/A	N/A	N/A	N/A
50-Year	0.897		0.431	-52%	N/A	N/A	N/A	N/A	N/A	N/A
100-Year	0.897		0.431	-52%	N/A	N/A	N/A	N/A	N/A	N/A
Dundas St. W Outlet to 450mm STM Sewer										
2-Year	0.051	**0.03**	0	-100%	N/A	N/A	N/A	N/A	N/A	N/A
5-Year	0.051		0	-100%	N/A	N/A	N/A	N/A	N/A	N/A
10-Year	0.051		0	-100%	N/A	N/A	N/A	N/A	N/A	N/A
25-Year	0.051		0	-100%	N/A	N/A	N/A	N/A	N/A	N/A
50-Year	0.051		0	-100%	N/A	N/A	N/A	N/A	N/A	N/A
100-Year	0.051		0	-100%	N/A	N/A	N/A	N/A	N/A	N/A
Dundas St. West										
2-Year	N/A	**N/A**	N/A	N/A	0	0.02	N/A	0.948	0.162	N/A
5-Year	N/A		N/A	N/A	0.032	0.04	25%	0.98	0.253	-74%
10-Year	N/A		N/A	N/A	0.055	0.06	9%	1.003	0.315	-69%
25-Year	N/A		N/A	N/A	0.076	0.07	-8%	1.024	0.376	-63%
50-Year	N/A		N/A	N/A	0.102	0.17	67%	1.05	0.501	-52%
100-Year	N/A		N/A	N/A	0.121	0.377	212%	1.069	0.674	-37%
Herman Ave.										
2-Year	N/A	**0**	N/A	N/A	0	0	N/A	0	0	N/A
5-Year	N/A		N/A	N/A	0.466	0.01	-98%	0.466	0.01	-98%
10-Year	N/A		N/A	N/A	0.787	0.02	-97%	0.787	0.02	-97%
25-Year	N/A		N/A	N/A	1.074	0.03	-97%	1.074	0.03	-97%

50-Year	N/A		N/A	N/A	1.441	0.03	-98%	1.441	0.03	-98%
100-Year	N/A		N/A	N/A	1.715	0.04	-98%	1.715	0.04	-98%
Rail Corridor										
2-Year	N/A		N/A	N/A	0.049	0	-100%	0.049	0	-100%
5-Year	N/A		N/A	N/A	0.084	0	-100%	0.084	0	-100%
10-Year	N/A		N/A	N/A	0.110	0	-100%	0.110	0	-100%
25-Year	N/A	**0.04**	N/A	N/A	0.134	0	-100%	0.134	0	-100%
50-Year	N/A		N/A	N/A	0.190	0	-100%	0.190	0	-100%
100-Year	N/A		N/A	N/A	0.180	0	-100%	0.180	0	-100%
Total Site										
2-Year	0.948		0.162	-83%	N/A	N/A	N/A	1.004	0.162	-84%
5-Year	0.948		0.255	-73%	N/A	N/A	N/A	1.531	0.253	-83%
10-Year	0.948		0.316	-67%	N/A	N/A	N/A	1.9	0.315	-83%
25-Year	0.948	**0.51**	0.378	-60%	N/A	N/A	N/A	2.233	0.376	-83%
50-Year	0.948		0.431	-55%	N/A	N/A	N/A	2.681	0.501	-81%
100-Year	0.948		0.431	-55%	N/A	N/A	N/A	2.964	0.674	-77%

As shown in **Table 10**, under post-development conditions and on a site basis, there is a significant reduction in peak flows compared to the corresponding pre-development storm flows, which satisfies the TRCA criteria and the City's Flood Flow Criteria. The post-development flows to the combined sewer on Dundas Street West do not exceed pre-development levels, satisfying quantity controls for this outlet. There is no major flow discharging from the development blocks as they are controlling the 100-year storm event to drain to minor system. However, the grading will accommodate any emergency flow from blocks to the right-of-ways to drain onto adjacent roads. It is noted that major system conveyance to Dundas Street West has increased considering majority of major system flows were directed towards Ritchie Avenue and subsequently Herman Avenue under pre-development conditions. However, due to site grading constraints there is no opportunity to direct major flows elsewhere. Furthermore, this re-direction of major flows to Dundas Street West can be viewed as an improvement to existing conditions, considering existing major system flows were previously directed to Ritchie Avenue which only contains combined servicing, and the area includes single family homes. Overall, on a site basis, quantity controls are achieved as the post-development release rates for all storms up to the 100-year storm are

controlled to pre-development rates or less, and release flow to the Dundas Street West combined system does not exceed 432 L/s during all storm events. The 100-year post/pre-development hydrographs have been shown in **Figure 2**. The proposed orifice plates on the downstream side of MH2 and MH14, along with the **527m^3** of storage in the pipes and maintenance holes, shall adequately ensure flows during all storms to the minor system will not exceed allowable release rate of 432 L/s to the minor system, and keep flows up to 2-year storm event underground. Refer to **Appendix B** for the allowable and proposed release rates calculations, along with the VO6 modeling summary.

Any overland flows exceeding the minor system capacity will be conveyed safely downstream through the internal the right-of-way and existing roads. The overland flows include emergency flows and uncontrolled flows from public roads, park and open space areas, which would not be captured by the minor system.

Figure 2: 100-year Post/Pre-Development Hydrographs

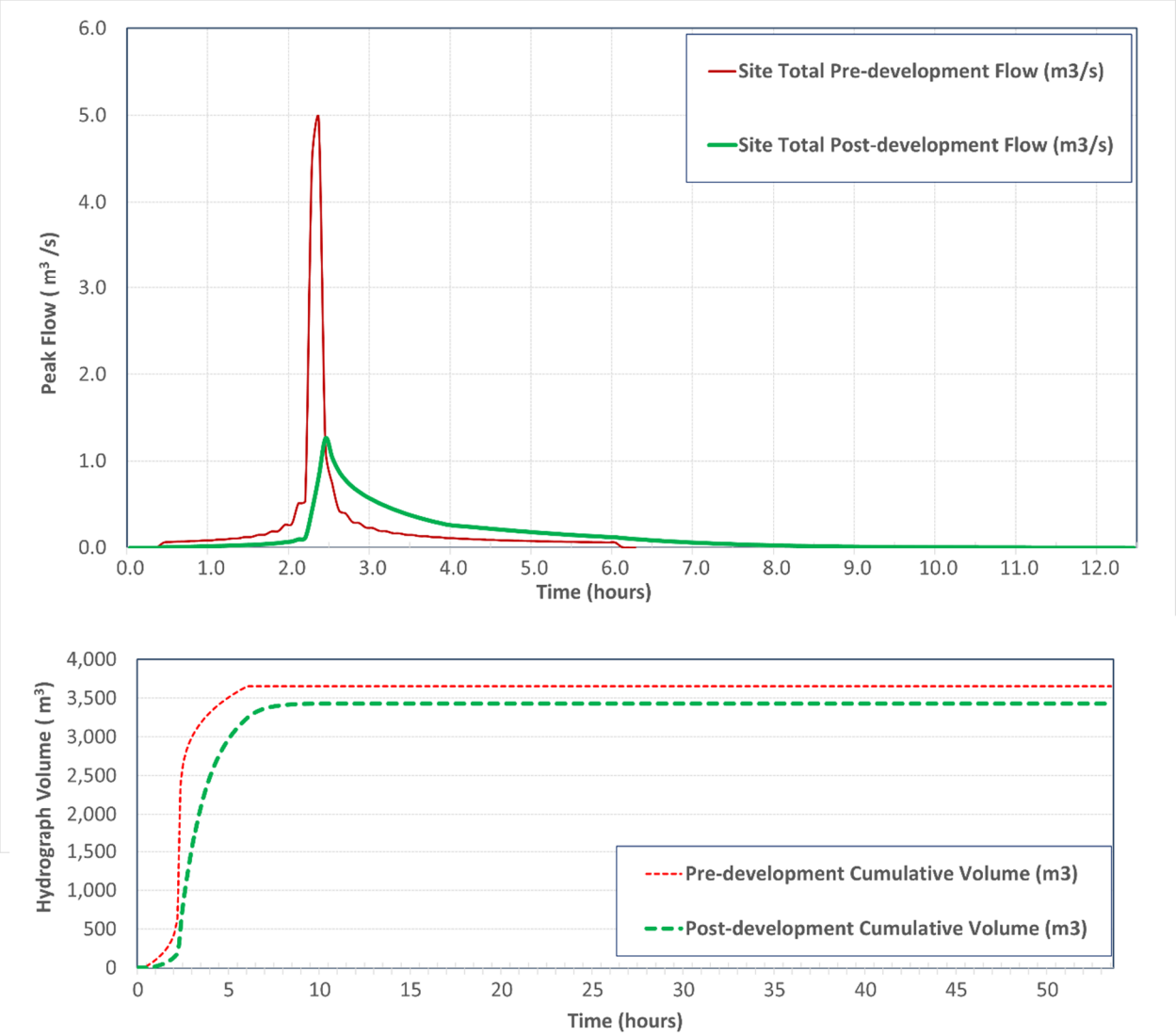

Table 12 below summarizes the drainage of the storm release rates on the block level. These flows are to be controlled to the 2-year pre-development levels at a run-off co-efficient of 0.50, less net sanitary peak flow. This will be achieved by providing stormwater storage tanks on each of the blocks connected to the storm sewer on the road.

Table 12: Post-Development Drainage Characteristics and VO6 Modelling Results

Block ID	Area (ha)	XIMP	TIMP	2-year @ RC=0.50 Minor System Allowable Release Rate (L/s)	VO6 Model 100-year Release Rate to Minor System (L/s)
Block 1	0.8	85	85	98	97
Block 2	0.56	85	85	69	69
Block 4	0.18	85	85	22	21
Block 5	0.97	85	85	119	118

As shown in the above **Table 12**, all the blocks are controlled to the 2-year storm at 0.50 runoff co-efficient, less net sanitary peak flow, or less. In addition, an orifice plate has been proposed in MH2 and MH 14 to ensure flows from the site to the Dundas Street West combined sewer system, in all design storm events, will not exceed the allowable rate of 0.432 m^3/sec. Therefore, City of Toronto quantity control requirements are satisfied.

3.0 SANITARY SERVICING

3.1 EXISTING SANITARY SERVICING

The subject site is currently occupied by several commercial and residential buildings. The site consists of an onsite sanitary sewer to collect sewage from the existing buildings at 2288 and 2280 Dundas Street West which ultimately connects into the combined sewer on Dundas Street West. The remainder of the building on site have direct sanitary sewer service connections to the combined sewer on Dundas Street West. The existing servicing surrounding the site is summarized as follows:

- Dundas Street West contains a 375mm diameter combined sewer that conveys drainage south. The sewer system continues south along Roncesvalles Avenue and, then connects into an existing trunk sewer that runs parallel to the Gardiner Expressway.
- An existing 300mm diameter combined sewer runs southwest along Herman Avenue where it connects to a 450mm diameter combined sewer on Ritchie Avenue. The Ritchie Avenue combined sewer flows south and connects to the Roncesvalles Avenue combined sewer and ultimately outlets to the same trunk sewer running parallel to the Gardiner Expressway.

The subject site is located in City of Toronto Basement Flooding Study Area 42 whose Class EA is in progress as of 2019.

3.2 PROPOSED SANITARY RELEASE RATE AND SERVICING

A new 250mm diameter sanitary sewer is proposed within Street ‘A’ and Street ‘B’ in order to service the subject lands. Two connections into Dundas Street West are required to adequately service the lands. The new sanitary sewers along Street ‘A’ and Street ‘B’ are independent legs of sewer with no common connection. The Street ‘A’ sanitary sewer leg is designed to service Block 1, Block 2, Block 3 and Block 4. The Street ‘B’ sanitary sewer leg is designed to service Block 5 and Block 6.

A servicing connection is provided to each building and podium, and one to the proposed park (14 connections in total) to meet the City's servicing requirements for this type of built form. However, it should be noted that the number of connections will be re-confirmed at detailed design, once the build-form has been finalized. The exact locations and depths of block level connections will be developed at the detailed design stage. Refer to drawing **PUP-1** for a graphic depiction of the proposed sanitary sewer system including connections into existing municipal services.

The following table provides a summary of equivalent populations per building.

Table 13: Summary of Equivalent Populations

Connection	Units	Residential Population
Building 1A & 1B	557	1008
Building 2	410	740
Building 3	220	403
Building 4	334	609
Building 5	177	335
Building 6	84	153
Building 7	141	257
Parkland	0	4
Totals:	**1,923**	**3,483**

For the purpose of sizing new sewers, an average wastewater flow rate of 450 L/cap/day was used. Populations were calculated for each use and peaked in accordance with City standards. Refer to **Appendix C** for further details as well as a sanitary sewer design sheet.

For the review of the external systems, the above population counts, and 240 L/cap/day for residential use and 250 L/cap/day was used for retail use. Peak flows were determined to be as follows for the external study, refer to **Appendix C** for further details.

Table 14: Peak Flow Summary

Sewer Leg	Res. Equivalent Population	Res. Peak. Flow (L/s)	Retail Average Flow (L/s)	Infiltration [0.26 L/s/ha] (L/s)	Total Peak Flow (L/s)
Street A	2,760	28.20	0.97	0.60	28.20
Street B	723	7.81	0.04	0.52	8.37

3.3 SANITARY CAPACITY ANALYSIS

The exiting site as it is designed today discharges stormwater from the private site storm sewer into the existing 375mm diameter combined sewer in Dundas Street West. The increase in sanitary flows will be offset by a reduction in storm flows to the combined sewer in the post development conditions which is discussed earlier in **Section 2.2 Stormwater Management Criteria** of this report. As discussed earlier in this report, the existing flows to the combined sewer in Dundas Street West is **948 l/s** under a 2yr storm event. The proposed release to the combined sewer in post development conditions is **432 l/s** which includes the net sanitary flow increase of **34 l/s.** The proposed development will result in an overall reduction of **516 l/s** in flows to the combined sewer downstream of the development, which is a significant improvement to the current condition. This will achieve an improvement to the overall combined sewer system. Therefore, it can be concluded that there will be no increase in Combined Sewer Overflow (CSO) and the development is in compliance with MECP Procedure F-5-5. As such, a new sanitary sewer connection to a combined sewer should be permitted.

4.0 GROUNDWATER MANAGEMENT

Discharge of groundwater and foundation drains to municipal sewers must be in accordance with Toronto Municipal Code, Chapter 681 Sewers. The quality limits for discharge in the sewers must satisfy the limits as listed in Table 1 – Limits for Sanitary and Combined Sewer Discharge and/or Table 2 – Limits for Storm Sewer Discharge of Chapter 681.

A Permit to Take Water (PTTW) from the Ontario Ministry of the Environment, Conservation and Parks (MECP) is required for short term water taking over 400 m^3/day. An Environmental Activity and Sector Registry (EASR) is required from the MECP for short term water taking between 50 m^3/day and 400 m^3/day. A PTTW is required for long term water taking from a permanent drainage system greater than 50 m^3/day.

The hydrogeological report, prepared by SLR Consulting (Canada) Ltd., provides estimates of long-term dewatering and construction dewatering (Storage removal and rainfall). The rates are as follows:

Table 15: Groundwater Discharge Summary

Block	Construction Dewatering (m^3/day)			Long-Term Dewatering (m^3/day)
	Storage	Rainfall	Total	
Block 1	1,620	200	1,820	0
Block 2	1,695	145	1,840	0
Block 4	360	45	405	0
Block 5	1,950	245	2,195	0
		Total :	6,260 (72.5 l/s)	0

Based on the City's Foundation Drainage Policy, foundation drain connections are no longer permitted. No allowances were made in the sanitary analysis (Section 3.2) for long term groundwater flows. The construction dewatering rate is more than the post-construction sanitary peak flow rate, however, the blocks will be constructed through several phases and dewatering of each block will not occur simultaneously. Upon establishing a phasing strategy and at detailed design, a separate analysis of the combined sewer capacity will be undertaken to ensure adequate offsetting onsite is achieved to not exceed allowable discharge rates and ensure MECP F-5-5 compliance. If, at the time of detailed phasing design, it is determined controls are required

to limit the discharge of flows from the site, an orifice will be designed and installed on the site storm sewer to ensure the City's design criteria is met.

Groundwater that was sampled as part of the investigation exceeded the City's Table 1 limits for TSS and must be treated accordingly prior to discharge to the 375mm diameter combined sewer in Dundas Street West.

5.0 WATERMAIN SERVICING

5.1 EXISTING WATER SERVICING

Municipal water servicing is adjacent to the subject site as follows:

- A 300mm diameter watermain in Dundas Street West.
- A 200mm diameter watermain in Herman Avenue.
- A 200mm diameter watermain in Ritchie Avenue.

The majority of the existing building on site are serviced via direct connections to the 300mm diameter watermain in Dundas Street West, this includes 2288, 2264, 2252 and 2238 Dundas Street West. However, the existing LCBO/mall/grocery store building located at 2280 Dundas Street West is serviced via a connection to the existing 200mm diameter watermain in Ritchie Avenue.

Two municipal fire hydrants are located along the frontage of the site, connected into the 300mm watermain. Refer to drawing **PUP-1** for information relating to existing water servicing.

5.2 PROPOSED WATER SERVICING STRATEGY

The proposed development will have a new 200mm diameter PVC watermain loop around the proposed municipal roads on site (‘Street A’ and ‘Street B’). The new proposed watermain on site will not have any dead ends, rather it will connect to the existing municipal watermain in three locations. One connection into the 300mm diameter watermain in Dundas Street West at the intersection with ‘Street A’, a second into the 300mm diameter watermain in Dundas Street West at the intersection with ‘Street B’ and a third connection into the existing 200mm diameter municipal watermain in Ritchie Avenue. The public watermain distribution system will be extended into the subject site through the new public roads in order to provide municipal connections to the various blocks and built forms, as required. The number of connections per block will be confirmed during detailed design.

The City of Toronto's Design Criteria states that governing flows shall be the greater of: a) maximum day demand plus fire flow, or b) maximum hour demand. Fire flows for residential areas are not to be less than 4,800 L/min for a 2-hour duration, delivered with a residual pressure of not less than 140 kPa (20 psi). New fire hydrants will be required in accordance with fire protection requirements and City criteria.

Domestic water demands for the various blocks were calculated using City criteria and by calculating equivalent populations by type of housing and land use and applying the multi-unit per capita demand of 190 l/cap/day.

Fire flows were estimated using FUS methodology. The following considerations were made as part of estimating fire flows:

- Fire Resistive type of construction for all buildings, including adequately protected vertical openings.
- Limited Combustible content factor.
- All system type reductions in place.

Table 16: Summary of Water Demands

Building	Daily Water Demand (L/sec)	Max Day Water Demand (L/sec)	Peak Hour Water Demand (L/sec)	Fire Demand Required (L/sec)	Max Day plus Fire Demand (L/sec)
B1	2.28	2.95	5.61	116.67	119.62
B2	1.58	2.06	3.96	83.33	85.39
B3	1.63	1.96	3.10	116.67	118.63
Parkland	0.00	0.01	0.01	0.00	0.01
B4	1.31	1.71	3.29	50.00	51.71
B5	0.73	0.94	1.77	116.67	117.61
B6	0.29	0.37	0.72	66.67	67.04
B7	0.50	0.65	1.25	83.33	83.98

Based on these results, it is anticipated that Building 1 will govern the overall maximum day plus fire flow demand requirement, at **119.62 L/s**. Refer to **Appendix D** for supporting calculations.

In addition to preferable ranges, the City of Toronto Design Criteria sets out watermain pressure requirements and can be summarized as follows:

1. Under normal conditions the maximum static pressure shall not exceed 690 kPa (100 psi).
2. The minimum pressure under any non-fire demand scenario will not be less than 275 kPa (40 psi).
3. Under conditions of simultaneous maximum day and fire flow demands, the pressure shall not drop below 140 kPa (20 psi) at any point in the water system.

A hydrant flow test was completed by Lozzi Aqua Check on May 20, 2022 on the hydrant fronting the subject site, connecting into the existing 300mm diameter watermain in Dundas Street West. The calculated flow at 140 kPa (20psi) of the municipal watermain system was calculated to be 148.72 L/s. Using the information obtained above combined with the site servicing and grading design, a water model was prepared to determine that the existing water distribution system can support the proposed development. Refer to **Section 5.3** below for detailed water modeling parameters and results.

5.3 PROPOSED WATER MODELLING

The proposed water distribution system within the municipal roads on site ('Street A' and 'Street B') was modelled using the EPANET hydraulic modelling program. The program was used to model the domestic demands as well as fire flow scenarios.

Boundary conditions at the two connections on Dundas Street West were established based on the conducted hydrant flow testing (refer to Hydrant Fire Flow Testing Results calculation sheet in **Appendix D**). Boundary conditions at the Ritchie Avenue connection were simulated as a dead end due to unavailability of hydrant flow testing data at this location at the time of preparation of this report. The results of the EPANET modelling are provided in **Appendix D** and summarized in **Tables 17 and 18**.

Table 17: Residual Pressures During Non-Fire Flow Scenarios

Scenario	Lowest Pressure			Satisfies Pressure Requirements?
	Pressure (m H_2O)	Pressure (psi)	Pressure (kPa)	
Max. Day	50.29	72	493	Yes
Peak Hour	49.32	70	484	Yes

Table 18: Residual Pressures During Fire Flow Scenarios

Fire Flow at Node	Max. Velocity (m/s)	Lowest Pressure			Satisfies Fire Flow Requirements?
		Pressure (m H_2O)	Pressure (psi)	Pressure (kPa)	
B1	2.53	34.69	49	340	Yes
B2	1.69	38.26	54	375	Yes
B3	2.66	36.71	52	360	Yes
B4	1.04	43.69	62	428	Yes
B5	2.55	36.78	52	361	Yes
B6	1.32	42.48	60	416	Yes
B7	1.52	39.15	56	384	Yes

From **Table 17**, the lowest pressure in the system during non-fire demand scenarios equals 484 kPa, thus meeting the minimum requirement of 275 kPa. The minimum pressure during fire-flow scenarios is shown in **Table 18** to be 340 kPa which exceeds the minimum 140 kPa requirement. The maximum flow velocity during the fire-flow scenarios equals 2.66 m/s. The maximum velocity is less than the 3 m/s maximum threshold, specified by the City of Toronto. The EPANET output for all modelled scenarios is included in **Appendix D**.

The above analysis demonstrates that the proposed water distribution system meets the City of Toronto requirements pertaining to residual pressures and flow velocities within water distribution systems. A triple connection to the adjacent watermain system will provide the desired level of redundancy. The site can therefore be adequately serviced by the proposed watermain layout. Internal (private) watermains and service connections within the proposed subdivision will be sized during the detail design stage.

6.0 CONCLUSIONS

This report presents a site servicing strategy for the proposed development that addresses the requirements of the applicable design guidelines and provides the basis for detailed servicing design.

We trust this report sufficiently addresses the site servicing requirements in support of the proposed official plan amendment.

Sincerely,
Counterpoint Engineering Inc.





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APPENDIX A

DRAFT PLAN OF SUBDIVISION

PART OF LOTS 50, 51 AND 52 REGISTERED PLAN 287

AND

LOT 27, BLOCK B AND PART OF BLOCK A REGISTERED PLAN 790

CITY OF TORONTO

SCALE 1 : 500

10 5 0 10 20 30 40 50 metres

SPEIGHT, VAN NOSTRAND & GIBSON LIMITED
ONTARIO LAND SURVEYORS
2022

(C) THE REPRODUCTION, ALTERATION OR USE OF THIS PLAN, IN WHOLE OR IN PART, WITHOUT THE EXPRESS PERMISSION OF SPEIGHT, VAN NOSTRAND & GIBSON LIMITED IS STRICTLY PROHIBITED.

NOTES:

SUBJECT PROPERTY

ALL DIMENSIONS ARE IN METERS
ALL AREA MEASUREMENTS ARE COMPUTER GENERATED.
ALL ELEVATIONS REFER TO GEODETIC DATUM
ALL CORNER ROUNDING ARE 6.0 METER RADIUS

ADDITIONAL INFORMATION REQUIRED UNDER SECTION 51(17), OF THE PLANNING ACT, R.S.O., 1990

a) AS SHOWN ON DRAFT PLAN
b) AS SHOWN ON DRAFT PLAN
c) AS SHOWN ON DRAFT PLAN
d) THE LAND IS TO BE USED ACCORDING TO THE SCHEDULE OF LAND USE
e) AS SHOWN ON DRAFT PLAN
f) AS SHOWN ON DRAFT PLAN
g) AS SHOWN ON DRAFT PLAN
h) MUNICIPAL WATER SUPPLY
i) CLAY/LOAM
j) SEE SITE PLAN
k) FULL MUNICIPAL SERVICES TO BE MADE AVAILABLE
l) SUBJECT TO EASEMENTS AS SHOWN ON DRAFT PLAN

LAND USE STATISITCS

BLOCK	LAND USE	AREA (Sq.m.)	AREA (Ha)
1	MIXED USE (220 Units) (170 Parking)	8021.8	0.80
2	MIXED USE (967 Units) (178 Parking)	5624.0	0.56
3	PUBLIC PARK (0 Units) (0 Parking)	4400.2	0.44
4	MIXED USE (338 Units) (0 Parking)	1762.9	0.18
5	MIXED USE (398 Units) (182 Parking)	9740.0	0.97
6	PRIVATE OPEN SPACE (0 Units) (0 Parking)	2306.1	0.23
7	PUBLIC STREET (0 Units) (0 Parking)	11532.0	1.15
8	ROW Widening (0 Units) (0 Parking)	70.90	0.01
9	ROW Widening (0 Units) (0 Parking)	206.40	0.02
10	ROW Widening (0 Units) (0 Parking)	182.0	0.02
11	PRIVATE OPEN SPACE (0 Units) (0 Parking)	95.9	0.01
TOTAL		43942.2	4.39

METRIC

DISTANCES SHOWN ON THIS PLAN ARE IN METRES
AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048.

OWNER'S AUTHORIZATION

CP REIT ONTARIO PROPERTIES LIMITED BEING THE REGISTERED OWNERS THE SUBJECT LANDS HEREBY AUTHORIZE URBAN STRATEGIES INC. TO SUBMIT A DRAFT PLAN OF SUBDIVISION FOR APPROVAL

DATE : JUNE 29th, 2022

SURVEYOR'S CERTIFICATE

I CERTIFY THAT: THE BOUNDARIES OF THE LAND TO BE SUBDIVIDED AND THEIR RELATIONSHIP TO THE ADJACENT LANDS ARE CORRECTLY SHOWN

DATE : JUNE 29th, 2022

D. A. WILTON
ONTARIO LAND SURVEYOR

SPEIGHT, VAN NOSTRAND & GIBSON LIMITED
ONTARIO LAND SURVEYORS
750 OAKDALE ROAD, Units 65 & 66
TORONTO, ONTARIO M3N 2Z4
TEL. 416 749-SVNG(7864) FAX 416 749-7866
E-MAIL: toronto@svng.on.ca

DRAWN : F. P. B.	FILE NAME : A0610067_Draft_condo.dwg
CHECKED :	PLOT SCALE : MET. 1=0.5
JOB No. : 061-0067	PLOTTED :
REF. No. :	UPDATED :

A1 (594x840)

APPENDIX B

Q = 2.78 X A X C X I/1000
C = RUNOFF COEFFICIENT
2 YEAR RAINFALL INTENSITY = 21.8/t^0.78 **(Rows in Blue)**
5 YEAR RAINFALL INTENSITY = 32./t^0.79 **(Rows in Green)**
A = AREA (Hectares)

STORM SEWER DESIGN SHEET
2280 DUNDAS STREET WEST
CITY OF TORONTO, EAST YORK DISTRICT

Project: 2280 Dundas St. W.
Project No: 22027
Date: 30-Jun-22
Designed by: GD
Checked by: JY

STREET	MANHOLE FROM	MANHOLE TO	AREA (INCREMENT) C	A (ha)	CA	TOTAL CA	FLOW TIME (min) TO SECTION	FLOW TIME (min) IN SECTION	I (mm/hr)	TOTAL Q (l/s)	LENGTH (m)	SLOPE S%	D (mm)	TYPE OF PIPE	ROUGH. COEFF.	Q FULL (l/s)	V FULL (m/s)	V ACTUAL (m/s)	CAPACITY (%)
2 YEAR RAINFALL INTENSITY = 21.8/t^0.78																			
STREET A - 1	MH17	MH16	0.74	0.24	0.17	0.17	10.00	0.46	88.19	41.6	24.0	0.30	375	PVC	0.013	96	0.87	0.84	43.37
STREET A - 2	MH16	MH8	0.74	0.10	0.07	0.24	10.46	0.84	85.15	56.8	49.4	0.30	450	CONC	0.013	156	0.98	0.90	36.35
STREET A - 3	MH7	MH8	0.74	0.27	0.20	0.20	10.00	0.40	88.19	49.0	68.7	1.00	900	CONC	0.013	1810	2.85	1.21	2.71
STREET B	MH8	MH9	0.74	0.00	0.00	0.44	10.46	0.22	85.15	104.1	20.6	0.30	900	CONC	0.013	992	1.56	0.99	10.50
STREET B - 4	MH9	MH10	0.74	0.07	0.05	0.49	10.68	0.20	83.78	114.0	18.9	0.30	900	CONC	0.013	992	1.56	1.01	11.50
BLOCK 4	MH10-10	MH10	0.50	0.18	0.09	0.09	10.00	0.06	88.19	22.0	8.4	2.00	375	PVC	0.013	248	2.25	1.38	8.89
STREET B	MH10	MH11	0.74	0.00	0.00	0.58	10.88	0.43	82.56	133.0	42.7	0.30	975	CONC	0.013	1227	1.64	1.07	10.84
STREET B - 5	MH11	MH12	0.74	0.22	0.16	0.74	11.32	0.65	80.09	164.6	63.9	0.30	975	CONC	0.013	1227	1.64	1.13	13.41
BLOCK 3 (PARK)	MH12-12	MH12	0.25	0.44	0.11	0.11	10.00	0.07	88.19	26.9	8.8	2.00	375	PVC	0.013	248	2.25	1.46	10.87
STREET B - 6	MH12	MH13	0.74	0.11	0.08	0.93	11.96	0.79	76.68	198.1	90.0	0.30	1200	CONC	0.013	2135	1.89	1.16	9.28
BLOCK 2	MH13-13	MH13	0.50	0.56	0.28	0.28	10.00	0.06	88.19	68.6	8.3	2.00	375	PVC	0.013	248	2.25	1.89	27.67
BLOCK 5	MH13-13-13	MH13	0.50	0.97	0.49	0.49	10.00	0.09	88.19	120.0	11.9	2.00	375	PVC	0.013	248	2.25	2.23	48.41
STREET B - 7	MH13	MH14(CNTRL MH)	0.74	0.15	0.11	1.81	12.76	0.06	72.93	366.7	11.9	0.80	1200	CONC	0.013	3487	3.08	1.95	10.52
STREET B*	MH14(CNTRL MH	OGS	0.74	0.00	0.00	1.81	12.82	0.02	72.65	313.2	2.2	1.00	525	CONC	0.013	430	1.99	2.16	72.83
CONNECTION*	OGS	MH15	0.74	0.00	0.00	1.81	12.84	0.08	72.56	313.2	12.0	2.00	450	CONC	0.013	403	2.54	2.80	77.68
BLOCK 1B	MH6-6	MH6	0.50	0.39	0.19	0.19	10.00	0.07	88.19	46.5	8.9	2.00	375	PVC	0.013	248	2.25	1.71	18.77
STREET A - 8	MH6	MH5	0.74	0.15	0.11	0.30	10.07	0.79	87.74	73.1	90.0	0.50	825	CONC	0.013	1015	1.90	1.10	7.20
STREET A	MH5	MH4	0.74	0.00	0.00	0.30	10.86	0.12	82.72	68.9	13.4	0.50	825	CONC	0.013	1015	1.90	1.06	6.79
STREET A	MH4	MH3	0.74	0.00	0.00	0.30	10.97	0.27	82.02	68.4	34.8	0.50	975	CONC	0.013	1585	2.12	1.05	4.31
BLOCK 1A	MH3-3	MH3	0.50	0.41	0.21	0.21	10.00	0.08	88.19	51.4	10.6	2.00	375	PVC	0.013	248	2.25	1.74	20.75
STREET A - 9	MH3	MH2 (CNTRL MH)	0.74	0.30	0.22	0.73	11.25	0.03	80.47	163.2	10.0	3.40	975	CONC	0.013	4132	5.53	2.62	3.95
STREET A*	MH2 (CNTRL MH)	OGS	0.74	0.00	0.00	0.73	11.28	0.02	80.30	118.3	2.1	0.90	375	PVC	0.013	166	1.51	1.63	71.12
CONNECTION*	OGS	MH1	0.74	0.00	0.00	0.73	11.30	0.07	80.17	118.3	11.9	2.90	375	PVC	0.013	299	2.70	2.53	39.62
*Controlled flow discharged through orifice in control manhole																			

SWM DESIGN CALCULATIONS
Pre-development Water Balance Calculation Results Summary (Lump)

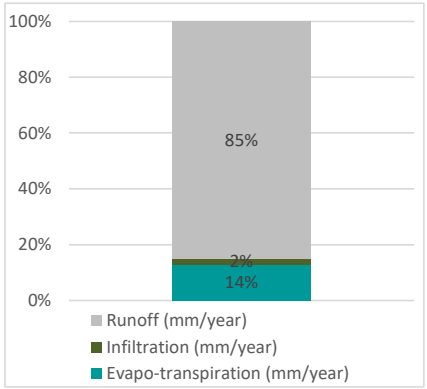
Project Name: 2280 Dundas Street
Municipality: City of Toronto
Project No.: 22027
Date: 28-Jun-22

Prepared by: Y.K.
Checked by: R.K
Last Revised: 30-Jun-22

Soil Type **Silty Loam**

Rainfall (mm) **840**

Land use	Area (ha)	Area (%)	Evapo-transpiration (mm/year)	Infiltration (mm/year)	Runoff (mm/year)	Runoff (%)
Landscape	0.36	8%	39	13	16	24%
Roof	1.46	33%	27	0	252	90%
Paved	2.58	59%	48	0	444	90%
Subtotal / Average	**4.40**	**100%**	**114**	**13**	**712**	**85%**



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SWM DESIGN CALCULATIONS
Water Balance Analysis Block 1

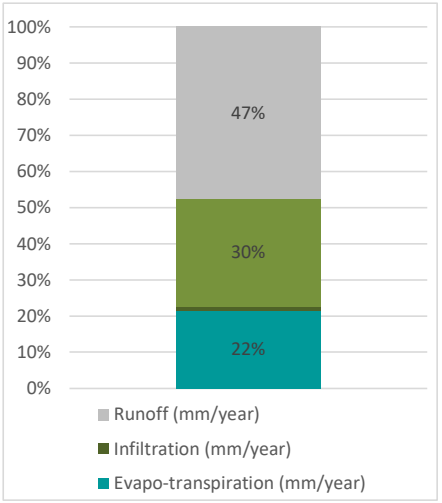
Project Name: 2280 Dundas Street
Municipality: City of Toronto
Project No.: 22027
Date: 28-Jun-22

Prepared by: Y.K.
Checked by: R.K
Last Revised: 30-Jun-22

Soil Type **Silty Loam**

Rainfall (mm) **840**

Land use	Area (ha)	Area (%)	Evapo-transpiration (mm/year)	Infiltration (mm/year)	Runoff (mm/year)	Runoff (%)
Landscape	0.0400	5%	24	8	10	24%
Green Roof	0.2000	25%	105	0	105	50%
Roof	0.2000	25%	21	0	190	90%
Paved	0.3600	45%	37	0	341	90%
Subtotal / Average	0.8000	100%	186	8	646	77%
6 mm Rainwater Harvesting Application	0.0000	0%	0	* 251	(-251)	0%
Total	0.8000	100%	186	259	395	47%



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SWM DESIGN CALCULATIONS
Water Balance Analysis Block 2

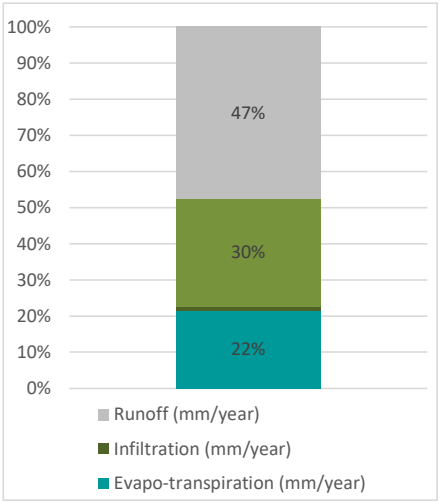
Project Name: 2280 Dundas Street
Municipality: City of Toronto
Project No.: 22027
Date: 28-Jun-22

Prepared by: Y.K.
Checked by: R.K
Last Revised: 30-Jun-22

Soil Type **Silty Loam**

Rainfall (mm) **840**

Land use	Area (ha)	Area (%)	Evapo-transpiration (mm/year)	Infiltration (mm/year)	Runoff (mm/year)	Runoff (%)
Landscape	0.0280	5%	24	8	10	24%
Green Roof	0.1400	25%	105	0	105	50%
Roof	0.1400	25%	21	0	190	90%
Paved	0.2520	45%	37	0	341	90%
Subtotal / Average	0.5600	100%	186	8	646	77%
6 mm Rainwater Harvesting Application	0.0000	0%	0	* 251	(-251)	0%
Total	0.5600	100%	186	259	395	47%



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SWM DESIGN CALCULATIONS
Water Balance Analysis Block 3 Open Space

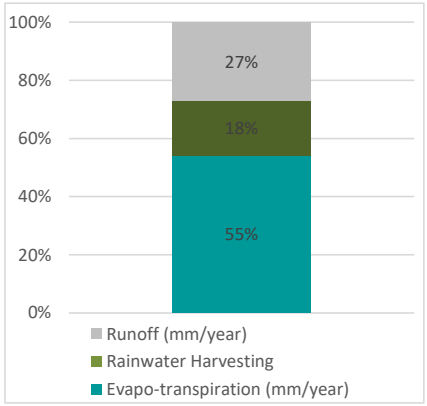
Project Name: 2280 Dundas Street
Municipality: City of Toronto
Project No.: 22027
Date: 28-Jun-22

Prepared by: Y.K.
Checked by: R.K
Last Revised: 30-Jun-22

Soil Type **Silty Loam**

Rainfall (mm) **840**

Land use	Area (ha)	Area (%)	Evapo-transpiration (mm/year)	Infiltration (mm/year)	Runoff (mm/year)	Runoff (%)
Landscape	0.4180	95%	455	155	188	24%
Green Roof	0.0000	0%	0	0	0	-
Roof	0.0000	0%	0	0	0	-
Paved	0.0220	5%	4	0	38	90%
Subtotal / Average	0.4400	100%	459	155	226	27%



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SWM DESIGN CALCULATIONS
Water Balance Analysis Block 4

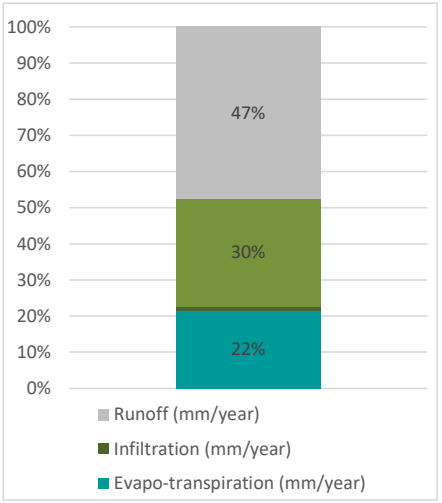
Project Name: 2280 Dundas Street
Municipality: City of Toronto
Project No.: 22027
Date: 28-Jun-22

Prepared by: Y.K.
Checked by: R.K
Last Revised: 30-Jun-22

Soil Type **Silty Loam**

Rainfall (mm) **840**

Land use	Area (ha)	Area (%)	Evapo-transpiration (mm/year)	Infiltration (mm/year)	Runoff (mm/year)	Runoff (%)
Landscape	0.0090	5%	24	8	10	24%
Green Roof	0.0450	25%	105	0	105	50%
Roof	0.0450	25%	21	0	190	90%
Paved	0.0810	45%	37	0	341	90%
Subtotal / Average	0.1800	100%	186	8	646	77%
6 mm Rainwater Harvesting Application	0.0000	0%	0	* 251	(-251)	0%
Total	0.1800	100%	186	259	395	47%



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SWM DESIGN CALCULATIONS
Water Balance Analysis Block 5

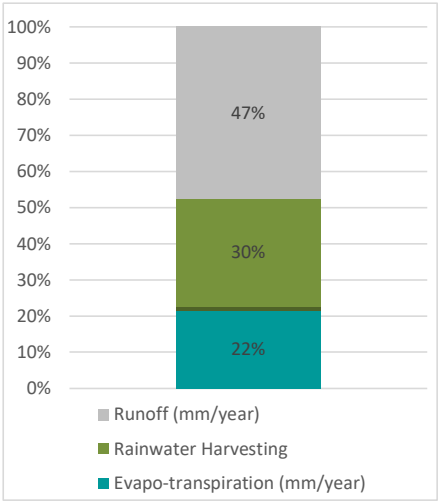
Project Name: 2280 Dundas Street
Municipality: City of Toronto
Project No.: 22027
Date: 28-Jun-22

Prepared by: Y.K.
Checked by: R.K
Last Revised: 30-Jun-22

Soil Type **Silty Loam**

Rainfall (mm) **840**

Land use	Area (ha)	Area (%)	Evapo-transpiration (mm/year)	Infiltration (mm/year)	Runoff (mm/year)	Runoff (%)
Landscape	0.0485	5%	24	8	10	24%
Green Roof	0.2425	25%	105	0	105	50%
Roof	0.2425	25%	21	0	190	90%
Paved	0.4365	45%	37	0	341	90%
Subtotal / Average	0.9700	100%	186	8	646	77%
6 mm Rainwater Harvesting Application	0.0000	0%	0	* 251	(-251)	0%
Total	0.9700	100%	186	259	395	47%



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SWM DESIGN CALCULATIONS
Water Balance Analysis Block 6 Open Space

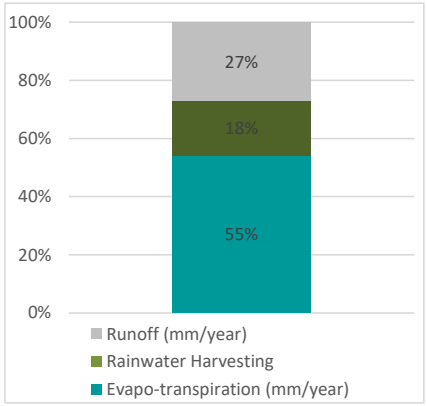
Project Name: 2280 Dundas Street
Municipality: City of Toronto
Project No.: 22027
Date: 28-Jun-22

Prepared by: Y.K.
Checked by: R.K
Last Revised: 30-Jun-22

Soil Type **Silty Loam**

Rainfall (mm) **840**

Land use	Area (ha)	Area (%)	Evapo-transpiration (mm/year)	Infiltration (mm/year)	Runoff (mm/year)	Runoff (%)
Landscape	0.2185	95%	455	155	188	24%
Green Roof	0.0000	0%	0	0	0	-
Roof	0.0000	0%	0	0	0	-
Paved	0.0115	5%	4	0	38	90%
Subtotal / Average	**0.2300**	**100%**	**459**	**155**	**226**	**27%**



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SWM DESIGN CALCULATIONS
Water Balance Analysis Right of Ways All (ROW-A, B)

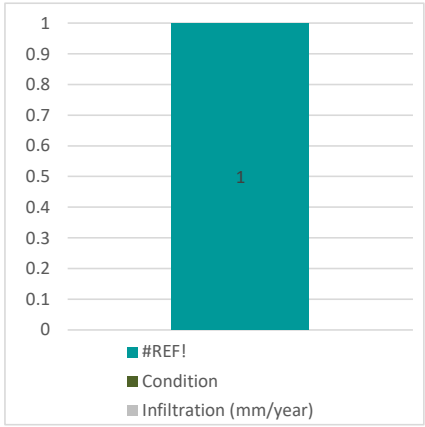
Project Name: 2280 Dundas Street
Municipality: City of Toronto
Project No.: 22027
Date: 28-Jun-22

Prepared by: Y.K.
Checked by: R.K
Last Revised: 30-Jun-22

Soil Type **Silty Loam**

Rainfall (mm) **840**

Land use	Area (ha)	Area (%)	Evapo-transpiration (mm/year)	Infiltration (mm/year)	Runoff (mm/year)	Runoff (%)
Landscape	0.3450	30%	144	49	60	24%
Side-walk to Landscape	0.1725	15%	63	0	63	50%
Roof	0.0000	0%	0	0	0	-
Paved	0.6325	55%	45	0	417	90%
Subtotal / Average	**1.1500**	**100%**	**252**	**49**	**539**	**64%**



Note: Imperviousness Asumed to be 90% in Street Right-of-Ways and 70% in Future Proposed Street Areas.

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SWM DESIGN CALCULATIONS
Table 5: Water Balance Calculation Results Summary

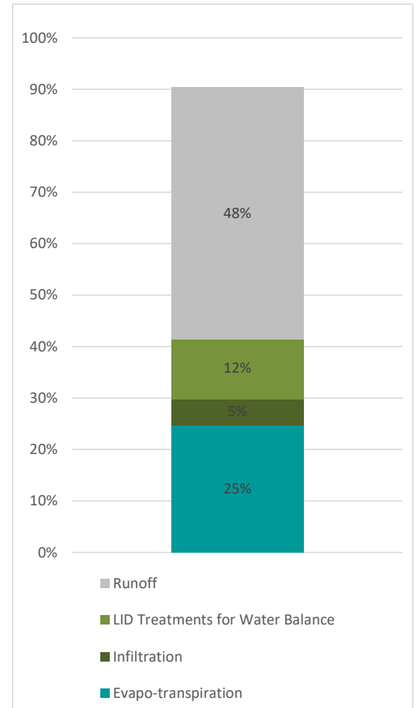
Project Name: 2280 Dundas Street
Municipality: City of Toronto
Project No.: 22027
Date: 28-Jun-22

Prepared by: Y.K.
Checked by: R.K
Last Revised: 30-Jun-22

Soil Type **Silty Loam**
Rainfall (mm) **840**

Block	Area (ha)	Per Individual Site				Per 4.33 ha Entire Site			
		Evapo-transpiration	Infiltration	LID Treatments for Water Balance	Runoff	Evapo-transpiration	Infiltration	LID Treatments for Water Balance	Runoff
Block 1	0.8000	22%	1%	30%	47%	4.1%	0.2%	5.5%	8.7%
Block 2	0.5600	22%	1%	30%	47%	2.9%	0.1%	3.9%	6.1%
Block 3 (Open Space)	0.4400	55%	18%	0%	27%	5.6%	1.9%	0.0%	2.7%
Block 4	0.1800	22%	1%	30%	47%	0.9%	0.0%	1.2%	2.0%
Block 5	0.9700	22%	1%	30%	47%	0.9%	0.0%	1.2%	10.5%
Block 6 (Open Space)	0.2300	55%	18%	0%	27%	2.9%	1.0%	0.0%	1.4%
Right Of Ways (A, B) Excluding External Areas	1.1500	30%	6%	0%	64%	8.0%	1.5%	0.0%	17.1%
Sub-Total	**4.3300**					**25%**	**5%**	**12%**	**48%**

* Therefore, in overall the site is able to retain events up to 5.0mm, which is equal to 50% of annual rainfall depth..



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SWM DESIGN CALCULATIONS

Table 5: Pre-development TSS Removal Calculation Results Summary (using New Jersey Stormwater Best Management Practices Manual , Chapter 4 - TSS Removal Rates for BMP's in Series)

Project Name: 2280 Dundas Street
Municipality: City of Toronto
Project No.: 22027
Date: 28-Jun-22

Prepared by: Y.K.
Last Revised: 30-Jun-22

Soil Type **Silty Loam**
Rainfall (mm) **840**

TSS Treatment Train Approach

Block	Area (ha)	Stage 1. Land Use (% of area) for TSS Removal Credits							Stage2. Block Level Additional TSS Removal Features				Complete TSS Removal Individual	TSS Removal Credit Per 4.4ha Entire Site
		Landscape (80% TSS Removal Credit)	Green Roof (80% TSS Removal Credit)	Roof (80% TSS Removal Credit)	Roof/Paved to Landscape (80% TSS Removal Credit)	Paved (0% TSS Removal Credit)	Total On-site TSS Romoval Credit	Remained Untreated TSS	OGS 50% TSS Removal Credit	Isolator Row / Infiltration 70% TSS Removal Credit	Total Block Level TSS Removal	Remained Untreated TSS		
Pre-development	4.400	8%	0%	33%	0%	59%	33%	67%						
Sub-Total	**4.40**													**33%**

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SWM DESIGN CALCULATIONS
Table 7: Post-development Water Quality/TSS Removal Calculation Results Summary (using New Jersey Stormwater Best Management Practices Manual , Chapter 4 - TSS Removal Rates for BMP's in Series)

Project Name: 2280 Dundas Street
Municipality: City of Toronto
Project No.: 22027
Date: 28-Jun-22

Prepared by: Y.K.
Checked by: R.K.
Last Revised: 30-Jun-22

Soil Type **Silty Loam**
Rainfall (mm) **840**

TSS Removal Treatment Train Approach

Block	Area (ha)	Stage 1. Land Use (% of area) for TSS Removal Credits							Stage2. Block Level Additional TSS Removal Features						Complete TSS Removal Individual	TSS Removal Credit Per 4.33ha Entire Site
		Landscape (80% TSS Removal Credit)	Green Roof (80% TSS Removal Credit)	Roof (80% TSS Removal Credit)	Roof/Paved to Landscape (80% TSS Removal Credit)	% Paved Area (0% TSS Removal Credit)	Total On-site TSS Removal Credit *	Remained Untreated TSS	* 6 mm Runoff Retention - Minimum 50% TSS Removal Credit	Total Block Level TSS Removal	Remained Untreated TSS	OGS 50% TSS Removal Credit	Total TSS Removal for Blocks	Remained Untreated TSS		
Block 1	0.8000	5%	25%	25%	0%	45%	44%	56%	50%	72%	28%	50%	86%	14%	86%	15.9%
Block 2	0.5600	5%	25%	25%	0%	45%	44%	56%	50%	72%	28%	50%	86%	14%	86%	11.1%
Block 3 (Open Space)	0.4400	95%	0%	0%	0%	5%	76%	24%	-	76%	24%	50%	88%	12%	88%	8.9%
Block 4	0.1800	5%	25%	25%	0%	45%	44%	56%	50%	72%	28%	50%	86%	14%	86%	3.6%
Block 5	0.9700	5%	25%	25%	0%	45%	44%	56%	50%	72%	28%	50%	86%	14%	86%	19.3%
Block 6 (Open Space)	0.2300	95%	0%	0%	0%	5%	76%	24%	-	76%	24%	50%	88%	12%	88%	4.7%
Right Of Ways (A, B) Excluding External Areas	1.1500	30%	0%	0%	15%	55%	36%	64%	50%	68%	32%	50%	84%	16%	84%	22.3%
Sub-Total	**4.3300**															**86%**

* Water Balance Cisterns TSS credit based on 5mm rain event retention, which is equivalent to 50% of annual rainfall depth.
**TSS treatment of last OGS unitS, for ROW's, for upstream released flows from blocks has been ignored in this calculations for a conservative approach.

Reference: **New Jersey Stormwater Best Management Practices Manual**
Chapter 4 - TSS Removal Rates for BMP's in Series

Z:\Shared\Projects\2022\22027_Choice_2280 Dundas Street West\Design\Design\Stormwater Management\[22027_Water Quantity Calculation Results Summary.xlsx]Land Use Matrix Actual Imp

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SWM DESIGN CALCULATIONS
2-Year @RC=0.5 Flow Rate Calculations - Block 1 Controlled

Project Name: 2280 Dundas Street
Municipality: City of Toronto
Project No.: 22027
Date: 30-Jun-22

Prepared by: Y.K
Checked by: R.K.
Last Revised: 30-Jun-22

Rainfall Data

Location:	City of Toronto	a	21.8
Event	2-year	b	0
		c	0.78

Site Data

Area (ha)	0.8
Runoff Coefficient	0.5
AC	0.40
Tc (min)	10
Rainfall Intensity (mm/hr)	88
Rational Flow Rate (l/s)	98

The Rational Equation:

$$Q = \frac{(C)(i)(A)}{360}$$

where,

Q = the design flow (m^3/s)
C = the site specific runoff coefficient
A = the drainage area (ha)
i = rainfall intensity (mm/hr)

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SWM DESIGN CALCULATIONS
2-Year @RC=0.5 Flow Rate Calculations - Block 2 Controlled

Project Name: 2280 Dundas Street
Municipality: City of Toronto
Project No.: 22027
Date: 30-Jun-22

Prepared by: Y.K
Checked by: R.K.
Last Revised: 30-Jun-22

Rainfall Data

Location:	City of Toronto	a	21.8
Event	2-year	b	0
		c	0.78

Site Data

Area (ha)	0.56
Runoff Coefficient	0.5
AC	0.28
Tc (min)	10
Rainfall Intensity (mm/hr)	88
Rational Flow Rate (l/s)	69

The Rational Equation:

$$Q = \frac{(C)(i)(A)}{360}$$

where,

Q = the design flow (m^3/s)
C = the site specific runoff coefficient
A = the drainage area (ha)
i = rainfall intensity (mm/hr)

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SWM DESIGN CALCULATIONS
2-Year @RC=0.5 Flow Rate Calculations - Block 3 Open Space

Project Name: 2280 Dundas Street
Municipality: City of Toronto
Project No.: 22027
Date: 30-Jun-22

Prepared by: Y.K
Checked by: R.K.
Last Revised: 30-Jun-22

Rainfall Data

Location:	City of Toronto	a	21.8
Event	2-year	b	0
		c	0.78

Site Data

Area (ha)	0.44
Runoff Coefficient	0.5
AC	0.22
Tc (min)	10
Rainfall Intensity (mm/hr)	88
Rational Flow Rate (l/s)	54

The Rational Equation:

$$Q = \frac{(C)(i)(A)}{360}$$

where,

Q = the design flow (m^3/s)
C = the site specific runoff coefficient
A = the drainage area (ha)
i = rainfall intensity (mm/hr)

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SWM DESIGN CALCULATIONS
2-Year @RC=0.5 Flow Rate Calculations - Block 4 Controlled

Project Name: 2280 Dundas Street
Municipality: City of Toronto
Project No.: 22027
Date: 30-Jun-22

Prepared by: Y.K
Checked by: R.K.
Last Revised: 30-Jun-22

Rainfall Data

Location:	City of Toronto	a	21.8
Event	2-year	b	0
		c	0.78

Site Data

Area (ha)	0.18
Runoff Coefficient	0.5
AC	0.09
Tc (min)	10
Rainfall Intensity (mm/hr)	88
Rational Flow Rate (l/s)	22

The Rational Equation:

$$Q = \frac{(C)(i)(A)}{360}$$

where,

Q = the design flow (m^3/s)
C = the site specific runoff coefficient
A = the drainage area (ha)
i = rainfall intensity (mm/hr)

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SWM DESIGN CALCULATIONS
2-Year @RC=0.5 Flow Rate Calculations - Block 5 Controlled

Project Name: 2280 Dundas Street
Municipality: City of Toronto
Project No.: 22027
Date: 30-Jun-22

Prepared by: Y.K
Checked by: R.K.
Last Revised: 30-Jun-22

Rainfall Data

Location:	City of Toronto	a	21.8
Event	2-year	b	0
		c	0.78

Site Data

Area (ha)	0.97
Runoff Coefficient	0.5
AC	0.49
Tc (min)	10
Rainfall Intensity (mm/hr)	88
Rational Flow Rate (l/s)	119

The Rational Equation:

$$Q = \frac{(C)(i)(A)}{360}$$

where,

Q = the design flow (m^3/s)
C = the site specific runoff coefficient
A = the drainage area (ha)
i = rainfall intensity (mm/hr)

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SWM DESIGN CALCULATIONS
2-Year @RC=0.5 Flow Rate Calculations - Block 6 Open Space

Project Name: 2280 Dundas Street
Municipality: City of Toronto
Project No.: 22027
Date: 30-Jun-22

Prepared by: Y.K
Checked by: R.K.
Last Revised: 30-Jun-22

Rainfall Data

Location:	City of Toronto	a	21.8
Event	2-year	b	0
		c	0.78

Site Data

Area (ha)	0.44
Runoff Coefficient	0.5
AC	0.22
Tc (min)	10
Rainfall Intensity (mm/hr)	88
Rational Flow Rate (l/s)	54

The Rational Equation:

$$Q = \frac{(C)(i)(A)}{360}$$

where,

Q = the design flow (m^3/s)
C = the site specific runoff coefficient
A = the drainage area (ha)
i = rainfall intensity (mm/hr)

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SWM DESIGN CALCULATIONS
2-Year@RC=0.5 Flow Rate Calc (to 450mm stm Dundas St. W Ex.MH1)

Project Name: 2280 Dundas Street
Municipality: City of Toronto
Project No.: 22027
Date: 30-Jun-22

Prepared by: Y.K
Checked by: R.K.
Last Revised: 30-Jun-22

Rainfall Data

Location:	City of Toronto	a	21.8
Event	2-year	b	0
		c	0.78

Site Data

Area (ha)	0.21
Runoff Coefficient	0.5
AC	0.11
Tc (min)	10
Rainfall Intensity (mm/hr)	88
Rational Flow Rate (l/s)	26

The Rational Equation:

$$Q = \frac{(C)(i)(A)}{360}$$

where,

Q = the design flow (m^3/s)
C = the site specific runoff coefficient
A = the drainage area (ha)
i = rainfall intensity (mm/hr)

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SWM DESIGN CALCULATIONS
2-Year@RC=0.5 Flow Rate Calc (To Combined sewer on Dundas St. W)

Project Name: 2280 Dundas Street
Municipality: City of Toronto
Project No.: 22027
Date: 30-Jun-22

Prepared by: Y.K
Checked by: R.K.
Last Revised: 30-Jun-22

Rainfall Data

Location:	City of Toronto	a	21.8
Event	2-year	b	0
		c	0.78

Site Data

Area (ha)	3.8
Runoff Coefficient	0.5
AC	1.90
Tc (min)	10
Rainfall Intensity (mm/hr)	88
Rational Flow Rate (l/s)	466
Net Sanitary Flows (l/s)	34.3
Site Release Rate (l/s)	431.5

The Rational Equation:

$$Q = \frac{(C)(i)(A)}{360}$$

where,

Q = the design flow (m^3/s)
C = the site specific runoff coefficient
A = the drainage area (ha)
i = rainfall intensity (mm/hr)

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SWM DESIGN CALCULATIONS
2-Year@RC=0.5 Flow Rate Calculations (To Combined sewer)

Project Name: 2280 Dundas Street
Municipality: City of Toronto
Project No.: 22027
Date: 30-Jun-22

Prepared by: Y.K
Checked by: R.K.
Last Revised: 30-Jun-22

		Post-development to Combined Sewer		
	Pre-dev to Combined Sewer	Street A	Street B	Total
Area (ha)	3.8	1.25	3.31	4.56
Sanitary Flow Rate (l/s)	2.3	28.2	8.37	36.57
Target Release Rate (l/s)	**431.5**	**118.3**	**313.2**	**431.5**

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SWM DESIGN CALCULATIONS
2-Year@RC=0.5 Flow Rate Calc (Uncontrolled to Herman Ave. ROW)

Project Name: 2280 Dundas Street
Municipality: City of Toronto
Project No.: 22027
Date: 30-Jun-22

Prepared by: Y.K
Checked by: R.K.
Last Revised: 30-Jun-22

Rainfall Data

Location:	City of Toronto	a	21.8
Event	2-year	b	0
		c	0.78

Site Data

Area (ha)	0.03
Runoff Coefficient	0.5
AC	0.02
Tc (min)	10
Rainfall Intensity (mm/hr)	88
Rational Flow Rate (l/s)	4

The Rational Equation:

$$Q = \frac{(C)(i)(A)}{360}$$

where,

Q = the design flow (m^3/s)
C = the site specific runoff coefficient
A = the drainage area (ha)
i = rainfall intensity (mm/hr)

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SWM DESIGN CALCULATIONS
2-Year@RC=0.5 Flow Rate Calculations (Uncontrolled to Rail Corridor)

Project Name: 2280 Dundas Street
Municipality: City of Toronto
Project No.: 22027
Date: 30-Jun-22

Prepared by: Y.K
Checked by: R.K.
Last Revised: 30-Jun-22

Rainfall Data

Location:	City of Toronto	a	21.8
Event	2-year	b	0
		c	0.78

Site Data

Area (ha)	0.36
Runoff Coefficient	0.5
AC	0.18
Tc (min)	10
Rainfall Intensity (mm/hr)	88
Rational Flow Rate (l/s)	44

The Rational Equation:

$$Q = \frac{(C)(i)(A)}{360}$$

where,

Q = the design flow (m^3/s)
C = the site specific runoff coefficient
A = the drainage area (ha)
i = rainfall intensity (mm/hr)

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SWM DESIGN CALCULATIONS
2-Year @RC=0.5 Flow Rate Calculations (Entire Site Area)

Project Name: 2280 Dundas Street
Municipality: City of Toronto
Project No.: 22027
Date: 30-Jun-22

Prepared by: Y.K
Checked by: R.K.
Last Revised: 30-Jun-22

Rainfall Data

Location:	City of Toronto	a	21.8
Event	2-year	b	0
		c	0.78

Site Data

Area (ha)	4.4
Runoff Coefficient	0.5
AC	2.20
Tc (min)	10
Rainfall Intensity (mm/hr)	88
Rational Flow Rate (l/s)	539
Sanitary Flows (l/s)	34
Site Release Rate (l/s)	505

The Rational Equation:

$$Q = \frac{(C)(i)(A)}{360}$$

where,

Q = the design flow (m^3/s)
C = the site specific runoff coefficient
A = the drainage area (ha)
i = rainfall intensity (mm/hr)

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SWM DESIGN CALCULATIONS
VO2 Model Characteristics (CN Determination)

Project Name: 2280 Dundas Street
Municipality: City of Toronto
Project No.: 22027
Date: 30-Jun-22

Prepared by: Y.K.
Checked by: R.K.
Last Revised: 30-Jun-22

Proposed Blocks

SCS Curve Number (CN) Determination

TABLE OF CURVE NUMBERS (CN)								
Land Use	Hydrologic Soil Type							
	A	AB	B	BC	C	CD	D	
Meadow	50	54	58	64.5	71	74.5	78	
Woodlot	50	55.3	60.5	67	73.5	76.8	80	
Long Grass	55	60	65	72	79	81.5	84	
Lawns	60	65.5	70	77	83	86	89	Pre/Post-Development
Pasture/Range	58	61.5	65	70.5	76	78.5	81	
Crop	66	70	74	78	82	84	86	
Fallow (Bare)	77	82	86	89	91	93	94	
Built-up	60	65.5	71	77	83	86	90	

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SWM DESIGN CALCULATIONS
VO2 Model Characteristics CN* Calculations

Project Name: 2280 Dundas Street
Municipality: City of Toronto
Project No.: 22027
Date: 30-Jun-22

Prepared by: R.K.
Last Revised: 30-Jun-22

Pre-development Conditions	
Estimation of CN* based on API	
CN_{AMCII} =	**86**
CN_{AMCIII} =	94
S =	16.5 mm
Ia =	3.30 mm
Total 100yr Rainfall, P =	99 mm
Q =	81.74 mm
Standard Ia =	5 mm
S* =	14.2 mm
CN^*_{AMCIII} =	95
CN^*_{AMCII} =	**87**

Post-development Conditions	
Estimation of CN* based on API	
CN_{AMCII} =	**86**
CN_{AMCIII} =	94
S =	16.5 mm
Ia =	3.30 mm
Total 100yr Rainfall, P =	99 mm
Q =	81.74 mm
Standard Ia =	5 mm
S* =	14.2 mm
CN^*_{AMCIII} =	95
CN^*_{AMCII} =	**87**

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SWM DESIGN CALCULATIONS

Table 5: Pre-development TSS Removal Calculation Results Summary (using New Jersey Stormwater Best Management Practices Manual , Chapter 4 - TSS Removal Rates for BMP's in Series)

Project Name: 2280 Dundas Street
Municipality: City of Toronto
Project No.: 22027
Date: 28-Jun-22

Prepared by: Y.K.
Last Revised: 30-Jun-22

Soil Type **Silty Loam**
Rainfall (mm) **840**

TSS Treatment Train Approach

Block	Area (ha)	Stage 1. Land Use (% of area) for TSS Removal Credits							Stage2. Block Level Additional TSS Removal Features				Complete TSS Removal Individual	TSS Removal Credit Per 4.4ha Entire Site
		Landscape (80% TSS Removal Credit)	Green Roof (80% TSS Removal Credit)	Roof (80% TSS Removal Credit)	Roof/Paved to Landscape (80% TSS Removal Credit)	Paved (0% TSS Removal Credit)	Total On-site TSS Romoval Credit	Remained Untreated TSS	OGS 50% TSS Removal Credit	Isolator Row / Infiltration 70% TSS Removal Credit	Total Block Level TSS Removal	Remained Untreated TSS		
Pre-development	4.400	8%	0%	33%	0%	59%	33%	67%						
Sub-Total	**4.40**													**33%**

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SWM DESIGN CALCULATIONS
Table 7: Post-development Water Quality/TSS Removal Calculation Results Summary (using New Jersey Stormwater Best Management Practices Manual , Chapter 4 - TSS Removal Rates for BMP's in Series)

Project Name: 2280 Dundas Street
Municipality: City of Toronto
Project No.: 22027
Date: 28-Jun-22

Prepared by: Y.K.
Checked by: R.K.
Last Revised: 30-Jun-22

Soil Type **Silty Loam**
Rainfall (mm) **840**

TSS Removal Treatment Train Approach

Block	Area (ha)	Stage 1. Land Use (% of area) for TSS Removal Credits							Stage2. Block Level Additional TSS Removal Features						Complete TSS Removal Individual	TSS Removal Credit Per 4.33ha Entire Site
		Landscape (80% TSS Removal Credit)	Green Roof (80% TSS Removal Credit)	Roof (80% TSS Removal Credit)	Roof/Paved to Landscape (80% TSS Removal Credit)	% Paved Area (0% TSS Removal Credit)	Total On-site TSS Removal Credit *	Remained Untreated TSS	* 6 mm Runoff Retention - Minimum 50% TSS Removal Credit	Total Block Level TSS Removal	Remained Untreated TSS	OGS 50% TSS Removal Credit	Total TSS Removal for Blocks	Remained Untreated TSS		
Block 1	0.8000	5%	25%	25%	0%	45%	44%	56%	50%	72%	28%	50%	86%	14%	86%	15.9%
Block 2	0.5600	5%	25%	25%	0%	45%	44%	56%	50%	72%	28%	50%	86%	14%	86%	11.1%
Block 3 (Open Space)	0.4400	95%	0%	0%	0%	5%	76%	24%	-	76%	24%	50%	88%	12%	88%	8.9%
Block 4	0.1800	5%	25%	25%	0%	45%	44%	56%	50%	72%	28%	50%	86%	14%	86%	3.6%
Block 5	0.9700	5%	25%	25%	0%	45%	44%	56%	50%	72%	28%	50%	86%	14%	86%	19.3%
Block 6 (Open Space)	0.2300	95%	0%	0%	0%	5%	76%	24%	-	76%	24%	50%	88%	12%	88%	4.7%
Right Of Ways (A, B) Excluding External Areas	1.1500	30%	0%	0%	15%	55%	36%	64%	50%	68%	32%	50%	84%	16%	84%	22.3%
Sub-Total	**4.3300**															**86%**

* Water Balance Cisterns TSS credit based on 5mm rain event retention, which is equivalent to 50% of annual rainfall depth.
**TSS treatment of last OGS unitS, for ROW's, for upstream released flows from blocks has been ignored in this calculations for a conservative approach.

Reference: **New Jersey Stormwater Best Management Practices Manual**
Chapter 4 - TSS Removal Rates for BMP's in Series

Z:\Shared\Projects\2022\22027_Choice_2280 Dundas Street West\Design\Design\Stormwater Management\[22027_Water Quantity Calculation Results Summary.xlsx]Land Use Matrix Actual Imp

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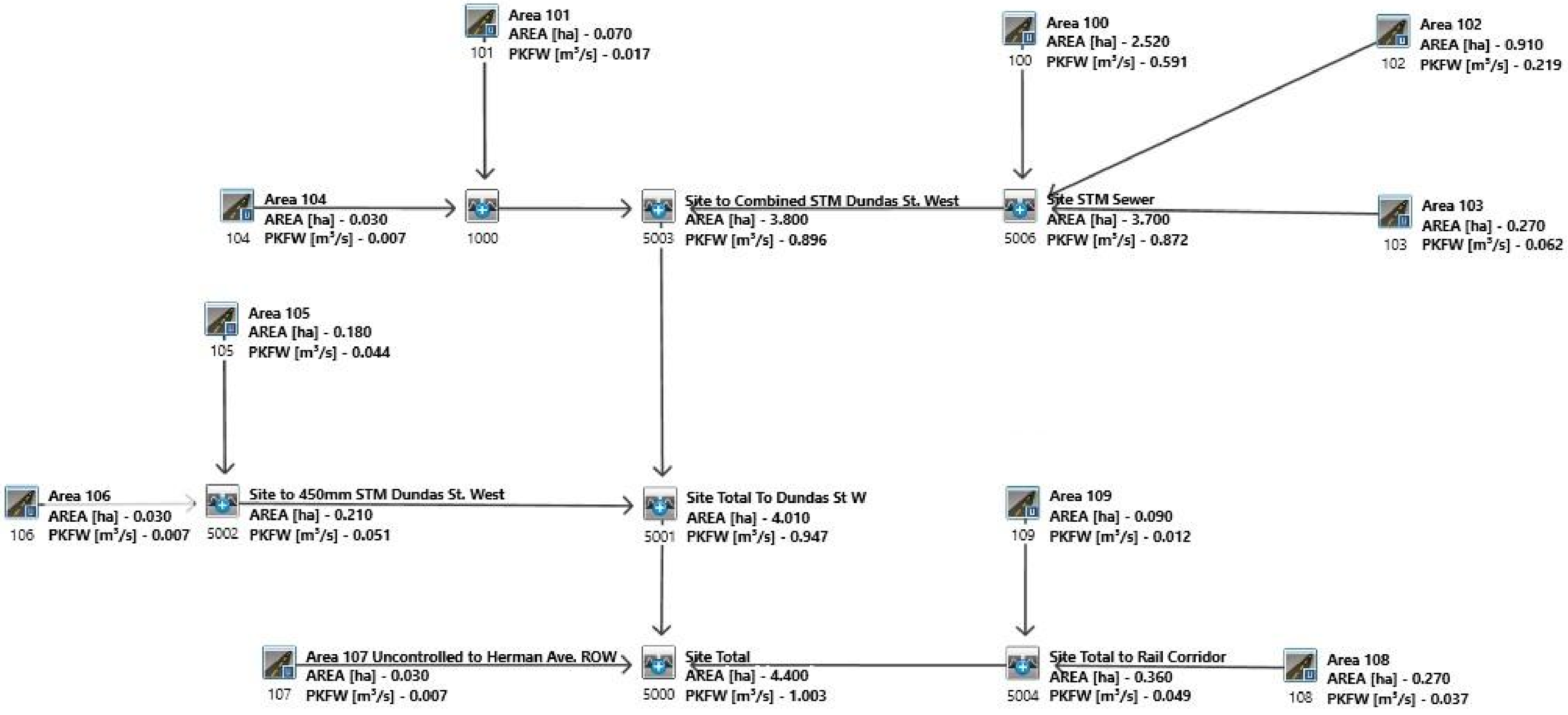
Area 101
AREA [ha] - 0.070
101 PKFW [m³/s] - 0.017
Area 100
AREA [ha] - 2.520
100 PKFW [m³/s] - 0.591
Area 102
AREA [ha] - 0.910
102 PKFW [m³/s] - 0.219
Area 104
AREA [ha] - 0.030
104 PKFW [m³/s] - 0.007
1000
5003
Site to Combined STM Dundas St. West
AREA [ha] - 3.800
PKFW [m³/s] - 0.896
5006
Site STM Sewer
AREA [ha] - 3.700
PKFW [m³/s] - 0.872
Area 103
AREA [ha] - 0.270
103 PKFW [m³/s] - 0.062
Area 105
AREA [ha] - 0.180
105 PKFW [m³/s] - 0.044
Area 106
AREA [ha] - 0.030
106 PKFW [m³/s] - 0.007
5002
Site to 450mm STM Dundas St. West
AREA [ha] - 0.210
PKFW [m³/s] - 0.051
5001
Site Total To Dundas St W
AREA [ha] - 4.010
PKFW [m³/s] - 0.947
Area 109
AREA [ha] - 0.090
109 PKFW [m³/s] - 0.012
Area 107 Uncontrolled to Herman Ave. ROW
AREA [ha] - 0.030
107 PKFW [m³/s] - 0.007
5000
Site Total
AREA [ha] - 4.400
PKFW [m³/s] - 1.003
5004
Site Total to Rail Corridor
AREA [ha] - 0.360
PKFW [m³/s] - 0.049
Area 108
AREA [ha] - 0.270
108 PKFW [m³/s] - 0.037

Pre-Development_Minor_System

```
================================================================================
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       V    V   I    SSSSS  U   U    A    L              (v 6.2.2010)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****


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6cc68e0-c7e6-459f-a84e-7c3852c2e4b2\s


DATE: 06-30-2022                          TIME: 04:45:00

USER:     Yelena Koshenkov


COMMENTS: The City of Toronto 6-hour Chicago 2-yr Design Storm


--------------------------------------------------------------------------------
------------------------
  **********************************************
  ** SIMULATION : 2-year storm                 **
  **********************************************

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| CHICAGO STORM    |    IDF curve parameters: A= 531.391
| Ptotal= 32.33 mm |                          B=   0.000
```

Pre-Development_Minor_System

C= 0.780

used in: INTENSITY = A / (t + B)^C

Duration of storm = 6.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.38

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.00	1.24	1.50	3.18	3.00	3.75	4.50	1.69
0.17	1.32	1.67	4.03	3.17	3.26	4.67	1.61
0.33	1.42	1.83	5.67	3.33	2.89	4.83	1.53
0.50	1.53	2.00	10.99	3.50	2.61	5.00	1.46
0.67	1.66	2.17	88.19	3.67	2.38	5.17	1.40
0.83	1.82	2.33	12.86	3.83	2.20	5.33	1.34
1.00	2.03	2.50	7.53	4.00	2.04	5.50	1.29
1.17	2.29	2.67	5.53	4.17	1.91	5.67	1.24
1.33	2.66	2.83	4.44	4.33	1.79	5.83	1.19

CALIB	STANDHYD (0100)	ID= 1 DT= 5.0 min

Area (ha)= 2.52
Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	2.49	0.03
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	129.61	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.24	1.583	3.18	3.083	3.75	4.58	1.69
0.167	1.24	1.667	3.18	3.167	3.75	4.67	1.69
0.250	1.32	1.750	4.03	3.250	3.26	4.75	1.61
0.333	1.32	1.833	4.03	3.333	3.26	4.83	1.61
0.417	1.42	1.917	5.67	3.417	2.89	4.92	1.53
0.500	1.42	2.000	5.67	3.500	2.89	5.00	1.53
0.583	1.53	2.083	10.99	3.583	2.61	5.08	1.46
0.667	1.53	2.167	10.99	3.667	2.61	5.17	1.46
0.750	1.66	2.250	88.19	3.750	2.38	5.25	1.40
0.833	1.66	2.333	88.19	3.833	2.38	5.33	1.40

Pre-Development_Minor_System

0.917	1.82	2.417	12.86	3.917	2.20	5.42	1.34
1.000	1.82	2.500	12.86	4.000	2.20	5.50	1.34
1.083	2.03	2.583	7.54	4.083	2.04	5.58	1.29
1.167	2.03	2.667	7.53	4.167	2.04	5.67	1.29
1.250	2.29	2.750	5.53	4.250	1.91	5.75	1.24
1.333	2.29	2.833	5.53	4.333	1.91	5.83	1.24
1.417	2.66	2.917	4.44	4.417	1.79	5.92	1.19
1.500	2.66	3.000	4.44	4.500	1.79	6.00	1.19

Max.Eff.Inten.(mm/hr)=	88.19	29.10	
over (min)	5.00	5.00	
Storage Coeff. (min)=	3.14 (ii)	4.32 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.27	0.23	
			TOTALS
PEAK FLOW (cms)=	0.59	0.00	0.591 (iii)
TIME TO PEAK (hrs)=	2.33	2.33	2.33
RUNOFF VOLUME (mm)=	31.33	11.44	31.13
TOTAL RAINFALL (mm)=	32.33	32.33	32.33
RUNOFF COEFFICIENT =	0.97	0.35	0.96

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB	
STANDHYD (0102)	Area (ha)= 0.91
ID= 1 DT= 5.0 min	Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.90	0.01
Dep. Storage (mm)=	1.00	5.00
Average Slope (%)=	1.00	2.00
Length (m)=	77.89	40.00
Mannings n =	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.24	1.583	3.18	3.083	3.75	4.58	1.69
0.167	1.24	1.667	3.18	3.167	3.75	4.67	1.69

Pre-Development_Minor_System

0.250	1.32	1.750	4.03	3.250	3.26	4.75	1.61
0.333	1.32	1.833	4.03	3.333	3.26	4.83	1.61
0.417	1.42	1.917	5.67	3.417	2.89	4.92	1.53
0.500	1.42	2.000	5.67	3.500	2.89	5.00	1.53
0.583	1.53	2.083	10.99	3.583	2.61	5.08	1.46
0.667	1.53	2.167	10.99	3.667	2.61	5.17	1.46
0.750	1.66	2.250	88.19	3.750	2.38	5.25	1.40
0.833	1.66	2.333	88.19	3.833	2.38	5.33	1.40
0.917	1.82	2.417	12.86	3.917	2.20	5.42	1.34
1.000	1.82	2.500	12.86	4.000	2.20	5.50	1.34
1.083	2.03	2.583	7.54	4.083	2.04	5.58	1.29
1.167	2.03	2.667	7.53	4.167	2.04	5.67	1.29
1.250	2.29	2.750	5.53	4.250	1.91	5.75	1.24
1.333	2.29	2.833	5.53	4.333	1.91	5.83	1.24
1.417	2.66	2.917	4.44	4.417	1.79	5.92	1.19
1.500	2.66	3.000	4.44	4.500	1.79	6.00	1.19

Max.Eff.Inten.(mm/hr)=	88.19	29.10	
over (min)	5.00	5.00	
Storage Coeff. (min)=	2.31 (ii)	3.49 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.30	0.26	
			TOTALS
PEAK FLOW (cms)=	0.22	0.00	0.219 (iii)
TIME TO PEAK (hrs)=	2.33	2.33	2.33
RUNOFF VOLUME (mm)=	31.33	11.44	31.13
TOTAL RAINFALL (mm)=	32.33	32.33	32.33
RUNOFF COEFFICIENT =	0.97	0.35	0.96

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB	
STANDHYD (0103)	Area (ha)= 0.27
ID= 1 DT= 5.0 min	Total Imp(%)= 90.00 Dir. Conn.(%)= 90.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.24	0.03
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	42.43	40.00
Mannings n	=	0.013	0.250

Pre-Development_Minor_System

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.24	1.583	3.18	3.083	3.75	4.58	1.69
0.167	1.24	1.667	3.18	3.167	3.75	4.67	1.69
0.250	1.32	1.750	4.03	3.250	3.26	4.75	1.61
0.333	1.32	1.833	4.03	3.333	3.26	4.83	1.61
0.417	1.42	1.917	5.67	3.417	2.89	4.92	1.53
0.500	1.42	2.000	5.67	3.500	2.89	5.00	1.53
0.583	1.53	2.083	10.99	3.583	2.61	5.08	1.46
0.667	1.53	2.167	10.99	3.667	2.61	5.17	1.46
0.750	1.66	2.250	88.19	3.750	2.38	5.25	1.40
0.833	1.66	2.333	88.19	3.833	2.38	5.33	1.40
0.917	1.82	2.417	12.86	3.917	2.20	5.42	1.34
1.000	1.82	2.500	12.86	4.000	2.20	5.50	1.34
1.083	2.03	2.583	7.54	4.083	2.04	5.58	1.29
1.167	2.03	2.667	7.53	4.167	2.04	5.67	1.29
1.250	2.29	2.750	5.53	4.250	1.91	5.75	1.24
1.333	2.29	2.833	5.53	4.333	1.91	5.83	1.24
1.417	2.66	2.917	4.44	4.417	1.79	5.92	1.19
1.500	2.66	3.000	4.44	4.500	1.79	6.00	1.19

Max.Eff.Inten.(mm/hr)=	88.19	29.10	
over (min)	5.00	5.00	
Storage Coeff. (min)=	1.61 (ii)	4.69 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.32	0.22	
			TOTALS
PEAK FLOW (cms)=	0.06	0.00	0.062 (iii)
TIME TO PEAK (hrs)=	2.33	2.33	2.33
RUNOFF VOLUME (mm)=	31.33	11.44	29.34
TOTAL RAINFALL (mm)=	32.33	32.33	32.33
RUNOFF COEFFICIENT =	0.97	0.35	0.91

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (5006)
1 + 2 = 3

AREA	QPEAK	TPEAK	R.V.

Pre-Development_Minor_System

	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0100):	2.52	0.591	2.33	31.13
+ ID2= 2 (0102):	0.91	0.219	2.33	31.13
ID = 3 (5006):	3.43	0.810	2.33	31.13

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (5006)
3 + 2 = 1

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (5006):	3.43	0.810	2.33	31.13
+ ID2= 2 (0103):	0.27	0.062	2.33	29.34
ID = 1 (5006):	3.70	0.872	2.33	31.00

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB
STANDHYD (0101) | Area (ha)= 0.07
ID= 1 DT= 5.0 min | Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.07	0.00
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	21.60	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.24	1.583	3.18	3.083	3.75	4.58	1.69
0.167	1.24	1.667	3.18	3.167	3.75	4.67	1.69
0.250	1.32	1.750	4.03	3.250	3.26	4.75	1.61
0.333	1.32	1.833	4.03	3.333	3.26	4.83	1.61
0.417	1.42	1.917	5.67	3.417	2.89	4.92	1.53
0.500	1.42	2.000	5.67	3.500	2.89	5.00	1.53
0.583	1.53	2.083	10.99	3.583	2.61	5.08	1.46
0.667	1.53	2.167	10.99	3.667	2.61	5.17	1.46
0.750	1.66	2.250	88.19	3.750	2.38	5.25	1.40
0.833	1.66	2.333	88.19	3.833	2.38	5.33	1.40
0.917	1.82	2.417	12.86	3.917	2.20	5.42	1.34

Pre-Development_Minor_System

1.000	1.82	2.500	12.86	4.000	2.20	5.50	1.34
1.083	2.03	2.583	7.54	4.083	2.04	5.58	1.29
1.167	2.03	2.667	7.53	4.167	2.04	5.67	1.29
1.250	2.29	2.750	5.53	4.250	1.91	5.75	1.24
1.333	2.29	2.833	5.53	4.333	1.91	5.83	1.24
1.417	2.66	2.917	4.44	4.417	1.79	5.92	1.19
1.500	2.66	3.000	4.44	4.500	1.79	6.00	1.19

Max.Eff.Inten.(mm/hr)=	88.19	29.10	
over (min)	5.00	5.00	
Storage Coeff. (min)=	1.07 (ii)	2.25 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.34	0.30	
			TOTALS
PEAK FLOW (cms)=	0.02	0.00	0.017 (iii)
TIME TO PEAK (hrs)=	2.33	2.33	2.33
RUNOFF VOLUME (mm)=	31.33	11.44	31.13
TOTAL RAINFALL (mm)=	32.33	32.33	32.33
RUNOFF COEFFICIENT =	0.97	0.35	0.96

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB	
STANDHYD (0104)	Area (ha)= 0.03
ID= 1 DT= 5.0 min	Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.03	0.00
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	14.14	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.24	1.583	3.18	3.083	3.75	4.58	1.69
0.167	1.24	1.667	3.18	3.167	3.75	4.67	1.69
0.250	1.32	1.750	4.03	3.250	3.26	4.75	1.61

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0.333	1.32	1.833	4.03	3.333	3.26	4.83	1.61
0.417	1.42	1.917	5.67	3.417	2.89	4.92	1.53
0.500	1.42	2.000	5.67	3.500	2.89	5.00	1.53
0.583	1.53	2.083	10.99	3.583	2.61	5.08	1.46
0.667	1.53	2.167	10.99	3.667	2.61	5.17	1.46
0.750	1.66	2.250	88.19	3.750	2.38	5.25	1.40
0.833	1.66	2.333	88.19	3.833	2.38	5.33	1.40
0.917	1.82	2.417	12.86	3.917	2.20	5.42	1.34
1.000	1.82	2.500	12.86	4.000	2.20	5.50	1.34
1.083	2.03	2.583	7.54	4.083	2.04	5.58	1.29
1.167	2.03	2.667	7.53	4.167	2.04	5.67	1.29
1.250	2.29	2.750	5.53	4.250	1.91	5.75	1.24
1.333	2.29	2.833	5.53	4.333	1.91	5.83	1.24
1.417	2.66	2.917	4.44	4.417	1.79	5.92	1.19
1.500	2.66	3.000	4.44	4.500	1.79	6.00	1.19

Max.Eff.Inten.(mm/hr)=	88.19	29.10	
over (min)	5.00	5.00	
Storage Coeff. (min)=	0.83 (ii)	2.01 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.34	0.31	
			TOTALS
PEAK FLOW (cms)=	0.01	0.00	0.007 (iii)
TIME TO PEAK (hrs)=	2.33	2.33	2.33
RUNOFF VOLUME (mm)=	31.33	11.44	30.93
TOTAL RAINFALL (mm)=	32.33	32.33	32.33
RUNOFF COEFFICIENT =	0.97	0.35	0.96

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (1000)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0101):	0.07	0.017	2.33	31.13
+ ID2= 2 (0104):	0.03	0.007	2.33	30.93
ID = 3 (1000):	0.10	0.024	2.33	31.07

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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| ADD HYD  (  5003)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  1000):      0.10   0.024     2.33    31.07
      + ID2= 2 (  5006):      3.70   0.872     2.33    31.00
        ====================================================
        ID = 3 (  5003):      3.80   0.896     2.33    31.00

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0105)|   Area    (ha)=   0.18
|ID= 1 DT= 5.0 min |   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
--------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.18         0.00
     Dep. Storage     (mm)=       1.00         1.50
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      34.64        40.00
     Mannings n           =      0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                              ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    1.24 | 1.583    3.18 | 3.083    3.75 |  4.58    1.69
               0.167    1.24 | 1.667    3.18 | 3.167    3.75 |  4.67    1.69
               0.250    1.32 | 1.750    4.03 | 3.250    3.26 |  4.75    1.61
               0.333    1.32 | 1.833    4.03 | 3.333    3.26 |  4.83    1.61
               0.417    1.42 | 1.917    5.67 | 3.417    2.89 |  4.92    1.53
               0.500    1.42 | 2.000    5.67 | 3.500    2.89 |  5.00    1.53
               0.583    1.53 | 2.083   10.99 | 3.583    2.61 |  5.08    1.46
               0.667    1.53 | 2.167   10.99 | 3.667    2.61 |  5.17    1.46
               0.750    1.66 | 2.250   88.19 | 3.750    2.38 |  5.25    1.40
               0.833    1.66 | 2.333   88.19 | 3.833    2.38 |  5.33    1.40
               0.917    1.82 | 2.417   12.86 | 3.917    2.20 |  5.42    1.34
               1.000    1.82 | 2.500   12.86 | 4.000    2.20 |  5.50    1.34
               1.083    2.03 | 2.583    7.54 | 4.083    2.04 |  5.58    1.29
               1.167    2.03 | 2.667    7.53 | 4.167    2.04 |  5.67    1.29
               1.250    2.29 | 2.750    5.53 | 4.250    1.91 |  5.75    1.24
               1.333    2.29 | 2.833    5.53 | 4.333    1.91 |  5.83    1.24
               1.417    2.66 | 2.917    4.44 | 4.417    1.79 |  5.92    1.19
               1.500    2.66 | 3.000    4.44 | 4.500    1.79 |  6.00    1.19

     Max.Eff.Inten.(mm/hr)=      88.19        33.35
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over (min)		5.00	5.00	
Storage Coeff. (min)=		1.42 (ii)	2.60 (ii)	
Unit Hyd. Tpeak (min)=		5.00	5.00	
Unit Hyd. peak (cms)=		0.33	0.29	
				TOTALS
PEAK FLOW	(cms)=	0.04	0.00	0.044 (iii)
TIME TO PEAK	(hrs)=	2.33	2.33	2.33
RUNOFF VOLUME	(mm)=	31.33	12.57	31.14
TOTAL RAINFALL	(mm)=	32.33	32.33	32.33
RUNOFF COEFFICIENT	=	0.97	0.39	0.96

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 85.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB			
STANDHYD (0106)	Area (ha)=	0.03	
ID= 1 DT= 5.0 min	Total Imp(%)=	99.00	Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.03	0.00
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	14.14	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.24	1.583	3.18	3.083	3.75	4.58	1.69
0.167	1.24	1.667	3.18	3.167	3.75	4.67	1.69
0.250	1.32	1.750	4.03	3.250	3.26	4.75	1.61
0.333	1.32	1.833	4.03	3.333	3.26	4.83	1.61
0.417	1.42	1.917	5.67	3.417	2.89	4.92	1.53
0.500	1.42	2.000	5.67	3.500	2.89	5.00	1.53
0.583	1.53	2.083	10.99	3.583	2.61	5.08	1.46
0.667	1.53	2.167	10.99	3.667	2.61	5.17	1.46
0.750	1.66	2.250	88.19	3.750	2.38	5.25	1.40
0.833	1.66	2.333	88.19	3.833	2.38	5.33	1.40
0.917	1.82	2.417	12.86	3.917	2.20	5.42	1.34
1.000	1.82	2.500	12.86	4.000	2.20	5.50	1.34
1.083	2.03	2.583	7.54	4.083	2.04	5.58	1.29

1.167	2.03	2.667	7.53	4.167	2.04	5.67	1.29
1.250	2.29	2.750	5.53	4.250	1.91	5.75	1.24
1.333	2.29	2.833	5.53	4.333	1.91	5.83	1.24
1.417	2.66	2.917	4.44	4.417	1.79	5.92	1.19
1.500	2.66	3.000	4.44	4.500	1.79	6.00	1.19

Max.Eff.Inten.(mm/hr)=	88.19	33.35	
over (min)	5.00	5.00	
Storage Coeff. (min)=	0.83 (ii)	2.01 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.34	0.31	
			TOTALS
PEAK FLOW (cms)=	0.01	0.00	0.007 (iii)
TIME TO PEAK (hrs)=	2.33	2.33	2.33
RUNOFF VOLUME (mm)=	31.33	12.57	30.95
TOTAL RAINFALL (mm)=	32.33	32.33	32.33
RUNOFF COEFFICIENT =	0.97	0.39	0.96

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 85.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (5002)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0105):	0.18	0.044	2.33	31.14
+ ID2= 2 (0106):	0.03	0.007	2.33	30.95
ID = 3 (5002):	0.21	0.051	2.33	31.11

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (5001)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (5002):	0.21	0.051	2.33	31.11
+ ID2= 2 (5003):	3.80	0.896	2.33	31.00
ID = 3 (5001):	4.01	0.947	2.33	31.01

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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| CALIB            |
| STANDHYD (  0107)|   Area    (ha)=   0.03
|ID= 1 DT= 5.0 min |   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
--------------------
                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.03         0.00
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      14.14        40.00
     Mannings n             =     0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.
```

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.24	1.583	3.18	3.083	3.75	4.58	1.69
0.167	1.24	1.667	3.18	3.167	3.75	4.67	1.69
0.250	1.32	1.750	4.03	3.250	3.26	4.75	1.61
0.333	1.32	1.833	4.03	3.333	3.26	4.83	1.61
0.417	1.42	1.917	5.67	3.417	2.89	4.92	1.53
0.500	1.42	2.000	5.67	3.500	2.89	5.00	1.53
0.583	1.53	2.083	10.99	3.583	2.61	5.08	1.46
0.667	1.53	2.167	10.99	3.667	2.61	5.17	1.46
0.750	1.66	2.250	88.19	3.750	2.38	5.25	1.40
0.833	1.66	2.333	88.19	3.833	2.38	5.33	1.40
0.917	1.82	2.417	12.86	3.917	2.20	5.42	1.34
1.000	1.82	2.500	12.86	4.000	2.20	5.50	1.34
1.083	2.03	2.583	7.54	4.083	2.04	5.58	1.29
1.167	2.03	2.667	7.53	4.167	2.04	5.67	1.29
1.250	2.29	2.750	5.53	4.250	1.91	5.75	1.24
1.333	2.29	2.833	5.53	4.333	1.91	5.83	1.24
1.417	2.66	2.917	4.44	4.417	1.79	5.92	1.19
1.500	2.66	3.000	4.44	4.500	1.79	6.00	1.19

```
     Max.Eff.Inten.(mm/hr)=      88.19        29.10
               over (min)         5.00         5.00
     Storage Coeff.  (min)=      0.83 (ii)    2.01 (ii)
     Unit Hyd. Tpeak (min)=      5.00         5.00
     Unit Hyd. peak  (cms)=      0.34         0.31
                                                      *TOTALS*
     PEAK FLOW       (cms)=      0.01         0.00          0.007 (iii)
     TIME TO PEAK    (hrs)=      2.33         2.33           2.33
     RUNOFF VOLUME    (mm)=     31.33        11.44          30.93
     TOTAL RAINFALL   (mm)=     32.33        32.33          32.33
     RUNOFF COEFFICIENT   =      0.97         0.35           0.96
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(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB	
STANDHYD (0109)	Area (ha)= 0.09
ID= 1 DT= 5.0 min	Total Imp(%)= 70.00 Dir. Conn.(%)= 30.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.06	0.03
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	24.49	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.24	1.583	3.18	3.083	3.75	4.58	1.69
0.167	1.24	1.667	3.18	3.167	3.75	4.67	1.69
0.250	1.32	1.750	4.03	3.250	3.26	4.75	1.61
0.333	1.32	1.833	4.03	3.333	3.26	4.83	1.61
0.417	1.42	1.917	5.67	3.417	2.89	4.92	1.53
0.500	1.42	2.000	5.67	3.500	2.89	5.00	1.53
0.583	1.53	2.083	10.99	3.583	2.61	5.08	1.46
0.667	1.53	2.167	10.99	3.667	2.61	5.17	1.46
0.750	1.66	2.250	88.19	3.750	2.38	5.25	1.40
0.833	1.66	2.333	88.19	3.833	2.38	5.33	1.40
0.917	1.82	2.417	12.86	3.917	2.20	5.42	1.34
1.000	1.82	2.500	12.86	4.000	2.20	5.50	1.34
1.083	2.03	2.583	7.54	4.083	2.04	5.58	1.29
1.167	2.03	2.667	7.53	4.167	2.04	5.67	1.29
1.250	2.29	2.750	5.53	4.250	1.91	5.75	1.24
1.333	2.29	2.833	5.53	4.333	1.91	5.83	1.24
1.417	2.66	2.917	4.44	4.417	1.79	5.92	1.19
1.500	2.66	3.000	4.44	4.500	1.79	6.00	1.19

Max.Eff.Inten.(mm/hr)=		88.19	131.84
over (min)		5.00	10.00
Storage Coeff. (min)=		1.15 (ii)	7.47 (ii)
Unit Hyd. Tpeak (min)=		5.00	10.00

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Unit Hyd. peak	(cms)=	0.34	0.13	
				TOTALS
PEAK FLOW	(cms)=	0.01	0.01	0.012 (iii)
TIME TO PEAK	(hrs)=	2.33	2.42	2.33
RUNOFF VOLUME	(mm)=	31.33	19.62	23.08
TOTAL RAINFALL	(mm)=	32.33	32.33	32.33
RUNOFF COEFFICIENT	=	0.97	0.61	0.71

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB			
STANDHYD (0108)	Area (ha)=	0.27	
ID= 1 DT= 5.0 min	Total Imp(%)=	70.00	Dir. Conn.(%)= 30.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.19	0.08
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	42.43	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.24	1.583	3.18	3.083	3.75	4.58	1.69
0.167	1.24	1.667	3.18	3.167	3.75	4.67	1.69
0.250	1.32	1.750	4.03	3.250	3.26	4.75	1.61
0.333	1.32	1.833	4.03	3.333	3.26	4.83	1.61
0.417	1.42	1.917	5.67	3.417	2.89	4.92	1.53
0.500	1.42	2.000	5.67	3.500	2.89	5.00	1.53
0.583	1.53	2.083	10.99	3.583	2.61	5.08	1.46
0.667	1.53	2.167	10.99	3.667	2.61	5.17	1.46
0.750	1.66	2.250	88.19	3.750	2.38	5.25	1.40
0.833	1.66	2.333	88.19	3.833	2.38	5.33	1.40
0.917	1.82	2.417	12.86	3.917	2.20	5.42	1.34
1.000	1.82	2.500	12.86	4.000	2.20	5.50	1.34
1.083	2.03	2.583	7.54	4.083	2.04	5.58	1.29
1.167	2.03	2.667	7.53	4.167	2.04	5.67	1.29
1.250	2.29	2.750	5.53	4.250	1.91	5.75	1.24

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1.333	2.29	2.833	5.53	4.333	1.91	5.83	1.24
1.417	2.66	2.917	4.44	4.417	1.79	5.92	1.19
1.500	2.66	3.000	4.44	4.500	1.79	6.00	1.19

			TOTALS
Max.Eff.Inten.(mm/hr)=	88.19	131.84	
over (min)	5.00	10.00	
Storage Coeff. (min)=	1.61 (ii)	7.93 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.32	0.13	
PEAK FLOW (cms)=	0.02	0.02	0.037 (iii)
TIME TO PEAK (hrs)=	2.33	2.42	2.33
RUNOFF VOLUME (mm)=	31.33	19.62	23.12
TOTAL RAINFALL (mm)=	32.33	32.33	32.33
RUNOFF COEFFICIENT =	0.97	0.61	0.71

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (5004)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0108):	0.27	0.037	2.33	23.12
+ ID2= 2 (0109):	0.09	0.012	2.33	23.08
ID = 3 (5004):	0.36	0.049	2.33	23.11

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (5000)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0107):	0.03	0.007	2.33	30.93
+ ID2= 2 (5001):	4.01	0.947	2.33	31.01
ID = 3 (5000):	4.04	0.955	2.33	31.01

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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--------------------
| ADD HYD  (  5000)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  5000):     4.04   0.955     2.33    31.01
      + ID2= 2 (  5004):     0.36   0.049     2.33    23.11
        ================================================
        ID = 1 (  5000):     4.40   1.003     2.33    30.36

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
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 FINISH
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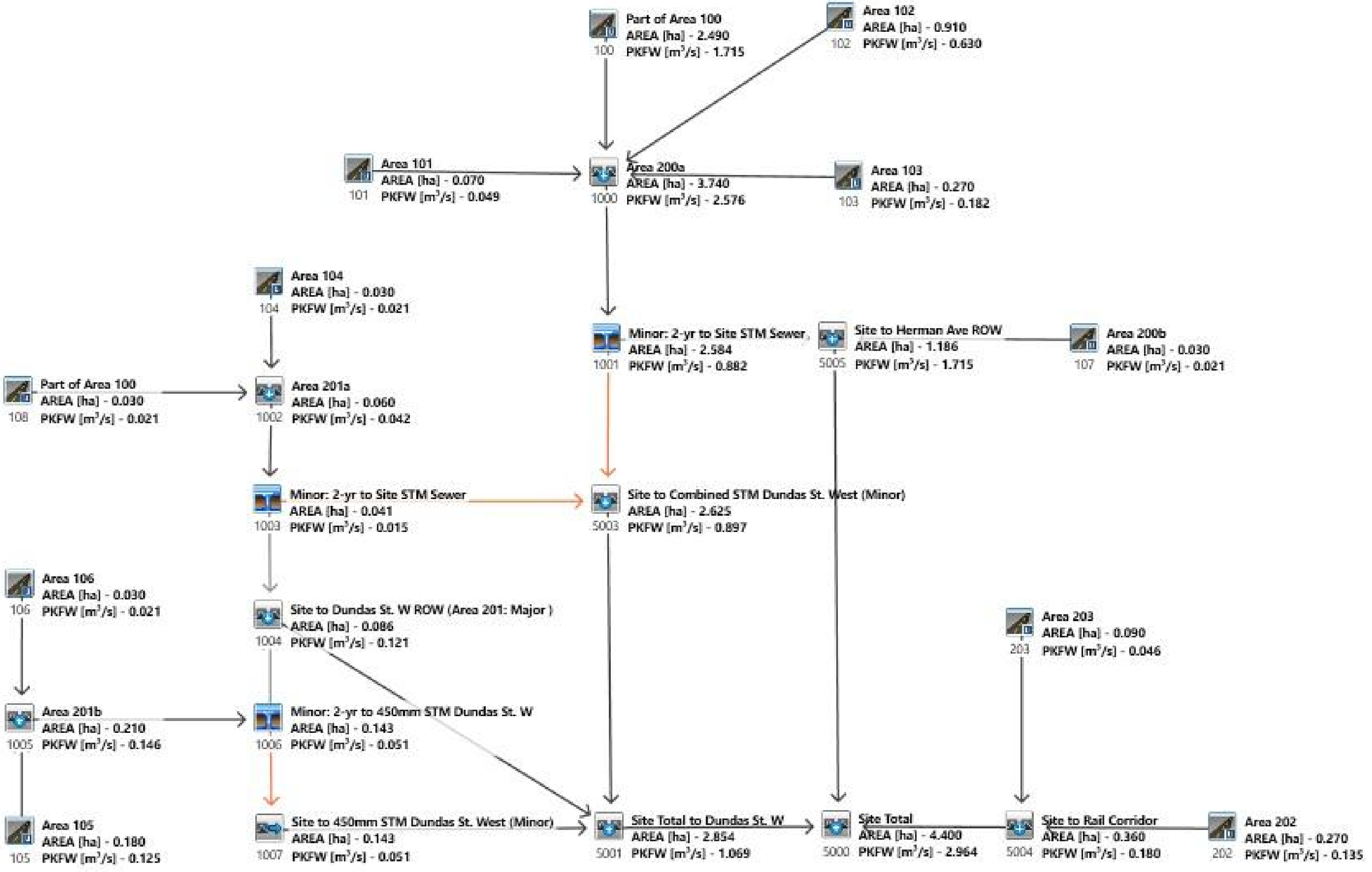
Part of Area 100
AREA [ha] - 2.490
100 PKFW [m³/s] - 1.715
Area 102
AREA [ha] - 0.910
102 PKFW [m³/s] - 0.630
Area 101
AREA [ha] - 0.070
101 PKFW [m³/s] - 0.049
Area 200a
AREA [ha] - 3.740
1000 PKFW [m³/s] - 2.576
Area 103
AREA [ha] - 0.270
103 PKFW [m³/s] - 0.182
Area 104
AREA [ha] - 0.030
104 PKFW [m³/s] - 0.021
Minor: 2-yr to Site STM Sewer
AREA [ha] - 2.584
1001 PKFW [m³/s] - 0.882
Site to Herman Ave ROW
AREA [ha] - 1.186
5005 PKFW [m³/s] - 1.715
Area 200b
AREA [ha] - 0.030
107 PKFW [m³/s] - 0.021
Part of Area 100
AREA [ha] - 0.030
108 PKFW [m³/s] - 0.021
Area 201a
AREA [ha] - 0.060
1002 PKFW [m³/s] - 0.042
Minor: 2-yr to Site STM Sewer
AREA [ha] - 0.041
1003 PKFW [m³/s] - 0.015
Site to Combined STM Dundas St. West (Minor)
AREA [ha] - 2.625
5003 PKFW [m³/s] - 0.897
Area 106
AREA [ha] - 0.030
106 PKFW [m³/s] - 0.021
Site to Dundas St. W ROW (Area 201: Major)
AREA [ha] - 0.086
1004 PKFW [m³/s] - 0.121
Area 203
AREA [ha] - 0.090
203 PKFW [m³/s] - 0.046
Area 201b
AREA [ha] - 0.210
1005 PKFW [m³/s] - 0.146
Minor: 2-yr to 450mm STM Dundas St. W
AREA [ha] - 0.143
1006 PKFW [m³/s] - 0.051
Area 105
AREA [ha] - 0.180
105 PKFW [m³/s] - 0.125
Site to 450mm STM Dundas St. West (Minor)
AREA [ha] - 0.143
1007 PKFW [m³/s] - 0.051
Site Total to Dundas St. W
AREA [ha] - 2.854
5001 PKFW [m³/s] - 1.069
Site Total
AREA [ha] - 4.400
5000 PKFW [m³/s] - 2.964
Site to Rail Corridor
AREA [ha] - 0.360
5004 PKFW [m³/s] - 0.180
Area 202
AREA [ha] - 0.270
202 PKFW [m³/s] - 0.135

Pre-Development_Major_System

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================================================================================
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       V    V   I    SSSSS  U   U    A    L              (v 6.2.2010)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****


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DATE: 06-30-2022                          TIME: 05:05:14

USER:     Yelena Koshenkov


COMMENTS: The City of Toronto 6-hour Chicago Design Storms, 5 to 100-year


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  **********************************************
  ** SIMULATION : 100-year storm                **
  **********************************************

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| CHICAGO STORM    |    IDF curve parameters: A=1579.412
| Ptotal= 85.43 mm |                          B=   0.000
```

Pre-Development_Major_System

C= 0.800

used in: INTENSITY = A / (t + B)^C

Duration of storm = 6.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.38

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.00	2.99	1.50	7.83	3.00	9.27	4.50	4.11
0.17	3.19	1.67	9.98	3.17	8.03	4.67	3.89
0.33	3.42	1.83	14.18	3.33	7.11	4.83	3.70
0.50	3.70	2.00	27.99	3.50	6.40	5.00	3.52
0.67	4.03	2.17	250.32	3.67	5.83	5.17	3.37
0.83	4.43	2.33	32.87	3.83	5.36	5.33	3.22
1.00	4.94	2.50	18.98	4.00	4.97	5.50	3.09
1.17	5.61	2.67	13.83	4.17	4.64	5.67	2.98
1.33	6.51	2.83	11.04	4.33	4.36	5.83	2.87

CALIB
STANDHYD (0100)
ID= 1 DT= 5.0 min

Area (ha)= 2.49
Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	2.47	0.02
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	128.84	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.99	1.583	7.83	3.083	9.27	4.58	4.11
0.167	2.99	1.667	7.83	3.167	9.27	4.67	4.11
0.250	3.19	1.750	9.98	3.250	8.03	4.75	3.89
0.333	3.19	1.833	9.98	3.333	8.03	4.83	3.89
0.417	3.42	1.917	14.18	3.417	7.11	4.92	3.70
0.500	3.42	2.000	14.18	3.500	7.11	5.00	3.70
0.583	3.70	2.083	27.99	3.583	6.40	5.08	3.52
0.667	3.70	2.167	27.99	3.667	6.40	5.17	3.52
0.750	4.03	2.250	250.32	3.750	5.83	5.25	3.37
0.833	4.03	2.333	250.32	3.833	5.83	5.33	3.37

Pre-Development_Major_System

0.917	4.43	2.417	32.87	3.917	5.36	5.42	3.22
1.000	4.43	2.500	32.87	4.000	5.36	5.50	3.22
1.083	4.94	2.583	18.98	4.083	4.97	5.58	3.09
1.167	4.94	2.667	18.98	4.167	4.97	5.67	3.09
1.250	5.61	2.750	13.83	4.250	4.64	5.75	2.98
1.333	5.61	2.833	13.83	4.333	4.64	5.83	2.98
1.417	6.51	2.917	11.04	4.417	4.36	5.92	2.87
1.500	6.51	3.000	11.04	4.500	4.36	6.00	2.87

			TOTALS
Max.Eff.Inten.(mm/hr)=	250.32	170.26	
over (min)	5.00	5.00	
Storage Coeff. (min)=	2.06 (ii)	2.84 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.31	0.28	
PEAK FLOW (cms)=	1.70	0.01	1.715 (iii)
TIME TO PEAK (hrs)=	2.33	2.33	2.33
RUNOFF VOLUME (mm)=	84.43	54.64	84.13
TOTAL RAINFALL (mm)=	85.43	85.43	85.43
RUNOFF COEFFICIENT =	0.99	0.64	0.98

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB	
STANDHYD (0101)	Area (ha)= 0.07
ID= 1 DT= 5.0 min	Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.07	0.00
Dep. Storage (mm)=	1.00	5.00
Average Slope (%)=	1.00	2.00
Length (m)=	21.60	40.00
Mannings n =	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.99	1.583	7.83	3.083	9.27	4.58	4.11
0.167	2.99	1.667	7.83	3.167	9.27	4.67	4.11

Pre-Development_Major_System

0.250	3.19	1.750	9.98	3.250	8.03	4.75	3.89
0.333	3.19	1.833	9.98	3.333	8.03	4.83	3.89
0.417	3.42	1.917	14.18	3.417	7.11	4.92	3.70
0.500	3.42	2.000	14.18	3.500	7.11	5.00	3.70
0.583	3.70	2.083	27.99	3.583	6.40	5.08	3.52
0.667	3.70	2.167	27.99	3.667	6.40	5.17	3.52
0.750	4.03	2.250	250.32	3.750	5.83	5.25	3.37
0.833	4.03	2.333	250.32	3.833	5.83	5.33	3.37
0.917	4.43	2.417	32.87	3.917	5.36	5.42	3.22
1.000	4.43	2.500	32.87	4.000	5.36	5.50	3.22
1.083	4.94	2.583	18.98	4.083	4.97	5.58	3.09
1.167	4.94	2.667	18.98	4.167	4.97	5.67	3.09
1.250	5.61	2.750	13.83	4.250	4.64	5.75	2.98
1.333	5.61	2.833	13.83	4.333	4.64	5.83	2.98
1.417	6.51	2.917	11.04	4.417	4.36	5.92	2.87
1.500	6.51	3.000	11.04	4.500	4.36	6.00	2.87

			TOTALS
Max.Eff.Inten.(mm/hr)=	250.32	170.26	
over (min)	5.00	5.00	
Storage Coeff. (min)=	0.71 (ii)	1.48 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.34	0.33	
PEAK FLOW (cms)=	0.05	0.00	0.049 (iii)
TIME TO PEAK (hrs)=	2.33	2.33	2.33
RUNOFF VOLUME (mm)=	84.43	54.64	84.13
TOTAL RAINFALL (mm)=	85.43	85.43	85.43
RUNOFF COEFFICIENT =	0.99	0.64	0.98

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB	
STANDHYD (0102)	Area (ha)= 0.91
ID= 1 DT= 5.0 min	Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.90	0.01
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	77.89	40.00
Mannings n	=	0.013	0.250

Pre-Development_Major_System

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.99	1.583	7.83	3.083	9.27	4.58	4.11
0.167	2.99	1.667	7.83	3.167	9.27	4.67	4.11
0.250	3.19	1.750	9.98	3.250	8.03	4.75	3.89
0.333	3.19	1.833	9.98	3.333	8.03	4.83	3.89
0.417	3.42	1.917	14.18	3.417	7.11	4.92	3.70
0.500	3.42	2.000	14.18	3.500	7.11	5.00	3.70
0.583	3.70	2.083	27.99	3.583	6.40	5.08	3.52
0.667	3.70	2.167	27.99	3.667	6.40	5.17	3.52
0.750	4.03	2.250	250.32	3.750	5.83	5.25	3.37
0.833	4.03	2.333	250.32	3.833	5.83	5.33	3.37
0.917	4.43	2.417	32.87	3.917	5.36	5.42	3.22
1.000	4.43	2.500	32.87	4.000	5.36	5.50	3.22
1.083	4.94	2.583	18.98	4.083	4.97	5.58	3.09
1.167	4.94	2.667	18.98	4.167	4.97	5.67	3.09
1.250	5.61	2.750	13.83	4.250	4.64	5.75	2.98
1.333	5.61	2.833	13.83	4.333	4.64	5.83	2.98
1.417	6.51	2.917	11.04	4.417	4.36	5.92	2.87
1.500	6.51	3.000	11.04	4.500	4.36	6.00	2.87

Max.Eff.Inten.(mm/hr)=	250.32	170.26		
over (min)	5.00	5.00		
Storage Coeff. (min)=	1.52 (ii)	2.30 (ii)		
Unit Hyd. Tpeak (min)=	5.00	5.00		
Unit Hyd. peak (cms)=	0.33	0.30		
			TOTALS	
PEAK FLOW (cms)=	0.63	0.00	0.630 (iii)	
TIME TO PEAK (hrs)=	2.33	2.33	2.33	
RUNOFF VOLUME (mm)=	84.43	54.64	84.13	
TOTAL RAINFALL (mm)=	85.43	85.43	85.43	
RUNOFF COEFFICIENT =	0.99	0.64	0.98	

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB		
STANDHYD (0103)	Area (ha)=	0.27
ID= 1 DT= 5.0 min	Total Imp(%)=	90.00 Dir. Conn.(%)= 90.00

Pre-Development_Major_System

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.24	0.03
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	42.43	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.99	1.583	7.83	3.083	9.27	4.58	4.11
0.167	2.99	1.667	7.83	3.167	9.27	4.67	4.11
0.250	3.19	1.750	9.98	3.250	8.03	4.75	3.89
0.333	3.19	1.833	9.98	3.333	8.03	4.83	3.89
0.417	3.42	1.917	14.18	3.417	7.11	4.92	3.70
0.500	3.42	2.000	14.18	3.500	7.11	5.00	3.70
0.583	3.70	2.083	27.99	3.583	6.40	5.08	3.52
0.667	3.70	2.167	27.99	3.667	6.40	5.17	3.52
0.750	4.03	2.250	250.32	3.750	5.83	5.25	3.37
0.833	4.03	2.333	250.32	3.833	5.83	5.33	3.37
0.917	4.43	2.417	32.87	3.917	5.36	5.42	3.22
1.000	4.43	2.500	32.87	4.000	5.36	5.50	3.22
1.083	4.94	2.583	18.98	4.083	4.97	5.58	3.09
1.167	4.94	2.667	18.98	4.167	4.97	5.67	3.09
1.250	5.61	2.750	13.83	4.250	4.64	5.75	2.98
1.333	5.61	2.833	13.83	4.333	4.64	5.83	2.98
1.417	6.51	2.917	11.04	4.417	4.36	5.92	2.87
1.500	6.51	3.000	11.04	4.500	4.36	6.00	2.87

Max.Eff.Inten.(mm/hr)=		250.32	170.26	
over (min)		5.00	5.00	
Storage Coeff. (min)=		1.06 (ii)	3.09 (ii)	
Unit Hyd. Tpeak (min)=		5.00	5.00	
Unit Hyd. peak (cms)=		0.34	0.27	
				TOTALS
PEAK FLOW	(cms)=	0.17	0.01	0.182 (iii)
TIME TO PEAK	(hrs)=	2.33	2.33	2.33
RUNOFF VOLUME	(mm)=	84.43	54.64	81.44
TOTAL RAINFALL	(mm)=	85.43	85.43	85.43
RUNOFF COEFFICIENT	=	0.99	0.64	0.95

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL



THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (1000)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
	ID1= 1 (0100):	2.49	1.715	2.33	84.13
	+ ID2= 2 (0101):	0.07	0.049	2.33	84.13
	ID = 3 (1000):	2.56	1.763	2.33	84.13

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (1000)		AREA	QPEAK	TPEAK	R.V.
3 + 2 = 1		(ha)	(cms)	(hrs)	(mm)
	ID1= 3 (1000):	2.56	1.763	2.33	84.13
	+ ID2= 2 (0102):	0.91	0.630	2.33	84.13
	ID = 1 (1000):	3.47	2.394	2.33	84.13

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (1000)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
	ID1= 1 (1000):	3.47	2.394	2.33	84.13
	+ ID2= 2 (0103):	0.27	0.182	2.33	81.44
	ID = 3 (1000):	3.74	2.576	2.33	83.93

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

DUHYD (1001)					
Inlet Cap.= 0.882					
#of Inlets= 1					
Total(cms)= 0.9		AREA	QPEAK	TPEAK	R.V.
		(ha)	(cms)	(hrs)	(mm)
	TOTAL HYD.(ID= 1):	3.74	2.58	2.33	83.93
	MAJOR SYS.(ID= 2):	1.16	1.69	2.33	83.93

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MINOR SYS.(ID= 3): 2.58 0.88 2.25 83.93

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB	
STANDHYD (0107)	Area (ha)= 0.03
ID= 1 DT= 5.0 min	Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.03	0.00
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	14.14	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.99	1.583	7.83	3.083	9.27	4.58	4.11
0.167	2.99	1.667	7.83	3.167	9.27	4.67	4.11
0.250	3.19	1.750	9.98	3.250	8.03	4.75	3.89
0.333	3.19	1.833	9.98	3.333	8.03	4.83	3.89
0.417	3.42	1.917	14.18	3.417	7.11	4.92	3.70
0.500	3.42	2.000	14.18	3.500	7.11	5.00	3.70
0.583	3.70	2.083	27.99	3.583	6.40	5.08	3.52
0.667	3.70	2.167	27.99	3.667	6.40	5.17	3.52
0.750	4.03	2.250	250.32	3.750	5.83	5.25	3.37
0.833	4.03	2.333	250.32	3.833	5.83	5.33	3.37
0.917	4.43	2.417	32.87	3.917	5.36	5.42	3.22
1.000	4.43	2.500	32.87	4.000	5.36	5.50	3.22
1.083	4.94	2.583	18.98	4.083	4.97	5.58	3.09
1.167	4.94	2.667	18.98	4.167	4.97	5.67	3.09
1.250	5.61	2.750	13.83	4.250	4.64	5.75	2.98
1.333	5.61	2.833	13.83	4.333	4.64	5.83	2.98
1.417	6.51	2.917	11.04	4.417	4.36	5.92	2.87
1.500	6.51	3.000	11.04	4.500	4.36	6.00	2.87

Max.Eff.Inten.(mm/hr)=	250.32	170.26		
over (min)	5.00	5.00		
Storage Coeff. (min)=	0.55 (ii)	1.33 (ii)		
Unit Hyd. Tpeak (min)=	5.00	5.00		
Unit Hyd. peak (cms)=	0.34	0.33		
			TOTALS	
PEAK FLOW (cms)=	0.02	0.00	0.021 (iii)	

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TIME TO PEAK (hrs)=	2.33	2.33	2.33
RUNOFF VOLUME (mm)=	84.43	54.64	84.13
TOTAL RAINFALL (mm)=	85.43	85.43	85.43
RUNOFF COEFFICIENT =	0.99	0.64	0.98

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (5005)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
ID1= 1 (1001):		1.16	1.694	2.33	83.93
+ ID2= 2 (0107):		0.03	0.021	2.33	84.13
ID = 3 (5005):		1.19	1.715	2.33	83.94

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB
STANDHYD (0104) | Area (ha)= 0.03
ID= 1 DT= 5.0 min | Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.03	0.00
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	14.14	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.99	1.583	7.83	3.083	9.27	4.58	4.11
0.167	2.99	1.667	7.83	3.167	9.27	4.67	4.11
0.250	3.19	1.750	9.98	3.250	8.03	4.75	3.89
0.333	3.19	1.833	9.98	3.333	8.03	4.83	3.89
0.417	3.42	1.917	14.18	3.417	7.11	4.92	3.70
0.500	3.42	2.000	14.18	3.500	7.11	5.00	3.70

Pre-Development_Major_System

0.583	3.70	2.083	27.99	3.583	6.40	5.08	3.52
0.667	3.70	2.167	27.99	3.667	6.40	5.17	3.52
0.750	4.03	2.250	250.32	3.750	5.83	5.25	3.37
0.833	4.03	2.333	250.32	3.833	5.83	5.33	3.37
0.917	4.43	2.417	32.87	3.917	5.36	5.42	3.22
1.000	4.43	2.500	32.87	4.000	5.36	5.50	3.22
1.083	4.94	2.583	18.98	4.083	4.97	5.58	3.09
1.167	4.94	2.667	18.98	4.167	4.97	5.67	3.09
1.250	5.61	2.750	13.83	4.250	4.64	5.75	2.98
1.333	5.61	2.833	13.83	4.333	4.64	5.83	2.98
1.417	6.51	2.917	11.04	4.417	4.36	5.92	2.87
1.500	6.51	3.000	11.04	4.500	4.36	6.00	2.87

			TOTALS
Max.Eff.Inten.(mm/hr)=	250.32	170.26	
over (min)	5.00	5.00	
Storage Coeff. (min)=	0.55 (ii)	1.33 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.34	0.33	
PEAK FLOW (cms)=	0.02	0.00	0.021 (iii)
TIME TO PEAK (hrs)=	2.33	2.33	2.33
RUNOFF VOLUME (mm)=	84.43	54.64	84.13
TOTAL RAINFALL (mm)=	85.43	85.43	85.43
RUNOFF COEFFICIENT =	0.99	0.64	0.98

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB STANDHYD (0108) ID= 1 DT= 5.0 min	Area (ha)= 0.03 Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.03	0.00
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	14.14	40.00
Mannings n =	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

Pre-Development_Major_System

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.99	1.583	7.83	3.083	9.27	4.58	4.11
0.167	2.99	1.667	7.83	3.167	9.27	4.67	4.11
0.250	3.19	1.750	9.98	3.250	8.03	4.75	3.89
0.333	3.19	1.833	9.98	3.333	8.03	4.83	3.89
0.417	3.42	1.917	14.18	3.417	7.11	4.92	3.70
0.500	3.42	2.000	14.18	3.500	7.11	5.00	3.70
0.583	3.70	2.083	27.99	3.583	6.40	5.08	3.52
0.667	3.70	2.167	27.99	3.667	6.40	5.17	3.52
0.750	4.03	2.250	250.32	3.750	5.83	5.25	3.37
0.833	4.03	2.333	250.32	3.833	5.83	5.33	3.37
0.917	4.43	2.417	32.87	3.917	5.36	5.42	3.22
1.000	4.43	2.500	32.87	4.000	5.36	5.50	3.22
1.083	4.94	2.583	18.98	4.083	4.97	5.58	3.09
1.167	4.94	2.667	18.98	4.167	4.97	5.67	3.09
1.250	5.61	2.750	13.83	4.250	4.64	5.75	2.98
1.333	5.61	2.833	13.83	4.333	4.64	5.83	2.98
1.417	6.51	2.917	11.04	4.417	4.36	5.92	2.87
1.500	6.51	3.000	11.04	4.500	4.36	6.00	2.87

			TOTALS
Max.Eff.Inten.(mm/hr)=	250.32	167.45	
over (min)	5.00	5.00	
Storage Coeff. (min)=	0.55 (ii)	1.33 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.34	0.33	
PEAK FLOW (cms)=	0.02	0.00	0.021 (iii)
TIME TO PEAK (hrs)=	2.33	2.33	2.33
RUNOFF VOLUME (mm)=	84.43	54.71	84.13
TOTAL RAINFALL (mm)=	85.43	85.43	85.43
RUNOFF COEFFICIENT =	0.99	0.64	0.98

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 85.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (1002)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
	ID1= 1 (0104):	0.03	0.021	2.33	84.13
	+ ID2= 2 (0108):	0.03	0.021	2.33	84.13
		0.06	0.042	2.33	84.13



Pre-Development_Major_System

ID = 3 (1002): 0.06 0.042 2.33 84.13

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| DUHYD (1003)|
| Inlet Cap.= 0.015|
| #of Inlets= 1|
| Total(cms)= 0.0|

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
TOTAL HYD.(ID= 1):	0.06	0.04	2.33	84.13
MAJOR SYS.(ID= 2):	0.02	0.03	2.33	84.13
MINOR SYS.(ID= 3):	0.04	0.01	2.25	84.13

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ADD HYD (5003)|
| 1 + 2 = 3 |

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (1001):	2.58	0.882	2.25	83.93
+ ID2= 2 (1003):	0.04	0.015	2.25	84.13
ID = 3 (5003):	2.63	0.897	2.25	83.94

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| CALIB |
| STANDHYD (0105)| Area (ha)= 0.18
|ID= 1 DT= 5.0 min | Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.18	0.00
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	34.64	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.99	1.583	7.83	3.083	9.27	4.58	4.11

Pre-Development_Major_System

0.167	2.99	1.667	7.83	3.167	9.27	4.67	4.11
0.250	3.19	1.750	9.98	3.250	8.03	4.75	3.89
0.333	3.19	1.833	9.98	3.333	8.03	4.83	3.89
0.417	3.42	1.917	14.18	3.417	7.11	4.92	3.70
0.500	3.42	2.000	14.18	3.500	7.11	5.00	3.70
0.583	3.70	2.083	27.99	3.583	6.40	5.08	3.52
0.667	3.70	2.167	27.99	3.667	6.40	5.17	3.52
0.750	4.03	2.250	250.32	3.750	5.83	5.25	3.37
0.833	4.03	2.333	250.32	3.833	5.83	5.33	3.37
0.917	4.43	2.417	32.87	3.917	5.36	5.42	3.22
1.000	4.43	2.500	32.87	4.000	5.36	5.50	3.22
1.083	4.94	2.583	18.98	4.083	4.97	5.58	3.09
1.167	4.94	2.667	18.98	4.167	4.97	5.67	3.09
1.250	5.61	2.750	13.83	4.250	4.64	5.75	2.98
1.333	5.61	2.833	13.83	4.333	4.64	5.83	2.98
1.417	6.51	2.917	11.04	4.417	4.36	5.92	2.87
1.500	6.51	3.000	11.04	4.500	4.36	6.00	2.87

			TOTALS
Max.Eff.Inten.(mm/hr)=	250.32	167.45	
over (min)	5.00	5.00	
Storage Coeff. (min)=	0.94 (ii)	1.71 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.34	0.32	
PEAK FLOW (cms)=	0.12	0.00	0.125 (iii)
TIME TO PEAK (hrs)=	2.33	2.33	2.33
RUNOFF VOLUME (mm)=	84.43	54.71	84.13
TOTAL RAINFALL (mm)=	85.43	85.43	85.43
RUNOFF COEFFICIENT =	0.99	0.64	0.98

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 85.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB STANDHYD (0106)	Area (ha)= 0.03
ID= 1 DT= 5.0 min	Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.03	0.00
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	14.14	40.00
Mannings n =	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.99	1.583	7.83	3.083	9.27	4.58	4.11
0.167	2.99	1.667	7.83	3.167	9.27	4.67	4.11
0.250	3.19	1.750	9.98	3.250	8.03	4.75	3.89
0.333	3.19	1.833	9.98	3.333	8.03	4.83	3.89
0.417	3.42	1.917	14.18	3.417	7.11	4.92	3.70
0.500	3.42	2.000	14.18	3.500	7.11	5.00	3.70
0.583	3.70	2.083	27.99	3.583	6.40	5.08	3.52
0.667	3.70	2.167	27.99	3.667	6.40	5.17	3.52
0.750	4.03	2.250	250.32	3.750	5.83	5.25	3.37
0.833	4.03	2.333	250.32	3.833	5.83	5.33	3.37
0.917	4.43	2.417	32.87	3.917	5.36	5.42	3.22
1.000	4.43	2.500	32.87	4.000	5.36	5.50	3.22
1.083	4.94	2.583	18.98	4.083	4.97	5.58	3.09
1.167	4.94	2.667	18.98	4.167	4.97	5.67	3.09
1.250	5.61	2.750	13.83	4.250	4.64	5.75	2.98
1.333	5.61	2.833	13.83	4.333	4.64	5.83	2.98
1.417	6.51	2.917	11.04	4.417	4.36	5.92	2.87
1.500	6.51	3.000	11.04	4.500	4.36	6.00	2.87

			TOTALS
Max.Eff.Inten.(mm/hr)=	250.32	167.45	
over (min)	5.00	5.00	
Storage Coeff. (min)=	0.55 (ii)	1.33 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.34	0.33	
PEAK FLOW (cms)=	0.02	0.00	0.021 (iii)
TIME TO PEAK (hrs)=	2.33	2.33	2.33
RUNOFF VOLUME (mm)=	84.43	54.71	84.13
TOTAL RAINFALL (mm)=	85.43	85.43	85.43
RUNOFF COEFFICIENT =	0.99	0.64	0.98

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 85.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

| ADD HYD (1005)|



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                                Pre-Development_Major_System
|   1 +  2 =  3    |          AREA     QPEAK     TPEAK      R.V.
--------------------          (ha)     (cms)     (hrs)      (mm)
        ID1= 1 (  0105):      0.18    0.125      2.33     84.13
      + ID2= 2 (  0106):      0.03    0.021      2.33     84.13
        ================================================
        ID = 3 (  1005):      0.21    0.146      2.33     84.13

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
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--------------------
| DUHYD    (  1006)|
| Inlet Cap.= 0.051|
| #of Inlets=     1|
| Total(cms)=   0.1|       AREA      QPEAK      TPEAK     R.V.
--------------------       (ha)      (cms)      (hrs)     (mm)
     TOTAL HYD.(ID= 1):    0.21       0.15       2.33    84.13
     ================================================
     MAJOR SYS.(ID= 2):    0.07       0.09       2.33    84.13
     MINOR SYS.(ID= 3):    0.14       0.05       2.25    84.13

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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| ADD HYD  (  1004)|
|   1 +  2 =  3    |          AREA     QPEAK     TPEAK      R.V.
--------------------          (ha)     (cms)     (hrs)      (mm)
        ID1= 1 (  1003):      0.02    0.027      2.33     84.13
      + ID2= 2 (  1006):      0.07    0.095      2.33     84.13
        ================================================
        ID = 3 (  1004):      0.09    0.121      2.33     84.13

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
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--------------------
| SHIFT HYD(  1007)|
| IN= 2---> OUT= 1 |
| SHIFT=  1.0 min  |       AREA      QPEAK      TPEAK       R.V.
--------------------       (ha)      (cms)      (hrs)       (mm)
          ID= 2 (  1006):    0.14       0.05       2.25      84.13
    SHIFT ID= 1 (  1007):    0.14       0.05       2.25      84.13


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| ADD HYD  (  5001)|
|   1 +  2 =  3    |          AREA     QPEAK     TPEAK      R.V.
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Pre-Development_Major_System

		(ha)	(cms)	(hrs)	(mm)
ID1= 1 (1004):		0.09	0.121	2.33	84.13
+ ID2= 2 (1007):		0.14	0.051	2.25	84.13
ID = 3 (5001):		0.23	0.172	2.33	84.13

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (5001)
3 + 2 = 1

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (5001):	0.23	0.172	2.33	84.13
+ ID2= 2 (5003):	2.63	0.897	2.25	83.94
ID = 1 (5001):	2.85	1.069	2.33	83.95

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0203) | Area (ha)= 0.09
ID= 1 DT= 5.0 min | Total Imp(%)= 70.00 Dir. Conn.(%)= 30.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.06	0.03
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	24.49	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.99	1.583	7.83	3.083	9.27	4.58	4.11
0.167	2.99	1.667	7.83	3.167	9.27	4.67	4.11
0.250	3.19	1.750	9.98	3.250	8.03	4.75	3.89
0.333	3.19	1.833	9.98	3.333	8.03	4.83	3.89
0.417	3.42	1.917	14.18	3.417	7.11	4.92	3.70
0.500	3.42	2.000	14.18	3.500	7.11	5.00	3.70
0.583	3.70	2.083	27.99	3.583	6.40	5.08	3.52
0.667	3.70	2.167	27.99	3.667	6.40	5.17	3.52
0.750	4.03	2.250	250.32	3.750	5.83	5.25	3.37
0.833	4.03	2.333	250.32	3.833	5.83	5.33	3.37
0.917	4.43	2.417	32.87	3.917	5.36	5.42	3.22

Pre-Development_Major_System

1.000	4.43	2.500	32.87	4.000	5.36	5.50	3.22
1.083	4.94	2.583	18.98	4.083	4.97	5.58	3.09
1.167	4.94	2.667	18.98	4.167	4.97	5.67	3.09
1.250	5.61	2.750	13.83	4.250	4.64	5.75	2.98
1.333	5.61	2.833	13.83	4.333	4.64	5.83	2.98
1.417	6.51	2.917	11.04	4.417	4.36	5.92	2.87
1.500	6.51	3.000	11.04	4.500	4.36	6.00	2.87

Max.Eff.Inten.(mm/hr)=	250.32	514.21	
over (min)	5.00	10.00	
Storage Coeff. (min)=	0.76 (ii)	5.65 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.34	0.15	
			TOTALS
PEAK FLOW (cms)=	0.02	0.03	0.046 (iii)
TIME TO PEAK (hrs)=	2.33	2.42	2.33
RUNOFF VOLUME (mm)=	84.43	69.68	74.06
TOTAL RAINFALL (mm)=	85.43	85.43	85.43
RUNOFF COEFFICIENT =	0.99	0.82	0.87

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB	
STANDHYD (0202)	Area (ha)= 0.27
ID= 1 DT= 5.0 min	Total Imp(%)= 70.00 Dir. Conn.(%)= 30.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.19	0.08
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	42.43	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.99	1.583	7.83	3.083	9.27	4.58	4.11
0.167	2.99	1.667	7.83	3.167	9.27	4.67	4.11
0.250	3.19	1.750	9.98	3.250	8.03	4.75	3.89

Pre-Development_Major_System

0.333	3.19	1.833	9.98	3.333	8.03	4.83	3.89
0.417	3.42	1.917	14.18	3.417	7.11	4.92	3.70
0.500	3.42	2.000	14.18	3.500	7.11	5.00	3.70
0.583	3.70	2.083	27.99	3.583	6.40	5.08	3.52
0.667	3.70	2.167	27.99	3.667	6.40	5.17	3.52
0.750	4.03	2.250	250.32	3.750	5.83	5.25	3.37
0.833	4.03	2.333	250.32	3.833	5.83	5.33	3.37
0.917	4.43	2.417	32.87	3.917	5.36	5.42	3.22
1.000	4.43	2.500	32.87	4.000	5.36	5.50	3.22
1.083	4.94	2.583	18.98	4.083	4.97	5.58	3.09
1.167	4.94	2.667	18.98	4.167	4.97	5.67	3.09
1.250	5.61	2.750	13.83	4.250	4.64	5.75	2.98
1.333	5.61	2.833	13.83	4.333	4.64	5.83	2.98
1.417	6.51	2.917	11.04	4.417	4.36	5.92	2.87
1.500	6.51	3.000	11.04	4.500	4.36	6.00	2.87

			TOTALS
Max.Eff.Inten.(mm/hr)=	250.32	514.21	
over (min)	5.00	10.00	
Storage Coeff. (min)=	1.06 (ii)	5.95 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.34	0.15	
PEAK FLOW (cms)=	0.06	0.08	0.135 (iii)
TIME TO PEAK (hrs)=	2.33	2.42	2.33
RUNOFF VOLUME (mm)=	84.43	69.68	74.08
TOTAL RAINFALL (mm)=	85.43	85.43	85.43
RUNOFF COEFFICIENT =	0.99	0.82	0.87

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (5004)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0202):	0.27	0.135	2.33	74.08
+ ID2= 2 (0203):	0.09	0.046	2.33	74.06
ID = 3 (5004):	0.36	0.180	2.33	74.08

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

Pre-Development_Major_System

```
--------------------
| ADD HYD  (  5000)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  5001):     2.85   1.069     2.33    83.95
      + ID2= 2 (  5004):     0.36   0.180     2.33    74.08
        ================================================
        ID = 3 (  5000):     3.21   1.249     2.33    82.85

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  5000)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  5000):     3.21   1.249     2.33    82.85
      + ID2= 2 (  5005):     1.19   1.715     2.33    83.94
        ================================================
        ID = 1 (  5000):     4.40   2.964     2.33    83.14

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
================================================================================
========================

       V    V   I    SSSSS  U   U    A    L              (v 6.2.2010)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat

  Output  filename:
C:\Users\ykoshenkov\AppData\Local\Civica\VH5\95aa6302-d561-466b-a85b-2e34c191f114\5
fc3e1c7-d8db-4e26-b4c1-d2a6e353fb62\s
```

Pre-Development_Major_System

Summary filename:
C:\Users\ykoshenkov\AppData\Local\Civica\VH5\95aa6302-d561-466b-a85b-2e34c191f114\5fc3e1c7-d8db-4e26-b4c1-d2a6e353fb62\s

DATE: 06-30-2022 TIME: 05:05:14

USER:

COMMENTS: _____

****
** SIMULATION : 10-year storm **
****

| CHICAGO STORM |
| Ptotal= 55.38 mm |

IDF curve parameters: A=1023.840
B= 0.000
C= 0.800
used in: INTENSITY = A / (t + B)^C

Duration of storm = 6.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.38

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.00	1.94	1.50	5.08	3.00	6.01	4.50	2.66
0.17	2.07	1.67	6.47	3.17	5.21	4.67	2.52
0.33	2.22	1.83	9.19	3.33	4.61	4.83	2.40
0.50	2.40	2.00	18.14	3.50	4.15	5.00	2.28
0.67	2.61	2.17	162.27	3.67	3.78	5.17	2.18
0.83	2.87	2.33	21.31	3.83	3.48	5.33	2.09
1.00	3.20	2.50	12.30	4.00	3.22	5.50	2.01
1.17	3.63	2.67	8.97	4.17	3.01	5.67	1.93
1.33	4.22	2.83	7.16	4.33	2.82	5.83	1.86

| CALIB |
| STANDHYD (0100)| Area (ha)= 2.49
|ID= 1 DT= 5.0 min | Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

Pre-Development_Major_System

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	2.47	0.02
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	128.84	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.94	1.583	5.08	3.083	6.01	4.58	2.66
0.167	1.94	1.667	5.08	3.167	6.01	4.67	2.66
0.250	2.07	1.750	6.47	3.250	5.21	4.75	2.52
0.333	2.07	1.833	6.47	3.333	5.21	4.83	2.52
0.417	2.22	1.917	9.19	3.417	4.61	4.92	2.40
0.500	2.22	2.000	9.19	3.500	4.61	5.00	2.40
0.583	2.40	2.083	18.14	3.583	4.15	5.08	2.28
0.667	2.40	2.167	18.14	3.667	4.15	5.17	2.28
0.750	2.61	2.250	162.27	3.750	3.78	5.25	2.18
0.833	2.61	2.333	162.27	3.833	3.78	5.33	2.18
0.917	2.87	2.417	21.31	3.917	3.48	5.42	2.09
1.000	2.87	2.500	21.31	4.000	3.48	5.50	2.09
1.083	3.20	2.583	12.30	4.083	3.22	5.58	2.01
1.167	3.20	2.667	12.30	4.167	3.22	5.67	2.01
1.250	3.63	2.750	8.97	4.250	3.01	5.75	1.93
1.333	3.63	2.833	8.97	4.333	3.01	5.83	1.93
1.417	4.22	2.917	7.16	4.417	2.82	5.92	1.86
1.500	4.22	3.000	7.16	4.500	2.82	6.00	1.86

Max.Eff.Inten.	(mm/hr)=	162.27	86.46	
over	(min)	5.00	5.00	
Storage Coeff.	(min)=	2.45 (ii)	3.38 (ii)	
Unit Hyd. Tpeak	(min)=	5.00	5.00	
Unit Hyd. peak	(cms)=	0.30	0.26	
				TOTALS
PEAK FLOW	(cms)=	1.09	0.01	1.101 (iii)
TIME TO PEAK	(hrs)=	2.33	2.33	2.33
RUNOFF VOLUME	(mm)=	54.38	28.73	54.12
TOTAL RAINFALL	(mm)=	55.38	55.38	55.38
RUNOFF COEFFICIENT	=	0.98	0.52	0.98

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)

(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.

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(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB	
STANDHYD (0101)	Area (ha)= 0.07
ID= 1 DT= 5.0 min	Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.07	0.00
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	21.60	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.94	1.583	5.08	3.083	6.01	4.58	2.66
0.167	1.94	1.667	5.08	3.167	6.01	4.67	2.66
0.250	2.07	1.750	6.47	3.250	5.21	4.75	2.52
0.333	2.07	1.833	6.47	3.333	5.21	4.83	2.52
0.417	2.22	1.917	9.19	3.417	4.61	4.92	2.40
0.500	2.22	2.000	9.19	3.500	4.61	5.00	2.40
0.583	2.40	2.083	18.14	3.583	4.15	5.08	2.28
0.667	2.40	2.167	18.14	3.667	4.15	5.17	2.28
0.750	2.61	2.250	162.27	3.750	3.78	5.25	2.18
0.833	2.61	2.333	162.27	3.833	3.78	5.33	2.18
0.917	2.87	2.417	21.31	3.917	3.48	5.42	2.09
1.000	2.87	2.500	21.31	4.000	3.48	5.50	2.09
1.083	3.20	2.583	12.30	4.083	3.22	5.58	2.01
1.167	3.20	2.667	12.30	4.167	3.22	5.67	2.01
1.250	3.63	2.750	8.97	4.250	3.01	5.75	1.93
1.333	3.63	2.833	8.97	4.333	3.01	5.83	1.93
1.417	4.22	2.917	7.16	4.417	2.82	5.92	1.86
1.500	4.22	3.000	7.16	4.500	2.82	6.00	1.86

Max.Eff.Inten.(mm/hr)=		162.27	86.46	
over (min)		5.00	5.00	
Storage Coeff. (min)=		0.84 (ii)	1.76 (ii)	
Unit Hyd. Tpeak (min)=		5.00	5.00	
Unit Hyd. peak (cms)=		0.34	0.32	
				TOTALS
PEAK FLOW	(cms)=	0.03	0.00	0.031 (iii)
TIME TO PEAK	(hrs)=	2.33	2.33	2.33
RUNOFF VOLUME	(mm)=	54.38	28.73	54.12

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TOTAL RAINFALL (mm)=	55.38	55.38	55.38
RUNOFF COEFFICIENT =	0.98	0.52	0.98

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB	
STANDHYD (0102)	Area (ha)= 0.91
ID= 1 DT= 5.0 min	Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.90	0.01
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	77.89	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.94	1.583	5.08	3.083	6.01	4.58	2.66
0.167	1.94	1.667	5.08	3.167	6.01	4.67	2.66
0.250	2.07	1.750	6.47	3.250	5.21	4.75	2.52
0.333	2.07	1.833	6.47	3.333	5.21	4.83	2.52
0.417	2.22	1.917	9.19	3.417	4.61	4.92	2.40
0.500	2.22	2.000	9.19	3.500	4.61	5.00	2.40
0.583	2.40	2.083	18.14	3.583	4.15	5.08	2.28
0.667	2.40	2.167	18.14	3.667	4.15	5.17	2.28
0.750	2.61	2.250	162.27	3.750	3.78	5.25	2.18
0.833	2.61	2.333	162.27	3.833	3.78	5.33	2.18
0.917	2.87	2.417	21.31	3.917	3.48	5.42	2.09
1.000	2.87	2.500	21.31	4.000	3.48	5.50	2.09
1.083	3.20	2.583	12.30	4.083	3.22	5.58	2.01
1.167	3.20	2.667	12.30	4.167	3.22	5.67	2.01
1.250	3.63	2.750	8.97	4.250	3.01	5.75	1.93
1.333	3.63	2.833	8.97	4.333	3.01	5.83	1.93
1.417	4.22	2.917	7.16	4.417	2.82	5.92	1.86
1.500	4.22	3.000	7.16	4.500	2.82	6.00	1.86

Max.Eff.Inten.(mm/hr)=	162.27	86.46

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over (min)		5.00	5.00	
Storage Coeff. (min)=		1.81 (ii)	2.74 (ii)	
Unit Hyd. Tpeak (min)=		5.00	5.00	
Unit Hyd. peak (cms)=		0.32	0.29	
				TOTALS
PEAK FLOW	(cms)=	0.40	0.00	0.407 (iii)
TIME TO PEAK	(hrs)=	2.33	2.33	2.33
RUNOFF VOLUME	(mm)=	54.38	28.73	54.12
TOTAL RAINFALL	(mm)=	55.38	55.38	55.38
RUNOFF COEFFICIENT	=	0.98	0.52	0.98

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB	
STANDHYD (0103)	Area (ha)= 0.27
ID= 1 DT= 5.0 min	Total Imp(%)= 90.00 Dir. Conn.(%)= 90.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.24	0.03
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	42.43	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.94	1.583	5.08	3.083	6.01	4.58	2.66
0.167	1.94	1.667	5.08	3.167	6.01	4.67	2.66
0.250	2.07	1.750	6.47	3.250	5.21	4.75	2.52
0.333	2.07	1.833	6.47	3.333	5.21	4.83	2.52
0.417	2.22	1.917	9.19	3.417	4.61	4.92	2.40
0.500	2.22	2.000	9.19	3.500	4.61	5.00	2.40
0.583	2.40	2.083	18.14	3.583	4.15	5.08	2.28
0.667	2.40	2.167	18.14	3.667	4.15	5.17	2.28
0.750	2.61	2.250	162.27	3.750	3.78	5.25	2.18
0.833	2.61	2.333	162.27	3.833	3.78	5.33	2.18
0.917	2.87	2.417	21.31	3.917	3.48	5.42	2.09
1.000	2.87	2.500	21.31	4.000	3.48	5.50	2.09

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1.083	3.20	2.583	12.30	4.083	3.22	5.58	2.01
1.167	3.20	2.667	12.30	4.167	3.22	5.67	2.01
1.250	3.63	2.750	8.97	4.250	3.01	5.75	1.93
1.333	3.63	2.833	8.97	4.333	3.01	5.83	1.93
1.417	4.22	2.917	7.16	4.417	2.82	5.92	1.86
1.500	4.22	3.000	7.16	4.500	2.82	6.00	1.86

			TOTALS
Max.Eff.Inten.(mm/hr)=	162.27	86.46	
over (min)	5.00	5.00	
Storage Coeff. (min)=	1.26 (ii)	3.67 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.33	0.25	
PEAK FLOW (cms)=	0.11	0.01	0.116 (iii)
TIME TO PEAK (hrs)=	2.33	2.33	2.33
RUNOFF VOLUME (mm)=	54.38	28.73	51.81
TOTAL RAINFALL (mm)=	55.38	55.38	55.38
RUNOFF COEFFICIENT =	0.98	0.52	0.94

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (1000)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0100):	2.49	1.101	2.33	54.12
+ ID2= 2 (0101):	0.07	0.031	2.33	54.12
ID = 3 (1000):	2.56	1.132	2.33	54.12

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (1000)				
3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (1000):	2.56	1.132	2.33	54.12
+ ID2= 2 (0102):	0.91	0.407	2.33	54.12
ID = 1 (1000):	3.47	1.539	2.33	54.12

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NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (1000)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
	ID1= 1 (1000):	3.47	1.539	2.33	54.12
	+ ID2= 2 (0103):	0.27	0.116	2.33	51.81
	ID = 3 (1000):	3.74	1.656	2.33	53.95

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

DUHYD (1001)		AREA	QPEAK	TPEAK	R.V.
Inlet Cap.= 0.882					
#of Inlets= 1					
Total(cms)= 0.9		(ha)	(cms)	(hrs)	(mm)
	TOTAL HYD.(ID= 1):	3.74	1.66	2.33	53.95
	MAJOR SYS.(ID= 2):	0.78	0.77	2.33	53.95
	MINOR SYS.(ID= 3):	2.96	0.88	2.25	53.95

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB			
STANDHYD (0107)	Area (ha)=	0.03	
ID= 1 DT= 5.0 min	Total Imp(%)=	99.00	Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.03	0.00
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	14.14	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.94	1.583	5.08	3.083	6.01	4.58	2.66
0.167	1.94	1.667	5.08	3.167	6.01	4.67	2.66
0.250	2.07	1.750	6.47	3.250	5.21	4.75	2.52

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0.333	2.07	1.833	6.47	3.333	5.21	4.83	2.52
0.417	2.22	1.917	9.19	3.417	4.61	4.92	2.40
0.500	2.22	2.000	9.19	3.500	4.61	5.00	2.40
0.583	2.40	2.083	18.14	3.583	4.15	5.08	2.28
0.667	2.40	2.167	18.14	3.667	4.15	5.17	2.28
0.750	2.61	2.250	162.27	3.750	3.78	5.25	2.18
0.833	2.61	2.333	162.27	3.833	3.78	5.33	2.18
0.917	2.87	2.417	21.31	3.917	3.48	5.42	2.09
1.000	2.87	2.500	21.31	4.000	3.48	5.50	2.09
1.083	3.20	2.583	12.30	4.083	3.22	5.58	2.01
1.167	3.20	2.667	12.30	4.167	3.22	5.67	2.01
1.250	3.63	2.750	8.97	4.250	3.01	5.75	1.93
1.333	3.63	2.833	8.97	4.333	3.01	5.83	1.93
1.417	4.22	2.917	7.16	4.417	2.82	5.92	1.86
1.500	4.22	3.000	7.16	4.500	2.82	6.00	1.86

Max.Eff.Inten.(mm/hr)=	162.27	86.46	
over (min)	5.00	5.00	
Storage Coeff. (min)=	0.65 (ii)	1.58 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.34	0.33	
			TOTALS
PEAK FLOW (cms)=	0.01	0.00	0.013 (iii)
TIME TO PEAK (hrs)=	2.33	2.33	2.33
RUNOFF VOLUME (mm)=	54.38	28.73	54.12
TOTAL RAINFALL (mm)=	55.38	55.38	55.38
RUNOFF COEFFICIENT =	0.98	0.52	0.98

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (5005) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (1001):	0.78	0.774	2.33	53.95
+ ID2= 2 (0107):	0.03	0.013	2.33	54.12
ID = 3 (5005):	0.81	0.787	2.33	53.96

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

Pre-Development_Major_System

CALIB	
STANDHYD (0104)	Area (ha)= 0.03
ID= 1 DT= 5.0 min	Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.03	0.00
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	14.14	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.94	1.583	5.08	3.083	6.01	4.58	2.66
0.167	1.94	1.667	5.08	3.167	6.01	4.67	2.66
0.250	2.07	1.750	6.47	3.250	5.21	4.75	2.52
0.333	2.07	1.833	6.47	3.333	5.21	4.83	2.52
0.417	2.22	1.917	9.19	3.417	4.61	4.92	2.40
0.500	2.22	2.000	9.19	3.500	4.61	5.00	2.40
0.583	2.40	2.083	18.14	3.583	4.15	5.08	2.28
0.667	2.40	2.167	18.14	3.667	4.15	5.17	2.28
0.750	2.61	2.250	162.27	3.750	3.78	5.25	2.18
0.833	2.61	2.333	162.27	3.833	3.78	5.33	2.18
0.917	2.87	2.417	21.31	3.917	3.48	5.42	2.09
1.000	2.87	2.500	21.31	4.000	3.48	5.50	2.09
1.083	3.20	2.583	12.30	4.083	3.22	5.58	2.01
1.167	3.20	2.667	12.30	4.167	3.22	5.67	2.01
1.250	3.63	2.750	8.97	4.250	3.01	5.75	1.93
1.333	3.63	2.833	8.97	4.333	3.01	5.83	1.93
1.417	4.22	2.917	7.16	4.417	2.82	5.92	1.86
1.500	4.22	3.000	7.16	4.500	2.82	6.00	1.86

Max.Eff.Inten.(mm/hr)=		162.27	86.46	
over (min)		5.00	5.00	
Storage Coeff.	(min)=	0.65 (ii)	1.58 (ii)	
Unit Hyd. Tpeak	(min)=	5.00	5.00	
Unit Hyd. peak	(cms)=	0.34	0.33	
				TOTALS
PEAK FLOW	(cms)=	0.01	0.00	0.013 (iii)
TIME TO PEAK	(hrs)=	2.33	2.33	2.33
RUNOFF VOLUME	(mm)=	54.38	28.73	54.12
TOTAL RAINFALL	(mm)=	55.38	55.38	55.38
RUNOFF COEFFICIENT	=	0.98	0.52	0.98

Pre-Development_Major_System

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB	
STANDHYD (0108)	Area (ha)= 0.03
ID= 1 DT= 5.0 min	Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.03	0.00
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	14.14	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.94	1.583	5.08	3.083	6.01	4.58	2.66
0.167	1.94	1.667	5.08	3.167	6.01	4.67	2.66
0.250	2.07	1.750	6.47	3.250	5.21	4.75	2.52
0.333	2.07	1.833	6.47	3.333	5.21	4.83	2.52
0.417	2.22	1.917	9.19	3.417	4.61	4.92	2.40
0.500	2.22	2.000	9.19	3.500	4.61	5.00	2.40
0.583	2.40	2.083	18.14	3.583	4.15	5.08	2.28
0.667	2.40	2.167	18.14	3.667	4.15	5.17	2.28
0.750	2.61	2.250	162.27	3.750	3.78	5.25	2.18
0.833	2.61	2.333	162.27	3.833	3.78	5.33	2.18
0.917	2.87	2.417	21.31	3.917	3.48	5.42	2.09
1.000	2.87	2.500	21.31	4.000	3.48	5.50	2.09
1.083	3.20	2.583	12.30	4.083	3.22	5.58	2.01
1.167	3.20	2.667	12.30	4.167	3.22	5.67	2.01
1.250	3.63	2.750	8.97	4.250	3.01	5.75	1.93
1.333	3.63	2.833	8.97	4.333	3.01	5.83	1.93
1.417	4.22	2.917	7.16	4.417	2.82	5.92	1.86
1.500	4.22	3.000	7.16	4.500	2.82	6.00	1.86

Max.Eff.Inten.(mm/hr)=		162.27	87.77
	over (min)	5.00	5.00
Storage Coeff.	(min)=	0.65 (ii)	1.58 (ii)
Unit Hyd. Tpeak	(min)=	5.00	5.00
Unit Hyd. peak	(cms)=	0.34	0.33

Pre-Development_Major_System

			TOTALS
PEAK FLOW (cms)=	0.01	0.00	0.013 (iii)
TIME TO PEAK (hrs)=	2.33	2.33	2.33
RUNOFF VOLUME (mm)=	54.38	29.41	54.13
TOTAL RAINFALL (mm)=	55.38	55.38	55.38
RUNOFF COEFFICIENT =	0.98	0.53	0.98

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 85.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (1002)					
1 + 2 = 3		AREA	QPEAK	TPEAK	R.V.
		(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0104):		0.03	0.013	2.33	54.12
+ ID2= 2 (0108):		0.03	0.013	2.33	54.13
ID = 3 (1002):		0.06	0.027	2.33	54.12

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

DUHYD (1003)				
Inlet Cap.= 0.015				
#of Inlets= 1				
Total(cms)= 0.0	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
TOTAL HYD.(ID= 1):	0.06	0.03	2.33	54.12
MAJOR SYS.(ID= 2):	0.01	0.01	2.33	54.12
MINOR SYS.(ID= 3):	0.05	0.01	2.25	54.12

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (5003)					
1 + 2 = 3		AREA	QPEAK	TPEAK	R.V.
		(ha)	(cms)	(hrs)	(mm)
ID1= 1 (1001):		2.96	0.882	2.25	53.95
+ ID2= 2 (1003):		0.05	0.015	2.25	54.12

Pre-Development_Major_System

ID = 3 (5003): 3.01 0.897 2.25 53.96

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB	
STANDHYD (0105)	Area (ha)= 0.18
ID= 1 DT= 5.0 min	Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.18	0.00
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	34.64	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.94	1.583	5.08	3.083	6.01	4.58	2.66
0.167	1.94	1.667	5.08	3.167	6.01	4.67	2.66
0.250	2.07	1.750	6.47	3.250	5.21	4.75	2.52
0.333	2.07	1.833	6.47	3.333	5.21	4.83	2.52
0.417	2.22	1.917	9.19	3.417	4.61	4.92	2.40
0.500	2.22	2.000	9.19	3.500	4.61	5.00	2.40
0.583	2.40	2.083	18.14	3.583	4.15	5.08	2.28
0.667	2.40	2.167	18.14	3.667	4.15	5.17	2.28
0.750	2.61	2.250	162.27	3.750	3.78	5.25	2.18
0.833	2.61	2.333	162.27	3.833	3.78	5.33	2.18
0.917	2.87	2.417	21.31	3.917	3.48	5.42	2.09
1.000	2.87	2.500	21.31	4.000	3.48	5.50	2.09
1.083	3.20	2.583	12.30	4.083	3.22	5.58	2.01
1.167	3.20	2.667	12.30	4.167	3.22	5.67	2.01
1.250	3.63	2.750	8.97	4.250	3.01	5.75	1.93
1.333	3.63	2.833	8.97	4.333	3.01	5.83	1.93
1.417	4.22	2.917	7.16	4.417	2.82	5.92	1.86
1.500	4.22	3.000	7.16	4.500	2.82	6.00	1.86

Max.Eff.Inten.(mm/hr)=		162.27	87.77	
over (min)		5.00	5.00	
Storage Coeff.	(min)=	1.11 (ii)	2.04 (ii)	
Unit Hyd. Tpeak	(min)=	5.00	5.00	
Unit Hyd. peak	(cms)=	0.34	0.31	
				TOTALS
PEAK FLOW	(cms)=	0.08	0.00	0.081 (iii)
TIME TO PEAK	(hrs)=	2.33	2.33	2.33

Pre-Development_Major_System

RUNOFF VOLUME	(mm)=	54.38	29.41	54.13
TOTAL RAINFALL	(mm)=	55.38	55.38	55.38
RUNOFF COEFFICIENT	=	0.98	0.53	0.98

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 85.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB	
STANDHYD (0106)	Area (ha)= 0.03
ID= 1 DT= 5.0 min	Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.03	0.00
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	14.14	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.94	1.583	5.08	3.083	6.01	4.58	2.66
0.167	1.94	1.667	5.08	3.167	6.01	4.67	2.66
0.250	2.07	1.750	6.47	3.250	5.21	4.75	2.52
0.333	2.07	1.833	6.47	3.333	5.21	4.83	2.52
0.417	2.22	1.917	9.19	3.417	4.61	4.92	2.40
0.500	2.22	2.000	9.19	3.500	4.61	5.00	2.40
0.583	2.40	2.083	18.14	3.583	4.15	5.08	2.28
0.667	2.40	2.167	18.14	3.667	4.15	5.17	2.28
0.750	2.61	2.250	162.27	3.750	3.78	5.25	2.18
0.833	2.61	2.333	162.27	3.833	3.78	5.33	2.18
0.917	2.87	2.417	21.31	3.917	3.48	5.42	2.09
1.000	2.87	2.500	21.31	4.000	3.48	5.50	2.09
1.083	3.20	2.583	12.30	4.083	3.22	5.58	2.01
1.167	3.20	2.667	12.30	4.167	3.22	5.67	2.01
1.250	3.63	2.750	8.97	4.250	3.01	5.75	1.93
1.333	3.63	2.833	8.97	4.333	3.01	5.83	1.93
1.417	4.22	2.917	7.16	4.417	2.82	5.92	1.86
1.500	4.22	3.000	7.16	4.500	2.82	6.00	1.86

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                              Pre-Development_Major_System
      Max.Eff.Inten.(mm/hr)=     162.27        87.77
                  over (min)       5.00         5.00
      Storage Coeff.  (min)=       0.65 (ii)    1.58 (ii)
      Unit Hyd. Tpeak (min)=       5.00         5.00
      Unit Hyd. peak  (cms)=       0.34         0.33
                                                          *TOTALS*
      PEAK FLOW       (cms)=       0.01         0.00         0.013 (iii)
      TIME TO PEAK    (hrs)=       2.33         2.33          2.33
      RUNOFF VOLUME    (mm)=      54.38        29.41         54.13
      TOTAL RAINFALL   (mm)=      55.38        55.38         55.38
      RUNOFF COEFFICIENT   =       0.98         0.53          0.98


        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  85.0    Ia = Dep. Storage  (Above)
       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
            THAN THE STORAGE COEFFICIENT.
      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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| ADD HYD  (  1005)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0105):     0.18   0.081     2.33    54.13
      + ID2= 2 (  0106):     0.03   0.013     2.33    54.13
        ================================================
        ID = 3 (  1005):     0.21   0.094     2.33    54.13

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
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--------------------
| DUHYD    (  1006)|
| Inlet Cap.= 0.051|
| #of Inlets=     1|
| Total(cms)=   0.1|      AREA     QPEAK     TPEAK    R.V.
--------------------      (ha)     (cms)     (hrs)    (mm)
     TOTAL HYD.(ID= 1):   0.21      0.09      2.33   54.13
     ====================================================
     MAJOR SYS.(ID= 2):   0.05      0.04      2.33   54.13
     MINOR SYS.(ID= 3):   0.16      0.05      2.25   54.13

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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| ADD HYD  (  1004)|
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Pre-Development_Major_System

1 + 2 = 3		AREA	QPEAK	TPEAK	R.V.
		(ha)	(cms)	(hrs)	(mm)
	ID1= 1 (1003):	0.01	0.012	2.33	54.12
	+ ID2= 2 (1006):	0.05	0.043	2.33	54.13
	ID = 3 (1004):	0.06	0.055	2.33	54.13

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

SHIFT HYD(1007)					
IN= 2---> OUT= 1					
SHIFT= 1.0 min		AREA	QPEAK	TPEAK	R.V.
		(ha)	(cms)	(hrs)	(mm)
	ID= 2 (1006):	0.16	0.05	2.25	54.13
	SHIFT ID= 1 (1007):	0.16	0.05	2.25	54.13

ADD HYD (5001)					
1 + 2 = 3		AREA	QPEAK	TPEAK	R.V.
		(ha)	(cms)	(hrs)	(mm)
	ID1= 1 (1004):	0.06	0.055	2.33	54.13
	+ ID2= 2 (1007):	0.16	0.051	2.25	54.13
	ID = 3 (5001):	0.22	0.106	2.33	54.13

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (5001)					
3 + 2 = 1		AREA	QPEAK	TPEAK	R.V.
		(ha)	(cms)	(hrs)	(mm)
	ID1= 3 (5001):	0.22	0.106	2.33	54.13
	+ ID2= 2 (5003):	3.01	0.897	2.25	53.96
	ID = 1 (5001):	3.23	1.003	2.33	53.97

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB					
STANDHYD (0203)	Area (ha)= 0.09				
ID= 1 DT= 5.0 min	Total Imp(%)= 70.00		Dir. Conn.(%)= 30.00		
		IMPERVIOUS	PERVIOUS (i)		

Pre-Development_Major_System

Surface Area (ha)=	0.06	0.03	
Dep. Storage (mm)=	1.00	5.00	
Average Slope (%)=	1.00	2.00	
Length (m)=	24.49	40.00	
Mannings n =	0.013	0.250	

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.94	1.583	5.08	3.083	6.01	4.58	2.66
0.167	1.94	1.667	5.08	3.167	6.01	4.67	2.66
0.250	2.07	1.750	6.47	3.250	5.21	4.75	2.52
0.333	2.07	1.833	6.47	3.333	5.21	4.83	2.52
0.417	2.22	1.917	9.19	3.417	4.61	4.92	2.40
0.500	2.22	2.000	9.19	3.500	4.61	5.00	2.40
0.583	2.40	2.083	18.14	3.583	4.15	5.08	2.28
0.667	2.40	2.167	18.14	3.667	4.15	5.17	2.28
0.750	2.61	2.250	162.27	3.750	3.78	5.25	2.18
0.833	2.61	2.333	162.27	3.833	3.78	5.33	2.18
0.917	2.87	2.417	21.31	3.917	3.48	5.42	2.09
1.000	2.87	2.500	21.31	4.000	3.48	5.50	2.09
1.083	3.20	2.583	12.30	4.083	3.22	5.58	2.01
1.167	3.20	2.667	12.30	4.167	3.22	5.67	2.01
1.250	3.63	2.750	8.97	4.250	3.01	5.75	1.93
1.333	3.63	2.833	8.97	4.333	3.01	5.83	1.93
1.417	4.22	2.917	7.16	4.417	2.82	5.92	1.86
1.500	4.22	3.000	7.16	4.500	2.82	6.00	1.86

Max.Eff.Inten.(mm/hr)=	162.27	300.70	
over (min)	5.00	10.00	
Storage Coeff. (min)=	0.90 (ii)	5.45 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.34	0.16	
			TOTALS
PEAK FLOW (cms)=	0.01	0.02	0.028 (iii)
TIME TO PEAK (hrs)=	2.33	2.42	2.33
RUNOFF VOLUME (mm)=	54.38	40.78	44.80
TOTAL RAINFALL (mm)=	55.38	55.38	55.38
RUNOFF COEFFICIENT =	0.98	0.74	0.81

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB STANDHYD (0202) ID= 1 DT= 5.0 min	Area (ha)= 0.27 Total Imp(%)= 70.00 Dir. Conn.(%)= 30.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.19	0.08
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	42.43	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.94	1.583	5.08	3.083	6.01	4.58	2.66
0.167	1.94	1.667	5.08	3.167	6.01	4.67	2.66
0.250	2.07	1.750	6.47	3.250	5.21	4.75	2.52
0.333	2.07	1.833	6.47	3.333	5.21	4.83	2.52
0.417	2.22	1.917	9.19	3.417	4.61	4.92	2.40
0.500	2.22	2.000	9.19	3.500	4.61	5.00	2.40
0.583	2.40	2.083	18.14	3.583	4.15	5.08	2.28
0.667	2.40	2.167	18.14	3.667	4.15	5.17	2.28
0.750	2.61	2.250	162.27	3.750	3.78	5.25	2.18
0.833	2.61	2.333	162.27	3.833	3.78	5.33	2.18
0.917	2.87	2.417	21.31	3.917	3.48	5.42	2.09
1.000	2.87	2.500	21.31	4.000	3.48	5.50	2.09
1.083	3.20	2.583	12.30	4.083	3.22	5.58	2.01
1.167	3.20	2.667	12.30	4.167	3.22	5.67	2.01
1.250	3.63	2.750	8.97	4.250	3.01	5.75	1.93
1.333	3.63	2.833	8.97	4.333	3.01	5.83	1.93
1.417	4.22	2.917	7.16	4.417	2.82	5.92	1.86
1.500	4.22	3.000	7.16	4.500	2.82	6.00	1.86

Max.Eff.Inten.(mm/hr)=		162.27	300.70	
over (min)		5.00	10.00	
Storage Coeff. (min)=		1.26 (ii)	5.80 (ii)	
Unit Hyd. Tpeak (min)=		5.00	10.00	
Unit Hyd. peak (cms)=		0.33	0.15	
				TOTALS
PEAK FLOW	(cms)=	0.04	0.05	0.082 (iii)
TIME TO PEAK	(hrs)=	2.33	2.42	2.33
RUNOFF VOLUME	(mm)=	54.38	40.78	44.85
TOTAL RAINFALL	(mm)=	55.38	55.38	55.38

```
                              Pre-Development_Major_System
      RUNOFF COEFFICIENT   =       0.98         0.74          0.81

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  87.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  5004)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0202):     0.27   0.082     2.33    44.85
      + ID2= 2 (  0203):     0.09   0.028     2.33    44.80
        ================================================
        ID = 3 (  5004):     0.36   0.110     2.33    44.83

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  5000)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  5001):     3.23   1.003     2.33    53.97
      + ID2= 2 (  5004):     0.36   0.110     2.33    44.83
        ================================================
        ID = 3 (  5000):     3.59   1.113     2.33    53.05

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  5000)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  5000):     3.59   1.113     2.33    53.05
      + ID2= 2 (  5005):     0.81   0.787     2.33    53.96
        ================================================
        ID = 1 (  5000):     4.40   1.900     2.33    53.22

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
================================================================================
========================

       V    V   I    SSSSS  U   U    A    L             (v 6.2.2010)
```



```
                          Pre-Development_Major_System
        V    V   I    SS     U   U   A A   L
         V  V    I     SS    U   U  AAAAA  L
         V  V    I      SS   U   U  A   A  L
          VV     I    SSSSS  UUUUU  A   A  LLLLL

         OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
        O   O    T      T    H   H   Y Y   MM MM  O   O
        O   O    T      T    H   H    Y    M   M  O   O
         OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat

  Output  filename:
C:\Users\ykoshenkov\AppData\Local\Civica\VH5\95aa6302-d561-466b-a85b-2e34c191f114\f
3b90f06-3abb-4738-ad2a-da26e6055935\s
  Summary filename:
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3b90f06-3abb-4738-ad2a-da26e6055935\s


DATE: 06-30-2022                          TIME: 05:05:14

USER:



COMMENTS: _____________________________________________________________


--------------------------------------------------------------------------------
------------------------
  ***********************************************
  ** SIMULATION : 25-year storm                 **
  ***********************************************

--------------------
| CHICAGO STORM    |    IDF curve parameters: A=1195.802
| Ptotal= 64.68 mm |                          B=   0.000
--------------------                          C=   0.800
                       used in:   INTENSITY =  A / (t + B)^C

                       Duration of storm  =  6.00 hrs
```

Pre-Development_Major_System
Storm time step = 10.00 min
Time to peak ratio = 0.38

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.00	2.26	1.50	5.93	3.00	7.02	4.50	3.11
0.17	2.41	1.67	7.55	3.17	6.08	4.67	2.94
0.33	2.59	1.83	10.73	3.33	5.38	4.83	2.80
0.50	2.80	2.00	21.19	3.50	4.85	5.00	2.67
0.67	3.05	2.17	189.52	3.67	4.41	5.17	2.55
0.83	3.36	2.33	24.89	3.83	4.06	5.33	2.44
1.00	3.74	2.50	14.37	4.00	3.77	5.50	2.34
1.17	4.24	2.67	10.47	4.17	3.52	5.67	2.25
1.33	4.93	2.83	8.36	4.33	3.30	5.83	2.17

CALIB	
STANDHYD (0100)	Area (ha)= 2.49
ID= 1 DT= 5.0 min	Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	2.47	0.02
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	128.84	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.26	1.583	5.93	3.083	7.02	4.58	3.11
0.167	2.26	1.667	5.93	3.167	7.02	4.67	3.11
0.250	2.41	1.750	7.55	3.250	6.08	4.75	2.94
0.333	2.41	1.833	7.55	3.333	6.08	4.83	2.94
0.417	2.59	1.917	10.73	3.417	5.38	4.92	2.80
0.500	2.59	2.000	10.73	3.500	5.38	5.00	2.80
0.583	2.80	2.083	21.19	3.583	4.85	5.08	2.67
0.667	2.80	2.167	21.19	3.667	4.85	5.17	2.67
0.750	3.05	2.250	189.52	3.750	4.41	5.25	2.55
0.833	3.05	2.333	189.52	3.833	4.41	5.33	2.55
0.917	3.36	2.417	24.89	3.917	4.06	5.42	2.44
1.000	3.36	2.500	24.89	4.000	4.06	5.50	2.44
1.083	3.74	2.583	14.37	4.083	3.77	5.58	2.34
1.167	3.74	2.667	14.37	4.167	3.77	5.67	2.34

Pre-Development_Major_System

1.250	4.24	2.750	10.47	4.250	3.52	5.75	2.25
1.333	4.24	2.833	10.47	4.333	3.52	5.83	2.25
1.417	4.93	2.917	8.36	4.417	3.30	5.92	2.17
1.500	4.93	3.000	8.36	4.500	3.30	6.00	2.17

Max.Eff.Inten.(mm/hr)=	189.52	111.47	
over (min)	5.00	5.00	
Storage Coeff. (min)=	2.30 (ii)	3.17 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.30	0.27	
			TOTALS
PEAK FLOW (cms)=	1.28	0.01	1.291 (iii)
TIME TO PEAK (hrs)=	2.33	2.33	2.33
RUNOFF VOLUME (mm)=	63.68	36.48	63.41
TOTAL RAINFALL (mm)=	64.68	64.68	64.68
RUNOFF COEFFICIENT =	0.98	0.56	0.98

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB	
STANDHYD (0101)	Area (ha)= 0.07
ID= 1 DT= 5.0 min	Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.07	0.00
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	21.60	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.26	1.583	5.93	3.083	7.02	4.58	3.11
0.167	2.26	1.667	5.93	3.167	7.02	4.67	3.11
0.250	2.41	1.750	7.55	3.250	6.08	4.75	2.94
0.333	2.41	1.833	7.55	3.333	6.08	4.83	2.94
0.417	2.59	1.917	10.73	3.417	5.38	4.92	2.80
0.500	2.59	2.000	10.73	3.500	5.38	5.00	2.80

Pre-Development_Major_System

0.583	2.80	2.083	21.19	3.583	4.85	5.08	2.67
0.667	2.80	2.167	21.19	3.667	4.85	5.17	2.67
0.750	3.05	2.250	189.52	3.750	4.41	5.25	2.55
0.833	3.05	2.333	189.52	3.833	4.41	5.33	2.55
0.917	3.36	2.417	24.89	3.917	4.06	5.42	2.44
1.000	3.36	2.500	24.89	4.000	4.06	5.50	2.44
1.083	3.74	2.583	14.37	4.083	3.77	5.58	2.34
1.167	3.74	2.667	14.37	4.167	3.77	5.67	2.34
1.250	4.24	2.750	10.47	4.250	3.52	5.75	2.25
1.333	4.24	2.833	10.47	4.333	3.52	5.83	2.25
1.417	4.93	2.917	8.36	4.417	3.30	5.92	2.17
1.500	4.93	3.000	8.36	4.500	3.30	6.00	2.17

			TOTALS
Max.Eff.Inten.(mm/hr)=	189.52	111.47	
over (min)	5.00	5.00	
Storage Coeff. (min)=	0.79 (ii)	1.66 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.34	0.32	
PEAK FLOW (cms)=	0.04	0.00	0.037 (iii)
TIME TO PEAK (hrs)=	2.33	2.33	2.33
RUNOFF VOLUME (mm)=	63.68	36.48	63.41
TOTAL RAINFALL (mm)=	64.68	64.68	64.68
RUNOFF COEFFICIENT =	0.98	0.56	0.98

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB	
STANDHYD (0102)	Area (ha)= 0.91
ID= 1 DT= 5.0 min	Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.90	0.01
Dep. Storage (mm)=	1.00	5.00
Average Slope (%)=	1.00	2.00
Length (m)=	77.89	40.00
Mannings n =	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

Pre-Development_Major_System

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.26	1.583	5.93	3.083	7.02	4.58	3.11
0.167	2.26	1.667	5.93	3.167	7.02	4.67	3.11
0.250	2.41	1.750	7.55	3.250	6.08	4.75	2.94
0.333	2.41	1.833	7.55	3.333	6.08	4.83	2.94
0.417	2.59	1.917	10.73	3.417	5.38	4.92	2.80
0.500	2.59	2.000	10.73	3.500	5.38	5.00	2.80
0.583	2.80	2.083	21.19	3.583	4.85	5.08	2.67
0.667	2.80	2.167	21.19	3.667	4.85	5.17	2.67
0.750	3.05	2.250	189.52	3.750	4.41	5.25	2.55
0.833	3.05	2.333	189.52	3.833	4.41	5.33	2.55
0.917	3.36	2.417	24.89	3.917	4.06	5.42	2.44
1.000	3.36	2.500	24.89	4.000	4.06	5.50	2.44
1.083	3.74	2.583	14.37	4.083	3.77	5.58	2.34
1.167	3.74	2.667	14.37	4.167	3.77	5.67	2.34
1.250	4.24	2.750	10.47	4.250	3.52	5.75	2.25
1.333	4.24	2.833	10.47	4.333	3.52	5.83	2.25
1.417	4.93	2.917	8.36	4.417	3.30	5.92	2.17
1.500	4.93	3.000	8.36	4.500	3.30	6.00	2.17

			TOTALS	
Max.Eff.Inten.(mm/hr)=	189.52	111.47		
over (min)	5.00	5.00		
Storage Coeff. (min)=	1.70 (ii)	2.57 (ii)		
Unit Hyd. Tpeak (min)=	5.00	5.00		
Unit Hyd. peak (cms)=	0.32	0.29		
PEAK FLOW (cms)=	0.47	0.00	0.476 (iii)	
TIME TO PEAK (hrs)=	2.33	2.33	2.33	
RUNOFF VOLUME (mm)=	63.68	36.48	63.41	
TOTAL RAINFALL (mm)=	64.68	64.68	64.68	
RUNOFF COEFFICIENT =	0.98	0.56	0.98	

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB	
STANDHYD (0103)	Area (ha)= 0.27
ID= 1 DT= 5.0 min	Total Imp(%)= 90.00 Dir. Conn.(%)= 90.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.24	0.03
Dep. Storage	(mm)=	1.00	5.00

Pre-Development_Major_System

Average Slope	(%)=	1.00	2.00
Length	(m)=	42.43	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.26	1.583	5.93	3.083	7.02	4.58	3.11
0.167	2.26	1.667	5.93	3.167	7.02	4.67	3.11
0.250	2.41	1.750	7.55	3.250	6.08	4.75	2.94
0.333	2.41	1.833	7.55	3.333	6.08	4.83	2.94
0.417	2.59	1.917	10.73	3.417	5.38	4.92	2.80
0.500	2.59	2.000	10.73	3.500	5.38	5.00	2.80
0.583	2.80	2.083	21.19	3.583	4.85	5.08	2.67
0.667	2.80	2.167	21.19	3.667	4.85	5.17	2.67
0.750	3.05	2.250	189.52	3.750	4.41	5.25	2.55
0.833	3.05	2.333	189.52	3.833	4.41	5.33	2.55
0.917	3.36	2.417	24.89	3.917	4.06	5.42	2.44
1.000	3.36	2.500	24.89	4.000	4.06	5.50	2.44
1.083	3.74	2.583	14.37	4.083	3.77	5.58	2.34
1.167	3.74	2.667	14.37	4.167	3.77	5.67	2.34
1.250	4.24	2.750	10.47	4.250	3.52	5.75	2.25
1.333	4.24	2.833	10.47	4.333	3.52	5.83	2.25
1.417	4.93	2.917	8.36	4.417	3.30	5.92	2.17
1.500	4.93	3.000	8.36	4.500	3.30	6.00	2.17

Max.Eff.Inten.(mm/hr)=	189.52	111.47		
over (min)	5.00	5.00		
Storage Coeff. (min)=	1.18 (ii)	3.45 (ii)		
Unit Hyd. Tpeak (min)=	5.00	5.00		
Unit Hyd. peak (cms)=	0.33	0.26		
			TOTALS	
PEAK FLOW (cms)=	0.13	0.01	0.137 (iii)	
TIME TO PEAK (hrs)=	2.33	2.33	2.33	
RUNOFF VOLUME (mm)=	63.68	36.48	60.95	
TOTAL RAINFALL (mm)=	64.68	64.68	64.68	
RUNOFF COEFFICIENT =	0.98	0.56	0.94	

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

```
--------------------
| ADD HYD  (  1000)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0100):     2.49   1.291     2.33    63.41
      + ID2= 2 (  0101):     0.07   0.037     2.33    63.41
        ================================================
        ID = 3 (  1000):     2.56   1.328     2.33    63.41

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  1000)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  1000):     2.56   1.328     2.33    63.41
      + ID2= 2 (  0102):     0.91   0.476     2.33    63.41
        ================================================
        ID = 1 (  1000):     3.47   1.804     2.33    63.41

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  1000)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  1000):     3.47   1.804     2.33    63.41
      + ID2= 2 (  0103):     0.27   0.137     2.33    60.95
        ================================================
        ID = 3 (  1000):     3.74   1.941     2.33    63.23

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| DUHYD    (  1001)|
| Inlet Cap.= 0.882|
| #of Inlets=     1|
| Total(cms)=   0.9|      AREA     QPEAK     TPEAK    R.V.
--------------------      (ha)     (cms)     (hrs)    (mm)
     TOTAL HYD.(ID= 1):   3.74      1.94      2.33   63.23
     ================================================
     MAJOR SYS.(ID= 2):   0.93      1.06      2.33   63.23
     MINOR SYS.(ID= 3):   2.81      0.88      2.25   63.23

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
```

Pre-Development_Major_System

CALIB	
STANDHYD (0107)	Area (ha)= 0.03
ID= 1 DT= 5.0 min	Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.03	0.00
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	14.14	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.26	1.583	5.93	3.083	7.02	4.58	3.11
0.167	2.26	1.667	5.93	3.167	7.02	4.67	3.11
0.250	2.41	1.750	7.55	3.250	6.08	4.75	2.94
0.333	2.41	1.833	7.55	3.333	6.08	4.83	2.94
0.417	2.59	1.917	10.73	3.417	5.38	4.92	2.80
0.500	2.59	2.000	10.73	3.500	5.38	5.00	2.80
0.583	2.80	2.083	21.19	3.583	4.85	5.08	2.67
0.667	2.80	2.167	21.19	3.667	4.85	5.17	2.67
0.750	3.05	2.250	189.52	3.750	4.41	5.25	2.55
0.833	3.05	2.333	189.52	3.833	4.41	5.33	2.55
0.917	3.36	2.417	24.89	3.917	4.06	5.42	2.44
1.000	3.36	2.500	24.89	4.000	4.06	5.50	2.44
1.083	3.74	2.583	14.37	4.083	3.77	5.58	2.34
1.167	3.74	2.667	14.37	4.167	3.77	5.67	2.34
1.250	4.24	2.750	10.47	4.250	3.52	5.75	2.25
1.333	4.24	2.833	10.47	4.333	3.52	5.83	2.25
1.417	4.93	2.917	8.36	4.417	3.30	5.92	2.17
1.500	4.93	3.000	8.36	4.500	3.30	6.00	2.17

Max.Eff.Inten.(mm/hr)=	189.52	111.47		
over (min)	5.00	5.00		
Storage Coeff. (min)=	0.61 (ii)	1.48 (ii)		
Unit Hyd. Tpeak (min)=	5.00	5.00		
Unit Hyd. peak (cms)=	0.34	0.33		
			TOTALS	
PEAK FLOW (cms)=	0.02	0.00	0.016 (iii)	
TIME TO PEAK (hrs)=	2.33	2.33	2.33	
RUNOFF VOLUME (mm)=	63.68	36.48	63.41	
TOTAL RAINFALL (mm)=	64.68	64.68	64.68	
RUNOFF COEFFICIENT =	0.98	0.56	0.98	

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (5005)					
1 + 2 = 3		AREA	QPEAK	TPEAK	R.V.
		(ha)	(cms)	(hrs)	(mm)
ID1= 1 (1001):		0.93	1.059	2.33	63.23
+ ID2= 2 (0107):		0.03	0.016	2.33	63.41
ID = 3 (5005):		0.96	1.074	2.33	63.23

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB				
STANDHYD (0104)	Area (ha)=	0.03		
ID= 1 DT= 5.0 min	Total Imp(%)=	99.00	Dir. Conn.(%)=	99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.03	0.00
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	14.14	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.26	1.583	5.93	3.083	7.02	4.58	3.11
0.167	2.26	1.667	5.93	3.167	7.02	4.67	3.11
0.250	2.41	1.750	7.55	3.250	6.08	4.75	2.94
0.333	2.41	1.833	7.55	3.333	6.08	4.83	2.94
0.417	2.59	1.917	10.73	3.417	5.38	4.92	2.80
0.500	2.59	2.000	10.73	3.500	5.38	5.00	2.80
0.583	2.80	2.083	21.19	3.583	4.85	5.08	2.67
0.667	2.80	2.167	21.19	3.667	4.85	5.17	2.67
0.750	3.05	2.250	189.52	3.750	4.41	5.25	2.55
0.833	3.05	2.333	189.52	3.833	4.41	5.33	2.55

Pre-Development_Major_System

0.917	3.36	2.417	24.89	3.917	4.06	5.42	2.44
1.000	3.36	2.500	24.89	4.000	4.06	5.50	2.44
1.083	3.74	2.583	14.37	4.083	3.77	5.58	2.34
1.167	3.74	2.667	14.37	4.167	3.77	5.67	2.34
1.250	4.24	2.750	10.47	4.250	3.52	5.75	2.25
1.333	4.24	2.833	10.47	4.333	3.52	5.83	2.25
1.417	4.93	2.917	8.36	4.417	3.30	5.92	2.17
1.500	4.93	3.000	8.36	4.500	3.30	6.00	2.17

			TOTALS
Max.Eff.Inten.(mm/hr)=	189.52	111.47	
over (min)	5.00	5.00	
Storage Coeff. (min)=	0.61 (ii)	1.48 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.34	0.33	
PEAK FLOW (cms)=	0.02	0.00	0.016 (iii)
TIME TO PEAK (hrs)=	2.33	2.33	2.33
RUNOFF VOLUME (mm)=	63.68	36.48	63.41
TOTAL RAINFALL (mm)=	64.68	64.68	64.68
RUNOFF COEFFICIENT =	0.98	0.56	0.98

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB			
STANDHYD (0108)	Area (ha)=	0.03	
ID= 1 DT= 5.0 min	Total Imp(%)=	99.00	Dir. Conn.(%)= 99.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.03	0.00
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	14.14	40.00
Mannings n =	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.26	1.583	5.93	3.083	7.02	4.58	3.11
0.167	2.26	1.667	5.93	3.167	7.02	4.67	3.11

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0.250	2.41	1.750	7.55	3.250	6.08	4.75	2.94
0.333	2.41	1.833	7.55	3.333	6.08	4.83	2.94
0.417	2.59	1.917	10.73	3.417	5.38	4.92	2.80
0.500	2.59	2.000	10.73	3.500	5.38	5.00	2.80
0.583	2.80	2.083	21.19	3.583	4.85	5.08	2.67
0.667	2.80	2.167	21.19	3.667	4.85	5.17	2.67
0.750	3.05	2.250	189.52	3.750	4.41	5.25	2.55
0.833	3.05	2.333	189.52	3.833	4.41	5.33	2.55
0.917	3.36	2.417	24.89	3.917	4.06	5.42	2.44
1.000	3.36	2.500	24.89	4.000	4.06	5.50	2.44
1.083	3.74	2.583	14.37	4.083	3.77	5.58	2.34
1.167	3.74	2.667	14.37	4.167	3.77	5.67	2.34
1.250	4.24	2.750	10.47	4.250	3.52	5.75	2.25
1.333	4.24	2.833	10.47	4.333	3.52	5.83	2.25
1.417	4.93	2.917	8.36	4.417	3.30	5.92	2.17
1.500	4.93	3.000	8.36	4.500	3.30	6.00	2.17

			TOTALS
Max.Eff.Inten.(mm/hr)=	189.52	111.41	
over (min)	5.00	5.00	
Storage Coeff. (min)=	0.61 (ii)	1.48 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.34	0.33	
PEAK FLOW (cms)=	0.02	0.00	0.016 (iii)
TIME TO PEAK (hrs)=	2.33	2.33	2.33
RUNOFF VOLUME (mm)=	63.68	36.96	63.41
TOTAL RAINFALL (mm)=	64.68	64.68	64.68
RUNOFF COEFFICIENT =	0.98	0.57	0.98

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 85.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (1002)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0104):	0.03	0.016	2.33	63.41
+ ID2= 2 (0108):	0.03	0.016	2.33	63.41
ID = 3 (1002):	0.06	0.031	2.33	63.41

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

Pre-Development_Major_System

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--------------------
| DUHYD     (  1003)|
| Inlet Cap.= 0.015|
| #of Inlets=     1|
| Total(cms)=   0.0|      AREA     QPEAK     TPEAK    R.V.
--------------------      (ha)     (cms)     (hrs)    (mm)
     TOTAL HYD.(ID= 1):   0.06      0.03      2.33   63.41
     ====================================================
     MAJOR SYS.(ID= 2):   0.02      0.02      2.33   63.41
     MINOR SYS.(ID= 3):   0.04      0.01      2.25   63.41

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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--------------------
| ADD HYD  (  5003)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  1001):     2.81   0.882     2.25    63.23
      + ID2= 2 (  1003):     0.04   0.015     2.25    63.41
        ====================================================
        ID = 3 (  5003):     2.85   0.897     2.25    63.23

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0105)|   Area    (ha)=   0.18
|ID= 1 DT= 5.0 min |   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
--------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.18         0.00
     Dep. Storage     (mm)=       1.00         1.50
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      34.64        40.00
     Mannings n           =      0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                              ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    2.26 | 1.583    5.93 | 3.083    7.02 |  4.58    3.11
               0.167    2.26 | 1.667    5.93 | 3.167    7.02 |  4.67    3.11
               0.250    2.41 | 1.750    7.55 | 3.250    6.08 |  4.75    2.94
               0.333    2.41 | 1.833    7.55 | 3.333    6.08 |  4.83    2.94
               0.417    2.59 | 1.917   10.73 | 3.417    5.38 |  4.92    2.80
```

Pre-Development_Major_System

0.500	2.59	2.000	10.73	3.500	5.38	5.00	2.80
0.583	2.80	2.083	21.19	3.583	4.85	5.08	2.67
0.667	2.80	2.167	21.19	3.667	4.85	5.17	2.67
0.750	3.05	2.250	189.52	3.750	4.41	5.25	2.55
0.833	3.05	2.333	189.52	3.833	4.41	5.33	2.55
0.917	3.36	2.417	24.89	3.917	4.06	5.42	2.44
1.000	3.36	2.500	24.89	4.000	4.06	5.50	2.44
1.083	3.74	2.583	14.37	4.083	3.77	5.58	2.34
1.167	3.74	2.667	14.37	4.167	3.77	5.67	2.34
1.250	4.24	2.750	10.47	4.250	3.52	5.75	2.25
1.333	4.24	2.833	10.47	4.333	3.52	5.83	2.25
1.417	4.93	2.917	8.36	4.417	3.30	5.92	2.17
1.500	4.93	3.000	8.36	4.500	3.30	6.00	2.17

Max.Eff.Inten.(mm/hr)=	189.52	111.41	
over (min)	5.00	5.00	
Storage Coeff. (min)=	1.05 (ii)	1.92 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.34	0.31	
			TOTALS
PEAK FLOW (cms)=	0.09	0.00	0.094 (iii)
TIME TO PEAK (hrs)=	2.33	2.33	2.33
RUNOFF VOLUME (mm)=	63.68	36.96	63.41
TOTAL RAINFALL (mm)=	64.68	64.68	64.68
RUNOFF COEFFICIENT =	0.98	0.57	0.98

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 85.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB	
STANDHYD (0106)	Area (ha)= 0.03
ID= 1 DT= 5.0 min	Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.03	0.00
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	14.14	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

Pre-Development_Major_System

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.26	1.583	5.93	3.083	7.02	4.58	3.11
0.167	2.26	1.667	5.93	3.167	7.02	4.67	3.11
0.250	2.41	1.750	7.55	3.250	6.08	4.75	2.94
0.333	2.41	1.833	7.55	3.333	6.08	4.83	2.94
0.417	2.59	1.917	10.73	3.417	5.38	4.92	2.80
0.500	2.59	2.000	10.73	3.500	5.38	5.00	2.80
0.583	2.80	2.083	21.19	3.583	4.85	5.08	2.67
0.667	2.80	2.167	21.19	3.667	4.85	5.17	2.67
0.750	3.05	2.250	189.52	3.750	4.41	5.25	2.55
0.833	3.05	2.333	189.52	3.833	4.41	5.33	2.55
0.917	3.36	2.417	24.89	3.917	4.06	5.42	2.44
1.000	3.36	2.500	24.89	4.000	4.06	5.50	2.44
1.083	3.74	2.583	14.37	4.083	3.77	5.58	2.34
1.167	3.74	2.667	14.37	4.167	3.77	5.67	2.34
1.250	4.24	2.750	10.47	4.250	3.52	5.75	2.25
1.333	4.24	2.833	10.47	4.333	3.52	5.83	2.25
1.417	4.93	2.917	8.36	4.417	3.30	5.92	2.17
1.500	4.93	3.000	8.36	4.500	3.30	6.00	2.17

			TOTALS
Max.Eff.Inten.(mm/hr)=	189.52	111.41	
over (min)	5.00	5.00	
Storage Coeff. (min)=	0.61 (ii)	1.48 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.34	0.33	
PEAK FLOW (cms)=	0.02	0.00	0.016 (iii)
TIME TO PEAK (hrs)=	2.33	2.33	2.33
RUNOFF VOLUME (mm)=	63.68	36.96	63.41
TOTAL RAINFALL (mm)=	64.68	64.68	64.68
RUNOFF COEFFICIENT =	0.98	0.57	0.98

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 85.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (1005)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0105):	0.18	0.094	2.33	63.41
+ ID2= 2 (0106):	0.03	0.016	2.33	63.41
	0.21	0.110	2.33	63.41




```
        ID = 3 (  1005):     0.21   0.110     2.33    63.41

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
-------------------------------------------------------------------------------
--------------------
| DUHYD    (  1006)|
| Inlet Cap.= 0.051|
| #of Inlets=     1|
| Total(cms)=   0.1|      AREA     QPEAK     TPEAK     R.V.
--------------------      (ha)     (cms)     (hrs)     (mm)
     TOTAL HYD.(ID= 1):   0.21      0.11      2.33   63.41
     ================================================
     MAJOR SYS.(ID= 2):   0.06      0.06      2.33   63.41
     MINOR SYS.(ID= 3):   0.15      0.05      2.25   63.41

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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--------------------
| ADD HYD  (  1004)|
|   1 +  2 =  3    |         AREA    QPEAK     TPEAK      R.V.
--------------------         (ha)    (cms)     (hrs)      (mm)
        ID1= 1 (  1003):     0.02   0.016     2.33    63.41
      + ID2= 2 (  1006):     0.06   0.059     2.33    63.41
        ================================================
        ID = 3 (  1004):     0.07   0.076     2.33    63.41

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
-------------------------------------------------------------------------------
--------------------
| SHIFT HYD(  1007)|
| IN= 2---> OUT= 1 |
| SHIFT=  1.0 min  |      AREA     QPEAK     TPEAK      R.V.
--------------------      (ha)     (cms)     (hrs)      (mm)
          ID= 2 (  1006):    0.15     0.05      2.25     63.41
    SHIFT ID= 1 (  1007):    0.15     0.05      2.25     63.41


-------------------------------------------------------------------------------

--------------------
| ADD HYD  (  5001)|
|   1 +  2 =  3    |         AREA    QPEAK     TPEAK      R.V.
--------------------         (ha)    (cms)     (hrs)      (mm)
        ID1= 1 (  1004):     0.07   0.076     2.33    63.41
      + ID2= 2 (  1007):     0.15   0.051     2.25    63.41
        ================================================
        ID = 3 (  5001):     0.23   0.127     2.33    63.41
```

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (5001)		AREA	QPEAK	TPEAK	R.V.
3 + 2 = 1		(ha)	(cms)	(hrs)	(mm)
	ID1= 3 (5001):	0.23	0.127	2.33	63.41
	+ ID2= 2 (5003):	2.85	0.897	2.25	63.23
	ID = 1 (5001):	3.08	1.024	2.33	63.24

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0203)	Area (ha)= 0.09			
ID= 1 DT= 5.0 min	Total Imp(%)= 70.00	Dir. Conn.(%)= 30.00		
		IMPERVIOUS	PERVIOUS (i)	
Surface Area	(ha)=	0.06	0.03	
Dep. Storage	(mm)=	1.00	5.00	
Average Slope	(%)=	1.00	2.00	
Length	(m)=	24.49	40.00	
Mannings n	=	0.013	0.250	

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.26	1.583	5.93	3.083	7.02	4.58	3.11
0.167	2.26	1.667	5.93	3.167	7.02	4.67	3.11
0.250	2.41	1.750	7.55	3.250	6.08	4.75	2.94
0.333	2.41	1.833	7.55	3.333	6.08	4.83	2.94
0.417	2.59	1.917	10.73	3.417	5.38	4.92	2.80
0.500	2.59	2.000	10.73	3.500	5.38	5.00	2.80
0.583	2.80	2.083	21.19	3.583	4.85	5.08	2.67
0.667	2.80	2.167	21.19	3.667	4.85	5.17	2.67
0.750	3.05	2.250	189.52	3.750	4.41	5.25	2.55
0.833	3.05	2.333	189.52	3.833	4.41	5.33	2.55
0.917	3.36	2.417	24.89	3.917	4.06	5.42	2.44
1.000	3.36	2.500	24.89	4.000	4.06	5.50	2.44
1.083	3.74	2.583	14.37	4.083	3.77	5.58	2.34
1.167	3.74	2.667	14.37	4.167	3.77	5.67	2.34
1.250	4.24	2.750	10.47	4.250	3.52	5.75	2.25
1.333	4.24	2.833	10.47	4.333	3.52	5.83	2.25

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1.417	4.93	2.917	8.36	4.417	3.30	5.92	2.17
1.500	4.93	3.000	8.36	4.500	3.30	6.00	2.17

Max.Eff.Inten.(mm/hr)=	189.52	366.58	
over (min)	5.00	10.00	
Storage Coeff. (min)=	0.85 (ii)	5.05 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.34	0.16	
			TOTALS
PEAK FLOW (cms)=	0.01	0.02	0.034 (iii)
TIME TO PEAK (hrs)=	2.33	2.42	2.33
RUNOFF VOLUME (mm)=	63.68	49.63	53.82
TOTAL RAINFALL (mm)=	64.68	64.68	64.68
RUNOFF COEFFICIENT =	0.98	0.77	0.83

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB	
STANDHYD (0202)	Area (ha)= 0.27
ID= 1 DT= 5.0 min	Total Imp(%)= 70.00 Dir. Conn.(%)= 30.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.19	0.08
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	42.43	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.26	1.583	5.93	3.083	7.02	4.58	3.11
0.167	2.26	1.667	5.93	3.167	7.02	4.67	3.11
0.250	2.41	1.750	7.55	3.250	6.08	4.75	2.94
0.333	2.41	1.833	7.55	3.333	6.08	4.83	2.94
0.417	2.59	1.917	10.73	3.417	5.38	4.92	2.80
0.500	2.59	2.000	10.73	3.500	5.38	5.00	2.80
0.583	2.80	2.083	21.19	3.583	4.85	5.08	2.67
0.667	2.80	2.167	21.19	3.667	4.85	5.17	2.67

Pre-Development_Major_System

0.750	3.05	2.250	189.52	3.750	4.41	5.25	2.55
0.833	3.05	2.333	189.52	3.833	4.41	5.33	2.55
0.917	3.36	2.417	24.89	3.917	4.06	5.42	2.44
1.000	3.36	2.500	24.89	4.000	4.06	5.50	2.44
1.083	3.74	2.583	14.37	4.083	3.77	5.58	2.34
1.167	3.74	2.667	14.37	4.167	3.77	5.67	2.34
1.250	4.24	2.750	10.47	4.250	3.52	5.75	2.25
1.333	4.24	2.833	10.47	4.333	3.52	5.83	2.25
1.417	4.93	2.917	8.36	4.417	3.30	5.92	2.17
1.500	4.93	3.000	8.36	4.500	3.30	6.00	2.17

Max.Eff.Inten.(mm/hr)=	189.52	366.58	
over (min)	5.00	10.00	
Storage Coeff. (min)=	1.18 (ii)	5.38 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.33	0.16	
			TOTALS
PEAK FLOW (cms)=	0.04	0.06	0.100 (iii)
TIME TO PEAK (hrs)=	2.33	2.42	2.33
RUNOFF VOLUME (mm)=	63.68	49.63	53.83
TOTAL RAINFALL (mm)=	64.68	64.68	64.68
RUNOFF COEFFICIENT =	0.98	0.77	0.83

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (5004)				
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0202):	0.27	0.100	2.33	53.83
+ ID2= 2 (0203):	0.09	0.034	2.33	53.82
ID = 3 (5004):	0.36	0.134	2.33	53.83

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (5000)				
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (5001):	3.08	1.024	2.33	63.24

```
                              Pre-Development_Major_System
       + ID2= 2 (  5004):     0.36   0.134     2.33    53.83
         ==================================================
         ID = 3 (  5000):     3.44   1.158     2.33    62.26

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  5000)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
         ID1= 3 (  5000):     3.44   1.158     2.33    62.26
       + ID2= 2 (  5005):     0.96   1.074     2.33    63.23
         ==================================================
         ID = 1 (  5000):     4.40   2.233     2.33    62.47

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------

 FINISH
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       V    V   I    SSSSS  U   U    A    L              (v 6.2.2010)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat

  Output  filename:
C:\Users\ykoshenkov\AppData\Local\Civica\VH5\95aa6302-d561-466b-a85b-2e34c191f114\3
f04f0d1-f034-45be-aeb4-692e1607ce85\s
```

Pre-Development_Major_System

Summary filename:
C:\Users\ykoshenkov\AppData\Local\Civica\VH5\95aa6302-d561-466b-a85b-2e34c191f114\3f04f0d1-f034-45be-aeb4-692e1607ce85\s

DATE: 06-30-2022 TIME: 05:05:14

USER:

COMMENTS: _____

****
** SIMULATION : 50-year storm **
****

| CHICAGO STORM |
| Ptotal= 76.56 mm |

IDF curve parameters: A=1415.386
B= 0.000
C= 0.800
used in: INTENSITY = A / (t + B)^C

Duration of storm = 6.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.38

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.00	2.68	1.50	7.02	3.00	8.31	4.50	3.68
0.17	2.86	1.67	8.94	3.17	7.20	4.67	3.49
0.33	3.07	1.83	12.71	3.33	6.37	4.83	3.31
0.50	3.31	2.00	25.08	3.50	5.74	5.00	3.16
0.67	3.61	2.17	224.32	3.67	5.23	5.17	3.02
0.83	3.97	2.33	29.45	3.83	4.81	5.33	2.89
1.00	4.43	2.50	17.01	4.00	4.46	5.50	2.77
1.17	5.02	2.67	12.39	4.17	4.16	5.67	2.67
1.33	5.84	2.83	9.90	4.33	3.90	5.83	2.57

| CALIB |
| STANDHYD (0100)| Area (ha)= 2.49
|ID= 1 DT= 5.0 min | Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

Pre-Development_Major_System

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	2.47	0.02
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	128.84	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.68	1.583	7.02	3.083	8.31	4.58	3.68
0.167	2.68	1.667	7.02	3.167	8.31	4.67	3.68
0.250	2.86	1.750	8.94	3.250	7.20	4.75	3.49
0.333	2.86	1.833	8.94	3.333	7.20	4.83	3.49
0.417	3.07	1.917	12.71	3.417	6.37	4.92	3.31
0.500	3.07	2.000	12.71	3.500	6.37	5.00	3.31
0.583	3.31	2.083	25.08	3.583	5.74	5.08	3.16
0.667	3.31	2.167	25.08	3.667	5.74	5.17	3.16
0.750	3.61	2.250	224.32	3.750	5.23	5.25	3.02
0.833	3.61	2.333	224.32	3.833	5.23	5.33	3.02
0.917	3.97	2.417	29.46	3.917	4.81	5.42	2.89
1.000	3.97	2.500	29.45	4.000	4.81	5.50	2.89
1.083	4.43	2.583	17.01	4.083	4.46	5.58	2.77
1.167	4.43	2.667	17.01	4.167	4.46	5.67	2.77
1.250	5.02	2.750	12.39	4.250	4.16	5.75	2.67
1.333	5.02	2.833	12.39	4.333	4.16	5.83	2.67
1.417	5.84	2.917	9.90	4.417	3.91	5.92	2.57
1.500	5.84	3.000	9.90	4.500	3.90	6.00	2.57

Max.Eff.Inten.(mm/hr)=		224.32	144.73	
over (min)		5.00	5.00	
Storage Coeff. (min)=		2.15 (ii)	2.97 (ii)	
Unit Hyd. Tpeak (min)=		5.00	5.00	
Unit Hyd. peak (cms)=		0.31	0.28	
				TOTALS
PEAK FLOW	(cms)=	1.52	0.01	1.534 (iii)
TIME TO PEAK	(hrs)=	2.33	2.33	2.33
RUNOFF VOLUME	(mm)=	75.56	46.75	75.27
TOTAL RAINFALL	(mm)=	76.56	76.56	76.56
RUNOFF COEFFICIENT	=	0.99	0.61	0.98

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)

(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.

Pre-Development_Major_System

(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB	
STANDHYD (0101)	Area (ha)= 0.07
ID= 1 DT= 5.0 min	Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.07	0.00
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	21.60	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.68	1.583	7.02	3.083	8.31	4.58	3.68
0.167	2.68	1.667	7.02	3.167	8.31	4.67	3.68
0.250	2.86	1.750	8.94	3.250	7.20	4.75	3.49
0.333	2.86	1.833	8.94	3.333	7.20	4.83	3.49
0.417	3.07	1.917	12.71	3.417	6.37	4.92	3.31
0.500	3.07	2.000	12.71	3.500	6.37	5.00	3.31
0.583	3.31	2.083	25.08	3.583	5.74	5.08	3.16
0.667	3.31	2.167	25.08	3.667	5.74	5.17	3.16
0.750	3.61	2.250	224.32	3.750	5.23	5.25	3.02
0.833	3.61	2.333	224.32	3.833	5.23	5.33	3.02
0.917	3.97	2.417	29.46	3.917	4.81	5.42	2.89
1.000	3.97	2.500	29.45	4.000	4.81	5.50	2.89
1.083	4.43	2.583	17.01	4.083	4.46	5.58	2.77
1.167	4.43	2.667	17.01	4.167	4.46	5.67	2.77
1.250	5.02	2.750	12.39	4.250	4.16	5.75	2.67
1.333	5.02	2.833	12.39	4.333	4.16	5.83	2.67
1.417	5.84	2.917	9.90	4.417	3.91	5.92	2.57
1.500	5.84	3.000	9.90	4.500	3.90	6.00	2.57

Max.Eff.Inten.(mm/hr)=		224.32	144.73	
over (min)		5.00	5.00	
Storage Coeff. (min)=		0.74 (ii)	1.55 (ii)	
Unit Hyd. Tpeak (min)=		5.00	5.00	
Unit Hyd. peak (cms)=		0.34	0.33	
				TOTALS
PEAK FLOW	(cms)=	0.04	0.00	0.044 (iii)
TIME TO PEAK	(hrs)=	2.33	2.33	2.33
RUNOFF VOLUME	(mm)=	75.56	46.76	75.27

Pre-Development_Major_System

TOTAL RAINFALL (mm)=	76.56	76.56	76.56
RUNOFF COEFFICIENT =	0.99	0.61	0.98

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB	
STANDHYD (0102)	Area (ha)= 0.91
ID= 1 DT= 5.0 min	Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.90	0.01
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	77.89	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.68	1.583	7.02	3.083	8.31	4.58	3.68
0.167	2.68	1.667	7.02	3.167	8.31	4.67	3.68
0.250	2.86	1.750	8.94	3.250	7.20	4.75	3.49
0.333	2.86	1.833	8.94	3.333	7.20	4.83	3.49
0.417	3.07	1.917	12.71	3.417	6.37	4.92	3.31
0.500	3.07	2.000	12.71	3.500	6.37	5.00	3.31
0.583	3.31	2.083	25.08	3.583	5.74	5.08	3.16
0.667	3.31	2.167	25.08	3.667	5.74	5.17	3.16
0.750	3.61	2.250	224.32	3.750	5.23	5.25	3.02
0.833	3.61	2.333	224.32	3.833	5.23	5.33	3.02
0.917	3.97	2.417	29.46	3.917	4.81	5.42	2.89
1.000	3.97	2.500	29.45	4.000	4.81	5.50	2.89
1.083	4.43	2.583	17.01	4.083	4.46	5.58	2.77
1.167	4.43	2.667	17.01	4.167	4.46	5.67	2.77
1.250	5.02	2.750	12.39	4.250	4.16	5.75	2.67
1.333	5.02	2.833	12.39	4.333	4.16	5.83	2.67
1.417	5.84	2.917	9.90	4.417	3.91	5.92	2.57
1.500	5.84	3.000	9.90	4.500	3.90	6.00	2.57

Max.Eff.Inten.(mm/hr)=	224.32	144.73

Pre-Development_Major_System

over (min)		5.00	5.00	
Storage Coeff. (min)=		1.59 (ii)	2.40 (ii)	
Unit Hyd. Tpeak (min)=		5.00	5.00	
Unit Hyd. peak (cms)=		0.33	0.30	
				TOTALS
PEAK FLOW	(cms)=	0.56	0.00	0.564 (iii)
TIME TO PEAK	(hrs)=	2.33	2.33	2.33
RUNOFF VOLUME	(mm)=	75.55	46.76	75.27
TOTAL RAINFALL	(mm)=	76.56	76.56	76.56
RUNOFF COEFFICIENT	=	0.99	0.61	0.98

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB
STANDHYD (0103) | Area (ha)= 0.27
ID= 1 DT= 5.0 min | Total Imp(%)= 90.00 Dir. Conn.(%)= 90.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.24	0.03
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	42.43	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.68	1.583	7.02	3.083	8.31	4.58	3.68
0.167	2.68	1.667	7.02	3.167	8.31	4.67	3.68
0.250	2.86	1.750	8.94	3.250	7.20	4.75	3.49
0.333	2.86	1.833	8.94	3.333	7.20	4.83	3.49
0.417	3.07	1.917	12.71	3.417	6.37	4.92	3.31
0.500	3.07	2.000	12.71	3.500	6.37	5.00	3.31
0.583	3.31	2.083	25.08	3.583	5.74	5.08	3.16
0.667	3.31	2.167	25.08	3.667	5.74	5.17	3.16
0.750	3.61	2.250	224.32	3.750	5.23	5.25	3.02
0.833	3.61	2.333	224.32	3.833	5.23	5.33	3.02
0.917	3.97	2.417	29.46	3.917	4.81	5.42	2.89
1.000	3.97	2.500	29.45	4.000	4.81	5.50	2.89

Pre-Development_Major_System

1.083	4.43	2.583	17.01	4.083	4.46	5.58	2.77
1.167	4.43	2.667	17.01	4.167	4.46	5.67	2.77
1.250	5.02	2.750	12.39	4.250	4.16	5.75	2.67
1.333	5.02	2.833	12.39	4.333	4.16	5.83	2.67
1.417	5.84	2.917	9.90	4.417	3.91	5.92	2.57
1.500	5.84	3.000	9.90	4.500	3.90	6.00	2.57

Max.Eff.Inten.(mm/hr)=	224.32	144.73	
over (min)	5.00	5.00	
Storage Coeff. (min)=	1.11 (ii)	3.23 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.34	0.27	
			TOTALS
PEAK FLOW (cms)=	0.15	0.01	0.163 (iii)
TIME TO PEAK (hrs)=	2.33	2.33	2.33
RUNOFF VOLUME (mm)=	75.56	46.76	72.67
TOTAL RAINFALL (mm)=	76.56	76.56	76.56
RUNOFF COEFFICIENT =	0.99	0.61	0.95

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (1000)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0100):	2.49	1.534	2.33	75.27
+ ID2= 2 (0101):	0.07	0.044	2.33	75.27
ID = 3 (1000):	2.56	1.577	2.33	75.27

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (1000)				
3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (1000):	2.56	1.577	2.33	75.27
+ ID2= 2 (0102):	0.91	0.564	2.33	75.27
ID = 1 (1000):	3.47	2.142	2.33	75.27

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
--------------------
| ADD HYD  (  1000)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  1000):     3.47   2.142     2.33    75.27
      + ID2= 2 (  0103):     0.27   0.163     2.33    72.67
        ================================================
        ID = 3 (  1000):     3.74   2.304     2.33    75.08

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| DUHYD    (  1001)|
| Inlet Cap.= 0.882|
| #of Inlets=     1|
| Total(cms)=   0.9|      AREA     QPEAK     TPEAK    R.V.
--------------------      (ha)     (cms)     (hrs)    (mm)
     TOTAL HYD.(ID= 1):   3.74      2.30      2.33   75.08
     ================================================
     MAJOR SYS.(ID= 2):   1.08      1.42      2.33   75.08
     MINOR SYS.(ID= 3):   2.66      0.88      2.25   75.08

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0107)|   Area    (ha)=   0.03
|ID= 1 DT= 5.0 min |   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
--------------------
                            IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.03         0.00
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      14.14        40.00
     Mannings n             =     0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                        ---- TRANSFORMED HYETOGRAPH ----
      TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
       hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
     0.083    2.68 | 1.583    7.02 | 3.083    8.31 |  4.58    3.68
     0.167    2.68 | 1.667    7.02 | 3.167    8.31 |  4.67    3.68
     0.250    2.86 | 1.750    8.94 | 3.250    7.20 |  4.75    3.49
     0.333    2.86 | 1.833    8.94 | 3.333    7.20 |  4.83    3.49
```

Pre-Development_Major_System

0.417	3.07	1.917	12.71	3.417	6.37	4.92	3.31
0.500	3.07	2.000	12.71	3.500	6.37	5.00	3.31
0.583	3.31	2.083	25.08	3.583	5.74	5.08	3.16
0.667	3.31	2.167	25.08	3.667	5.74	5.17	3.16
0.750	3.61	2.250	224.32	3.750	5.23	5.25	3.02
0.833	3.61	2.333	224.32	3.833	5.23	5.33	3.02
0.917	3.97	2.417	29.46	3.917	4.81	5.42	2.89
1.000	3.97	2.500	29.45	4.000	4.81	5.50	2.89
1.083	4.43	2.583	17.01	4.083	4.46	5.58	2.77
1.167	4.43	2.667	17.01	4.167	4.46	5.67	2.77
1.250	5.02	2.750	12.39	4.250	4.16	5.75	2.67
1.333	5.02	2.833	12.39	4.333	4.16	5.83	2.67
1.417	5.84	2.917	9.90	4.417	3.91	5.92	2.57
1.500	5.84	3.000	9.90	4.500	3.90	6.00	2.57

Max.Eff.Inten.(mm/hr)=	224.32	144.73	
over (min)	5.00	5.00	
Storage Coeff. (min)=	0.57 (ii)	1.38 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.34	0.33	
			TOTALS
PEAK FLOW (cms)=	0.02	0.00	0.019 (iii)
TIME TO PEAK (hrs)=	2.33	2.33	2.33
RUNOFF VOLUME (mm)=	75.56	46.76	75.27
TOTAL RAINFALL (mm)=	76.56	76.56	76.56
RUNOFF COEFFICIENT =	0.99	0.61	0.98

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (5005)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
ID1= 1 (1001):		1.08	1.422	2.33	75.08
+ ID2= 2 (0107):		0.03	0.019	2.33	75.27
ID = 3 (5005):		1.11	1.441	2.33	75.08

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB

Pre-Development_Major_System

| STANDHYD (0104)| Area (ha)= 0.03
|ID= 1 DT= 5.0 min | Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.03	0.00
Dep. Storage (mm)=	1.00	5.00
Average Slope (%)=	1.00	2.00
Length (m)=	14.14	40.00
Mannings n =	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.68	1.583	7.02	3.083	8.31	4.58	3.68
0.167	2.68	1.667	7.02	3.167	8.31	4.67	3.68
0.250	2.86	1.750	8.94	3.250	7.20	4.75	3.49
0.333	2.86	1.833	8.94	3.333	7.20	4.83	3.49
0.417	3.07	1.917	12.71	3.417	6.37	4.92	3.31
0.500	3.07	2.000	12.71	3.500	6.37	5.00	3.31
0.583	3.31	2.083	25.08	3.583	5.74	5.08	3.16
0.667	3.31	2.167	25.08	3.667	5.74	5.17	3.16
0.750	3.61	2.250	224.32	3.750	5.23	5.25	3.02
0.833	3.61	2.333	224.32	3.833	5.23	5.33	3.02
0.917	3.97	2.417	29.46	3.917	4.81	5.42	2.89
1.000	3.97	2.500	29.45	4.000	4.81	5.50	2.89
1.083	4.43	2.583	17.01	4.083	4.46	5.58	2.77
1.167	4.43	2.667	17.01	4.167	4.46	5.67	2.77
1.250	5.02	2.750	12.39	4.250	4.16	5.75	2.67
1.333	5.02	2.833	12.39	4.333	4.16	5.83	2.67
1.417	5.84	2.917	9.90	4.417	3.91	5.92	2.57
1.500	5.84	3.000	9.90	4.500	3.90	6.00	2.57

Max.Eff.Inten.(mm/hr)=	224.32	144.73	
over (min)	5.00	5.00	
Storage Coeff. (min)=	0.57 (ii)	1.38 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.34	0.33	
			TOTALS
PEAK FLOW (cms)=	0.02	0.00	0.019 (iii)
TIME TO PEAK (hrs)=	2.33	2.33	2.33
RUNOFF VOLUME (mm)=	75.56	46.76	75.27
TOTAL RAINFALL (mm)=	76.56	76.56	76.56
RUNOFF COEFFICIENT =	0.99	0.61	0.98

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)

Pre-Development_Major_System

(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB	
STANDHYD (0108)	Area (ha)= 0.03
ID= 1 DT= 5.0 min	Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.03	0.00
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	14.14	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.68	1.583	7.02	3.083	8.31	4.58	3.68
0.167	2.68	1.667	7.02	3.167	8.31	4.67	3.68
0.250	2.86	1.750	8.94	3.250	7.20	4.75	3.49
0.333	2.86	1.833	8.94	3.333	7.20	4.83	3.49
0.417	3.07	1.917	12.71	3.417	6.37	4.92	3.31
0.500	3.07	2.000	12.71	3.500	6.37	5.00	3.31
0.583	3.31	2.083	25.08	3.583	5.74	5.08	3.16
0.667	3.31	2.167	25.08	3.667	5.74	5.17	3.16
0.750	3.61	2.250	224.32	3.750	5.23	5.25	3.02
0.833	3.61	2.333	224.32	3.833	5.23	5.33	3.02
0.917	3.97	2.417	29.46	3.917	4.81	5.42	2.89
1.000	3.97	2.500	29.45	4.000	4.81	5.50	2.89
1.083	4.43	2.583	17.01	4.083	4.46	5.58	2.77
1.167	4.43	2.667	17.01	4.167	4.46	5.67	2.77
1.250	5.02	2.750	12.39	4.250	4.16	5.75	2.67
1.333	5.02	2.833	12.39	4.333	4.16	5.83	2.67
1.417	5.84	2.917	9.90	4.417	3.91	5.92	2.57
1.500	5.84	3.000	9.90	4.500	3.90	6.00	2.57

Max.Eff.Inten.(mm/hr)=		224.32	143.04	
over (min)		5.00	5.00	
Storage Coeff. (min)=		0.57 (ii)	1.38 (ii)	
Unit Hyd. Tpeak (min)=		5.00	5.00	
Unit Hyd. peak (cms)=		0.34	0.33	
				TOTALS
PEAK FLOW	(cms)=	0.02	0.00	0.019 (iii)

Pre-Development_Major_System

TIME TO PEAK (hrs)=	2.33	2.33	2.33
RUNOFF VOLUME (mm)=	75.56	46.99	75.27
TOTAL RAINFALL (mm)=	76.56	76.56	76.56
RUNOFF COEFFICIENT =	0.99	0.61	0.98

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 85.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (1002)				
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0104):	0.03	0.019	2.33	75.27
+ ID2= 2 (0108):	0.03	0.019	2.33	75.27
ID = 3 (1002):	0.06	0.037	2.33	75.27

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

DUHYD (1003)				
Inlet Cap.= 0.015				
#of Inlets= 1				
Total(cms)= 0.0	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
TOTAL HYD.(ID= 1):	0.06	0.04	2.33	75.27
MAJOR SYS.(ID= 2):	0.02	0.02	2.33	75.27
MINOR SYS.(ID= 3):	0.04	0.01	2.25	75.27

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (5003)				
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (1001):	2.66	0.882	2.25	75.08
+ ID2= 2 (1003):	0.04	0.015	2.25	75.27
ID = 3 (5003):	2.71	0.897	2.25	75.08

Pre-Development_Major_System

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB	
STANDHYD (0105)	Area (ha)= 0.18
ID= 1 DT= 5.0 min	Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.18	0.00
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	34.64	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.68	1.583	7.02	3.083	8.31	4.58	3.68
0.167	2.68	1.667	7.02	3.167	8.31	4.67	3.68
0.250	2.86	1.750	8.94	3.250	7.20	4.75	3.49
0.333	2.86	1.833	8.94	3.333	7.20	4.83	3.49
0.417	3.07	1.917	12.71	3.417	6.37	4.92	3.31
0.500	3.07	2.000	12.71	3.500	6.37	5.00	3.31
0.583	3.31	2.083	25.08	3.583	5.74	5.08	3.16
0.667	3.31	2.167	25.08	3.667	5.74	5.17	3.16
0.750	3.61	2.250	224.32	3.750	5.23	5.25	3.02
0.833	3.61	2.333	224.32	3.833	5.23	5.33	3.02
0.917	3.97	2.417	29.46	3.917	4.81	5.42	2.89
1.000	3.97	2.500	29.45	4.000	4.81	5.50	2.89
1.083	4.43	2.583	17.01	4.083	4.46	5.58	2.77
1.167	4.43	2.667	17.01	4.167	4.46	5.67	2.77
1.250	5.02	2.750	12.39	4.250	4.16	5.75	2.67
1.333	5.02	2.833	12.39	4.333	4.16	5.83	2.67
1.417	5.84	2.917	9.90	4.417	3.91	5.92	2.57
1.500	5.84	3.000	9.90	4.500	3.90	6.00	2.57

Max.Eff.Inten.	(mm/hr)=	224.32	143.04	
over	(min)	5.00	5.00	
Storage Coeff.	(min)=	0.98 (ii)	1.79 (ii)	
Unit Hyd. Tpeak	(min)=	5.00	5.00	
Unit Hyd. peak	(cms)=	0.34	0.32	
				TOTALS
PEAK FLOW	(cms)=	0.11	0.00	0.112 (iii)
TIME TO PEAK	(hrs)=	2.33	2.33	2.33
RUNOFF VOLUME	(mm)=	75.56	46.99	75.27
TOTAL RAINFALL	(mm)=	76.56	76.56	76.56

Pre-Development_Major_System

RUNOFF COEFFICIENT = 0.99 0.61 0.98

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 85.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB	
STANDHYD (0106)	Area (ha)= 0.03
ID= 1 DT= 5.0 min	Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.03	0.00
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	14.14	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.68	1.583	7.02	3.083	8.31	4.58	3.68
0.167	2.68	1.667	7.02	3.167	8.31	4.67	3.68
0.250	2.86	1.750	8.94	3.250	7.20	4.75	3.49
0.333	2.86	1.833	8.94	3.333	7.20	4.83	3.49
0.417	3.07	1.917	12.71	3.417	6.37	4.92	3.31
0.500	3.07	2.000	12.71	3.500	6.37	5.00	3.31
0.583	3.31	2.083	25.08	3.583	5.74	5.08	3.16
0.667	3.31	2.167	25.08	3.667	5.74	5.17	3.16
0.750	3.61	2.250	224.32	3.750	5.23	5.25	3.02
0.833	3.61	2.333	224.32	3.833	5.23	5.33	3.02
0.917	3.97	2.417	29.46	3.917	4.81	5.42	2.89
1.000	3.97	2.500	29.45	4.000	4.81	5.50	2.89
1.083	4.43	2.583	17.01	4.083	4.46	5.58	2.77
1.167	4.43	2.667	17.01	4.167	4.46	5.67	2.77
1.250	5.02	2.750	12.39	4.250	4.16	5.75	2.67
1.333	5.02	2.833	12.39	4.333	4.16	5.83	2.67
1.417	5.84	2.917	9.90	4.417	3.91	5.92	2.57
1.500	5.84	3.000	9.90	4.500	3.90	6.00	2.57

Max.Eff.Inten.(mm/hr)=		224.32	143.04
over (min)		5.00	5.00

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                              Pre-Development_Major_System
      Storage Coeff.  (min)=       0.57 (ii)    1.38 (ii)
      Unit Hyd. Tpeak (min)=       5.00         5.00
      Unit Hyd. peak  (cms)=       0.34         0.33
                                                          *TOTALS*
      PEAK FLOW       (cms)=       0.02         0.00          0.019 (iii)
      TIME TO PEAK    (hrs)=       2.33         2.33           2.33
      RUNOFF VOLUME    (mm)=      75.56        46.99          75.27
      TOTAL RAINFALL   (mm)=      76.56        76.56          76.56
      RUNOFF COEFFICIENT   =       0.99         0.61           0.98


        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  85.0    Ia = Dep. Storage  (Above)
       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
            THAN THE STORAGE COEFFICIENT.
      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
| ADD HYD  (  1005)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0105):     0.18   0.112     2.33    75.27
      + ID2= 2 (  0106):     0.03   0.019     2.33    75.27
        ================================================
        ID = 3 (  1005):     0.21   0.130     2.33    75.27

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| DUHYD    (  1006)|
| Inlet Cap.= 0.051|
| #of Inlets=     1|
| Total(cms)=   0.1|      AREA     QPEAK     TPEAK    R.V.
--------------------      (ha)     (cms)     (hrs)    (mm)
     TOTAL HYD.(ID= 1):   0.21      0.13      2.33   75.27
     ================================================
     MAJOR SYS.(ID= 2):   0.06      0.08      2.33   75.27
     MINOR SYS.(ID= 3):   0.15      0.05      2.25   75.27

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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--------------------
| ADD HYD  (  1004)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
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                              Pre-Development_Major_System
          ID1= 1 (  1003):     0.02   0.022     2.33    75.27
        + ID2= 2 (  1006):     0.06   0.079     2.33    75.27
          ================================================
          ID = 3 (  1004):     0.08   0.102     2.33    75.27

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| SHIFT HYD(  1007)|
| IN= 2---> OUT= 1 |
| SHIFT=  1.0 min  |      AREA     QPEAK     TPEAK      R.V.
--------------------      (ha)     (cms)     (hrs)      (mm)
          ID= 2 (  1006):    0.15      0.05      2.25     75.27
    SHIFT ID= 1 (  1007):    0.15      0.05      2.25     75.27


--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  5001)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
          ID1= 1 (  1004):     0.08   0.102     2.33    75.27
        + ID2= 2 (  1007):     0.15   0.051     2.25    75.27
          ================================================
          ID = 3 (  5001):     0.23   0.153     2.33    75.27

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  5001)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
          ID1= 3 (  5001):     0.23   0.153     2.33    75.27
        + ID2= 2 (  5003):     2.71   0.897     2.25    75.08
          ================================================
          ID = 1 (  5001):     2.93   1.050     2.33    75.10

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
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--------------------
| CALIB            |
| STANDHYD (  0203)|   Area    (ha)=   0.09
|ID= 1 DT= 5.0 min |   Total Imp(%)=  70.00   Dir. Conn.(%)=  30.00
--------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.06          0.03
     Dep. Storage     (mm)=       1.00          5.00
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Pre-Development_Major_System

Average Slope	(%)=	1.00	2.00
Length	(m)=	24.49	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.68	1.583	7.02	3.083	8.31	4.58	3.68
0.167	2.68	1.667	7.02	3.167	8.31	4.67	3.68
0.250	2.86	1.750	8.94	3.250	7.20	4.75	3.49
0.333	2.86	1.833	8.94	3.333	7.20	4.83	3.49
0.417	3.07	1.917	12.71	3.417	6.37	4.92	3.31
0.500	3.07	2.000	12.71	3.500	6.37	5.00	3.31
0.583	3.31	2.083	25.08	3.583	5.74	5.08	3.16
0.667	3.31	2.167	25.08	3.667	5.74	5.17	3.16
0.750	3.61	2.250	224.32	3.750	5.23	5.25	3.02
0.833	3.61	2.333	224.32	3.833	5.23	5.33	3.02
0.917	3.97	2.417	29.46	3.917	4.81	5.42	2.89
1.000	3.97	2.500	29.45	4.000	4.81	5.50	2.89
1.083	4.43	2.583	17.01	4.083	4.46	5.58	2.77
1.167	4.43	2.667	17.01	4.167	4.46	5.67	2.77
1.250	5.02	2.750	12.39	4.250	4.16	5.75	2.67
1.333	5.02	2.833	12.39	4.333	4.16	5.83	2.67
1.417	5.84	2.917	9.90	4.417	3.91	5.92	2.57
1.500	5.84	3.000	9.90	4.500	3.90	6.00	2.57

Max.Eff.Inten.(mm/hr)=		224.32	451.05	
over (min)		5.00	5.00	
Storage Coeff. (min)=		0.80 (ii)	4.66 (ii)	
Unit Hyd. Tpeak (min)=		5.00	5.00	
Unit Hyd. peak (cms)=		0.34	0.22	
				TOTALS
PEAK FLOW	(cms)=	0.02	0.03	0.048 (iii)
TIME TO PEAK	(hrs)=	2.33	2.33	2.33
RUNOFF VOLUME	(mm)=	75.55	61.06	65.39
TOTAL RAINFALL	(mm)=	76.56	76.56	76.56
RUNOFF COEFFICIENT	=	0.99	0.80	0.85

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

Pre-Development_Major_System

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| CALIB            |
| STANDHYD (  0202)|   Area    (ha)=   0.27
|ID= 1 DT= 5.0 min |   Total Imp(%)=  70.00   Dir. Conn.(%)=  30.00
--------------------
                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.19         0.08
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      42.43        40.00
     Mannings n             =     0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.
```

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.68	1.583	7.02	3.083	8.31	4.58	3.68
0.167	2.68	1.667	7.02	3.167	8.31	4.67	3.68
0.250	2.86	1.750	8.94	3.250	7.20	4.75	3.49
0.333	2.86	1.833	8.94	3.333	7.20	4.83	3.49
0.417	3.07	1.917	12.71	3.417	6.37	4.92	3.31
0.500	3.07	2.000	12.71	3.500	6.37	5.00	3.31
0.583	3.31	2.083	25.08	3.583	5.74	5.08	3.16
0.667	3.31	2.167	25.08	3.667	5.74	5.17	3.16
0.750	3.61	2.250	224.32	3.750	5.23	5.25	3.02
0.833	3.61	2.333	224.32	3.833	5.23	5.33	3.02
0.917	3.97	2.417	29.46	3.917	4.81	5.42	2.89
1.000	3.97	2.500	29.45	4.000	4.81	5.50	2.89
1.083	4.43	2.583	17.01	4.083	4.46	5.58	2.77
1.167	4.43	2.667	17.01	4.167	4.46	5.67	2.77
1.250	5.02	2.750	12.39	4.250	4.16	5.75	2.67
1.333	5.02	2.833	12.39	4.333	4.16	5.83	2.67
1.417	5.84	2.917	9.90	4.417	3.91	5.92	2.57
1.500	5.84	3.000	9.90	4.500	3.90	6.00	2.57

Max.Eff.Inten.(mm/hr)=	224.32	451.05	
over (min)	5.00	5.00	
Storage Coeff. (min)=	1.11 (ii)	4.97 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.34	0.22	
			TOTALS
PEAK FLOW (cms)=	0.05	0.09	0.142 (iii)
TIME TO PEAK (hrs)=	2.33	2.33	2.33
RUNOFF VOLUME (mm)=	75.56	61.06	65.40
TOTAL RAINFALL (mm)=	76.56	76.56	76.56
RUNOFF COEFFICIENT =	0.99	0.80	0.85

```
      (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  87.0    Ia = Dep. Storage  (Above)
     (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
          THAN THE STORAGE COEFFICIENT.
    (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  5004)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0202):     0.27   0.142     2.33    65.40
     + ID2= 2 (  0203):     0.09   0.048     2.33    65.39
       ================================================
       ID = 3 (  5004):     0.36   0.190     2.33    65.40

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  5000)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  5001):     2.93   1.050     2.33    75.10
     + ID2= 2 (  5004):     0.36   0.190     2.33    65.40
       ================================================
       ID = 3 (  5000):     3.29   1.240     2.33    74.04

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  5000)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 3 (  5000):     3.29   1.240     2.33    74.04
     + ID2= 2 (  5005):     1.11   1.441     2.33    75.08
       ================================================
       ID = 1 (  5000):     4.40   2.681     2.33    74.30

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
================================================================================
========================

       V    V   I    SSSSS  U   U    A    L              (v 6.2.2010)
       V    V   I    SS     U   U   A A   L
```

```
                          Pre-Development_Major_System
         V  V    I     SS    U   U  AAAAA  L
         V  V    I      SS   U   U  A   A  L
          VV     I    SSSSS  UUUUU  A   A  LLLLL

         OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
        O   O    T      T    H   H   Y Y   MM MM  O   O
        O   O    T      T    H   H    Y    M   M  O   O
         OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat

  Output  filename:
C:\Users\ykoshenkov\AppData\Local\Civica\VH5\95aa6302-d561-466b-a85b-2e34c191f114\0
3592d92-db3c-4130-a092-08016a0d297a\s
  Summary filename:
C:\Users\ykoshenkov\AppData\Local\Civica\VH5\95aa6302-d561-466b-a85b-2e34c191f114\0
3592d92-db3c-4130-a092-08016a0d297a\s


DATE: 06-30-2022                          TIME: 05:05:14

USER:



COMMENTS: ____________________________________________________________


--------------------------------------------------------------------------------
------------------------
  ********************************************
  ** SIMULATION : 5-year storm                **
  ********************************************

--------------------
| CHICAGO STORM    |    IDF curve parameters: A= 812.624
| Ptotal= 46.62 mm |                          B=   0.000
--------------------                          C=   0.790
                       used in:   INTENSITY =  A / (t + B)^C

                       Duration of storm  =  6.00 hrs
                       Storm time step    = 10.00 min
```

Pre-Development_Major_System
Time to peak ratio = 0.38

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.00	1.71	1.50	4.43	3.00	5.23	4.50	2.34
0.17	1.82	1.67	5.63	3.17	4.54	4.67	2.22
0.33	1.96	1.83	7.96	3.33	4.03	4.83	2.11
0.50	2.11	2.00	15.58	3.50	3.63	5.00	2.01
0.67	2.30	2.17	131.79	3.67	3.31	5.17	1.92
0.83	2.53	2.33	18.26	3.83	3.05	5.33	1.84
1.00	2.81	2.50	10.62	4.00	2.83	5.50	1.77
1.17	3.18	2.67	7.77	4.17	2.64	5.67	1.70
1.33	3.69	2.83	6.22	4.33	2.48	5.83	1.64

CALIB	
STANDHYD (0100)	Area (ha)= 2.49
ID= 1 DT= 5.0 min	Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	2.47	0.02
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	128.84	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.71	1.583	4.43	3.083	5.23	4.58	2.34
0.167	1.71	1.667	4.43	3.167	5.23	4.67	2.34
0.250	1.82	1.750	5.63	3.250	4.54	4.75	2.22
0.333	1.82	1.833	5.63	3.333	4.54	4.83	2.22
0.417	1.96	1.917	7.96	3.417	4.03	4.92	2.11
0.500	1.96	2.000	7.96	3.500	4.03	5.00	2.11
0.583	2.11	2.083	15.58	3.583	3.63	5.08	2.01
0.667	2.11	2.167	15.58	3.667	3.63	5.17	2.01
0.750	2.30	2.250	131.79	3.750	3.31	5.25	1.92
0.833	2.30	2.333	131.79	3.833	3.31	5.33	1.92
0.917	2.53	2.417	18.26	3.917	3.05	5.42	1.84
1.000	2.53	2.500	18.26	4.000	3.05	5.50	1.84
1.083	2.81	2.583	10.62	4.083	2.83	5.58	1.77
1.167	2.81	2.667	10.62	4.167	2.83	5.67	1.77
1.250	3.18	2.750	7.77	4.250	2.64	5.75	1.70

Pre-Development_Major_System

1.333	3.18	2.833	7.77	4.333	2.64	5.83	1.70
1.417	3.69	2.917	6.22	4.417	2.48	5.92	1.64
1.500	3.69	3.000	6.22	4.500	2.48	6.00	1.64

Max.Eff.Inten.(mm/hr)=	131.79	61.79	
over (min)	5.00	5.00	
Storage Coeff. (min)=	2.66 (ii)	3.67 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.29	0.25	
			TOTALS
PEAK FLOW (cms)=	0.88	0.00	0.888 (iii)
TIME TO PEAK (hrs)=	2.33	2.33	2.33
RUNOFF VOLUME (mm)=	45.62	21.77	45.38
TOTAL RAINFALL (mm)=	46.62	46.62	46.62
RUNOFF COEFFICIENT =	0.98	0.47	0.97

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB
STANDHYD (0101)
ID= 1 DT= 5.0 min

Area (ha)= 0.07
Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.07	0.00
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	21.60	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.71	1.583	4.43	3.083	5.23	4.58	2.34
0.167	1.71	1.667	4.43	3.167	5.23	4.67	2.34
0.250	1.82	1.750	5.63	3.250	4.54	4.75	2.22
0.333	1.82	1.833	5.63	3.333	4.54	4.83	2.22
0.417	1.96	1.917	7.96	3.417	4.03	4.92	2.11
0.500	1.96	2.000	7.96	3.500	4.03	5.00	2.11
0.583	2.11	2.083	15.58	3.583	3.63	5.08	2.01

Pre-Development_Major_System

0.667	2.11	2.167	15.58	3.667	3.63	5.17	2.01
0.750	2.30	2.250	131.79	3.750	3.31	5.25	1.92
0.833	2.30	2.333	131.79	3.833	3.31	5.33	1.92
0.917	2.53	2.417	18.26	3.917	3.05	5.42	1.84
1.000	2.53	2.500	18.26	4.000	3.05	5.50	1.84
1.083	2.81	2.583	10.62	4.083	2.83	5.58	1.77
1.167	2.81	2.667	10.62	4.167	2.83	5.67	1.77
1.250	3.18	2.750	7.77	4.250	2.64	5.75	1.70
1.333	3.18	2.833	7.77	4.333	2.64	5.83	1.70
1.417	3.69	2.917	6.22	4.417	2.48	5.92	1.64
1.500	3.69	3.000	6.22	4.500	2.48	6.00	1.64

			TOTALS
Max.Eff.Inten.(mm/hr)=	131.79	61.79	
over (min)	5.00	5.00	
Storage Coeff. (min)=	0.91 (ii)	1.92 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.34	0.31	
PEAK FLOW (cms)=	0.03	0.00	0.026 (iii)
TIME TO PEAK (hrs)=	2.33	2.33	2.33
RUNOFF VOLUME (mm)=	45.62	21.77	45.38
TOTAL RAINFALL (mm)=	46.62	46.62	46.62
RUNOFF COEFFICIENT =	0.98	0.47	0.97

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB	
STANDHYD (0102)	Area (ha)= 0.91
ID= 1 DT= 5.0 min	Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.90	0.01
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	77.89	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN

Pre-Development_Major_System

hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	1.71	1.583	4.43	3.083	5.23	4.58	2.34
0.167	1.71	1.667	4.43	3.167	5.23	4.67	2.34
0.250	1.82	1.750	5.63	3.250	4.54	4.75	2.22
0.333	1.82	1.833	5.63	3.333	4.54	4.83	2.22
0.417	1.96	1.917	7.96	3.417	4.03	4.92	2.11
0.500	1.96	2.000	7.96	3.500	4.03	5.00	2.11
0.583	2.11	2.083	15.58	3.583	3.63	5.08	2.01
0.667	2.11	2.167	15.58	3.667	3.63	5.17	2.01
0.750	2.30	2.250	131.79	3.750	3.31	5.25	1.92
0.833	2.30	2.333	131.79	3.833	3.31	5.33	1.92
0.917	2.53	2.417	18.26	3.917	3.05	5.42	1.84
1.000	2.53	2.500	18.26	4.000	3.05	5.50	1.84
1.083	2.81	2.583	10.62	4.083	2.83	5.58	1.77
1.167	2.81	2.667	10.62	4.167	2.83	5.67	1.77
1.250	3.18	2.750	7.77	4.250	2.64	5.75	1.70
1.333	3.18	2.833	7.77	4.333	2.64	5.83	1.70
1.417	3.69	2.917	6.22	4.417	2.48	5.92	1.64
1.500	3.69	3.000	6.22	4.500	2.48	6.00	1.64

Max.Eff.Inten.(mm/hr)=	131.79	61.79	
over (min)	5.00	5.00	
Storage Coeff. (min)=	1.97 (ii)	2.97 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.31	0.28	
			TOTALS
PEAK FLOW (cms)=	0.33	0.00	0.330 (iii)
TIME TO PEAK (hrs)=	2.33	2.33	2.33
RUNOFF VOLUME (mm)=	45.62	21.77	45.38
TOTAL RAINFALL (mm)=	46.62	46.62	46.62
RUNOFF COEFFICIENT =	0.98	0.47	0.97

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB			
STANDHYD (0103)	Area (ha)=	0.27	
ID= 1 DT= 5.0 min	Total Imp(%)=	90.00	Dir. Conn.(%)= 90.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.24	0.03
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00

Pre-Development_Major_System

Length	(m)=	42.43	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.71	1.583	4.43	3.083	5.23	4.58	2.34
0.167	1.71	1.667	4.43	3.167	5.23	4.67	2.34
0.250	1.82	1.750	5.63	3.250	4.54	4.75	2.22
0.333	1.82	1.833	5.63	3.333	4.54	4.83	2.22
0.417	1.96	1.917	7.96	3.417	4.03	4.92	2.11
0.500	1.96	2.000	7.96	3.500	4.03	5.00	2.11
0.583	2.11	2.083	15.58	3.583	3.63	5.08	2.01
0.667	2.11	2.167	15.58	3.667	3.63	5.17	2.01
0.750	2.30	2.250	131.79	3.750	3.31	5.25	1.92
0.833	2.30	2.333	131.79	3.833	3.31	5.33	1.92
0.917	2.53	2.417	18.26	3.917	3.05	5.42	1.84
1.000	2.53	2.500	18.26	4.000	3.05	5.50	1.84
1.083	2.81	2.583	10.62	4.083	2.83	5.58	1.77
1.167	2.81	2.667	10.62	4.167	2.83	5.67	1.77
1.250	3.18	2.750	7.77	4.250	2.64	5.75	1.70
1.333	3.18	2.833	7.77	4.333	2.64	5.83	1.70
1.417	3.69	2.917	6.22	4.417	2.48	5.92	1.64
1.500	3.69	3.000	6.22	4.500	2.48	6.00	1.64

Max.Eff.Inten.(mm/hr)=	131.79	61.79		
over (min)	5.00	5.00		
Storage Coeff. (min)=	1.37 (ii)	3.99 (ii)		
Unit Hyd. Tpeak (min)=	5.00	5.00		
Unit Hyd. peak (cms)=	0.33	0.24		
			TOTALS	
PEAK FLOW (cms)=	0.09	0.00	0.094 (iii)	
TIME TO PEAK (hrs)=	2.33	2.33	2.33	
RUNOFF VOLUME (mm)=	45.62	21.77	43.23	
TOTAL RAINFALL (mm)=	46.62	46.62	46.62	
RUNOFF COEFFICIENT =	0.98	0.47	0.93	

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

Pre-Development_Major_System

```
--------------------
| ADD HYD  (  1000)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0100):     2.49   0.888     2.33    45.38
      + ID2= 2 (  0101):     0.07   0.026     2.33    45.38
        ================================================
        ID = 3 (  1000):     2.56   0.914     2.33    45.38

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  1000)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  1000):     2.56   0.914     2.33    45.38
      + ID2= 2 (  0102):     0.91   0.330     2.33    45.38
        ================================================
        ID = 1 (  1000):     3.47   1.244     2.33    45.38

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  1000)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  1000):     3.47   1.244     2.33    45.38
      + ID2= 2 (  0103):     0.27   0.094     2.33    43.23
        ================================================
        ID = 3 (  1000):     3.74   1.337     2.33    45.22

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| DUHYD    (  1001)|
| Inlet Cap.= 0.882|
| #of Inlets=     1|
| Total(cms)=   0.9|      AREA     QPEAK     TPEAK     R.V.
--------------------      (ha)     (cms)     (hrs)     (mm)
     TOTAL HYD.(ID= 1):   3.74      1.34      2.33    45.22
     ================================================
     MAJOR SYS.(ID= 2):   0.52      0.46      2.33    45.22
     MINOR SYS.(ID= 3):   3.22      0.88      2.25    45.22

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
```

Pre-Development_Major_System

CALIB	
STANDHYD (0107)	Area (ha)= 0.03
ID= 1 DT= 5.0 min	Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.03	0.00
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	14.14	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.71	1.583	4.43	3.083	5.23	4.58	2.34
0.167	1.71	1.667	4.43	3.167	5.23	4.67	2.34
0.250	1.82	1.750	5.63	3.250	4.54	4.75	2.22
0.333	1.82	1.833	5.63	3.333	4.54	4.83	2.22
0.417	1.96	1.917	7.96	3.417	4.03	4.92	2.11
0.500	1.96	2.000	7.96	3.500	4.03	5.00	2.11
0.583	2.11	2.083	15.58	3.583	3.63	5.08	2.01
0.667	2.11	2.167	15.58	3.667	3.63	5.17	2.01
0.750	2.30	2.250	131.79	3.750	3.31	5.25	1.92
0.833	2.30	2.333	131.79	3.833	3.31	5.33	1.92
0.917	2.53	2.417	18.26	3.917	3.05	5.42	1.84
1.000	2.53	2.500	18.26	4.000	3.05	5.50	1.84
1.083	2.81	2.583	10.62	4.083	2.83	5.58	1.77
1.167	2.81	2.667	10.62	4.167	2.83	5.67	1.77
1.250	3.18	2.750	7.77	4.250	2.64	5.75	1.70
1.333	3.18	2.833	7.77	4.333	2.64	5.83	1.70
1.417	3.69	2.917	6.22	4.417	2.48	5.92	1.64
1.500	3.69	3.000	6.22	4.500	2.48	6.00	1.64

Max.Eff.Inten.(mm/hr)	=	131.79	61.79	
over (min)		5.00	5.00	
Storage Coeff. (min)	=	0.71 (ii)	1.71 (ii)	
Unit Hyd. Tpeak (min)	=	5.00	5.00	
Unit Hyd. peak (cms)	=	0.34	0.32	
				TOTALS
PEAK FLOW	(cms)=	0.01	0.00	0.011 (iii)
TIME TO PEAK	(hrs)=	2.33	2.33	2.33
RUNOFF VOLUME	(mm)=	45.62	21.77	45.38
TOTAL RAINFALL	(mm)=	46.62	46.62	46.62
RUNOFF COEFFICIENT	=	0.98	0.47	0.97

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (5005)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
	ID1= 1 (1001):	0.52	0.455	2.33	45.22
	+ ID2= 2 (0107):	0.03	0.011	2.33	45.38
	ID = 3 (5005):	0.55	0.466	2.33	45.23

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB			
STANDHYD (0104)	Area (ha)= 0.03		
ID= 1 DT= 5.0 min	Total Imp(%)= 99.00	Dir. Conn.(%)= 99.00	

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.03	0.00
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	14.14	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.71	1.583	4.43	3.083	5.23	4.58	2.34
0.167	1.71	1.667	4.43	3.167	5.23	4.67	2.34
0.250	1.82	1.750	5.63	3.250	4.54	4.75	2.22
0.333	1.82	1.833	5.63	3.333	4.54	4.83	2.22
0.417	1.96	1.917	7.96	3.417	4.03	4.92	2.11
0.500	1.96	2.000	7.96	3.500	4.03	5.00	2.11
0.583	2.11	2.083	15.58	3.583	3.63	5.08	2.01
0.667	2.11	2.167	15.58	3.667	3.63	5.17	2.01
0.750	2.30	2.250	131.79	3.750	3.31	5.25	1.92
0.833	2.30	2.333	131.79	3.833	3.31	5.33	1.92
0.917	2.53	2.417	18.26	3.917	3.05	5.42	1.84

Pre-Development_Major_System

1.000	2.53	2.500	18.26	4.000	3.05	5.50	1.84
1.083	2.81	2.583	10.62	4.083	2.83	5.58	1.77
1.167	2.81	2.667	10.62	4.167	2.83	5.67	1.77
1.250	3.18	2.750	7.77	4.250	2.64	5.75	1.70
1.333	3.18	2.833	7.77	4.333	2.64	5.83	1.70
1.417	3.69	2.917	6.22	4.417	2.48	5.92	1.64
1.500	3.69	3.000	6.22	4.500	2.48	6.00	1.64

Max.Eff.Inten.(mm/hr)=	131.79	61.79	
over (min)	5.00	5.00	
Storage Coeff. (min)=	0.71 (ii)	1.71 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.34	0.32	
			TOTALS
PEAK FLOW (cms)=	0.01	0.00	0.011 (iii)
TIME TO PEAK (hrs)=	2.33	2.33	2.33
RUNOFF VOLUME (mm)=	45.62	21.77	45.38
TOTAL RAINFALL (mm)=	46.62	46.62	46.62
RUNOFF COEFFICIENT =	0.98	0.47	0.97

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB	
STANDHYD (0108)	Area (ha)= 0.03
ID= 1 DT= 5.0 min	Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.03	0.00
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	14.14	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.71	1.583	4.43	3.083	5.23	4.58	2.34
0.167	1.71	1.667	4.43	3.167	5.23	4.67	2.34
0.250	1.82	1.750	5.63	3.250	4.54	4.75	2.22

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0.333	1.82	1.833	5.63	3.333	4.54	4.83	2.22
0.417	1.96	1.917	7.96	3.417	4.03	4.92	2.11
0.500	1.96	2.000	7.96	3.500	4.03	5.00	2.11
0.583	2.11	2.083	15.58	3.583	3.63	5.08	2.01
0.667	2.11	2.167	15.58	3.667	3.63	5.17	2.01
0.750	2.30	2.250	131.79	3.750	3.31	5.25	1.92
0.833	2.30	2.333	131.79	3.833	3.31	5.33	1.92
0.917	2.53	2.417	18.26	3.917	3.05	5.42	1.84
1.000	2.53	2.500	18.26	4.000	3.05	5.50	1.84
1.083	2.81	2.583	10.62	4.083	2.83	5.58	1.77
1.167	2.81	2.667	10.62	4.167	2.83	5.67	1.77
1.250	3.18	2.750	7.77	4.250	2.64	5.75	1.70
1.333	3.18	2.833	7.77	4.333	2.64	5.83	1.70
1.417	3.69	2.917	6.22	4.417	2.48	5.92	1.64
1.500	3.69	3.000	6.22	4.500	2.48	6.00	1.64

			TOTALS
Max.Eff.Inten.(mm/hr)=	131.79	64.30	
over (min)	5.00	5.00	
Storage Coeff. (min)=	0.71 (ii)	1.71 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.34	0.32	
PEAK FLOW (cms)=	0.01	0.00	0.011 (iii)
TIME TO PEAK (hrs)=	2.33	2.33	2.33
RUNOFF VOLUME (mm)=	45.62	22.63	45.39
TOTAL RAINFALL (mm)=	46.62	46.62	46.62
RUNOFF COEFFICIENT =	0.98	0.49	0.97

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 85.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (1002)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0104):	0.03	0.011	2.33	45.38
+ ID2= 2 (0108):	0.03	0.011	2.33	45.39
ID = 3 (1002):	0.06	0.022	2.33	45.38

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

Pre-Development_Major_System

| DUHYD (1003)|
| Inlet Cap.= 0.015|
| #of Inlets= 1|
| Total(cms)= 0.0|

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
TOTAL HYD.(ID= 1):	0.06	0.02	2.33	45.38
MAJOR SYS.(ID= 2):	0.01	0.01	2.33	45.38
MINOR SYS.(ID= 3):	0.05	0.01	2.25	45.38

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ADD HYD (5003)|
| 1 + 2 = 3 |

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (1001):	3.22	0.882	2.25	45.22
+ ID2= 2 (1003):	0.05	0.015	2.25	45.38
ID = 3 (5003):	3.27	0.897	2.25	45.23

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| CALIB |
| STANDHYD (0105)| Area (ha)= 0.18
|ID= 1 DT= 5.0 min | Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.18	0.00
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	34.64	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.71	1.583	4.43	3.083	5.23	4.58	2.34
0.167	1.71	1.667	4.43	3.167	5.23	4.67	2.34
0.250	1.82	1.750	5.63	3.250	4.54	4.75	2.22
0.333	1.82	1.833	5.63	3.333	4.54	4.83	2.22
0.417	1.96	1.917	7.96	3.417	4.03	4.92	2.11
0.500	1.96	2.000	7.96	3.500	4.03	5.00	2.11

Pre-Development_Major_System

0.583	2.11	2.083	15.58	3.583	3.63	5.08	2.01
0.667	2.11	2.167	15.58	3.667	3.63	5.17	2.01
0.750	2.30	2.250	131.79	3.750	3.31	5.25	1.92
0.833	2.30	2.333	131.79	3.833	3.31	5.33	1.92
0.917	2.53	2.417	18.26	3.917	3.05	5.42	1.84
1.000	2.53	2.500	18.26	4.000	3.05	5.50	1.84
1.083	2.81	2.583	10.62	4.083	2.83	5.58	1.77
1.167	2.81	2.667	10.62	4.167	2.83	5.67	1.77
1.250	3.18	2.750	7.77	4.250	2.64	5.75	1.70
1.333	3.18	2.833	7.77	4.333	2.64	5.83	1.70
1.417	3.69	2.917	6.22	4.417	2.48	5.92	1.64
1.500	3.69	3.000	6.22	4.500	2.48	6.00	1.64

			TOTALS
Max.Eff.Inten.(mm/hr)=	131.79	64.30	
over (min)	5.00	5.00	
Storage Coeff. (min)=	1.21 (ii)	2.22 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.33	0.30	
PEAK FLOW (cms)=	0.07	0.00	0.066 (iii)
TIME TO PEAK (hrs)=	2.33	2.33	2.33
RUNOFF VOLUME (mm)=	45.62	22.63	45.39
TOTAL RAINFALL (mm)=	46.62	46.62	46.62
RUNOFF COEFFICIENT =	0.98	0.49	0.97

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 85.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB	
STANDHYD (0106)	Area (ha)= 0.03
ID= 1 DT= 5.0 min	Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.03	0.00
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	14.14	40.00
Mannings n =	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

Pre-Development_Major_System

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.71	1.583	4.43	3.083	5.23	4.58	2.34
0.167	1.71	1.667	4.43	3.167	5.23	4.67	2.34
0.250	1.82	1.750	5.63	3.250	4.54	4.75	2.22
0.333	1.82	1.833	5.63	3.333	4.54	4.83	2.22
0.417	1.96	1.917	7.96	3.417	4.03	4.92	2.11
0.500	1.96	2.000	7.96	3.500	4.03	5.00	2.11
0.583	2.11	2.083	15.58	3.583	3.63	5.08	2.01
0.667	2.11	2.167	15.58	3.667	3.63	5.17	2.01
0.750	2.30	2.250	131.79	3.750	3.31	5.25	1.92
0.833	2.30	2.333	131.79	3.833	3.31	5.33	1.92
0.917	2.53	2.417	18.26	3.917	3.05	5.42	1.84
1.000	2.53	2.500	18.26	4.000	3.05	5.50	1.84
1.083	2.81	2.583	10.62	4.083	2.83	5.58	1.77
1.167	2.81	2.667	10.62	4.167	2.83	5.67	1.77
1.250	3.18	2.750	7.77	4.250	2.64	5.75	1.70
1.333	3.18	2.833	7.77	4.333	2.64	5.83	1.70
1.417	3.69	2.917	6.22	4.417	2.48	5.92	1.64
1.500	3.69	3.000	6.22	4.500	2.48	6.00	1.64

			TOTALS
Max.Eff.Inten.(mm/hr)=	131.79	64.30	
over (min)	5.00	5.00	
Storage Coeff. (min)=	0.71 (ii)	1.71 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.34	0.32	
PEAK FLOW (cms)=	0.01	0.00	0.011 (iii)
TIME TO PEAK (hrs)=	2.33	2.33	2.33
RUNOFF VOLUME (mm)=	45.62	22.63	45.39
TOTAL RAINFALL (mm)=	46.62	46.62	46.62
RUNOFF COEFFICIENT =	0.98	0.49	0.97

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 85.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (1005)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
	ID1= 1 (0105):	0.18	0.066	2.33	45.39
	+ ID2= 2 (0106):	0.03	0.011	2.33	45.39



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                              Pre-Development_Major_System
         ID = 3 (  1005):     0.21   0.077     2.33    45.39

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| DUHYD    (  1006)|
| Inlet Cap.= 0.051|
| #of Inlets=     1|
| Total(cms)=   0.1|      AREA     QPEAK     TPEAK    R.V.
--------------------      (ha)     (cms)     (hrs)    (mm)
     TOTAL HYD.(ID= 1):   0.21      0.08      2.33   45.39
     ==================================================
     MAJOR SYS.(ID= 2):   0.03      0.03      2.33   45.39
     MINOR SYS.(ID= 3):   0.18      0.05      2.25   45.39

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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--------------------
| ADD HYD  (  1004)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  1003):     0.01   0.007     2.33    45.38
      + ID2= 2 (  1006):     0.03   0.026     2.33    45.39
        ==================================================
        ID = 3 (  1004):     0.04   0.032     2.33    45.39

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| SHIFT HYD(  1007)|
| IN= 2---> OUT= 1 |
| SHIFT=  1.0 min  |      AREA     QPEAK     TPEAK      R.V.
--------------------      (ha)     (cms)     (hrs)      (mm)
          ID= 2 (  1006):    0.18     0.05      2.25     45.39
    SHIFT ID= 1 (  1007):    0.18     0.05      2.25     45.39


--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  5001)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  1004):     0.04   0.032     2.33    45.39
      + ID2= 2 (  1007):     0.18   0.051     2.25    45.39
        ==================================================
        ID = 3 (  5001):     0.22   0.083     2.33    45.39
```

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (5001)		AREA	QPEAK	TPEAK	R.V.
3 + 2 = 1		(ha)	(cms)	(hrs)	(mm)
	ID1= 3 (5001):	0.22	0.083	2.33	45.39
	+ ID2= 2 (5003):	3.27	0.897	2.25	45.23
	ID = 1 (5001):	3.49	0.980	2.33	45.24

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0203)	Area (ha)= 0.09		
ID= 1 DT= 5.0 min	Total Imp(%)= 70.00	Dir. Conn.(%)= 30.00	
		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.06	0.03
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	24.49	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.71	1.583	4.43	3.083	5.23	4.58	2.34
0.167	1.71	1.667	4.43	3.167	5.23	4.67	2.34
0.250	1.82	1.750	5.63	3.250	4.54	4.75	2.22
0.333	1.82	1.833	5.63	3.333	4.54	4.83	2.22
0.417	1.96	1.917	7.96	3.417	4.03	4.92	2.11
0.500	1.96	2.000	7.96	3.500	4.03	5.00	2.11
0.583	2.11	2.083	15.58	3.583	3.63	5.08	2.01
0.667	2.11	2.167	15.58	3.667	3.63	5.17	2.01
0.750	2.30	2.250	131.79	3.750	3.31	5.25	1.92
0.833	2.30	2.333	131.79	3.833	3.31	5.33	1.92
0.917	2.53	2.417	18.26	3.917	3.05	5.42	1.84
1.000	2.53	2.500	18.26	4.000	3.05	5.50	1.84
1.083	2.81	2.583	10.62	4.083	2.83	5.58	1.77
1.167	2.81	2.667	10.62	4.167	2.83	5.67	1.77
1.250	3.18	2.750	7.77	4.250	2.64	5.75	1.70
1.333	3.18	2.833	7.77	4.333	2.64	5.83	1.70

Pre-Development_Major_System

1.417	3.69	2.917	6.22	4.417	2.48	5.92	1.64
1.500	3.69	3.000	6.22	4.500	2.48	6.00	1.64

			TOTALS
Max.Eff.Inten.(mm/hr)=	131.79	230.91	
over (min)	5.00	10.00	
Storage Coeff. (min)=	0.98 (ii)	6.03 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.34	0.15	
PEAK FLOW (cms)=	0.01	0.01	0.021 (iii)
TIME TO PEAK (hrs)=	2.33	2.42	2.33
RUNOFF VOLUME (mm)=	45.62	32.56	36.43
TOTAL RAINFALL (mm)=	46.62	46.62	46.62
RUNOFF COEFFICIENT =	0.98	0.70	0.78

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB	
STANDHYD (0202)	Area (ha)= 0.27
ID= 1 DT= 5.0 min	Total Imp(%)= 70.00 Dir. Conn.(%)= 30.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.19	0.08
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	42.43	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.71	1.583	4.43	3.083	5.23	4.58	2.34
0.167	1.71	1.667	4.43	3.167	5.23	4.67	2.34
0.250	1.82	1.750	5.63	3.250	4.54	4.75	2.22
0.333	1.82	1.833	5.63	3.333	4.54	4.83	2.22
0.417	1.96	1.917	7.96	3.417	4.03	4.92	2.11
0.500	1.96	2.000	7.96	3.500	4.03	5.00	2.11
0.583	2.11	2.083	15.58	3.583	3.63	5.08	2.01
0.667	2.11	2.167	15.58	3.667	3.63	5.17	2.01

Pre-Development_Major_System

0.750	2.30	2.250	131.79	3.750	3.31	5.25	1.92
0.833	2.30	2.333	131.79	3.833	3.31	5.33	1.92
0.917	2.53	2.417	18.26	3.917	3.05	5.42	1.84
1.000	2.53	2.500	18.26	4.000	3.05	5.50	1.84
1.083	2.81	2.583	10.62	4.083	2.83	5.58	1.77
1.167	2.81	2.667	10.62	4.167	2.83	5.67	1.77
1.250	3.18	2.750	7.77	4.250	2.64	5.75	1.70
1.333	3.18	2.833	7.77	4.333	2.64	5.83	1.70
1.417	3.69	2.917	6.22	4.417	2.48	5.92	1.64
1.500	3.69	3.000	6.22	4.500	2.48	6.00	1.64

Max.Eff.Inten.(mm/hr)=	131.79	230.91	
over (min)	5.00	10.00	
Storage Coeff. (min)=	1.37 (ii)	6.42 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.33	0.14	
			TOTALS
PEAK FLOW (cms)=	0.03	0.04	0.063 (iii)
TIME TO PEAK (hrs)=	2.33	2.42	2.33
RUNOFF VOLUME (mm)=	45.62	32.56	36.47
TOTAL RAINFALL (mm)=	46.62	46.62	46.62
RUNOFF COEFFICIENT =	0.98	0.70	0.78

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (5004)				
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0202):	0.27	0.063	2.33	36.47
+ ID2= 2 (0203):	0.09	0.021	2.33	36.43
ID = 3 (5004):	0.36	0.084	2.33	36.46

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (5000)				
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (5001):	3.49	0.980	2.33	45.24

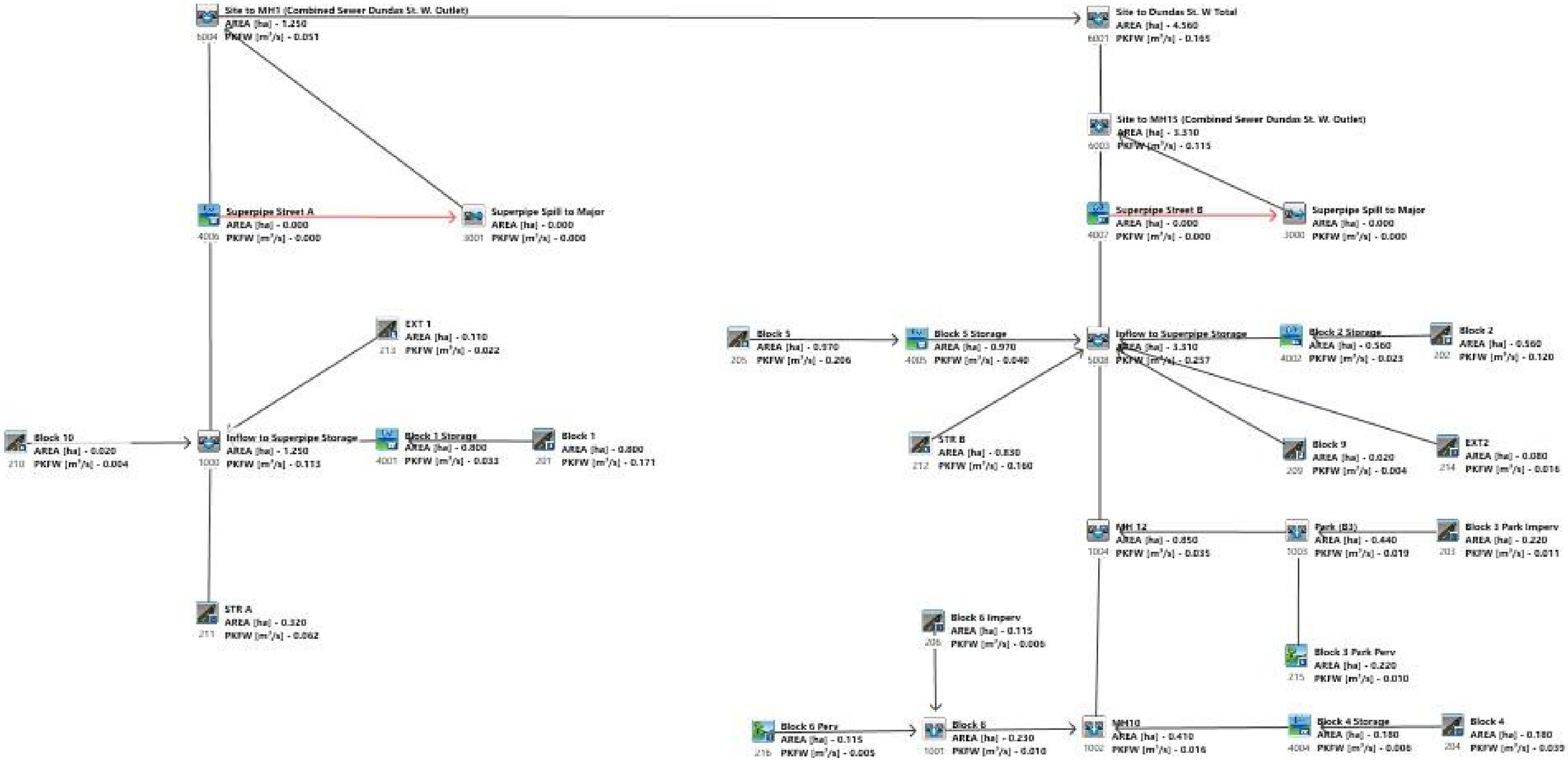
Pre-Development_Major_System

```
       + ID2= 2 (  5004):     0.36   0.084     2.33    36.46
         ==================================================
         ID = 3 (  5000):     3.85   1.065     2.33    44.42

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  5000)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
         ID1= 3 (  5000):     3.85   1.065     2.33    44.42
       + ID2= 2 (  5005):     0.55   0.466     2.33    45.23
         ==================================================
         ID = 1 (  5000):     4.40   1.531     2.33    44.52

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
```


Site to MH1 (Combined Sewer Dundas St. W. Outlet)
AREA [ha] - 1.250
6004 PKFW [m³/s] - 0.051
Site to Dundas St. W Total
AREA [ha] - 4.560
6001 PKFW [m³/s] - 0.165
Site to MH15 (Combined Sewer Dundas St. W. Outlet)
AREA [ha] - 3.310
6003 PKFW [m³/s] - 0.115
Superpipe Street A
AREA [ha] - 0.000
4006 PKFW [m³/s] - 0.000
Superpipe Spill to Major
AREA [ha] - 0.000
3001 PKFW [m³/s] - 0.000
Superpipe Street B
AREA [ha] - 0.000
4007 PKFW [m³/s] - 0.000
Superpipe Spill to Major
AREA [ha] - 0.000
3000 PKFW [m³/s] - 0.000
EXT 1
AREA [ha] - 0.110
213 PKFW [m³/s] - 0.022
Block 5
AREA [ha] - 0.570
205 PKFW [m³/s] - 0.206
Block 5 Storage
AREA [ha] - 0.570
4005 PKFW [m³/s] - 0.040
Inflow to Superpipe Storage
AREA [ha] - 3.310
5008 PKFW [m³/s] - 0.257
Block 2 Storage
AREA [ha] - 0.560
4002 PKFW [m³/s] - 0.023
Block 2
AREA [ha] - 0.560
202 PKFW [m³/s] - 0.120
Block 10
AREA [ha] - 0.020
210 PKFW [m³/s] - 0.004
Inflow to Superpipe Storage
AREA [ha] - 1.250
1000 PKFW [m³/s] - 0.113
Block 1 Storage
AREA [ha] - 0.800
4001 PKFW [m³/s] - 0.033
Block 1
AREA [ha] - 0.800
201 PKFW [m³/s] - 0.171
STR B
AREA [ha] - 0.850
212 PKFW [m³/s] - 0.160
Block 9
AREA [ha] - 0.020
209 PKFW [m³/s] - 0.004
EXT2
AREA [ha] - 0.080
214 PKFW [m³/s] - 0.016
STR A
AREA [ha] - 0.320
211 PKFW [m³/s] - 0.062
MH 12
AREA [ha] - 0.850
1004 PKFW [m³/s] - 0.035
Park (B1)
AREA [ha] - 0.440
1005 PKFW [m³/s] - 0.019
Block 3 Park Imperv
AREA [ha] - 0.220
203 PKFW [m³/s] - 0.011
Block 6 Imperv
AREA [ha] - 0.115
206 PKFW [m³/s] - 0.005
Block 3 Park Perv
AREA [ha] - 0.220
215 PKFW [m³/s] - 0.010
Block 6 Perv
AREA [ha] - 0.115
216 PKFW [m³/s] - 0.005
Block 6
AREA [ha] - 0.230
1001 PKFW [m³/s] - 0.010
MH10
AREA [ha] - 0.410
1002 PKFW [m³/s] - 0.016
Block 4 Storage
AREA [ha] - 0.180
4004 PKFW [m³/s] - 0.008
Block 4
AREA [ha] - 0.180
204 PKFW [m³/s] - 0.033

Post-Development_Minor_System

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       V    V   I    SSSSS  U   U    A    L              (v 6.2.2010)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****


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DATE: 06-30-2022                          TIME: 04:51:01

USER:  Yelena Koshenkov


COMMENTS: The City of Toronto 6-hour Chicago 2-yr Design Storm

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  **********************************************
  ** SIMULATION : 2-year storm                 **
  **********************************************

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| CHICAGO STORM    |    IDF curve parameters: A= 531.391
| Ptotal= 32.33 mm |                          B=   0.000
--------------------                          C=   0.780
```

Post-Development_Minor_System
used in: INTENSITY = A / (t + B)^C

Duration of storm = 6.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.38

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.00	1.24	1.50	3.18	3.00	3.75	4.50	1.69
0.17	1.32	1.67	4.03	3.17	3.26	4.67	1.61
0.33	1.42	1.83	5.67	3.33	2.89	4.83	1.53
0.50	1.53	2.00	10.99	3.50	2.61	5.00	1.46
0.67	1.66	2.17	88.19	3.67	2.38	5.17	1.40
0.83	1.82	2.33	12.86	3.83	2.20	5.33	1.34
1.00	2.03	2.50	7.53	4.00	2.04	5.50	1.29
1.17	2.29	2.67	5.53	4.17	1.91	5.67	1.24
1.33	2.66	2.83	4.44	4.33	1.79	5.83	1.19

CALIB			
NASHYD (0215)	Area (ha)= 0.22	Curve Number (CN)= 87.0	
ID= 1 DT=10.0 min	Ia (mm)= 5.00	# of Linear Res.(N)= 3.00	
	U.H. Tp(hrs)= 0.17		

Unit Hyd Qpeak (cms)= 0.049

PEAK FLOW (cms)= 0.010 (i)
TIME TO PEAK (hrs)= 2.333
RUNOFF VOLUME (mm)= 10.915
TOTAL RAINFALL (mm)= 32.332
RUNOFF COEFFICIENT = 0.338

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB			
STANDHYD (0203)	Area (ha)= 0.22		
ID= 1 DT= 5.0 min	Total Imp(%)= 20.00	Dir. Conn.(%)= 1.00	

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.04	0.18
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	38.30	40.00
Mannings n	=	0.013	0.250

Post-Development_Minor_System

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.24	1.583	3.18	3.083	3.75	4.58	1.69
0.167	1.24	1.667	3.18	3.167	3.75	4.67	1.69
0.250	1.32	1.750	4.03	3.250	3.26	4.75	1.61
0.333	1.32	1.833	4.03	3.333	3.26	4.83	1.61
0.417	1.42	1.917	5.67	3.417	2.89	4.92	1.53
0.500	1.42	2.000	5.67	3.500	2.89	5.00	1.53
0.583	1.53	2.083	10.99	3.583	2.61	5.08	1.46
0.667	1.53	2.167	10.99	3.667	2.61	5.17	1.46
0.750	1.66	2.250	88.19	3.750	2.38	5.25	1.40
0.833	1.66	2.333	88.19	3.833	2.38	5.33	1.40
0.917	1.82	2.417	12.86	3.917	2.20	5.42	1.34
1.000	1.82	2.500	12.86	4.000	2.20	5.50	1.34
1.083	2.03	2.583	7.54	4.083	2.04	5.58	1.29
1.167	2.03	2.667	7.53	4.167	2.04	5.67	1.29
1.250	2.29	2.750	5.53	4.250	1.91	5.75	1.24
1.333	2.29	2.833	5.53	4.333	1.91	5.83	1.24
1.417	2.66	2.917	4.44	4.417	1.79	5.92	1.19
1.500	2.66	3.000	4.44	4.500	1.79	6.00	1.19

			TOTALS
Max.Eff.Inten.(mm/hr)=	88.19	44.81	
over (min)	5.00	15.00	
Storage Coeff. (min)=	1.51 (ii)	11.24 (ii)	
Unit Hyd. Tpeak (min)=	5.00	15.00	
Unit Hyd. peak (cms)=	0.33	0.09	
PEAK FLOW (cms)=	0.00	0.01	0.011 (iii)
TIME TO PEAK (hrs)=	2.33	2.50	2.50
RUNOFF VOLUME (mm)=	31.33	13.58	13.73
TOTAL RAINFALL (mm)=	32.33	32.33	32.33
RUNOFF COEFFICIENT =	0.97	0.42	0.42

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (1003)
1 + 2 = 3

AREA	QPEAK	TPEAK	R.V.

Post-Development_Minor_System

	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0203):	0.22	0.011	2.50	13.73
+ ID2= 2 (0215):	0.22	0.010	2.33	10.91
ID = 3 (1003):	0.44	0.019	2.50	12.32

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB			
NASHYD (0216)	Area (ha)= 0.12	Curve Number (CN)= 87.0	
ID= 1 DT=10.0 min	Ia (mm)= 5.00	# of Linear Res.(N)= 3.00	
	U.H. Tp(hrs)= 0.17		

Unit Hyd Qpeak (cms)= 0.026

PEAK FLOW (cms)= 0.005 (i)
TIME TO PEAK (hrs)= 2.333
RUNOFF VOLUME (mm)= 10.911
TOTAL RAINFALL (mm)= 32.332
RUNOFF COEFFICIENT = 0.337

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB			
STANDHYD (0206)	Area (ha)= 0.12		
ID= 1 DT= 5.0 min	Total Imp(%)= 20.00	Dir. Conn.(%)= 1.00	

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.02	0.09
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	27.69	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.24	1.583	3.18	3.083	3.75	4.58	1.69
0.167	1.24	1.667	3.18	3.167	3.75	4.67	1.69
0.250	1.32	1.750	4.03	3.250	3.26	4.75	1.61
0.333	1.32	1.833	4.03	3.333	3.26	4.83	1.61
0.417	1.42	1.917	5.67	3.417	2.89	4.92	1.53
0.500	1.42	2.000	5.67	3.500	2.89	5.00	1.53

Post-Development_Minor_System

0.583	1.53	2.083	10.99	3.583	2.61	5.08	1.46
0.667	1.53	2.167	10.99	3.667	2.61	5.17	1.46
0.750	1.66	2.250	88.19	3.750	2.38	5.25	1.40
0.833	1.66	2.333	88.19	3.833	2.38	5.33	1.40
0.917	1.82	2.417	12.86	3.917	2.20	5.42	1.34
1.000	1.82	2.500	12.86	4.000	2.20	5.50	1.34
1.083	2.03	2.583	7.54	4.083	2.04	5.58	1.29
1.167	2.03	2.667	7.53	4.167	2.04	5.67	1.29
1.250	2.29	2.750	5.53	4.250	1.91	5.75	1.24
1.333	2.29	2.833	5.53	4.333	1.91	5.83	1.24
1.417	2.66	2.917	4.44	4.417	1.79	5.92	1.19
1.500	2.66	3.000	4.44	4.500	1.79	6.00	1.19

Max.Eff.Inten.(mm/hr)=	88.19	44.81	
over (min)	5.00	15.00	
Storage Coeff. (min)=	1.24 (ii)	10.97 (ii)	
Unit Hyd. Tpeak (min)=	5.00	15.00	
Unit Hyd. peak (cms)=	0.33	0.09	
			TOTALS
PEAK FLOW (cms)=	0.00	0.01	0.006 (iii)
TIME TO PEAK (hrs)=	2.33	2.50	2.50
RUNOFF VOLUME (mm)=	31.33	13.58	13.69
TOTAL RAINFALL (mm)=	32.33	32.33	32.33
RUNOFF COEFFICIENT =	0.97	0.42	0.42

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (1001)					
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	
ID1= 1 (0206):	0.12	0.006	2.50	13.69	
+ ID2= 2 (0216):	0.12	0.005	2.33	10.91	
ID = 3 (1001):	0.23	0.010	2.50	12.30	

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB				
STANDHYD (0204)	Area (ha)=	0.18		
ID= 1 DT= 5.0 min	Total Imp(%)=	85.00	Dir. Conn.(%)=	85.00

Post-Development_Minor_System

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.15	0.03
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	34.64	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.24	1.583	3.18	3.083	3.75	4.58	1.69
0.167	1.24	1.667	3.18	3.167	3.75	4.67	1.69
0.250	1.32	1.750	4.03	3.250	3.26	4.75	1.61
0.333	1.32	1.833	4.03	3.333	3.26	4.83	1.61
0.417	1.42	1.917	5.67	3.417	2.89	4.92	1.53
0.500	1.42	2.000	5.67	3.500	2.89	5.00	1.53
0.583	1.53	2.083	10.99	3.583	2.61	5.08	1.46
0.667	1.53	2.167	10.99	3.667	2.61	5.17	1.46
0.750	1.66	2.250	88.19	3.750	2.38	5.25	1.40
0.833	1.66	2.333	88.19	3.833	2.38	5.33	1.40
0.917	1.82	2.417	12.86	3.917	2.20	5.42	1.34
1.000	1.82	2.500	12.86	4.000	2.20	5.50	1.34
1.083	2.03	2.583	7.54	4.083	2.04	5.58	1.29
1.167	2.03	2.667	7.53	4.167	2.04	5.67	1.29
1.250	2.29	2.750	5.53	4.250	1.91	5.75	1.24
1.333	2.29	2.833	5.53	4.333	1.91	5.83	1.24
1.417	2.66	2.917	4.44	4.417	1.79	5.92	1.19
1.500	2.66	3.000	4.44	4.500	1.79	6.00	1.19

Max.Eff.Inten.(mm/hr)	=	88.19	29.10	
over	(min)	5.00	10.00	
Storage Coeff.	(min)=	1.42 (ii)	5.13 (ii)	
Unit Hyd. Tpeak	(min)=	5.00	10.00	
Unit Hyd. peak	(cms)=	0.33	0.16	
				TOTALS
PEAK FLOW	(cms)=	0.04	0.00	0.039 (iii)
TIME TO PEAK	(hrs)=	2.33	2.42	2.33
RUNOFF VOLUME	(mm)=	31.33	11.44	28.33
TOTAL RAINFALL	(mm)=	32.33	32.33	32.33
RUNOFF COEFFICIENT	=	0.97	0.35	0.88

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL



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                              Post-Development_Minor_System
            THAN THE STORAGE COEFFICIENT.
      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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| RESERVOIR(  4004)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE    |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)    |   (cms)     (ha.m.)
                          0.0000     0.0007    |   0.0220      0.0085

                                    AREA     QPEAK     TPEAK       R.V.
                                    (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0204)      0.180      0.039      2.33      28.33
   OUTFLOW: ID= 1 (  4004)      0.180      0.006      2.50      23.98

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 16.54
                  TIME SHIFT OF PEAK FLOW         (min)= 10.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0030

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  1002)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  1001):     0.23   0.010     2.50    12.30
      + ID2= 2 (  4004):     0.18   0.006     2.50    23.98
        ================================================
        ID = 3 (  1002):     0.41   0.016     2.50    17.42

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  1004)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  1002):     0.41   0.016     2.50    17.42
      + ID2= 2 (  1003):     0.44   0.019     2.50    12.32
        ================================================
        ID = 3 (  1004):     0.85   0.035     2.50    14.78

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0205)|   Area    (ha)=   0.97
|ID= 1 DT= 5.0 min |   Total Imp(%)=  85.00   Dir. Conn.(%)=  85.00
```

Post-Development_Minor_System

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.82	0.15
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	80.42	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.24	1.583	3.18	3.083	3.75	4.58	1.69
0.167	1.24	1.667	3.18	3.167	3.75	4.67	1.69
0.250	1.32	1.750	4.03	3.250	3.26	4.75	1.61
0.333	1.32	1.833	4.03	3.333	3.26	4.83	1.61
0.417	1.42	1.917	5.67	3.417	2.89	4.92	1.53
0.500	1.42	2.000	5.67	3.500	2.89	5.00	1.53
0.583	1.53	2.083	10.99	3.583	2.61	5.08	1.46
0.667	1.53	2.167	10.99	3.667	2.61	5.17	1.46
0.750	1.66	2.250	88.19	3.750	2.38	5.25	1.40
0.833	1.66	2.333	88.19	3.833	2.38	5.33	1.40
0.917	1.82	2.417	12.86	3.917	2.20	5.42	1.34
1.000	1.82	2.500	12.86	4.000	2.20	5.50	1.34
1.083	2.03	2.583	7.54	4.083	2.04	5.58	1.29
1.167	2.03	2.667	7.53	4.167	2.04	5.67	1.29
1.250	2.29	2.750	5.53	4.250	1.91	5.75	1.24
1.333	2.29	2.833	5.53	4.333	1.91	5.83	1.24
1.417	2.66	2.917	4.44	4.417	1.79	5.92	1.19
1.500	2.66	3.000	4.44	4.500	1.79	6.00	1.19

Max.Eff.Inten.(mm/hr)	=	88.19	29.10	
over	(min)	5.00	10.00	
Storage Coeff.	(min)=	2.36 (ii)	6.07 (ii)	
Unit Hyd. Tpeak	(min)=	5.00	10.00	
Unit Hyd. peak	(cms)=	0.30	0.15	
				TOTALS
PEAK FLOW	(cms)=	0.20	0.01	0.206 (iii)
TIME TO PEAK	(hrs)=	2.33	2.42	2.33
RUNOFF VOLUME	(mm)=	31.33	11.44	28.35
TOTAL RAINFALL	(mm)=	32.33	32.33	32.33
RUNOFF COEFFICIENT	=	0.97	0.35	0.88

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL

THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(4005) IN= 2---> OUT= 1 DT= 5.0 min	OVERFLOW IS OFF			
	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.1190	0.0415

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0205)	0.970	0.206	2.33	28.35
OUTFLOW: ID= 1 (4005)	0.970	0.040	2.50	28.26

PEAK FLOW REDUCTION [Qout/Qin](%)= 19.25
TIME SHIFT OF PEAK FLOW (min)= 10.00
MAXIMUM STORAGE USED (ha.m.)= 0.0139

CALIB STANDHYD (0202) ID= 1 DT= 5.0 min	Area (ha)= 0.56 Total Imp(%)= 85.00 Dir. Conn.(%)= 85.00	
	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.48	0.08
Dep. Storage (mm)=	1.00	5.00
Average Slope (%)=	1.00	2.00
Length (m)=	61.10	40.00
Mannings n =	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.24	1.583	3.18	3.083	3.75	4.58	1.69
0.167	1.24	1.667	3.18	3.167	3.75	4.67	1.69
0.250	1.32	1.750	4.03	3.250	3.26	4.75	1.61
0.333	1.32	1.833	4.03	3.333	3.26	4.83	1.61
0.417	1.42	1.917	5.67	3.417	2.89	4.92	1.53
0.500	1.42	2.000	5.67	3.500	2.89	5.00	1.53
0.583	1.53	2.083	10.99	3.583	2.61	5.08	1.46
0.667	1.53	2.167	10.99	3.667	2.61	5.17	1.46
0.750	1.66	2.250	88.19	3.750	2.38	5.25	1.40
0.833	1.66	2.333	88.19	3.833	2.38	5.33	1.40

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0.917	1.82	2.417	12.86	3.917	2.20	5.42	1.34
1.000	1.82	2.500	12.86	4.000	2.20	5.50	1.34
1.083	2.03	2.583	7.54	4.083	2.04	5.58	1.29
1.167	2.03	2.667	7.53	4.167	2.04	5.67	1.29
1.250	2.29	2.750	5.53	4.250	1.91	5.75	1.24
1.333	2.29	2.833	5.53	4.333	1.91	5.83	1.24
1.417	2.66	2.917	4.44	4.417	1.79	5.92	1.19
1.500	2.66	3.000	4.44	4.500	1.79	6.00	1.19

Max.Eff.Inten.(mm/hr)=	88.19	29.10	
over (min)	5.00	10.00	
Storage Coeff. (min)=	2.00 (ii)	5.71 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.31	0.15	
			TOTALS
PEAK FLOW (cms)=	0.12	0.01	0.120 (iii)
TIME TO PEAK (hrs)=	2.33	2.42	2.33
RUNOFF VOLUME (mm)=	31.33	11.44	28.34
TOTAL RAINFALL (mm)=	32.33	32.33	32.33
RUNOFF COEFFICIENT =	0.97	0.35	0.88

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(4002)	OVERFLOW IS OFF			
IN= 2---> OUT= 1				
DT= 5.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.0690	0.0240

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0202)	0.560	0.120	2.33	28.34
OUTFLOW: ID= 1 (4002)	0.560	0.023	2.50	28.19

PEAK FLOW REDUCTION [Qout/Qin](%)= 19.17
TIME SHIFT OF PEAK FLOW (min)= 10.00
MAXIMUM STORAGE USED (ha.m.)= 0.0080

CALIB			
STANDHYD (0212)	Area (ha)= 0.83		
ID= 1 DT= 5.0 min	Total Imp(%)= 75.00	Dir. Conn.(%)= 75.00	

Post-Development_Minor_System

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.62	0.21
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	74.39	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.24	1.583	3.18	3.083	3.75	4.58	1.69
0.167	1.24	1.667	3.18	3.167	3.75	4.67	1.69
0.250	1.32	1.750	4.03	3.250	3.26	4.75	1.61
0.333	1.32	1.833	4.03	3.333	3.26	4.83	1.61
0.417	1.42	1.917	5.67	3.417	2.89	4.92	1.53
0.500	1.42	2.000	5.67	3.500	2.89	5.00	1.53
0.583	1.53	2.083	10.99	3.583	2.61	5.08	1.46
0.667	1.53	2.167	10.99	3.667	2.61	5.17	1.46
0.750	1.66	2.250	88.19	3.750	2.38	5.25	1.40
0.833	1.66	2.333	88.19	3.833	2.38	5.33	1.40
0.917	1.82	2.417	12.86	3.917	2.20	5.42	1.34
1.000	1.82	2.500	12.86	4.000	2.20	5.50	1.34
1.083	2.03	2.583	7.54	4.083	2.04	5.58	1.29
1.167	2.03	2.667	7.53	4.167	2.04	5.67	1.29
1.250	2.29	2.750	5.53	4.250	1.91	5.75	1.24
1.333	2.29	2.833	5.53	4.333	1.91	5.83	1.24
1.417	2.66	2.917	4.44	4.417	1.79	5.92	1.19
1.500	2.66	3.000	4.44	4.500	1.79	6.00	1.19

Max.Eff.Inten.(mm/hr)	=	88.19	29.10	
over	(min)	5.00	10.00	
Storage Coeff.	(min)=	2.25 (ii)	7.03 (ii)	
Unit Hyd. Tpeak	(min)=	5.00	10.00	
Unit Hyd. peak	(cms)=	0.30	0.14	
				TOTALS
PEAK FLOW	(cms)=	0.15	0.01	0.160 (iii)
TIME TO PEAK	(hrs)=	2.33	2.42	2.33
RUNOFF VOLUME	(mm)=	31.33	11.44	26.35
TOTAL RAINFALL	(mm)=	32.33	32.33	32.33
RUNOFF COEFFICIENT	=	0.97	0.35	0.82

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL



THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB	
STANDHYD (0209)	Area (ha)= 0.02
ID= 1 DT= 5.0 min	Total Imp(%)= 75.00 Dir. Conn.(%)= 75.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.01	0.00
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	11.55	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.24	1.583	3.18	3.083	3.75	4.58	1.69
0.167	1.24	1.667	3.18	3.167	3.75	4.67	1.69
0.250	1.32	1.750	4.03	3.250	3.26	4.75	1.61
0.333	1.32	1.833	4.03	3.333	3.26	4.83	1.61
0.417	1.42	1.917	5.67	3.417	2.89	4.92	1.53
0.500	1.42	2.000	5.67	3.500	2.89	5.00	1.53
0.583	1.53	2.083	10.99	3.583	2.61	5.08	1.46
0.667	1.53	2.167	10.99	3.667	2.61	5.17	1.46
0.750	1.66	2.250	88.19	3.750	2.38	5.25	1.40
0.833	1.66	2.333	88.19	3.833	2.38	5.33	1.40
0.917	1.82	2.417	12.86	3.917	2.20	5.42	1.34
1.000	1.82	2.500	12.86	4.000	2.20	5.50	1.34
1.083	2.03	2.583	7.54	4.083	2.04	5.58	1.29
1.167	2.03	2.667	7.53	4.167	2.04	5.67	1.29
1.250	2.29	2.750	5.53	4.250	1.91	5.75	1.24
1.333	2.29	2.833	5.53	4.333	1.91	5.83	1.24
1.417	2.66	2.917	4.44	4.417	1.79	5.92	1.19
1.500	2.66	3.000	4.44	4.500	1.79	6.00	1.19

Max.Eff.Inten.(mm/hr)=		88.19	33.35	
	over (min)	5.00	10.00	
Storage Coeff.	(min)=	0.74 (ii)	5.52 (ii)	
Unit Hyd. Tpeak	(min)=	5.00	10.00	
Unit Hyd. peak	(cms)=	0.34	0.16	
				TOTALS
PEAK FLOW	(cms)=	0.00	0.00	0.004 (iii)
TIME TO PEAK	(hrs)=	2.33	2.42	2.33

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RUNOFF VOLUME	(mm)=	31.33	12.57	24.12
TOTAL RAINFALL	(mm)=	32.33	32.33	32.33
RUNOFF COEFFICIENT	=	0.97	0.39	0.75

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 85.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB	
STANDHYD (0214)	Area (ha)= 0.08
ID= 1 DT= 5.0 min	Total Imp(%)= 75.00 Dir. Conn.(%)= 75.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.06	0.02
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	23.09	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.24	1.583	3.18	3.083	3.75	4.58	1.69
0.167	1.24	1.667	3.18	3.167	3.75	4.67	1.69
0.250	1.32	1.750	4.03	3.250	3.26	4.75	1.61
0.333	1.32	1.833	4.03	3.333	3.26	4.83	1.61
0.417	1.42	1.917	5.67	3.417	2.89	4.92	1.53
0.500	1.42	2.000	5.67	3.500	2.89	5.00	1.53
0.583	1.53	2.083	10.99	3.583	2.61	5.08	1.46
0.667	1.53	2.167	10.99	3.667	2.61	5.17	1.46
0.750	1.66	2.250	88.19	3.750	2.38	5.25	1.40
0.833	1.66	2.333	88.19	3.833	2.38	5.33	1.40
0.917	1.82	2.417	12.86	3.917	2.20	5.42	1.34
1.000	1.82	2.500	12.86	4.000	2.20	5.50	1.34
1.083	2.03	2.583	7.54	4.083	2.04	5.58	1.29
1.167	2.03	2.667	7.53	4.167	2.04	5.67	1.29
1.250	2.29	2.750	5.53	4.250	1.91	5.75	1.24
1.333	2.29	2.833	5.53	4.333	1.91	5.83	1.24
1.417	2.66	2.917	4.44	4.417	1.79	5.92	1.19
1.500	2.66	3.000	4.44	4.500	1.79	6.00	1.19

Max.Eff.Inten.(mm/hr)=	88.19	33.35	

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                          Post-Development_Minor_System
              over (min)        5.00        10.00
     Storage Coeff.  (min)=       1.11 (ii)    5.90 (ii)
     Unit Hyd. Tpeak (min)=       5.00        10.00
     Unit Hyd. peak  (cms)=       0.34         0.15
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.01         0.00          0.016 (iii)
     TIME TO PEAK    (hrs)=       2.33         2.42           2.33
     RUNOFF VOLUME    (mm)=      31.33        12.57          26.62
     TOTAL RAINFALL   (mm)=      32.33        32.33          32.33
     RUNOFF COEFFICIENT   =       0.97         0.39           0.82


       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  85.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  5008)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  1004):     0.85   0.035     2.50    14.78
      + ID2= 2 (  0209):     0.02   0.004     2.33    24.12
        ====================================================
        ID = 3 (  5008):     0.87   0.036     2.50    15.00

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  5008)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  5008):     0.87   0.036     2.50    15.00
      + ID2= 2 (  0212):     0.83   0.160     2.33    26.35
        ====================================================
        ID = 1 (  5008):     1.70   0.193     2.33    20.54

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  5008)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  5008):     1.70   0.193     2.33    20.54
```

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                              Post-Development_Minor_System
       + ID2= 2 (  0214):     0.08   0.016     2.33    26.62
         ================================================
         ID = 3 (  5008):     1.78   0.209     2.33    20.81

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  5008)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
         ID1= 3 (  5008):     1.78   0.209     2.33    20.81
       + ID2= 2 (  4002):     0.56   0.023     2.50    28.19
         ================================================
         ID = 1 (  5008):     2.34   0.227     2.33    22.58

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  5008)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
         ID1= 1 (  5008):     2.34   0.227     2.33    22.58
       + ID2= 2 (  4005):     0.97   0.040     2.50    28.26
         ================================================
         ID = 3 (  5008):     3.31   0.257     2.33    24.25

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  4007)|     OVERFLOW IS ON
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE    |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)    |   (cms)     (ha.m.)
                          0.0000     0.0000    |   0.3132      0.0397

                                  AREA     QPEAK     TPEAK       R.V.
                                  (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  5008)      3.310      0.257      2.33      24.25
   OUTFLOW: ID= 1 (  4007)      3.310      0.115      2.58      24.24
   OVERFLOW:ID= 3 (  0003)      0.000      0.000      0.00       0.00

                  TOTAL NUMBER OF SIMULATION OVERFLOW  =     0
                  CUMULATIVE TIME OF OVERFLOW  (HOURS) =  0.00
                  PERCENTAGE OF TIME OVERFLOWING   (%) =  0.00

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 44.77
                  TIME SHIFT OF PEAK FLOW         (min)= 15.00
```

Post-Development_Minor_System

MAXIMUM STORAGE USED (ha.m.)= 0.0146

SHIFT HYD(3000) IN= 2---> OUT= 1 SHIFT= 1.0 min	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID= 2 (4007):	0.00	0.00	0.00	0.00
SHIFT ID= 1 (3000):	0.00	0.00	0.00	0.00

ADD HYD (6003) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
*** W A R N I N G : HYDROGRAPH 3000 <ID= 1> IS DRY.				
*** W A R N I N G : HYDROGRAPH 6003 = HYDROGRAPH 4007				
ID1= 1 (3000):	0.00	0.000	0.00	0.00
+ ID2= 2 (4007):	3.31	0.115	2.58	24.24
ID = 3 (6003):	3.31	0.115	2.58	24.24

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0211) ID= 1 DT= 5.0 min	Area (ha)= 0.32 Total Imp(%)= 75.00 Dir. Conn.(%)= 75.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.24	0.08
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	46.19	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.24	1.583	3.18	3.083	3.75	4.58	1.69
0.167	1.24	1.667	3.18	3.167	3.75	4.67	1.69
0.250	1.32	1.750	4.03	3.250	3.26	4.75	1.61
0.333	1.32	1.833	4.03	3.333	3.26	4.83	1.61

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0.417	1.42	1.917	5.67	3.417	2.89	4.92	1.53
0.500	1.42	2.000	5.67	3.500	2.89	5.00	1.53
0.583	1.53	2.083	10.99	3.583	2.61	5.08	1.46
0.667	1.53	2.167	10.99	3.667	2.61	5.17	1.46
0.750	1.66	2.250	88.19	3.750	2.38	5.25	1.40
0.833	1.66	2.333	88.19	3.833	2.38	5.33	1.40
0.917	1.82	2.417	12.86	3.917	2.20	5.42	1.34
1.000	1.82	2.500	12.86	4.000	2.20	5.50	1.34
1.083	2.03	2.583	7.54	4.083	2.04	5.58	1.29
1.167	2.03	2.667	7.53	4.167	2.04	5.67	1.29
1.250	2.29	2.750	5.53	4.250	1.91	5.75	1.24
1.333	2.29	2.833	5.53	4.333	1.91	5.83	1.24
1.417	2.66	2.917	4.44	4.417	1.79	5.92	1.19
1.500	2.66	3.000	4.44	4.500	1.79	6.00	1.19

Max.Eff.Inten.(mm/hr)=	88.19	29.10	
over (min)	5.00	10.00	
Storage Coeff. (min)=	1.69 (ii)	6.47 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.32	0.14	
			TOTALS
PEAK FLOW (cms)=	0.06	0.00	0.062 (iii)
TIME TO PEAK (hrs)=	2.33	2.42	2.33
RUNOFF VOLUME (mm)=	31.33	11.44	26.35
TOTAL RAINFALL (mm)=	32.33	32.33	32.33
RUNOFF COEFFICIENT =	0.97	0.35	0.81

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB			
STANDHYD (0201)	Area (ha)=	0.80	
ID= 1 DT= 5.0 min	Total Imp(%)=	85.00	Dir. Conn.(%)= 85.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.68	0.12
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	73.03	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

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---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.24	1.583	3.18	3.083	3.75	4.58	1.69
0.167	1.24	1.667	3.18	3.167	3.75	4.67	1.69
0.250	1.32	1.750	4.03	3.250	3.26	4.75	1.61
0.333	1.32	1.833	4.03	3.333	3.26	4.83	1.61
0.417	1.42	1.917	5.67	3.417	2.89	4.92	1.53
0.500	1.42	2.000	5.67	3.500	2.89	5.00	1.53
0.583	1.53	2.083	10.99	3.583	2.61	5.08	1.46
0.667	1.53	2.167	10.99	3.667	2.61	5.17	1.46
0.750	1.66	2.250	88.19	3.750	2.38	5.25	1.40
0.833	1.66	2.333	88.19	3.833	2.38	5.33	1.40
0.917	1.82	2.417	12.86	3.917	2.20	5.42	1.34
1.000	1.82	2.500	12.86	4.000	2.20	5.50	1.34
1.083	2.03	2.583	7.54	4.083	2.04	5.58	1.29
1.167	2.03	2.667	7.53	4.167	2.04	5.67	1.29
1.250	2.29	2.750	5.53	4.250	1.91	5.75	1.24
1.333	2.29	2.833	5.53	4.333	1.91	5.83	1.24
1.417	2.66	2.917	4.44	4.417	1.79	5.92	1.19
1.500	2.66	3.000	4.44	4.500	1.79	6.00	1.19

			TOTALS
Max.Eff.Inten.(mm/hr)=	88.19	29.10	
over (min)	5.00	10.00	
Storage Coeff. (min)=	2.22 (ii)	5.93 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.30	0.15	
PEAK FLOW (cms)=	0.16	0.01	0.171 (iii)
TIME TO PEAK (hrs)=	2.33	2.42	2.33
RUNOFF VOLUME (mm)=	31.33	11.44	28.35
TOTAL RAINFALL (mm)=	32.33	32.33	32.33
RUNOFF COEFFICIENT =	0.97	0.35	0.88

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(4001) IN= 2---> OUT= 1 DT= 5.0 min	OVERFLOW IS OFF			
	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.0980	0.0345

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	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0201)	0.800	0.171	2.33	28.35
OUTFLOW: ID= 1 (4001)	0.800	0.033	2.50	28.24

PEAK FLOW REDUCTION [Qout/Qin](%)= 19.07
TIME SHIFT OF PEAK FLOW (min)= 10.00
MAXIMUM STORAGE USED (ha.m.)= 0.0115

CALIB
STANDHYD (0210)
ID= 1 DT= 5.0 min

Area (ha)= 0.02
Total Imp(%)= 75.00 Dir. Conn.(%)= 75.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.01	0.00
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	11.55	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.24	1.583	3.18	3.083	3.75	4.58	1.69
0.167	1.24	1.667	3.18	3.167	3.75	4.67	1.69
0.250	1.32	1.750	4.03	3.250	3.26	4.75	1.61
0.333	1.32	1.833	4.03	3.333	3.26	4.83	1.61
0.417	1.42	1.917	5.67	3.417	2.89	4.92	1.53
0.500	1.42	2.000	5.67	3.500	2.89	5.00	1.53
0.583	1.53	2.083	10.99	3.583	2.61	5.08	1.46
0.667	1.53	2.167	10.99	3.667	2.61	5.17	1.46
0.750	1.66	2.250	88.19	3.750	2.38	5.25	1.40
0.833	1.66	2.333	88.19	3.833	2.38	5.33	1.40
0.917	1.82	2.417	12.86	3.917	2.20	5.42	1.34
1.000	1.82	2.500	12.86	4.000	2.20	5.50	1.34
1.083	2.03	2.583	7.54	4.083	2.04	5.58	1.29
1.167	2.03	2.667	7.53	4.167	2.04	5.67	1.29
1.250	2.29	2.750	5.53	4.250	1.91	5.75	1.24
1.333	2.29	2.833	5.53	4.333	1.91	5.83	1.24
1.417	2.66	2.917	4.44	4.417	1.79	5.92	1.19
1.500	2.66	3.000	4.44	4.500	1.79	6.00	1.19

Max.Eff.Inten.(mm/hr)= 88.19 33.35

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over (min)		5.00	10.00	
Storage Coeff. (min)=		0.74 (ii)	5.52 (ii)	
Unit Hyd. Tpeak (min)=		5.00	10.00	
Unit Hyd. peak (cms)=		0.34	0.16	
				TOTALS
PEAK FLOW	(cms)=	0.00	0.00	0.004 (iii)
TIME TO PEAK	(hrs)=	2.33	2.42	2.33
RUNOFF VOLUME	(mm)=	31.33	12.57	24.12
TOTAL RAINFALL	(mm)=	32.33	32.33	32.33
RUNOFF COEFFICIENT	=	0.97	0.39	0.75

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 85.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB			
STANDHYD (0213)	Area (ha)=	0.11	
ID= 1 DT= 5.0 min	Total Imp(%)=	75.00	Dir. Conn.(%)= 75.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.08	0.03
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	27.08	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.24	1.583	3.18	3.083	3.75	4.58	1.69
0.167	1.24	1.667	3.18	3.167	3.75	4.67	1.69
0.250	1.32	1.750	4.03	3.250	3.26	4.75	1.61
0.333	1.32	1.833	4.03	3.333	3.26	4.83	1.61
0.417	1.42	1.917	5.67	3.417	2.89	4.92	1.53
0.500	1.42	2.000	5.67	3.500	2.89	5.00	1.53
0.583	1.53	2.083	10.99	3.583	2.61	5.08	1.46
0.667	1.53	2.167	10.99	3.667	2.61	5.17	1.46
0.750	1.66	2.250	88.19	3.750	2.38	5.25	1.40
0.833	1.66	2.333	88.19	3.833	2.38	5.33	1.40
0.917	1.82	2.417	12.86	3.917	2.20	5.42	1.34
1.000	1.82	2.500	12.86	4.000	2.20	5.50	1.34
1.083	2.03	2.583	7.54	4.083	2.04	5.58	1.29

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1.167	2.03	2.667	7.53	4.167	2.04	5.67	1.29
1.250	2.29	2.750	5.53	4.250	1.91	5.75	1.24
1.333	2.29	2.833	5.53	4.333	1.91	5.83	1.24
1.417	2.66	2.917	4.44	4.417	1.79	5.92	1.19
1.500	2.66	3.000	4.44	4.500	1.79	6.00	1.19

Max.Eff.Inten.(mm/hr)=	88.19	33.35	
over (min)	5.00	10.00	
Storage Coeff. (min)=	1.23 (ii)	6.01 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.33	0.15	
			TOTALS
PEAK FLOW (cms)=	0.02	0.00	0.022 (iii)
TIME TO PEAK (hrs)=	2.33	2.42	2.33
RUNOFF VOLUME (mm)=	31.33	12.57	26.62
TOTAL RAINFALL (mm)=	32.33	32.33	32.33
RUNOFF COEFFICIENT =	0.97	0.39	0.82

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 85.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (1000)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0210):	0.02	0.004	2.33	24.12
+ ID2= 2 (0211):	0.32	0.062	2.33	26.35
ID = 3 (1000):	0.34	0.066	2.33	26.22

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (1000)				
3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (1000):	0.34	0.066	2.33	26.22
+ ID2= 2 (0213):	0.11	0.022	2.33	26.62
ID = 1 (1000):	0.45	0.088	2.33	26.31

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.




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--------------------
| ADD HYD  (  1000)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  1000):     0.45   0.088     2.33    26.31
      + ID2= 2 (  4001):     0.80   0.033     2.50    28.24
        ================================================
        ID = 3 (  1000):     1.25   0.113     2.33    27.55

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  4006)|     OVERFLOW IS ON
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE    |  OUTFLOW    STORAGE
--------------------       (cms)     (ha.m.)   |   (cms)     (ha.m.)
                           0.0000     0.0000   |   0.1183      0.0131

                                  AREA     QPEAK     TPEAK       R.V.
                                  (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  1000)      1.250      0.113      2.33      27.55
   OUTFLOW: ID= 1 (  4006)      1.250      0.051      2.50      27.53
   OVERFLOW:ID= 3 (  0003)      0.000      0.000      0.00       0.00

                  TOTAL NUMBER OF SIMULATION OVERFLOW  =     0
                  CUMULATIVE TIME OF OVERFLOW  (HOURS) =  0.00
                  PERCENTAGE OF TIME OVERFLOWING   (%) =  0.00

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 45.10
                  TIME SHIFT OF PEAK FLOW         (min)= 10.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0057

--------------------------------------------------------------------------------
--------------------
| SHIFT HYD(  3001)|
| IN= 2---> OUT= 1 |
| SHIFT=  1.0 min  |      AREA     QPEAK     TPEAK      R.V.
--------------------      (ha)     (cms)     (hrs)      (mm)
          ID= 2 (  4006):    0.00     0.00      0.00      0.00
    SHIFT ID= 1 (  3001):    0.00     0.00      0.00      0.00


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--------------------
| ADD HYD  (  6004)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
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                              Post-Development_Minor_System
--------------------          (ha)    (cms)    (hrs)     (mm)
*** W A R N I N G :  HYDROGRAPH   3001 <ID= 1> IS DRY.
*** W A R N I N G :  HYDROGRAPH   6004 = HYDROGRAPH 4006
        ID1= 1 (  3001):     0.00   0.000     0.00     0.00
      + ID2= 2 (  4006):     1.25   0.051     2.50    27.53
        ======================================================
        ID = 3 (  6004):     1.25   0.051     2.50    27.53

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
------------------------------------------------------------------------------

--------------------
| ADD HYD  (  6001)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  6003):     3.31   0.115     2.58    24.24
      + ID2= 2 (  6004):     1.25   0.051     2.50    27.53
        ======================================================
        ID = 3 (  6001):     4.56   0.165     2.58    25.14

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
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 FINISH
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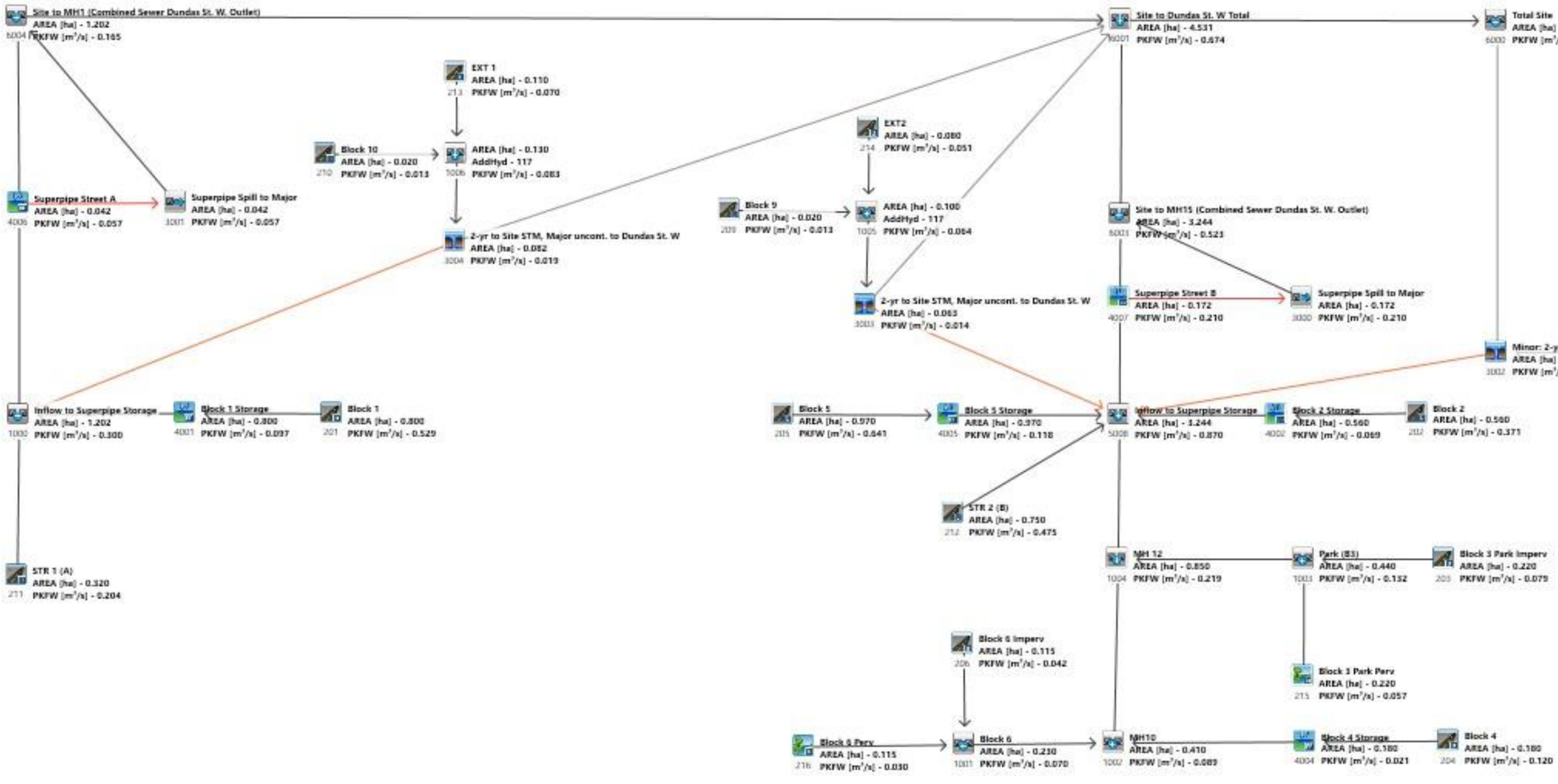
Site to MH1 (Combined Sewer Dundas St. W. Outlet)
AREA [ha] - 1.202
6004 PKFW [m³/s] - 0.165
EXT 1
AREA [ha] - 0.110
213 PKFW [m³/s] - 0.070
Block 10
AREA [ha] - 0.020
210 PKFW [m³/s] - 0.013
AREA [ha] - 0.130
AddHyd - 117
1006 PKFW [m³/s] - 0.083
Superpipe Street A
AREA [ha] - 0.042
4006 PKFW [m³/s] - 0.057
Superpipe Spill to Major
AREA [ha] - 0.042
3001 PKFW [m³/s] - 0.057
2-yr to Site STM, Major uncont. to Dundas St. W
AREA [ha] - 0.082
3004 PKFW [m³/s] - 0.019
EXT2
AREA [ha] - 0.080
214 PKFW [m³/s] - 0.051
Block 9
AREA [ha] - 0.020
209 PKFW [m³/s] - 0.013
AREA [ha] - 0.100
AddHyd - 117
1005 PKFW [m³/s] - 0.064
2-yr to Site STM, Major uncont. to Dundas St. W
AREA [ha] - 0.063
3003 PKFW [m³/s] - 0.014
Site to Dundas St. W Total
AREA [ha] - 4.531
6001 PKFW [m³/s] - 0.674
Total Site
AREA [ha] - 4.560
6000 PKFW [m³/s] - 0.674
Site to MH15 (Combined Sewer Dundas St. W. Outlet)
AREA [ha] - 3.244
6003 PKFW [m³/s] - 0.523
Superpipe Street B
AREA [ha] - 0.172
4007 PKFW [m³/s] - 0.210
Superpipe Spill to Major
AREA [ha] - 0.172
3000 PKFW [m³/s] - 0.210
Minor: 2-yr to Site STM Sewer
AREA [ha] - 0.051
3002 PKFW [m³/s] - 0.012
STR 3 (E): Major to Herman Ave
AREA [ha] - 0.080
6005 PKFW [m³/s] - 0.051
Inflow to Superpipe Storage
AREA [ha] - 1.202
1000 PKFW [m³/s] - 0.300
Block 1 Storage
AREA [ha] - 0.800
4001 PKFW [m³/s] - 0.097
Block 1
AREA [ha] - 0.800
201 PKFW [m³/s] - 0.529
STR 1 (A)
AREA [ha] - 0.320
211 PKFW [m³/s] - 0.204
Block 5
AREA [ha] - 0.970
205 PKFW [m³/s] - 0.641
Block 5 Storage
AREA [ha] - 0.970
4005 PKFW [m³/s] - 0.118
Inflow to Superpipe Storage
AREA [ha] - 3.244
5008 PKFW [m³/s] - 0.870
Block 2 Storage
AREA [ha] - 0.560
4002 PKFW [m³/s] - 0.069
Block 2
AREA [ha] - 0.560
202 PKFW [m³/s] - 0.371
STR 2 (B)
AREA [ha] - 0.750
212 PKFW [m³/s] - 0.475
MH 12
AREA [ha] - 0.850
1004 PKFW [m³/s] - 0.219
Park (B3)
AREA [ha] - 0.440
1003 PKFW [m³/s] - 0.152
Block 3 Park Imperv
AREA [ha] - 0.220
203 PKFW [m³/s] - 0.079
Block 6 Imperv
AREA [ha] - 0.115
206 PKFW [m³/s] - 0.042
Block 3 Park Perv
AREA [ha] - 0.220
215 PKFW [m³/s] - 0.057
Block 6 Perv
AREA [ha] - 0.115
216 PKFW [m³/s] - 0.030
Block 6
AREA [ha] - 0.230
1001 PKFW [m³/s] - 0.070
MH10
AREA [ha] - 0.410
1002 PKFW [m³/s] - 0.089
Block 4 Storage
AREA [ha] - 0.180
4004 PKFW [m³/s] - 0.021
Block 4
AREA [ha] - 0.180
204 PKFW [m³/s] - 0.120

Post-Development_Major_System

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       V    V   I    SSSSS  U   U    A    L              (v 6.2.2010)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat

  Output  filename:
C:\Users\ykoshenkov\AppData\Local\Civica\VH5\95aa6302-d561-466b-a85b-2e34c191f114\7
a7eaa13-69bb-4b46-a82a-03049979588f\s
  Summary filename:
C:\Users\ykoshenkov\AppData\Local\Civica\VH5\95aa6302-d561-466b-a85b-2e34c191f114\7
a7eaa13-69bb-4b46-a82a-03049979588f\s


DATE: 06-30-2022                          TIME: 05:05:54

USER:   Yelena Koshenkov


COMMENTS: The City of Toronto 6-hour Chicago Design Storms, 5 to 100-year


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  **********************************************
  ** SIMULATION : 100-year storm                **
  **********************************************

--------------------
| CHICAGO STORM    |    IDF curve parameters: A=1579.412
| Ptotal= 85.43 mm |                          B=   0.000
```

Post-Development_Major_System
---------- C= 0.800
used in: INTENSITY = A / (t + B)^C

Duration of storm = 6.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.38

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.00	2.99	1.50	7.83	3.00	9.27	4.50	4.11
0.17	3.19	1.67	9.98	3.17	8.03	4.67	3.89
0.33	3.42	1.83	14.18	3.33	7.11	4.83	3.70
0.50	3.70	2.00	27.99	3.50	6.40	5.00	3.52
0.67	4.03	2.17	250.32	3.67	5.83	5.17	3.37
0.83	4.43	2.33	32.87	3.83	5.36	5.33	3.22
1.00	4.94	2.50	18.98	4.00	4.97	5.50	3.09
1.17	5.61	2.67	13.83	4.17	4.64	5.67	2.98
1.33	6.51	2.83	11.04	4.33	4.36	5.83	2.87

CALIB					
NASHYD (0215)	Area (ha)=	0.22	Curve Number (CN)=	87.0	
ID= 1 DT=10.0 min	Ia (mm)=	5.00	# of Linear Res.(N)=	3.00	
	U.H. Tp(hrs)=	0.17			

Unit Hyd Qpeak (cms)= 0.049

PEAK FLOW (cms)= 0.057 (i)
TIME TO PEAK (hrs)= 2.333
RUNOFF VOLUME (mm)= 52.125
TOTAL RAINFALL (mm)= 85.427
RUNOFF COEFFICIENT = 0.610

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB					
STANDHYD (0203)	Area (ha)=	0.22			
ID= 1 DT= 5.0 min	Total Imp(%)=	20.00	Dir. Conn.(%)=	1.00	

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.04	0.18
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	38.30	40.00
Mannings n	=	0.013	0.250

Post-Development_Major_System

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.99	1.583	7.83	3.083	9.27	4.58	4.11
0.167	2.99	1.667	7.83	3.167	9.27	4.67	4.11
0.250	3.19	1.750	9.98	3.250	8.03	4.75	3.89
0.333	3.19	1.833	9.98	3.333	8.03	4.83	3.89
0.417	3.42	1.917	14.18	3.417	7.11	4.92	3.70
0.500	3.42	2.000	14.18	3.500	7.11	5.00	3.70
0.583	3.70	2.083	27.99	3.583	6.40	5.08	3.52
0.667	3.70	2.167	27.99	3.667	6.40	5.17	3.52
0.750	4.03	2.250	250.32	3.750	5.83	5.25	3.37
0.833	4.03	2.333	250.32	3.833	5.83	5.33	3.37
0.917	4.43	2.417	32.87	3.917	5.36	5.42	3.22
1.000	4.43	2.500	32.87	4.000	5.36	5.50	3.22
1.083	4.94	2.583	18.98	4.083	4.97	5.58	3.09
1.167	4.94	2.667	18.98	4.167	4.97	5.67	3.09
1.250	5.61	2.750	13.83	4.250	4.64	5.75	2.98
1.333	5.61	2.833	13.83	4.333	4.64	5.83	2.98
1.417	6.51	2.917	11.04	4.417	4.36	5.92	2.87
1.500	6.51	3.000	11.04	4.500	4.36	6.00	2.87

			TOTALS
Max.Eff.Inten.(mm/hr)=	250.32	230.05	
over (min)	5.00	10.00	
Storage Coeff. (min)=	1.00 (ii)	6.05 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.34	0.15	
PEAK FLOW (cms)=	0.00	0.08	0.079 (iii)
TIME TO PEAK (hrs)=	2.33	2.42	2.42
RUNOFF VOLUME (mm)=	84.43	59.11	59.35
TOTAL RAINFALL (mm)=	85.43	85.43	85.43
RUNOFF COEFFICIENT =	0.99	0.69	0.69

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (1003)				
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.

```
                              Post-Development_Major_System
--------------------            (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0203):     0.22   0.079     2.42    59.35
      + ID2= 2 (  0215):     0.22   0.057     2.33    52.12
        ================================================
        ID = 3 (  1003):     0.44   0.132     2.33    55.74

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| CALIB            |
| NASHYD   (  0216)|   Area    (ha)=   0.12   Curve Number   (CN)= 87.0
|ID= 1 DT=10.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.17

     Unit Hyd Qpeak  (cms)=   0.026

     PEAK FLOW       (cms)=   0.030 (i)
     TIME TO PEAK    (hrs)=   2.333
     RUNOFF VOLUME    (mm)=  52.122
     TOTAL RAINFALL   (mm)=  85.427
     RUNOFF COEFFICIENT   =   0.610

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
| CALIB            |
| STANDHYD (  0206)|   Area    (ha)=   0.12
|ID= 1 DT= 5.0 min |   Total Imp(%)=  20.00   Dir. Conn.(%)=   1.00
--------------------

                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.02         0.09
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      27.69        40.00
     Mannings n           =      0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                        ---- TRANSFORMED HYETOGRAPH ----
    TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
     hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
   0.083    2.99 | 1.583    7.83 | 3.083    9.27 |  4.58    4.11
   0.167    2.99 | 1.667    7.83 | 3.167    9.27 |  4.67    4.11
   0.250    3.19 | 1.750    9.98 | 3.250    8.03 |  4.75    3.89
   0.333    3.19 | 1.833    9.98 | 3.333    8.03 |  4.83    3.89
   0.417    3.42 | 1.917   14.18 | 3.417    7.11 |  4.92    3.70
   0.500    3.42 | 2.000   14.18 | 3.500    7.11 |  5.00    3.70
```

Post-Development_Major_System

0.583	3.70	2.083	27.99	3.583	6.40	5.08	3.52
0.667	3.70	2.167	27.99	3.667	6.40	5.17	3.52
0.750	4.03	2.250	250.32	3.750	5.83	5.25	3.37
0.833	4.03	2.333	250.32	3.833	5.83	5.33	3.37
0.917	4.43	2.417	32.87	3.917	5.36	5.42	3.22
1.000	4.43	2.500	32.87	4.000	5.36	5.50	3.22
1.083	4.94	2.583	18.98	4.083	4.97	5.58	3.09
1.167	4.94	2.667	18.98	4.167	4.97	5.67	3.09
1.250	5.61	2.750	13.83	4.250	4.64	5.75	2.98
1.333	5.61	2.833	13.83	4.333	4.64	5.83	2.98
1.417	6.51	2.917	11.04	4.417	4.36	5.92	2.87
1.500	6.51	3.000	11.04	4.500	4.36	6.00	2.87

			TOTALS
Max.Eff.Inten.(mm/hr)=	250.32	230.05	
over (min)	5.00	10.00	
Storage Coeff. (min)=	0.82 (ii)	5.88 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.34	0.15	
PEAK FLOW (cms)=	0.00	0.04	0.042 (iii)
TIME TO PEAK (hrs)=	2.33	2.42	2.42
RUNOFF VOLUME (mm)=	84.43	59.11	59.34
TOTAL RAINFALL (mm)=	85.43	85.43	85.43
RUNOFF COEFFICIENT =	0.99	0.69	0.69

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (1001)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
	ID1= 1 (0206):	0.12	0.042	2.42	59.34
+	ID2= 2 (0216):	0.12	0.030	2.33	52.12
	ID = 3 (1001):	0.23	0.070	2.33	55.73

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB					
STANDHYD (0204)	Area (ha)=	0.18			
ID= 1 DT= 5.0 min	Total Imp(%)=	85.00	Dir. Conn.(%)=	85.00	

Post-Development_Major_System

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.15	0.03
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	34.64	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.99	1.583	7.83	3.083	9.27	4.58	4.11
0.167	2.99	1.667	7.83	3.167	9.27	4.67	4.11
0.250	3.19	1.750	9.98	3.250	8.03	4.75	3.89
0.333	3.19	1.833	9.98	3.333	8.03	4.83	3.89
0.417	3.42	1.917	14.18	3.417	7.11	4.92	3.70
0.500	3.42	2.000	14.18	3.500	7.11	5.00	3.70
0.583	3.70	2.083	27.99	3.583	6.40	5.08	3.52
0.667	3.70	2.167	27.99	3.667	6.40	5.17	3.52
0.750	4.03	2.250	250.32	3.750	5.83	5.25	3.37
0.833	4.03	2.333	250.32	3.833	5.83	5.33	3.37
0.917	4.43	2.417	32.87	3.917	5.36	5.42	3.22
1.000	4.43	2.500	32.87	4.000	5.36	5.50	3.22
1.083	4.94	2.583	18.98	4.083	4.97	5.58	3.09
1.167	4.94	2.667	18.98	4.167	4.97	5.67	3.09
1.250	5.61	2.750	13.83	4.250	4.64	5.75	2.98
1.333	5.61	2.833	13.83	4.333	4.64	5.83	2.98
1.417	6.51	2.917	11.04	4.417	4.36	5.92	2.87
1.500	6.51	3.000	11.04	4.500	4.36	6.00	2.87

Max.Eff.Inten.(mm/hr)=		250.32	170.26	
over (min)		5.00	5.00	
Storage Coeff. (min)=		0.94 (ii)	3.38 (ii)	
Unit Hyd. Tpeak (min)=		5.00	5.00	
Unit Hyd. peak (cms)=		0.34	0.26	
				TOTALS
PEAK FLOW	(cms)=	0.11	0.01	0.120 (iii)
TIME TO PEAK	(hrs)=	2.33	2.33	2.33
RUNOFF VOLUME	(mm)=	84.43	54.64	79.95
TOTAL RAINFALL	(mm)=	85.43	85.43	85.43
RUNOFF COEFFICIENT	=	0.99	0.64	0.94

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.



Post-Development_Major_System

(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
| RESERVOIR(  4004)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE    |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)    |   (cms)     (ha.m.)
                          0.0000     0.0007    |   0.0220      0.0085

                                  AREA     QPEAK     TPEAK       R.V.
                                  (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0204)      0.180      0.120      2.33       79.95
   OUTFLOW: ID= 1 (  4004)      0.180      0.021      2.42       75.61

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 17.84
                  TIME SHIFT OF PEAK FLOW         (min)=  5.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0083

------------------------------------------------------------------------------

--------------------
| ADD HYD  (  1002)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  1001):     0.23   0.070     2.33    55.73
      + ID2= 2 (  4004):     0.18   0.021     2.42    75.61
        ================================================
        ID = 3 (  1002):     0.41   0.089     2.42    64.46

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
------------------------------------------------------------------------------

--------------------
| ADD HYD  (  1004)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  1002):     0.41   0.089     2.42    64.46
      + ID2= 2 (  1003):     0.44   0.132     2.33    55.74
        ================================================
        ID = 3 (  1004):     0.85   0.219     2.33    59.94

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0205)|   Area    (ha)=   0.97
|ID= 1 DT= 5.0 min |   Total Imp(%)=  85.00   Dir. Conn.(%)=  85.00
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Post-Development_Major_System

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.82	0.15
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	80.42	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.99	1.583	7.83	3.083	9.27	4.58	4.11
0.167	2.99	1.667	7.83	3.167	9.27	4.67	4.11
0.250	3.19	1.750	9.98	3.250	8.03	4.75	3.89
0.333	3.19	1.833	9.98	3.333	8.03	4.83	3.89
0.417	3.42	1.917	14.18	3.417	7.11	4.92	3.70
0.500	3.42	2.000	14.18	3.500	7.11	5.00	3.70
0.583	3.70	2.083	27.99	3.583	6.40	5.08	3.52
0.667	3.70	2.167	27.99	3.667	6.40	5.17	3.52
0.750	4.03	2.250	250.32	3.750	5.83	5.25	3.37
0.833	4.03	2.333	250.32	3.833	5.83	5.33	3.37
0.917	4.43	2.417	32.87	3.917	5.36	5.42	3.22
1.000	4.43	2.500	32.87	4.000	5.36	5.50	3.22
1.083	4.94	2.583	18.98	4.083	4.97	5.58	3.09
1.167	4.94	2.667	18.98	4.167	4.97	5.67	3.09
1.250	5.61	2.750	13.83	4.250	4.64	5.75	2.98
1.333	5.61	2.833	13.83	4.333	4.64	5.83	2.98
1.417	6.51	2.917	11.04	4.417	4.36	5.92	2.87
1.500	6.51	3.000	11.04	4.500	4.36	6.00	2.87

Max.Eff.Inten.(mm/hr)=		250.32	170.26	
over (min)		5.00	5.00	
Storage Coeff. (min)=		1.55 (ii)	4.00 (ii)	
Unit Hyd. Tpeak (min)=		5.00	5.00	
Unit Hyd. peak (cms)=		0.33	0.24	
				TOTALS
PEAK FLOW	(cms)=	0.57	0.07	0.641 (iii)
TIME TO PEAK	(hrs)=	2.33	2.33	2.33
RUNOFF VOLUME	(mm)=	84.43	54.64	79.95
TOTAL RAINFALL	(mm)=	85.43	85.43	85.43
RUNOFF COEFFICIENT	=	0.99	0.64	0.94

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)

(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL THAN THE STORAGE COEFFICIENT.

Post-Development_Major_System

(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(4005) IN= 2---> OUT= 1 DT= 5.0 min	OVERFLOW IS OFF			
	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.1190	0.0415

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0205)	0.970	0.641	2.33	79.95
OUTFLOW: ID= 1 (4005)	0.970	0.118	2.42	79.87

PEAK FLOW REDUCTION [Qout/Qin](%)= 18.40
TIME SHIFT OF PEAK FLOW (min)= 5.00
MAXIMUM STORAGE USED (ha.m.)= 0.0412

CALIB STANDHYD (0202) ID= 1 DT= 5.0 min	Area (ha)= 0.56 Total Imp(%)= 85.00 Dir. Conn.(%)= 85.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.48	0.08
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	61.10	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.99	1.583	7.83	3.083	9.27	4.58	4.11
0.167	2.99	1.667	7.83	3.167	9.27	4.67	4.11
0.250	3.19	1.750	9.98	3.250	8.03	4.75	3.89
0.333	3.19	1.833	9.98	3.333	8.03	4.83	3.89
0.417	3.42	1.917	14.18	3.417	7.11	4.92	3.70
0.500	3.42	2.000	14.18	3.500	7.11	5.00	3.70
0.583	3.70	2.083	27.99	3.583	6.40	5.08	3.52
0.667	3.70	2.167	27.99	3.667	6.40	5.17	3.52
0.750	4.03	2.250	250.32	3.750	5.83	5.25	3.37
0.833	4.03	2.333	250.32	3.833	5.83	5.33	3.37
0.917	4.43	2.417	32.87	3.917	5.36	5.42	3.22

Post-Development_Major_System

1.000	4.43	2.500	32.87	4.000	5.36	5.50	3.22
1.083	4.94	2.583	18.98	4.083	4.97	5.58	3.09
1.167	4.94	2.667	18.98	4.167	4.97	5.67	3.09
1.250	5.61	2.750	13.83	4.250	4.64	5.75	2.98
1.333	5.61	2.833	13.83	4.333	4.64	5.83	2.98
1.417	6.51	2.917	11.04	4.417	4.36	5.92	2.87
1.500	6.51	3.000	11.04	4.500	4.36	6.00	2.87

Max.Eff.Inten.(mm/hr)=	250.32	170.26	
over (min)	5.00	5.00	
Storage Coeff. (min)=	1.32 (ii)	3.76 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.33	0.25	
			TOTALS
PEAK FLOW (cms)=	0.33	0.04	0.371 (iii)
TIME TO PEAK (hrs)=	2.33	2.33	2.33
RUNOFF VOLUME (mm)=	84.43	54.64	79.96
TOTAL RAINFALL (mm)=	85.43	85.43	85.43
RUNOFF COEFFICIENT =	0.99	0.64	0.94

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(4002)	OVERFLOW IS OFF			
IN= 2---> OUT= 1				
DT= 5.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.0690	0.0240

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0202)	0.560	0.371	2.33	79.96
OUTFLOW: ID= 1 (4002)	0.560	0.069	2.42	79.81

PEAK FLOW REDUCTION [Qout/Qin](%)= 18.47
TIME SHIFT OF PEAK FLOW (min)= 5.00
MAXIMUM STORAGE USED (ha.m.)= 0.0239

CALIB	
STANDHYD (0212)	Area (ha)= 0.75

Post-Development_Major_System

|ID= 1 DT= 5.0 min | Total Imp(%)= 75.00 Dir. Conn.(%)= 75.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.56	0.19
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	70.71	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.99	1.583	7.83	3.083	9.27	4.58	4.11
0.167	2.99	1.667	7.83	3.167	9.27	4.67	4.11
0.250	3.19	1.750	9.98	3.250	8.03	4.75	3.89
0.333	3.19	1.833	9.98	3.333	8.03	4.83	3.89
0.417	3.42	1.917	14.18	3.417	7.11	4.92	3.70
0.500	3.42	2.000	14.18	3.500	7.11	5.00	3.70
0.583	3.70	2.083	27.99	3.583	6.40	5.08	3.52
0.667	3.70	2.167	27.99	3.667	6.40	5.17	3.52
0.750	4.03	2.250	250.32	3.750	5.83	5.25	3.37
0.833	4.03	2.333	250.32	3.833	5.83	5.33	3.37
0.917	4.43	2.417	32.87	3.917	5.36	5.42	3.22
1.000	4.43	2.500	32.87	4.000	5.36	5.50	3.22
1.083	4.94	2.583	18.98	4.083	4.97	5.58	3.09
1.167	4.94	2.667	18.98	4.167	4.97	5.67	3.09
1.250	5.61	2.750	13.83	4.250	4.64	5.75	2.98
1.333	5.61	2.833	13.83	4.333	4.64	5.83	2.98
1.417	6.51	2.917	11.04	4.417	4.36	5.92	2.87
1.500	6.51	3.000	11.04	4.500	4.36	6.00	2.87

Max.Eff.Inten.(mm/hr)=		250.32	170.26	
over (min)		5.00	5.00	
Storage Coeff. (min)=		1.44 (ii)	4.59 (ii)	
Unit Hyd. Tpeak (min)=		5.00	5.00	
Unit Hyd. peak (cms)=		0.33	0.23	
				TOTALS
PEAK FLOW	(cms)=	0.39	0.08	0.475 (iii)
TIME TO PEAK	(hrs)=	2.33	2.33	2.33
RUNOFF VOLUME	(mm)=	84.43	54.64	76.98
TOTAL RAINFALL	(mm)=	85.43	85.43	85.43
RUNOFF COEFFICIENT	=	0.99	0.64	0.90

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)

Post-Development_Major_System

(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB	
STANDHYD (0209)	Area (ha)= 0.02
ID= 1 DT= 5.0 min	Total Imp(%)= 75.00 Dir. Conn.(%)= 75.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.01	0.00
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	11.55	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.99	1.583	7.83	3.083	9.27	4.58	4.11
0.167	2.99	1.667	7.83	3.167	9.27	4.67	4.11
0.250	3.19	1.750	9.98	3.250	8.03	4.75	3.89
0.333	3.19	1.833	9.98	3.333	8.03	4.83	3.89
0.417	3.42	1.917	14.18	3.417	7.11	4.92	3.70
0.500	3.42	2.000	14.18	3.500	7.11	5.00	3.70
0.583	3.70	2.083	27.99	3.583	6.40	5.08	3.52
0.667	3.70	2.167	27.99	3.667	6.40	5.17	3.52
0.750	4.03	2.250	250.32	3.750	5.83	5.25	3.37
0.833	4.03	2.333	250.32	3.833	5.83	5.33	3.37
0.917	4.43	2.417	32.87	3.917	5.36	5.42	3.22
1.000	4.43	2.500	32.87	4.000	5.36	5.50	3.22
1.083	4.94	2.583	18.98	4.083	4.97	5.58	3.09
1.167	4.94	2.667	18.98	4.167	4.97	5.67	3.09
1.250	5.61	2.750	13.83	4.250	4.64	5.75	2.98
1.333	5.61	2.833	13.83	4.333	4.64	5.83	2.98
1.417	6.51	2.917	11.04	4.417	4.36	5.92	2.87
1.500	6.51	3.000	11.04	4.500	4.36	6.00	2.87

Max.Eff.Inten.(mm/hr)=		250.32	167.45	
over (min)		5.00	5.00	
Storage Coeff. (min)=		0.48 (ii)	3.64 (ii)	
Unit Hyd. Tpeak (min)=		5.00	5.00	
Unit Hyd. peak (cms)=		0.34	0.25	
				TOTALS
PEAK FLOW	(cms)=	0.01	0.00	0.013 (iii)

Post-Development_Major_System

TIME TO PEAK	(hrs)=	2.33	2.33	2.33
RUNOFF VOLUME	(mm)=	84.43	54.71	76.98
TOTAL RAINFALL	(mm)=	85.43	85.43	85.43
RUNOFF COEFFICIENT	=	0.99	0.64	0.90

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 85.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB			
STANDHYD (0214)	Area (ha)=	0.08	
ID= 1 DT= 5.0 min	Total Imp(%)=	75.00	Dir. Conn.(%)= 75.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.06	0.02
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	23.09	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.99	1.583	7.83	3.083	9.27	4.58	4.11
0.167	2.99	1.667	7.83	3.167	9.27	4.67	4.11
0.250	3.19	1.750	9.98	3.250	8.03	4.75	3.89
0.333	3.19	1.833	9.98	3.333	8.03	4.83	3.89
0.417	3.42	1.917	14.18	3.417	7.11	4.92	3.70
0.500	3.42	2.000	14.18	3.500	7.11	5.00	3.70
0.583	3.70	2.083	27.99	3.583	6.40	5.08	3.52
0.667	3.70	2.167	27.99	3.667	6.40	5.17	3.52
0.750	4.03	2.250	250.32	3.750	5.83	5.25	3.37
0.833	4.03	2.333	250.32	3.833	5.83	5.33	3.37
0.917	4.43	2.417	32.87	3.917	5.36	5.42	3.22
1.000	4.43	2.500	32.87	4.000	5.36	5.50	3.22
1.083	4.94	2.583	18.98	4.083	4.97	5.58	3.09
1.167	4.94	2.667	18.98	4.167	4.97	5.67	3.09
1.250	5.61	2.750	13.83	4.250	4.64	5.75	2.98
1.333	5.61	2.833	13.83	4.333	4.64	5.83	2.98
1.417	6.51	2.917	11.04	4.417	4.36	5.92	2.87
1.500	6.51	3.000	11.04	4.500	4.36	6.00	2.87

Post-Development_Major_System

Max.Eff.Inten.(mm/hr)=	250.32	167.45		
over (min)	5.00	5.00		
Storage Coeff. (min)=	0.73 (ii)	3.89 (ii)		
Unit Hyd. Tpeak (min)=	5.00	5.00		
Unit Hyd. peak (cms)=	0.34	0.25		
			TOTALS	
PEAK FLOW (cms)=	0.04	0.01	0.051 (iii)	
TIME TO PEAK (hrs)=	2.33	2.33	2.33	
RUNOFF VOLUME (mm)=	84.43	54.71	76.98	
TOTAL RAINFALL (mm)=	85.43	85.43	85.43	
RUNOFF COEFFICIENT =	0.99	0.64	0.90	

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 85.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (1005)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0209):		0.02	0.013	2.33	76.98
+ ID2= 2 (0214):		0.08	0.051	2.33	76.98
ID = 3 (1005):		0.10	0.064	2.33	76.98

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

DUHYD (3003)		AREA	QPEAK	TPEAK	R.V.
Inlet Cap.= 0.014					
#of Inlets= 1					
Total(cms)= 0.0		(ha)	(cms)	(hrs)	(mm)
TOTAL HYD.(ID= 1):		0.10	0.06	2.33	76.98
MAJOR SYS.(ID= 2):		0.04	0.05	2.33	76.98
MINOR SYS.(ID= 3):		0.06	0.01	2.25	76.98

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB

Post-Development_Major_System

| STANDHYD (6005)| Area (ha)= 0.08
|ID= 1 DT= 5.0 min | Total Imp(%)= 75.00 Dir. Conn.(%)= 75.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.06	0.02
Dep. Storage (mm)=	1.00	5.00
Average Slope (%)=	1.00	2.00
Length (m)=	23.09	40.00
Mannings n =	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.99	1.583	7.83	3.083	9.27	4.58	4.11
0.167	2.99	1.667	7.83	3.167	9.27	4.67	4.11
0.250	3.19	1.750	9.98	3.250	8.03	4.75	3.89
0.333	3.19	1.833	9.98	3.333	8.03	4.83	3.89
0.417	3.42	1.917	14.18	3.417	7.11	4.92	3.70
0.500	3.42	2.000	14.18	3.500	7.11	5.00	3.70
0.583	3.70	2.083	27.99	3.583	6.40	5.08	3.52
0.667	3.70	2.167	27.99	3.667	6.40	5.17	3.52
0.750	4.03	2.250	250.32	3.750	5.83	5.25	3.37
0.833	4.03	2.333	250.32	3.833	5.83	5.33	3.37
0.917	4.43	2.417	32.87	3.917	5.36	5.42	3.22
1.000	4.43	2.500	32.87	4.000	5.36	5.50	3.22
1.083	4.94	2.583	18.98	4.083	4.97	5.58	3.09
1.167	4.94	2.667	18.98	4.167	4.97	5.67	3.09
1.250	5.61	2.750	13.83	4.250	4.64	5.75	2.98
1.333	5.61	2.833	13.83	4.333	4.64	5.83	2.98
1.417	6.51	2.917	11.04	4.417	4.36	5.92	2.87
1.500	6.51	3.000	11.04	4.500	4.36	6.00	2.87

			TOTALS
Max.Eff.Inten.(mm/hr)=	250.32	170.26	
over (min)	5.00	5.00	
Storage Coeff. (min)=	0.73 (ii)	3.89 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.34	0.25	
PEAK FLOW (cms)=	0.04	0.01	0.051 (iii)
TIME TO PEAK (hrs)=	2.33	2.33	2.33
RUNOFF VOLUME (mm)=	84.43	54.64	76.96
TOTAL RAINFALL (mm)=	85.43	85.43	85.43
RUNOFF COEFFICIENT =	0.99	0.64	0.90

```
                          Post-Development_Major_System
        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  87.0    Ia = Dep. Storage  (Above)
       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
            THAN THE STORAGE COEFFICIENT.
      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
--------------------
| DUHYD    (  3002)|
| Inlet Cap.= 0.012|
| #of Inlets=     1|
| Total(cms)=   0.0|      AREA     QPEAK     TPEAK    R.V.
--------------------      (ha)     (cms)     (hrs)    (mm)
     TOTAL HYD.(ID= 1):   0.08      0.05      2.33   76.96
     ==================================================
     MAJOR SYS.(ID= 2):   0.03      0.04      2.33   76.96
     MINOR SYS.(ID= 3):   0.05      0.01      2.25   76.96

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  5008)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  1004):     0.85   0.219     2.33    59.94
      + ID2= 2 (  0212):     0.75   0.475     2.33    76.98
        ================================================
        ID = 3 (  5008):     1.60   0.694     2.33    67.93

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  5008)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  5008):     1.60   0.694     2.33    67.93
      + ID2= 2 (  3002):     0.05   0.012     2.25    76.96
        ================================================
        ID = 1 (  5008):     1.65   0.706     2.33    68.21

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  5008)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
```

```
                              Post-Development_Major_System
--------------------           (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  5008):     1.65   0.706     2.33    68.21
      + ID2= 2 (  3003):     0.06   0.014     2.25    76.98
        ================================================
        ID = 3 (  5008):     1.71   0.720     2.33    68.53

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
------------------------------------------------------------------------------

--------------------
| ADD HYD  (  5008)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  5008):     1.71   0.720     2.33    68.53
      + ID2= 2 (  4002):     0.56   0.069     2.42    79.81
        ================================================
        ID = 1 (  5008):     2.27   0.775     2.33    71.31

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
------------------------------------------------------------------------------

--------------------
| ADD HYD  (  5008)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  5008):     2.27   0.775     2.33    71.31
      + ID2= 2 (  4005):     0.97   0.118     2.42    79.87
        ================================================
        ID = 3 (  5008):     3.24   0.870     2.33    73.87

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
------------------------------------------------------------------------------
--------------------
| RESERVOIR(  4007)|     OVERFLOW IS ON
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE    |  OUTFLOW    STORAGE
--------------------       (cms)     (ha.m.)   |   (cms)     (ha.m.)
                           0.0000     0.0000   |   0.3132      0.0397

                                  AREA     QPEAK     TPEAK       R.V.
                                  (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  5008)      3.244      0.870      2.33      73.87
   OUTFLOW: ID= 1 (  4007)      3.072      0.313      2.42      73.90
   OVERFLOW:ID= 3 (  0003)      0.172      0.210      2.42      73.90

                  TOTAL NUMBER OF SIMULATION OVERFLOW  =     0
                  CUMULATIVE TIME OF OVERFLOW  (HOURS) =  0.00
                  PERCENTAGE OF TIME OVERFLOWING   (%) =  0.00
```

```
                        Post-Development_Major_System
                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 36.01
                  TIME SHIFT OF PEAK FLOW         (min)=  5.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0397

--------------------------------------------------------------------------------
--------------------
| SHIFT HYD(  3000)|
| IN= 2---> OUT= 1 |
| SHIFT=  1.0 min  |      AREA     QPEAK     TPEAK      R.V.
--------------------      (ha)     (cms)     (hrs)      (mm)
          ID= 2 (  4007):    0.17     0.21      2.42     73.90
    SHIFT ID= 1 (  3000):    0.17     0.21      2.42     73.90


--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  6003)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  3000):     0.17   0.210     2.42    73.90
      + ID2= 2 (  4007):     3.07   0.313     2.42    73.90
        ================================================
        ID = 3 (  6003):     3.24   0.523     2.42    73.90

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0211)|   Area    (ha)=   0.32
|ID= 1 DT= 5.0 min |   Total Imp(%)=  75.00   Dir. Conn.(%)=  75.00
--------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.24         0.08
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      46.19        40.00
     Mannings n             =     0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                          ---- TRANSFORMED HYETOGRAPH ----
              TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
               hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
             0.083    2.99 | 1.583    7.83 | 3.083    9.27 |  4.58    4.11
             0.167    2.99 | 1.667    7.83 | 3.167    9.27 |  4.67    4.11
             0.250    3.19 | 1.750    9.98 | 3.250    8.03 |  4.75    3.89
             0.333    3.19 | 1.833    9.98 | 3.333    8.03 |  4.83    3.89
```

Post-Development_Major_System

0.417	3.42	1.917	14.18	3.417	7.11	4.92	3.70
0.500	3.42	2.000	14.18	3.500	7.11	5.00	3.70
0.583	3.70	2.083	27.99	3.583	6.40	5.08	3.52
0.667	3.70	2.167	27.99	3.667	6.40	5.17	3.52
0.750	4.03	2.250	250.32	3.750	5.83	5.25	3.37
0.833	4.03	2.333	250.32	3.833	5.83	5.33	3.37
0.917	4.43	2.417	32.87	3.917	5.36	5.42	3.22
1.000	4.43	2.500	32.87	4.000	5.36	5.50	3.22
1.083	4.94	2.583	18.98	4.083	4.97	5.58	3.09
1.167	4.94	2.667	18.98	4.167	4.97	5.67	3.09
1.250	5.61	2.750	13.83	4.250	4.64	5.75	2.98
1.333	5.61	2.833	13.83	4.333	4.64	5.83	2.98
1.417	6.51	2.917	11.04	4.417	4.36	5.92	2.87
1.500	6.51	3.000	11.04	4.500	4.36	6.00	2.87

			TOTALS
Max.Eff.Inten.(mm/hr)=	250.32	170.26	
over (min)	5.00	5.00	
Storage Coeff. (min)=	1.11 (ii)	4.26 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.34	0.23	
PEAK FLOW (cms)=	0.17	0.04	0.204 (iii)
TIME TO PEAK (hrs)=	2.33	2.33	2.33
RUNOFF VOLUME (mm)=	84.43	54.64	76.97
TOTAL RAINFALL (mm)=	85.43	85.43	85.43
RUNOFF COEFFICIENT =	0.99	0.64	0.90

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB		
STANDHYD (0201)	Area (ha)=	0.80
ID= 1 DT= 5.0 min	Total Imp(%)=	85.00 Dir. Conn.(%)= 85.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.68	0.12
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	73.03	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.99	1.583	7.83	3.083	9.27	4.58	4.11
0.167	2.99	1.667	7.83	3.167	9.27	4.67	4.11
0.250	3.19	1.750	9.98	3.250	8.03	4.75	3.89
0.333	3.19	1.833	9.98	3.333	8.03	4.83	3.89
0.417	3.42	1.917	14.18	3.417	7.11	4.92	3.70
0.500	3.42	2.000	14.18	3.500	7.11	5.00	3.70
0.583	3.70	2.083	27.99	3.583	6.40	5.08	3.52
0.667	3.70	2.167	27.99	3.667	6.40	5.17	3.52
0.750	4.03	2.250	250.32	3.750	5.83	5.25	3.37
0.833	4.03	2.333	250.32	3.833	5.83	5.33	3.37
0.917	4.43	2.417	32.87	3.917	5.36	5.42	3.22
1.000	4.43	2.500	32.87	4.000	5.36	5.50	3.22
1.083	4.94	2.583	18.98	4.083	4.97	5.58	3.09
1.167	4.94	2.667	18.98	4.167	4.97	5.67	3.09
1.250	5.61	2.750	13.83	4.250	4.64	5.75	2.98
1.333	5.61	2.833	13.83	4.333	4.64	5.83	2.98
1.417	6.51	2.917	11.04	4.417	4.36	5.92	2.87
1.500	6.51	3.000	11.04	4.500	4.36	6.00	2.87

			TOTALS
Max.Eff.Inten.(mm/hr)=	250.32	170.26	
over (min)	5.00	5.00	
Storage Coeff. (min)=	1.47 (ii)	3.91 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.33	0.25	
PEAK FLOW (cms)=	0.47	0.06	0.529 (iii)
TIME TO PEAK (hrs)=	2.33	2.33	2.33
RUNOFF VOLUME (mm)=	84.43	54.64	79.96
TOTAL RAINFALL (mm)=	85.43	85.43	85.43
RUNOFF COEFFICIENT =	0.99	0.64	0.94

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(4001)		OVERFLOW IS OFF			
IN= 2---> OUT= 1					
DT= 5.0 min		OUTFLOW	STORAGE	OUTFLOW	STORAGE

```
                              Post-Development_Major_System
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000     0.0000   |   0.0980      0.0345

                                    AREA     QPEAK     TPEAK       R.V.
                                    (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0201)         0.800      0.529      2.33      79.96
   OUTFLOW: ID= 1 (  4001)         0.800      0.097      2.42      79.85

                   PEAK   FLOW   REDUCTION [Qout/Qin](%)= 18.27
                   TIME SHIFT OF PEAK FLOW         (min)=  5.00
                   MAXIMUM  STORAGE   USED       (ha.m.)=  0.0341

--------------------------------------------------------------------------------
--------------------
| CALIB             |
| STANDHYD (  0210)|   Area    (ha)=   0.02
|ID= 1 DT= 5.0 min |   Total Imp(%)=  75.00   Dir. Conn.(%)=  75.00
--------------------
                               IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.01          0.00
     Dep. Storage     (mm)=       1.00          1.50
     Average Slope     (%)=       1.00          2.00
     Length            (m)=      11.55         40.00
     Mannings n             =     0.013         0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                          ---- TRANSFORMED HYETOGRAPH ----
              TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
               hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
             0.083    2.99 | 1.583    7.83 | 3.083    9.27 |  4.58    4.11
             0.167    2.99 | 1.667    7.83 | 3.167    9.27 |  4.67    4.11
             0.250    3.19 | 1.750    9.98 | 3.250    8.03 |  4.75    3.89
             0.333    3.19 | 1.833    9.98 | 3.333    8.03 |  4.83    3.89
             0.417    3.42 | 1.917   14.18 | 3.417    7.11 |  4.92    3.70
             0.500    3.42 | 2.000   14.18 | 3.500    7.11 |  5.00    3.70
             0.583    3.70 | 2.083   27.99 | 3.583    6.40 |  5.08    3.52
             0.667    3.70 | 2.167   27.99 | 3.667    6.40 |  5.17    3.52
             0.750    4.03 | 2.250  250.32 | 3.750    5.83 |  5.25    3.37
             0.833    4.03 | 2.333  250.32 | 3.833    5.83 |  5.33    3.37
             0.917    4.43 | 2.417   32.87 | 3.917    5.36 |  5.42    3.22
             1.000    4.43 | 2.500   32.87 | 4.000    5.36 |  5.50    3.22
             1.083    4.94 | 2.583   18.98 | 4.083    4.97 |  5.58    3.09
             1.167    4.94 | 2.667   18.98 | 4.167    4.97 |  5.67    3.09
             1.250    5.61 | 2.750   13.83 | 4.250    4.64 |  5.75    2.98
             1.333    5.61 | 2.833   13.83 | 4.333    4.64 |  5.83    2.98
             1.417    6.51 | 2.917   11.04 | 4.417    4.36 |  5.92    2.87
             1.500    6.51 | 3.000   11.04 | 4.500    4.36 |  6.00    2.87
```

Post-Development_Major_System

```
      Max.Eff.Inten.(mm/hr)=     250.32       167.45
                over (min)        5.00         5.00
      Storage Coeff.  (min)=      0.48 (ii)    3.64 (ii)
      Unit Hyd. Tpeak (min)=      5.00         5.00
      Unit Hyd. peak  (cms)=      0.34         0.25
                                                          *TOTALS*
      PEAK FLOW       (cms)=      0.01         0.00          0.013 (iii)
      TIME TO PEAK    (hrs)=      2.33         2.33           2.33
      RUNOFF VOLUME    (mm)=     84.43        54.71          76.98
      TOTAL RAINFALL   (mm)=     85.43        85.43          85.43
      RUNOFF COEFFICIENT   =      0.99         0.64           0.90

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  85.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0213)|   Area    (ha)=   0.11
|ID= 1 DT= 5.0 min |   Total Imp(%)=  75.00   Dir. Conn.(%)=  75.00
--------------------
                            IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.08         0.03
     Dep. Storage     (mm)=       1.00         1.50
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      27.08        40.00
     Mannings n             =     0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                        ---- TRANSFORMED HYETOGRAPH ----
              TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
               hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
             0.083    2.99 | 1.583    7.83 | 3.083    9.27 |  4.58    4.11
             0.167    2.99 | 1.667    7.83 | 3.167    9.27 |  4.67    4.11
             0.250    3.19 | 1.750    9.98 | 3.250    8.03 |  4.75    3.89
             0.333    3.19 | 1.833    9.98 | 3.333    8.03 |  4.83    3.89
             0.417    3.42 | 1.917   14.18 | 3.417    7.11 |  4.92    3.70
             0.500    3.42 | 2.000   14.18 | 3.500    7.11 |  5.00    3.70
             0.583    3.70 | 2.083   27.99 | 3.583    6.40 |  5.08    3.52
             0.667    3.70 | 2.167   27.99 | 3.667    6.40 |  5.17    3.52
             0.750    4.03 | 2.250  250.32 | 3.750    5.83 |  5.25    3.37
```

Post-Development_Major_System

0.833	4.03	2.333	250.32	3.833	5.83	5.33	3.37
0.917	4.43	2.417	32.87	3.917	5.36	5.42	3.22
1.000	4.43	2.500	32.87	4.000	5.36	5.50	3.22
1.083	4.94	2.583	18.98	4.083	4.97	5.58	3.09
1.167	4.94	2.667	18.98	4.167	4.97	5.67	3.09
1.250	5.61	2.750	13.83	4.250	4.64	5.75	2.98
1.333	5.61	2.833	13.83	4.333	4.64	5.83	2.98
1.417	6.51	2.917	11.04	4.417	4.36	5.92	2.87
1.500	6.51	3.000	11.04	4.500	4.36	6.00	2.87

			TOTALS
Max.Eff.Inten.(mm/hr)=	250.32	167.45	
over (min)	5.00	5.00	
Storage Coeff. (min)=	0.81 (ii)	3.96 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.34	0.24	
PEAK FLOW (cms)=	0.06	0.01	0.070 (iii)
TIME TO PEAK (hrs)=	2.33	2.33	2.33
RUNOFF VOLUME (mm)=	84.43	54.71	76.98
TOTAL RAINFALL (mm)=	85.43	85.43	85.43
RUNOFF COEFFICIENT =	0.99	0.64	0.90

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 85.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (1006)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0210):	0.02	0.013	2.33	76.98
+ ID2= 2 (0213):	0.11	0.070	2.33	76.98
ID = 3 (1006):	0.13	0.083	2.33	76.98

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

DUHYD (3004)				
Inlet Cap.= 0.019				
#of Inlets= 1				
Total(cms)= 0.0	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)

```
                              Post-Development_Major_System
      TOTAL HYD.(ID= 1):   0.13      0.08      2.33   76.98
      ================================================
      MAJOR SYS.(ID= 2):   0.05      0.06      2.33   76.98
      MINOR SYS.(ID= 3):   0.08      0.02      2.25   76.98

      NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

---------------------------------------------------------------------------------

--------------------
| ADD HYD  (  1000)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0211):     0.32   0.204     2.33    76.97
      + ID2= 2 (  3004):     0.08   0.019     2.25    76.98
        ================================================
        ID = 3 (  1000):     0.40   0.223     2.33    76.97

      NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
---------------------------------------------------------------------------------

--------------------
| ADD HYD  (  1000)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  1000):     0.40   0.223     2.33    76.97
      + ID2= 2 (  4001):     0.80   0.097     2.42    79.85
        ================================================
        ID = 1 (  1000):     1.20   0.300     2.33    78.89

      NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
---------------------------------------------------------------------------------
--------------------
| RESERVOIR(  4006)|     OVERFLOW IS ON
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE    |  OUTFLOW    STORAGE
--------------------       (cms)     (ha.m.)   |   (cms)     (ha.m.)
                           0.0000     0.0000   |   0.1183      0.0131

                                  AREA     QPEAK     TPEAK       R.V.
                                  (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  1000)      1.202      0.300      2.33      78.89
   OUTFLOW: ID= 1 (  4006)      1.160      0.118      2.42      78.66
   OVERFLOW:ID= 3 (  0003)      0.042      0.057      2.33      78.66

                    TOTAL NUMBER OF SIMULATION OVERFLOW  =     0
                    CUMULATIVE TIME OF OVERFLOW  (HOURS) =  0.00
                    PERCENTAGE OF TIME OVERFLOWING   (%) =  0.00
```

Post-Development_Major_System

PEAK FLOW REDUCTION [Qout/Qin](%)= 39.41
TIME SHIFT OF PEAK FLOW (min)= 5.00
MAXIMUM STORAGE USED (ha.m.)= 0.0131

SHIFT HYD(3001) IN= 2---> OUT= 1 SHIFT= 1.0 min	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID= 2 (4006):	0.04	0.06	2.33	78.66
SHIFT ID= 1 (3001):	0.04	0.06	2.33	78.66

ADD HYD (6004) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3001):	0.04	0.057	2.33	78.66
+ ID2= 2 (4006):	1.16	0.118	2.42	78.66
ID = 3 (6004):	1.20	0.165	2.33	78.66

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (6001) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3003):	0.04	0.050	2.33	76.98
+ ID2= 2 (3004):	0.05	0.064	2.33	76.98
ID = 3 (6001):	0.08	0.114	2.33	76.98

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (6001) 3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (6001):	0.08	0.114	2.33	76.98
+ ID2= 2 (6003):	3.24	0.523	2.42	73.90
ID = 1 (6001):	3.33	0.523	2.42	73.97



```
                              Post-Development_Major_System
     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
---------------------------------------------------------------------------

--------------------
| ADD HYD  (  6001)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  6001):     3.33   0.523     2.42    73.97
      + ID2= 2 (  6004):     1.20   0.165     2.33    78.66
        ====================================================
        ID = 3 (  6001):     4.53   0.674     2.42    75.22

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
---------------------------------------------------------------------------

--------------------
| ADD HYD  (  6000)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  3002):     0.03   0.039     2.33    76.96
      + ID2= 2 (  6001):     4.53   0.674     2.42    75.22
        ====================================================
        ID = 3 (  6000):     4.56   0.674     2.42    75.23

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
---------------------------------------------------------------------------

 FINISH
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       V    V   I    SSSSS  U   U    A    L              (v 6.2.2010)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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```

Post-Development_Major_System
***** D E T A I L E D O U T P U T *****

Input filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat

Output filename:
C:\Users\ykoshenkov\AppData\Local\Civica\VH5\95aa6302-d561-466b-a85b-2e34c191f114\21e2dadb-4867-4122-ad1c-c2349afe4569\s
Summary filename:
C:\Users\ykoshenkov\AppData\Local\Civica\VH5\95aa6302-d561-466b-a85b-2e34c191f114\21e2dadb-4867-4122-ad1c-c2349afe4569\s

DATE: 06-30-2022 TIME: 05:05:54

USER:

COMMENTS: _____

****
** SIMULATION : 10-year storm **
****

| CHICAGO STORM |
| Ptotal= 55.38 mm |

IDF curve parameters: A=1023.840
B= 0.000
C= 0.800
used in: INTENSITY = A / (t + B)^C

Duration of storm = 6.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.38

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.00	1.94	1.50	5.08	3.00	6.01	4.50	2.66
0.17	2.07	1.67	6.47	3.17	5.21	4.67	2.52
0.33	2.22	1.83	9.19	3.33	4.61	4.83	2.40
0.50	2.40	2.00	18.14	3.50	4.15	5.00	2.28
0.67	2.61	2.17	162.27	3.67	3.78	5.17	2.18
0.83	2.87	2.33	21.31	3.83	3.48	5.33	2.09
1.00	3.20	2.50	12.30	4.00	3.22	5.50	2.01
1.17	3.63	2.67	8.97	4.17	3.01	5.67	1.93
1.33	4.22	2.83	7.16	4.33	2.82	5.83	1.86

```
--------------------------------------------------------------------------------
--------------------
| CALIB             |
| NASHYD   (  0215)|   Area    (ha)=   0.22   Curve Number   (CN)= 87.0
|ID= 1 DT=10.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.17

     Unit Hyd Qpeak  (cms)=   0.049

     PEAK FLOW       (cms)=   0.029 (i)
     TIME TO PEAK    (hrs)=   2.333
     RUNOFF VOLUME    (mm)=  27.406
     TOTAL RAINFALL   (mm)=  55.377
     RUNOFF COEFFICIENT   =   0.495

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
--------------------
| CALIB             |
| STANDHYD (  0203)|   Area    (ha)=   0.22
|ID= 1 DT= 5.0 min |   Total Imp(%)=  20.00   Dir. Conn.(%)=   1.00
--------------------

                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.04         0.18
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      38.30        40.00
     Mannings n           =      0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                        ---- TRANSFORMED HYETOGRAPH ----
  TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
   hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
 0.083    1.94 | 1.583    5.08 | 3.083    6.01 |  4.58    2.66
 0.167    1.94 | 1.667    5.08 | 3.167    6.01 |  4.67    2.66
 0.250    2.07 | 1.750    6.47 | 3.250    5.21 |  4.75    2.52
 0.333    2.07 | 1.833    6.47 | 3.333    5.21 |  4.83    2.52
 0.417    2.22 | 1.917    9.19 | 3.417    4.61 |  4.92    2.40
 0.500    2.22 | 2.000    9.19 | 3.500    4.61 |  5.00    2.40
 0.583    2.40 | 2.083   18.14 | 3.583    4.15 |  5.08    2.28
 0.667    2.40 | 2.167   18.14 | 3.667    4.15 |  5.17    2.28
 0.750    2.61 | 2.250  162.27 | 3.750    3.78 |  5.25    2.18
 0.833    2.61 | 2.333  162.27 | 3.833    3.78 |  5.33    2.18
 0.917    2.87 | 2.417   21.31 | 3.917    3.48 |  5.42    2.09
```

Post-Development_Major_System

1.000	2.87	2.500	21.31	4.000	3.48	5.50	2.09
1.083	3.20	2.583	12.30	4.083	3.22	5.58	2.01
1.167	3.20	2.667	12.30	4.167	3.22	5.67	2.01
1.250	3.63	2.750	8.97	4.250	3.01	5.75	1.93
1.333	3.63	2.833	8.97	4.333	3.01	5.83	1.93
1.417	4.22	2.917	7.16	4.417	2.82	5.92	1.86
1.500	4.22	3.000	7.16	4.500	2.82	6.00	1.86

Max.Eff.Inten.(mm/hr)=	162.27	122.12		
over (min)	5.00	10.00		
Storage Coeff. (min)=	1.18 (ii)	7.70 (ii)		
Unit Hyd. Tpeak (min)=	5.00	10.00		
Unit Hyd. peak (cms)=	0.33	0.13		
			TOTALS	
PEAK FLOW (cms)=	0.00	0.04	0.040 (iii)	
TIME TO PEAK (hrs)=	2.33	2.42	2.42	
RUNOFF VOLUME (mm)=	54.38	32.14	32.34	
TOTAL RAINFALL (mm)=	55.38	55.38	55.38	
RUNOFF COEFFICIENT =	0.98	0.58	0.58	

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
***** WARNING:FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20%
YOU SHOULD CONSIDER SPLITTING THE AREA.

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (1003)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0203):	0.22	0.040	2.42	32.34
+ ID2= 2 (0215):	0.22	0.029	2.33	27.41
ID = 3 (1003):	0.44	0.064	2.42	29.87

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB NASHYD (0216) ID= 1 DT=10.0 min				
Area (ha)=	0.12	Curve Number (CN)=	87.0	
Ia (mm)=	5.00	# of Linear Res.(N)=	3.00	
U.H. Tp(hrs)=	0.17			

Post-Development_Major_System

Unit Hyd Qpeak (cms)= 0.026

PEAK FLOW (cms)= 0.015 (i)
TIME TO PEAK (hrs)= 2.333
RUNOFF VOLUME (mm)= 27.406
TOTAL RAINFALL (mm)= 55.377
RUNOFF COEFFICIENT = 0.495

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB	
STANDHYD (0206)	Area (ha)= 0.12
ID= 1 DT= 5.0 min	Total Imp(%)= 20.00 Dir. Conn.(%)= 1.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.02	0.09
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	27.69	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.94	1.583	5.08	3.083	6.01	4.58	2.66
0.167	1.94	1.667	5.08	3.167	6.01	4.67	2.66
0.250	2.07	1.750	6.47	3.250	5.21	4.75	2.52
0.333	2.07	1.833	6.47	3.333	5.21	4.83	2.52
0.417	2.22	1.917	9.19	3.417	4.61	4.92	2.40
0.500	2.22	2.000	9.19	3.500	4.61	5.00	2.40
0.583	2.40	2.083	18.14	3.583	4.15	5.08	2.28
0.667	2.40	2.167	18.14	3.667	4.15	5.17	2.28
0.750	2.61	2.250	162.27	3.750	3.78	5.25	2.18
0.833	2.61	2.333	162.27	3.833	3.78	5.33	2.18
0.917	2.87	2.417	21.31	3.917	3.48	5.42	2.09
1.000	2.87	2.500	21.31	4.000	3.48	5.50	2.09
1.083	3.20	2.583	12.30	4.083	3.22	5.58	2.01
1.167	3.20	2.667	12.30	4.167	3.22	5.67	2.01
1.250	3.63	2.750	8.97	4.250	3.01	5.75	1.93
1.333	3.63	2.833	8.97	4.333	3.01	5.83	1.93
1.417	4.22	2.917	7.16	4.417	2.82	5.92	1.86
1.500	4.22	3.000	7.16	4.500	2.82	6.00	1.86

Max.Eff.Inten.(mm/hr)= 162.27 122.12

```
                          Post-Development_Major_System
                over (min)        5.00        10.00
      Storage Coeff.  (min)=      0.97 (ii)    7.49 (ii)
      Unit Hyd. Tpeak (min)=      5.00        10.00
      Unit Hyd. peak  (cms)=      0.34         0.13
                                                          *TOTALS*
      PEAK FLOW       (cms)=      0.00         0.02         0.021 (iii)
      TIME TO PEAK    (hrs)=      2.33         2.42          2.42
      RUNOFF VOLUME    (mm)=     54.38        32.14         32.33
      TOTAL RAINFALL   (mm)=     55.38        55.38         55.38
      RUNOFF COEFFICIENT   =      0.98         0.58          0.58

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
***** WARNING:FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20%
              YOU SHOULD CONSIDER SPLITTING THE AREA.

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  87.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
| ADD HYD  (  1001)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0206):     0.12   0.021     2.42    32.33
      + ID2= 2 (  0216):     0.12   0.015     2.33    27.41
        ================================================
        ID = 3 (  1001):     0.23   0.034     2.42    29.87

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0204)|   Area    (ha)=   0.18
|ID= 1 DT= 5.0 min |   Total Imp(%)=  85.00   Dir. Conn.(%)=  85.00
--------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.15         0.03
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      34.64        40.00
     Mannings n             =     0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.
```

Post-Development_Major_System

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.94	1.583	5.08	3.083	6.01	4.58	2.66
0.167	1.94	1.667	5.08	3.167	6.01	4.67	2.66
0.250	2.07	1.750	6.47	3.250	5.21	4.75	2.52
0.333	2.07	1.833	6.47	3.333	5.21	4.83	2.52
0.417	2.22	1.917	9.19	3.417	4.61	4.92	2.40
0.500	2.22	2.000	9.19	3.500	4.61	5.00	2.40
0.583	2.40	2.083	18.14	3.583	4.15	5.08	2.28
0.667	2.40	2.167	18.14	3.667	4.15	5.17	2.28
0.750	2.61	2.250	162.27	3.750	3.78	5.25	2.18
0.833	2.61	2.333	162.27	3.833	3.78	5.33	2.18
0.917	2.87	2.417	21.31	3.917	3.48	5.42	2.09
1.000	2.87	2.500	21.31	4.000	3.48	5.50	2.09
1.083	3.20	2.583	12.30	4.083	3.22	5.58	2.01
1.167	3.20	2.667	12.30	4.167	3.22	5.67	2.01
1.250	3.63	2.750	8.97	4.250	3.01	5.75	1.93
1.333	3.63	2.833	8.97	4.333	3.01	5.83	1.93
1.417	4.22	2.917	7.16	4.417	2.82	5.92	1.86
1.500	4.22	3.000	7.16	4.500	2.82	6.00	1.86

			TOTALS
Max.Eff.Inten.(mm/hr)=	162.27	86.46	
over (min)	5.00	5.00	
Storage Coeff. (min)=	1.11 (ii)	4.02 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.34	0.24	
PEAK FLOW (cms)=	0.07	0.01	0.076 (iii)
TIME TO PEAK (hrs)=	2.33	2.33	2.33
RUNOFF VOLUME (mm)=	54.38	28.73	50.52
TOTAL RAINFALL (mm)=	55.38	55.38	55.38
RUNOFF COEFFICIENT =	0.98	0.52	0.91

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(4004)	OVERFLOW IS OFF			
IN= 2---> OUT= 1				
DT= 5.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0007	0.0220	0.0085

Post-Development_Major_System

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0204)	0.180	0.076	2.33	50.52
OUTFLOW: ID= 1 (4004)	0.180	0.013	2.42	46.16

PEAK FLOW REDUCTION [Qout/Qin](%)= 17.32
TIME SHIFT OF PEAK FLOW (min)= 5.00
MAXIMUM STORAGE USED (ha.m.)= 0.0054

ADD HYD (1002)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (1001):	0.23	0.034	2.42	29.87
+ ID2= 2 (4004):	0.18	0.013	2.42	46.16
ID = 3 (1002):	0.41	0.047	2.42	37.02

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (1004)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (1002):	0.41	0.047	2.42	37.02
+ ID2= 2 (1003):	0.44	0.064	2.42	29.87
ID = 3 (1004):	0.85	0.111	2.42	33.32

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB
STANDHYD (0205) | Area (ha)= 0.97
ID= 1 DT= 5.0 min | Total Imp(%)= 85.00 Dir. Conn.(%)= 85.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.82	0.15
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	80.42	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

Post-Development_Major_System

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.94	1.583	5.08	3.083	6.01	4.58	2.66
0.167	1.94	1.667	5.08	3.167	6.01	4.67	2.66
0.250	2.07	1.750	6.47	3.250	5.21	4.75	2.52
0.333	2.07	1.833	6.47	3.333	5.21	4.83	2.52
0.417	2.22	1.917	9.19	3.417	4.61	4.92	2.40
0.500	2.22	2.000	9.19	3.500	4.61	5.00	2.40
0.583	2.40	2.083	18.14	3.583	4.15	5.08	2.28
0.667	2.40	2.167	18.14	3.667	4.15	5.17	2.28
0.750	2.61	2.250	162.27	3.750	3.78	5.25	2.18
0.833	2.61	2.333	162.27	3.833	3.78	5.33	2.18
0.917	2.87	2.417	21.31	3.917	3.48	5.42	2.09
1.000	2.87	2.500	21.31	4.000	3.48	5.50	2.09
1.083	3.20	2.583	12.30	4.083	3.22	5.58	2.01
1.167	3.20	2.667	12.30	4.167	3.22	5.67	2.01
1.250	3.63	2.750	8.97	4.250	3.01	5.75	1.93
1.333	3.63	2.833	8.97	4.333	3.01	5.83	1.93
1.417	4.22	2.917	7.16	4.417	2.82	5.92	1.86
1.500	4.22	3.000	7.16	4.500	2.82	6.00	1.86

			TOTALS
Max.Eff.Inten.(mm/hr)=	162.27	86.46	
over (min)	5.00	5.00	
Storage Coeff. (min)=	1.85 (ii)	4.75 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.32	0.22	
PEAK FLOW (cms)=	0.37	0.03	0.404 (iii)
TIME TO PEAK (hrs)=	2.33	2.33	2.33
RUNOFF VOLUME (mm)=	54.38	28.73	50.53
TOTAL RAINFALL (mm)=	55.38	55.38	55.38
RUNOFF COEFFICIENT =	0.98	0.52	0.91

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(4005) / IN= 2---> OUT= 1 / DT= 5.0 min	OVERFLOW IS OFF			
	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)

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0.0000 0.0000 | 0.1190 0.0415

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0205)	0.970	0.404	2.33	50.53
OUTFLOW: ID= 1 (4005)	0.970	0.074	2.42	50.44

PEAK FLOW REDUCTION [Qout/Qin](%)= 18.32
TIME SHIFT OF PEAK FLOW (min)= 5.00
MAXIMUM STORAGE USED (ha.m.)= 0.0260

CALIB
STANDHYD (0202)
ID= 1 DT= 5.0 min

Area (ha)= 0.56
Total Imp(%)= 85.00 Dir. Conn.(%)= 85.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.48	0.08
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	61.10	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.94	1.583	5.08	3.083	6.01	4.58	2.66
0.167	1.94	1.667	5.08	3.167	6.01	4.67	2.66
0.250	2.07	1.750	6.47	3.250	5.21	4.75	2.52
0.333	2.07	1.833	6.47	3.333	5.21	4.83	2.52
0.417	2.22	1.917	9.19	3.417	4.61	4.92	2.40
0.500	2.22	2.000	9.19	3.500	4.61	5.00	2.40
0.583	2.40	2.083	18.14	3.583	4.15	5.08	2.28
0.667	2.40	2.167	18.14	3.667	4.15	5.17	2.28
0.750	2.61	2.250	162.27	3.750	3.78	5.25	2.18
0.833	2.61	2.333	162.27	3.833	3.78	5.33	2.18
0.917	2.87	2.417	21.31	3.917	3.48	5.42	2.09
1.000	2.87	2.500	21.31	4.000	3.48	5.50	2.09
1.083	3.20	2.583	12.30	4.083	3.22	5.58	2.01
1.167	3.20	2.667	12.30	4.167	3.22	5.67	2.01
1.250	3.63	2.750	8.97	4.250	3.01	5.75	1.93
1.333	3.63	2.833	8.97	4.333	3.01	5.83	1.93
1.417	4.22	2.917	7.16	4.417	2.82	5.92	1.86
1.500	4.22	3.000	7.16	4.500	2.82	6.00	1.86

```
                              Post-Development_Major_System
      Max.Eff.Inten.(mm/hr)=     162.27        86.46
                   over (min)      5.00         5.00
      Storage Coeff.  (min)=      1.57 (ii)    4.47 (ii)
      Unit Hyd. Tpeak (min)=      5.00         5.00
      Unit Hyd. peak  (cms)=      0.33         0.23
                                                          *TOTALS*
      PEAK FLOW       (cms)=      0.21         0.02         0.234 (iii)
      TIME TO PEAK    (hrs)=      2.33         2.33          2.33
      RUNOFF VOLUME    (mm)=     54.38        28.73         50.53
      TOTAL RAINFALL   (mm)=     55.38        55.38         55.38
      RUNOFF COEFFICIENT   =      0.98         0.52          0.91

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  87.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  4002)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE    |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)    |   (cms)     (ha.m.)
                          0.0000     0.0000    |   0.0690      0.0240

                                  AREA     QPEAK     TPEAK       R.V.
                                  (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0202)      0.560      0.234      2.33       50.53
   OUTFLOW: ID= 1 (  4002)      0.560      0.043      2.42       50.38

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 18.41
                  TIME SHIFT OF PEAK FLOW         (min)=  5.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0150

--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0212)|   Area    (ha)=   0.75
|ID= 1 DT= 5.0 min |   Total Imp(%)=  75.00   Dir. Conn.(%)=  75.00
--------------------
                             IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.56         0.19
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      70.71        40.00
     Mannings n             =     0.013        0.250
```

Post-Development_Major_System

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.94	1.583	5.08	3.083	6.01	4.58	2.66
0.167	1.94	1.667	5.08	3.167	6.01	4.67	2.66
0.250	2.07	1.750	6.47	3.250	5.21	4.75	2.52
0.333	2.07	1.833	6.47	3.333	5.21	4.83	2.52
0.417	2.22	1.917	9.19	3.417	4.61	4.92	2.40
0.500	2.22	2.000	9.19	3.500	4.61	5.00	2.40
0.583	2.40	2.083	18.14	3.583	4.15	5.08	2.28
0.667	2.40	2.167	18.14	3.667	4.15	5.17	2.28
0.750	2.61	2.250	162.27	3.750	3.78	5.25	2.18
0.833	2.61	2.333	162.27	3.833	3.78	5.33	2.18
0.917	2.87	2.417	21.31	3.917	3.48	5.42	2.09
1.000	2.87	2.500	21.31	4.000	3.48	5.50	2.09
1.083	3.20	2.583	12.30	4.083	3.22	5.58	2.01
1.167	3.20	2.667	12.30	4.167	3.22	5.67	2.01
1.250	3.63	2.750	8.97	4.250	3.01	5.75	1.93
1.333	3.63	2.833	8.97	4.333	3.01	5.83	1.93
1.417	4.22	2.917	7.16	4.417	2.82	5.92	1.86
1.500	4.22	3.000	7.16	4.500	2.82	6.00	1.86

Max.Eff.Inten.(mm/hr)=	162.27	86.46		
over (min)	5.00	10.00		
Storage Coeff. (min)=	1.71 (ii)	5.46 (ii)		
Unit Hyd. Tpeak (min)=	5.00	10.00		
Unit Hyd. peak (cms)=	0.32	0.16		
			TOTALS	
PEAK FLOW (cms)=	0.25	0.03	0.282 (iii)	
TIME TO PEAK (hrs)=	2.33	2.42	2.33	
RUNOFF VOLUME (mm)=	54.38	28.73	47.96	
TOTAL RAINFALL (mm)=	55.38	55.38	55.38	
RUNOFF COEFFICIENT =	0.98	0.52	0.87	

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB

Post-Development_Major_System

| STANDHYD (0209)| Area (ha)= 0.02
|ID= 1 DT= 5.0 min | Total Imp(%)= 75.00 Dir. Conn.(%)= 75.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.01	0.00
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	11.55	40.00
Mannings n =	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.94	1.583	5.08	3.083	6.01	4.58	2.66
0.167	1.94	1.667	5.08	3.167	6.01	4.67	2.66
0.250	2.07	1.750	6.47	3.250	5.21	4.75	2.52
0.333	2.07	1.833	6.47	3.333	5.21	4.83	2.52
0.417	2.22	1.917	9.19	3.417	4.61	4.92	2.40
0.500	2.22	2.000	9.19	3.500	4.61	5.00	2.40
0.583	2.40	2.083	18.14	3.583	4.15	5.08	2.28
0.667	2.40	2.167	18.14	3.667	4.15	5.17	2.28
0.750	2.61	2.250	162.27	3.750	3.78	5.25	2.18
0.833	2.61	2.333	162.27	3.833	3.78	5.33	2.18
0.917	2.87	2.417	21.31	3.917	3.48	5.42	2.09
1.000	2.87	2.500	21.31	4.000	3.48	5.50	2.09
1.083	3.20	2.583	12.30	4.083	3.22	5.58	2.01
1.167	3.20	2.667	12.30	4.167	3.22	5.67	2.01
1.250	3.63	2.750	8.97	4.250	3.01	5.75	1.93
1.333	3.63	2.833	8.97	4.333	3.01	5.83	1.93
1.417	4.22	2.917	7.16	4.417	2.82	5.92	1.86
1.500	4.22	3.000	7.16	4.500	2.82	6.00	1.86

			TOTALS
Max.Eff.Inten.(mm/hr)=	162.27	87.77	
over (min)	5.00	5.00	
Storage Coeff. (min)=	0.58 (ii)	4.32 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.34	0.23	
PEAK FLOW (cms)=	0.01	0.00	0.008 (iii)
TIME TO PEAK (hrs)=	2.33	2.33	2.33
RUNOFF VOLUME (mm)=	54.38	29.41	47.83
TOTAL RAINFALL (mm)=	55.38	55.38	55.38
RUNOFF COEFFICIENT =	0.98	0.53	0.86

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

Post-Development_Major_System

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 85.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB	
STANDHYD (0214)	Area (ha)= 0.08
ID= 1 DT= 5.0 min	Total Imp(%)= 75.00 Dir. Conn.(%)= 75.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.06	0.02
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	23.09	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.94	1.583	5.08	3.083	6.01	4.58	2.66
0.167	1.94	1.667	5.08	3.167	6.01	4.67	2.66
0.250	2.07	1.750	6.47	3.250	5.21	4.75	2.52
0.333	2.07	1.833	6.47	3.333	5.21	4.83	2.52
0.417	2.22	1.917	9.19	3.417	4.61	4.92	2.40
0.500	2.22	2.000	9.19	3.500	4.61	5.00	2.40
0.583	2.40	2.083	18.14	3.583	4.15	5.08	2.28
0.667	2.40	2.167	18.14	3.667	4.15	5.17	2.28
0.750	2.61	2.250	162.27	3.750	3.78	5.25	2.18
0.833	2.61	2.333	162.27	3.833	3.78	5.33	2.18
0.917	2.87	2.417	21.31	3.917	3.48	5.42	2.09
1.000	2.87	2.500	21.31	4.000	3.48	5.50	2.09
1.083	3.20	2.583	12.30	4.083	3.22	5.58	2.01
1.167	3.20	2.667	12.30	4.167	3.22	5.67	2.01
1.250	3.63	2.750	8.97	4.250	3.01	5.75	1.93
1.333	3.63	2.833	8.97	4.333	3.01	5.83	1.93
1.417	4.22	2.917	7.16	4.417	2.82	5.92	1.86
1.500	4.22	3.000	7.16	4.500	2.82	6.00	1.86

Max.Eff.Inten.(mm/hr)=	162.27	87.77
over (min)	5.00	5.00
Storage Coeff. (min)=	0.87 (ii)	4.62 (ii)
Unit Hyd. Tpeak (min)=	5.00	5.00
Unit Hyd. peak (cms)=	0.34	0.22

Post-Development_Major_System

				TOTALS
PEAK FLOW	(cms)=	0.03	0.00	0.032 (iii)
TIME TO PEAK	(hrs)=	2.33	2.33	2.33
RUNOFF VOLUME	(mm)=	54.38	29.41	48.12
TOTAL RAINFALL	(mm)=	55.38	55.38	55.38
RUNOFF COEFFICIENT	=	0.98	0.53	0.87

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 85.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (1005)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0209):	0.02	0.008	2.33	47.83
+ ID2= 2 (0214):	0.08	0.032	2.33	48.12
ID = 3 (1005):	0.10	0.040	2.33	48.06

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

DUHYD (3003)
Inlet Cap.= 0.014
#of Inlets= 1
Total(cms)= 0.0

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
TOTAL HYD.(ID= 1):	0.10	0.04	2.33	48.06
MAJOR SYS.(ID= 2):	0.03	0.03	2.33	48.06
MINOR SYS.(ID= 3):	0.07	0.01	2.25	48.06

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB
STANDHYD (6005) Area (ha)= 0.08
ID= 1 DT= 5.0 min Total Imp(%)= 75.00 Dir. Conn.(%)= 75.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.06	0.02

Post-Development_Major_System

Dep. Storage (mm)=	1.00	5.00	
Average Slope (%)=	1.00	2.00	
Length (m)=	23.09	40.00	
Mannings n =	0.013	0.250	

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.94	1.583	5.08	3.083	6.01	4.58	2.66
0.167	1.94	1.667	5.08	3.167	6.01	4.67	2.66
0.250	2.07	1.750	6.47	3.250	5.21	4.75	2.52
0.333	2.07	1.833	6.47	3.333	5.21	4.83	2.52
0.417	2.22	1.917	9.19	3.417	4.61	4.92	2.40
0.500	2.22	2.000	9.19	3.500	4.61	5.00	2.40
0.583	2.40	2.083	18.14	3.583	4.15	5.08	2.28
0.667	2.40	2.167	18.14	3.667	4.15	5.17	2.28
0.750	2.61	2.250	162.27	3.750	3.78	5.25	2.18
0.833	2.61	2.333	162.27	3.833	3.78	5.33	2.18
0.917	2.87	2.417	21.31	3.917	3.48	5.42	2.09
1.000	2.87	2.500	21.31	4.000	3.48	5.50	2.09
1.083	3.20	2.583	12.30	4.083	3.22	5.58	2.01
1.167	3.20	2.667	12.30	4.167	3.22	5.67	2.01
1.250	3.63	2.750	8.97	4.250	3.01	5.75	1.93
1.333	3.63	2.833	8.97	4.333	3.01	5.83	1.93
1.417	4.22	2.917	7.16	4.417	2.82	5.92	1.86
1.500	4.22	3.000	7.16	4.500	2.82	6.00	1.86

Max.Eff.Inten.(mm/hr)=	162.27	86.46		
over (min)	5.00	5.00		
Storage Coeff. (min)=	0.87 (ii)	4.62 (ii)		
Unit Hyd. Tpeak (min)=	5.00	5.00		
Unit Hyd. peak (cms)=	0.34	0.22		
			TOTALS	
PEAK FLOW (cms)=	0.03	0.00	0.032 (iii)	
TIME TO PEAK (hrs)=	2.33	2.33	2.33	
RUNOFF VOLUME (mm)=	54.38	28.73	47.95	
TOTAL RAINFALL (mm)=	55.38	55.38	55.38	
RUNOFF COEFFICIENT =	0.98	0.52	0.87	

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

```
| DUHYD    (  3002)|
| Inlet Cap.= 0.012|
| #of Inlets=     1|
| Total(cms)=   0.0|      AREA     QPEAK     TPEAK    R.V.
-------------------      (ha)     (cms)     (hrs)    (mm)
     TOTAL HYD.(ID= 1):   0.08      0.03      2.33   47.95
     ================================================
     MAJOR SYS.(ID= 2):   0.02      0.02      2.33   47.95
     MINOR SYS.(ID= 3):   0.06      0.01      2.25   47.95

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
```

```
| ADD HYD  (  5008)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  1004):     0.85   0.111     2.42    33.32
      + ID2= 2 (  0212):     0.75   0.282     2.33    47.96
        ================================================
        ID = 3 (  5008):     1.60   0.389     2.33    40.18

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
```

```
| ADD HYD  (  5008)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  5008):     1.60   0.389     2.33    40.18
      + ID2= 2 (  3002):     0.06   0.012     2.25    47.95
        ================================================
        ID = 1 (  5008):     1.66   0.401     2.33    40.45

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
```

```
| ADD HYD  (  5008)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  5008):     1.66   0.401     2.33    40.45
      + ID2= 2 (  3003):     0.07   0.014     2.25    48.06
        ================================================
        ID = 3 (  5008):     1.73   0.415     2.33    40.75
```

```
     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
------------------------------------------------------------------------------

--------------------
| ADD HYD  (  5008)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  5008):     1.73   0.415     2.33    40.75
      + ID2= 2 (  4002):     0.56   0.043     2.42    50.38
        ================================================
        ID = 1 (  5008):     2.29   0.450     2.33    43.11

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
------------------------------------------------------------------------------

--------------------
| ADD HYD  (  5008)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  5008):     2.29   0.450     2.33    43.11
      + ID2= 2 (  4005):     0.97   0.074     2.42    50.44
        ================================================
        ID = 3 (  5008):     3.26   0.508     2.33    45.30

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
------------------------------------------------------------------------------
--------------------
| RESERVOIR(  4007)|     OVERFLOW IS ON
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE    |  OUTFLOW    STORAGE
--------------------       (cms)     (ha.m.)   |   (cms)     (ha.m.)
                           0.0000     0.0000   |   0.3132      0.0397

                                  AREA     QPEAK     TPEAK       R.V.
                                  (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  5008)      3.256      0.508      2.33      45.30
   OUTFLOW: ID= 1 (  4007)      3.256      0.228      2.58      45.29
   OVERFLOW:ID= 3 (  0003)      0.000      0.000      0.00       0.00

                    TOTAL NUMBER OF SIMULATION OVERFLOW  =     0
                    CUMULATIVE TIME OF OVERFLOW  (HOURS) =  0.00
                    PERCENTAGE OF TIME OVERFLOWING   (%) =  0.00

                    PEAK   FLOW   REDUCTION [Qout/Qin](%)= 44.76
                    TIME SHIFT OF PEAK FLOW         (min)= 15.00
                    MAXIMUM  STORAGE   USED       (ha.m.)=  0.0290

------------------------------------------------------------------------------
```

Post-Development_Major_System

```
--------------------
| SHIFT HYD(  3000)|
| IN= 2---> OUT= 1 |
| SHIFT=  1.0 min  |       AREA     QPEAK     TPEAK      R.V.
--------------------       (ha)     (cms)     (hrs)      (mm)
          ID= 2 (  4007):    0.00      0.00      0.00      0.00
    SHIFT ID= 1 (  3000):    0.00      0.00      0.00      0.00


--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  6003)|
|   1 +  2 =  3    |          AREA     QPEAK     TPEAK      R.V.
--------------------          (ha)     (cms)     (hrs)      (mm)
*** W A R N I N G :  HYDROGRAPH   3000 <ID= 1> IS DRY.
*** W A R N I N G :  HYDROGRAPH   6003 = HYDROGRAPH 4007
        ID1= 1 (  3000):     0.00    0.000     0.00     0.00
      + ID2= 2 (  4007):     3.26    0.228     2.58    45.29
        ================================================
        ID = 3 (  6003):     3.26    0.228     2.58    45.29

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0211)|   Area    (ha)=   0.32
|ID= 1 DT= 5.0 min |   Total Imp(%)=  75.00   Dir. Conn.(%)=  75.00
--------------------
                             IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.24         0.08
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      46.19        40.00
     Mannings n           =      0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                        ---- TRANSFORMED HYETOGRAPH ----
      TIME     RAIN |  TIME     RAIN |'  TIME     RAIN |  TIME     RAIN
       hrs    mm/hr |   hrs    mm/hr |'   hrs    mm/hr |   hrs    mm/hr
     0.083     1.94 | 1.583     5.08 | 3.083     6.01 |  4.58     2.66
     0.167     1.94 | 1.667     5.08 | 3.167     6.01 |  4.67     2.66
     0.250     2.07 | 1.750     6.47 | 3.250     5.21 |  4.75     2.52
     0.333     2.07 | 1.833     6.47 | 3.333     5.21 |  4.83     2.52
     0.417     2.22 | 1.917     9.19 | 3.417     4.61 |  4.92     2.40
     0.500     2.22 | 2.000     9.19 | 3.500     4.61 |  5.00     2.40
     0.583     2.40 | 2.083    18.14 | 3.583     4.15 |  5.08     2.28
```



0.667	2.40	2.167	18.14	3.667	4.15	5.17	2.28
0.750	2.61	2.250	162.27	3.750	3.78	5.25	2.18
0.833	2.61	2.333	162.27	3.833	3.78	5.33	2.18
0.917	2.87	2.417	21.31	3.917	3.48	5.42	2.09
1.000	2.87	2.500	21.31	4.000	3.48	5.50	2.09
1.083	3.20	2.583	12.30	4.083	3.22	5.58	2.01
1.167	3.20	2.667	12.30	4.167	3.22	5.67	2.01
1.250	3.63	2.750	8.97	4.250	3.01	5.75	1.93
1.333	3.63	2.833	8.97	4.333	3.01	5.83	1.93
1.417	4.22	2.917	7.16	4.417	2.82	5.92	1.86
1.500	4.22	3.000	7.16	4.500	2.82	6.00	1.86

Max.Eff.Inten.(mm/hr)=	162.27	86.46	
over (min)	5.00	10.00	
Storage Coeff. (min)=	1.32 (ii)	5.07 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.33	0.16	
			TOTALS
PEAK FLOW (cms)=	0.11	0.01	0.121 (iii)
TIME TO PEAK (hrs)=	2.33	2.42	2.33
RUNOFF VOLUME (mm)=	54.38	28.73	47.95
TOTAL RAINFALL (mm)=	55.38	55.38	55.38
RUNOFF COEFFICIENT =	0.98	0.52	0.87

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB			
STANDHYD (0201)	Area (ha)=	0.80	
ID= 1 DT= 5.0 min	Total Imp(%)=	85.00	Dir. Conn.(%)= 85.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.68	0.12
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	73.03	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

Post-Development_Major_System

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.94	1.583	5.08	3.083	6.01	4.58	2.66
0.167	1.94	1.667	5.08	3.167	6.01	4.67	2.66
0.250	2.07	1.750	6.47	3.250	5.21	4.75	2.52
0.333	2.07	1.833	6.47	3.333	5.21	4.83	2.52
0.417	2.22	1.917	9.19	3.417	4.61	4.92	2.40
0.500	2.22	2.000	9.19	3.500	4.61	5.00	2.40
0.583	2.40	2.083	18.14	3.583	4.15	5.08	2.28
0.667	2.40	2.167	18.14	3.667	4.15	5.17	2.28
0.750	2.61	2.250	162.27	3.750	3.78	5.25	2.18
0.833	2.61	2.333	162.27	3.833	3.78	5.33	2.18
0.917	2.87	2.417	21.31	3.917	3.48	5.42	2.09
1.000	2.87	2.500	21.31	4.000	3.48	5.50	2.09
1.083	3.20	2.583	12.30	4.083	3.22	5.58	2.01
1.167	3.20	2.667	12.30	4.167	3.22	5.67	2.01
1.250	3.63	2.750	8.97	4.250	3.01	5.75	1.93
1.333	3.63	2.833	8.97	4.333	3.01	5.83	1.93
1.417	4.22	2.917	7.16	4.417	2.82	5.92	1.86
1.500	4.22	3.000	7.16	4.500	2.82	6.00	1.86

			TOTALS
Max.Eff.Inten.(mm/hr)=	162.27	86.46	
over (min)	5.00	5.00	
Storage Coeff. (min)=	1.74 (ii)	4.65 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.32	0.22	
PEAK FLOW (cms)=	0.31	0.03	0.334 (iii)
TIME TO PEAK (hrs)=	2.33	2.33	2.33
RUNOFF VOLUME (mm)=	54.38	28.73	50.53
TOTAL RAINFALL (mm)=	55.38	55.38	55.38
RUNOFF COEFFICIENT =	0.98	0.52	0.91

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(4001) IN= 2---> OUT= 1 DT= 5.0 min	OVERFLOW IS OFF			
	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.0980	0.0345

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	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0201)	0.800	0.334	2.33	50.53
OUTFLOW: ID= 1 (4001)	0.800	0.061	2.42	50.42

PEAK FLOW REDUCTION [Qout/Qin](%)= 18.20
TIME SHIFT OF PEAK FLOW (min)= 5.00
MAXIMUM STORAGE USED (ha.m.)= 0.0215

CALIB STANDHYD (0210) ID= 1 DT= 5.0 min	Area (ha)= 0.02	Total Imp(%)= 75.00	Dir. Conn.(%)= 75.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.01	0.00
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	11.55	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.94	1.583	5.08	3.083	6.01	4.58	2.66
0.167	1.94	1.667	5.08	3.167	6.01	4.67	2.66
0.250	2.07	1.750	6.47	3.250	5.21	4.75	2.52
0.333	2.07	1.833	6.47	3.333	5.21	4.83	2.52
0.417	2.22	1.917	9.19	3.417	4.61	4.92	2.40
0.500	2.22	2.000	9.19	3.500	4.61	5.00	2.40
0.583	2.40	2.083	18.14	3.583	4.15	5.08	2.28
0.667	2.40	2.167	18.14	3.667	4.15	5.17	2.28
0.750	2.61	2.250	162.27	3.750	3.78	5.25	2.18
0.833	2.61	2.333	162.27	3.833	3.78	5.33	2.18
0.917	2.87	2.417	21.31	3.917	3.48	5.42	2.09
1.000	2.87	2.500	21.31	4.000	3.48	5.50	2.09
1.083	3.20	2.583	12.30	4.083	3.22	5.58	2.01
1.167	3.20	2.667	12.30	4.167	3.22	5.67	2.01
1.250	3.63	2.750	8.97	4.250	3.01	5.75	1.93
1.333	3.63	2.833	8.97	4.333	3.01	5.83	1.93
1.417	4.22	2.917	7.16	4.417	2.82	5.92	1.86
1.500	4.22	3.000	7.16	4.500	2.82	6.00	1.86

Max.Eff.Inten.(mm/hr)=	162.27	87.77	
over (min)	5.00	5.00	

Post-Development_Major_System

Storage Coeff. (min)=	0.58 (ii)	4.32 (ii)		
Unit Hyd. Tpeak (min)=	5.00	5.00		
Unit Hyd. peak (cms)=	0.34	0.23		
			TOTALS	
PEAK FLOW (cms)=	0.01	0.00	0.008 (iii)	
TIME TO PEAK (hrs)=	2.33	2.33	2.33	
RUNOFF VOLUME (mm)=	54.38	29.41	47.83	
TOTAL RAINFALL (mm)=	55.38	55.38	55.38	
RUNOFF COEFFICIENT =	0.98	0.53	0.86	

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 85.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB	
STANDHYD (0213)	Area (ha)= 0.11
ID= 1 DT= 5.0 min	Total Imp(%)= 75.00 Dir. Conn.(%)= 75.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.08	0.03
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	27.08	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.94	1.583	5.08	3.083	6.01	4.58	2.66
0.167	1.94	1.667	5.08	3.167	6.01	4.67	2.66
0.250	2.07	1.750	6.47	3.250	5.21	4.75	2.52
0.333	2.07	1.833	6.47	3.333	5.21	4.83	2.52
0.417	2.22	1.917	9.19	3.417	4.61	4.92	2.40
0.500	2.22	2.000	9.19	3.500	4.61	5.00	2.40
0.583	2.40	2.083	18.14	3.583	4.15	5.08	2.28
0.667	2.40	2.167	18.14	3.667	4.15	5.17	2.28
0.750	2.61	2.250	162.27	3.750	3.78	5.25	2.18
0.833	2.61	2.333	162.27	3.833	3.78	5.33	2.18
0.917	2.87	2.417	21.31	3.917	3.48	5.42	2.09
1.000	2.87	2.500	21.31	4.000	3.48	5.50	2.09

Post-Development_Major_System

1.083	3.20	2.583	12.30	4.083	3.22	5.58	2.01
1.167	3.20	2.667	12.30	4.167	3.22	5.67	2.01
1.250	3.63	2.750	8.97	4.250	3.01	5.75	1.93
1.333	3.63	2.833	8.97	4.333	3.01	5.83	1.93
1.417	4.22	2.917	7.16	4.417	2.82	5.92	1.86
1.500	4.22	3.000	7.16	4.500	2.82	6.00	1.86

			TOTALS
Max.Eff.Inten.(mm/hr)=	162.27	87.77	
over (min)	5.00	5.00	
Storage Coeff. (min)=	0.96 (ii)	4.71 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.34	0.22	
PEAK FLOW (cms)=	0.04	0.01	0.044 (iii)
TIME TO PEAK (hrs)=	2.33	2.33	2.33
RUNOFF VOLUME (mm)=	54.38	29.41	48.12
TOTAL RAINFALL (mm)=	55.38	55.38	55.38
RUNOFF COEFFICIENT =	0.98	0.53	0.87

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 85.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (1006)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0210):	0.02	0.008	2.33	47.83
+ ID2= 2 (0213):	0.11	0.044	2.33	48.12
ID = 3 (1006):	0.13	0.052	2.33	48.07

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

DUHYD (3004)				
Inlet Cap.= 0.019				
#of Inlets= 1				
Total(cms)= 0.0	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
TOTAL HYD.(ID= 1):	0.13	0.05	2.33	48.07
MAJOR SYS.(ID= 2):	0.04	0.03	2.33	48.07

```
                          Post-Development_Major_System
      MINOR SYS.(ID= 3):   0.09      0.02      2.25   48.07

      NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

------------------------------------------------------------------------------

--------------------
| ADD HYD  (  1000)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0211):     0.32   0.121     2.33    47.95
      + ID2= 2 (  3004):     0.09   0.019     2.25    48.07
        ================================================
        ID = 3 (  1000):     0.41   0.140     2.33    47.98

      NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
------------------------------------------------------------------------------

--------------------
| ADD HYD  (  1000)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  1000):     0.41   0.140     2.33    47.98
      + ID2= 2 (  4001):     0.80   0.061     2.42    50.42
        ================================================
        ID = 1 (  1000):     1.21   0.188     2.33    49.59

      NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
------------------------------------------------------------------------------
--------------------
| RESERVOIR(  4006)|     OVERFLOW IS ON
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE    |  OUTFLOW    STORAGE
--------------------       (cms)     (ha.m.)   |   (cms)     (ha.m.)
                           0.0000     0.0000   |   0.1183      0.0131

                                  AREA     QPEAK     TPEAK       R.V.
                                  (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  1000)      1.211      0.188      2.33      49.59
   OUTFLOW: ID= 1 (  4006)      1.211      0.088      2.50      49.58
   OVERFLOW:ID= 3 (  0003)      0.000      0.000      0.00       0.00

                  TOTAL NUMBER OF SIMULATION OVERFLOW  =     0
                  CUMULATIVE TIME OF OVERFLOW  (HOURS) =  0.00
                  PERCENTAGE OF TIME OVERFLOWING   (%) =  0.00

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 46.77
                  TIME SHIFT OF PEAK FLOW         (min)= 10.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0098
```

```
--------------------------------------------------------------------------------
--------------------
| SHIFT HYD(  3001)|
| IN= 2---> OUT= 1 |
| SHIFT=  1.0 min  |      AREA     QPEAK     TPEAK      R.V.
--------------------      (ha)     (cms)     (hrs)      (mm)
          ID= 2 (  4006):    0.00      0.00      0.00      0.00
    SHIFT ID= 1 (  3001):    0.00      0.00      0.00      0.00


--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  6004)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
*** W A R N I N G :  HYDROGRAPH   3001 <ID= 1> IS DRY.
*** W A R N I N G :  HYDROGRAPH   6004 = HYDROGRAPH 4006
        ID1= 1 (  3001):     0.00   0.000     0.00     0.00
      + ID2= 2 (  4006):     1.21   0.088     2.50    49.58
        ================================================
        ID = 3 (  6004):     1.21   0.088     2.50    49.58

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  6001)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  3003):     0.03   0.026     2.33    48.06
      + ID2= 2 (  3004):     0.04   0.033     2.33    48.07
        ================================================
        ID = 3 (  6001):     0.07   0.058     2.33    48.07

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  6001)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  6001):     0.07   0.058     2.33    48.07
      + ID2= 2 (  6003):     3.26   0.228     2.58    45.29
        ================================================
        ID = 1 (  6001):     3.33   0.228     2.58    45.35

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
```



Post-Development_Major_System

```
--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  6001)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  6001):     3.33   0.228     2.58    45.35
      + ID2= 2 (  6004):     1.21   0.088     2.50    49.58
        ================================================
        ID = 3 (  6001):     4.54   0.315     2.58    46.48

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  6000)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  3002):     0.02   0.020     2.33    47.95
      + ID2= 2 (  6001):     4.54   0.315     2.58    46.48
        ================================================
        ID = 3 (  6000):     4.56   0.315     2.58    46.48

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
================================================================================
========================

       V    V   I    SSSSS  U   U    A    L              (v 6.2.2010)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat

  Output  filename:
```

Post-Development_Major_System
C:\Users\ykoshenkov\AppData\Local\Civica\VH5\95aa6302-d561-466b-a85b-2e34c191f114\566ad1a1-989f-4471-8ede-45be6b891906\s
  Summary filename:
C:\Users\ykoshenkov\AppData\Local\Civica\VH5\95aa6302-d561-466b-a85b-2e34c191f114\566ad1a1-989f-4471-8ede-45be6b891906\s

DATE: 06-30-2022 TIME: 05:05:54

USER:

COMMENTS: _____

****
** SIMULATION : 25-year storm **
****

| CHICAGO STORM |
| Ptotal= 64.68 mm |

IDF curve parameters: A=1195.802
B= 0.000
C= 0.800
used in: INTENSITY = A / (t + B)^C

Duration of storm = 6.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.38

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.00	2.26	1.50	5.93	3.00	7.02	4.50	3.11
0.17	2.41	1.67	7.55	3.17	6.08	4.67	2.94
0.33	2.59	1.83	10.73	3.33	5.38	4.83	2.80
0.50	2.80	2.00	21.19	3.50	4.85	5.00	2.67
0.67	3.05	2.17	189.52	3.67	4.41	5.17	2.55
0.83	3.36	2.33	24.89	3.83	4.06	5.33	2.44
1.00	3.74	2.50	14.37	4.00	3.77	5.50	2.34
1.17	4.24	2.67	10.47	4.17	3.52	5.67	2.25
1.33	4.93	2.83	8.36	4.33	3.30	5.83	2.17

| CALIB |
| NASHYD (0215)| Area (ha)= 0.22 Curve Number (CN)= 87.0

Post-Development_Major_System

|ID= 1 DT=10.0 min | Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.17

Unit Hyd Qpeak (cms)= 0.049

PEAK FLOW (cms)= 0.037 (i)
TIME TO PEAK (hrs)= 2.333
RUNOFF VOLUME (mm)= 34.797
TOTAL RAINFALL (mm)= 64.678
RUNOFF COEFFICIENT = 0.538

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

| CALIB |
| STANDHYD (0203)| Area (ha)= 0.22
|ID= 1 DT= 5.0 min | Total Imp(%)= 20.00 Dir. Conn.(%)= 1.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.04	0.18
Dep. Storage (mm)=	1.00	5.00
Average Slope (%)=	1.00	2.00
Length (m)=	38.30	40.00
Mannings n =	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.26	1.583	5.93	3.083	7.02	4.58	3.11
0.167	2.26	1.667	5.93	3.167	7.02	4.67	3.11
0.250	2.41	1.750	7.55	3.250	6.08	4.75	2.94
0.333	2.41	1.833	7.55	3.333	6.08	4.83	2.94
0.417	2.59	1.917	10.73	3.417	5.38	4.92	2.80
0.500	2.59	2.000	10.73	3.500	5.38	5.00	2.80
0.583	2.80	2.083	21.19	3.583	4.85	5.08	2.67
0.667	2.80	2.167	21.19	3.667	4.85	5.17	2.67
0.750	3.05	2.250	189.52	3.750	4.41	5.25	2.55
0.833	3.05	2.333	189.52	3.833	4.41	5.33	2.55
0.917	3.36	2.417	24.89	3.917	4.06	5.42	2.44
1.000	3.36	2.500	24.89	4.000	4.06	5.50	2.44
1.083	3.74	2.583	14.37	4.083	3.77	5.58	2.34
1.167	3.74	2.667	14.37	4.167	3.77	5.67	2.34
1.250	4.24	2.750	10.47	4.250	3.52	5.75	2.25
1.333	4.24	2.833	10.47	4.333	3.52	5.83	2.25
1.417	4.93	2.917	8.36	4.417	3.30	5.92	2.17

Post-Development_Major_System

1.500 4.93 | 3.000 8.36 | 4.500 3.30 | 6.00 2.17

Max.Eff.Inten.(mm/hr)=	189.52	154.70		
over (min)	5.00	10.00		
Storage Coeff. (min)=	1.11 (ii)	7.04 (ii)		
Unit Hyd. Tpeak (min)=	5.00	10.00		
Unit Hyd. peak (cms)=	0.34	0.14		
			TOTALS	
PEAK FLOW (cms)=	0.00	0.05	0.051 (iii)	
TIME TO PEAK (hrs)=	2.33	2.42	2.42	
RUNOFF VOLUME (mm)=	63.68	40.27	40.49	
TOTAL RAINFALL (mm)=	64.68	64.68	64.68	
RUNOFF COEFFICIENT =	0.98	0.62	0.63	

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
***** WARNING:FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20%
YOU SHOULD CONSIDER SPLITTING THE AREA.

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (1003)					
1 + 2 = 3		AREA	QPEAK	TPEAK	R.V.
		(ha)	(cms)	(hrs)	(mm)
	ID1= 1 (0203):	0.22	0.051	2.42	40.49
+	ID2= 2 (0215):	0.22	0.037	2.33	34.80
	ID = 3 (1003):	0.44	0.083	2.33	37.64

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB					
NASHYD (0216)	Area (ha)=	0.12	Curve Number (CN)=	87.0	
ID= 1 DT=10.0 min	Ia (mm)=	5.00	# of Linear Res.(N)=	3.00	
	U.H. Tp(hrs)=	0.17			

Unit Hyd Qpeak (cms)= 0.026

PEAK FLOW (cms)= 0.019 (i)
TIME TO PEAK (hrs)= 2.333
RUNOFF VOLUME (mm)= 34.797
TOTAL RAINFALL (mm)= 64.678

Post-Development_Major_System

RUNOFF COEFFICIENT = 0.538

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB	
STANDHYD (0206)	Area (ha)= 0.12
ID= 1 DT= 5.0 min	Total Imp(%)= 20.00 Dir. Conn.(%)= 1.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.02	0.09
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	27.69	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.26	1.583	5.93	3.083	7.02	4.58	3.11
0.167	2.26	1.667	5.93	3.167	7.02	4.67	3.11
0.250	2.41	1.750	7.55	3.250	6.08	4.75	2.94
0.333	2.41	1.833	7.55	3.333	6.08	4.83	2.94
0.417	2.59	1.917	10.73	3.417	5.38	4.92	2.80
0.500	2.59	2.000	10.73	3.500	5.38	5.00	2.80
0.583	2.80	2.083	21.19	3.583	4.85	5.08	2.67
0.667	2.80	2.167	21.19	3.667	4.85	5.17	2.67
0.750	3.05	2.250	189.52	3.750	4.41	5.25	2.55
0.833	3.05	2.333	189.52	3.833	4.41	5.33	2.55
0.917	3.36	2.417	24.89	3.917	4.06	5.42	2.44
1.000	3.36	2.500	24.89	4.000	4.06	5.50	2.44
1.083	3.74	2.583	14.37	4.083	3.77	5.58	2.34
1.167	3.74	2.667	14.37	4.167	3.77	5.67	2.34
1.250	4.24	2.750	10.47	4.250	3.52	5.75	2.25
1.333	4.24	2.833	10.47	4.333	3.52	5.83	2.25
1.417	4.93	2.917	8.36	4.417	3.30	5.92	2.17
1.500	4.93	3.000	8.36	4.500	3.30	6.00	2.17

Max.Eff.Inten.(mm/hr)=		189.52	154.70	
over (min)		5.00	10.00	
Storage Coeff. (min)=		0.92 (ii)	6.84 (ii)	
Unit Hyd. Tpeak (min)=		5.00	10.00	
Unit Hyd. peak (cms)=		0.34	0.14	
				TOTALS
PEAK FLOW	(cms)=	0.00	0.03	0.027 (iii)

```
                              Post-Development_Major_System
      TIME TO PEAK    (hrs)=       2.33         2.42          2.42
      RUNOFF VOLUME    (mm)=      63.68        40.27         40.48
      TOTAL RAINFALL   (mm)=      64.68        64.68         64.68
      RUNOFF COEFFICIENT   =       0.98         0.62          0.63

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
***** WARNING:FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20%
              YOU SHOULD CONSIDER SPLITTING THE AREA.

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  87.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
| ADD HYD  (  1001)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0206):     0.12   0.027     2.42    40.48
      + ID2= 2 (  0216):     0.12   0.019     2.33    34.80
        ================================================
        ID = 3 (  1001):     0.23   0.044     2.33    37.63

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0204)|   Area    (ha)=   0.18
|ID= 1 DT= 5.0 min |   Total Imp(%)=  85.00   Dir. Conn.(%)=  85.00
--------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.15         0.03
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      34.64        40.00
     Mannings n           =      0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                          ---- TRANSFORMED HYETOGRAPH ----
              TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
               hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
             0.083    2.26 | 1.583    5.93 | 3.083    7.02 |  4.58    3.11
             0.167    2.26 | 1.667    5.93 | 3.167    7.02 |  4.67    3.11
             0.250    2.41 | 1.750    7.55 | 3.250    6.08 |  4.75    2.94
```

Post-Development_Major_System

0.333	2.41	1.833	7.55	3.333	6.08	4.83	2.94
0.417	2.59	1.917	10.73	3.417	5.38	4.92	2.80
0.500	2.59	2.000	10.73	3.500	5.38	5.00	2.80
0.583	2.80	2.083	21.19	3.583	4.85	5.08	2.67
0.667	2.80	2.167	21.19	3.667	4.85	5.17	2.67
0.750	3.05	2.250	189.52	3.750	4.41	5.25	2.55
0.833	3.05	2.333	189.52	3.833	4.41	5.33	2.55
0.917	3.36	2.417	24.89	3.917	4.06	5.42	2.44
1.000	3.36	2.500	24.89	4.000	4.06	5.50	2.44
1.083	3.74	2.583	14.37	4.083	3.77	5.58	2.34
1.167	3.74	2.667	14.37	4.167	3.77	5.67	2.34
1.250	4.24	2.750	10.47	4.250	3.52	5.75	2.25
1.333	4.24	2.833	10.47	4.333	3.52	5.83	2.25
1.417	4.93	2.917	8.36	4.417	3.30	5.92	2.17
1.500	4.93	3.000	8.36	4.500	3.30	6.00	2.17

Max.Eff.Inten.(mm/hr)=	189.52	111.47	
over (min)	5.00	5.00	
Storage Coeff. (min)=	1.05 (ii)	3.78 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.34	0.25	
			TOTALS
PEAK FLOW (cms)=	0.08	0.01	0.089 (iii)
TIME TO PEAK (hrs)=	2.33	2.33	2.33
RUNOFF VOLUME (mm)=	63.68	36.48	59.59
TOTAL RAINFALL (mm)=	64.68	64.68	64.68
RUNOFF COEFFICIENT =	0.98	0.56	0.92

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(4004)	OVERFLOW IS OFF			
IN= 2---> OUT= 1				
DT= 5.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0007	0.0220	0.0085

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0204)	0.180	0.089	2.33	59.59
OUTFLOW: ID= 1 (4004)	0.180	0.016	2.42	55.23

```
                        Post-Development_Major_System
                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 17.55
                  TIME SHIFT OF PEAK FLOW         (min)=  5.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0063

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  1002)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  1001):     0.23   0.044     2.33    37.63
      + ID2= 2 (  4004):     0.18   0.016     2.42    55.23
        ================================================
        ID = 3 (  1002):     0.41   0.060     2.42    45.36

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  1004)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  1002):     0.41   0.060     2.42    45.36
      + ID2= 2 (  1003):     0.44   0.083     2.33    37.64
        ================================================
        ID = 3 (  1004):     0.85   0.143     2.42    41.36

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0205)|   Area    (ha)=   0.97
|ID= 1 DT= 5.0 min |   Total Imp(%)=  85.00   Dir. Conn.(%)=  85.00
--------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.82         0.15
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      80.42        40.00
     Mannings n           =      0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                          ---- TRANSFORMED HYETOGRAPH ----
              TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
               hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
             0.083    2.26 | 1.583    5.93 | 3.083    7.02 |  4.58    3.11
             0.167    2.26 | 1.667    5.93 | 3.167    7.02 |  4.67    3.11
```

Post-Development_Major_System

0.250	2.41	1.750	7.55	3.250	6.08	4.75	2.94
0.333	2.41	1.833	7.55	3.333	6.08	4.83	2.94
0.417	2.59	1.917	10.73	3.417	5.38	4.92	2.80
0.500	2.59	2.000	10.73	3.500	5.38	5.00	2.80
0.583	2.80	2.083	21.19	3.583	4.85	5.08	2.67
0.667	2.80	2.167	21.19	3.667	4.85	5.17	2.67
0.750	3.05	2.250	189.52	3.750	4.41	5.25	2.55
0.833	3.05	2.333	189.52	3.833	4.41	5.33	2.55
0.917	3.36	2.417	24.89	3.917	4.06	5.42	2.44
1.000	3.36	2.500	24.89	4.000	4.06	5.50	2.44
1.083	3.74	2.583	14.37	4.083	3.77	5.58	2.34
1.167	3.74	2.667	14.37	4.167	3.77	5.67	2.34
1.250	4.24	2.750	10.47	4.250	3.52	5.75	2.25
1.333	4.24	2.833	10.47	4.333	3.52	5.83	2.25
1.417	4.93	2.917	8.36	4.417	3.30	5.92	2.17
1.500	4.93	3.000	8.36	4.500	3.30	6.00	2.17

Max.Eff.Inten.(mm/hr)=	189.52	111.47	
over (min)	5.00	5.00	
Storage Coeff. (min)=	1.74 (ii)	4.47 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.32	0.23	
			TOTALS
PEAK FLOW (cms)=	0.43	0.04	0.477 (iii)
TIME TO PEAK (hrs)=	2.33	2.33	2.33
RUNOFF VOLUME (mm)=	63.68	36.48	59.59
TOTAL RAINFALL (mm)=	64.68	64.68	64.68
RUNOFF COEFFICIENT =	0.98	0.56	0.92

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(4005)	OVERFLOW IS OFF			
IN= 2---> OUT= 1				
DT= 5.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.1190	0.0415

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0205)	0.970	0.477	2.33	59.59
OUTFLOW: ID= 1 (4005)	0.970	0.088	2.42	59.51

Post-Development_Major_System

```
                    PEAK   FLOW   REDUCTION [Qout/Qin](%)= 18.35
                    TIME SHIFT OF PEAK FLOW         (min)=  5.00
                    MAXIMUM  STORAGE   USED       (ha.m.)=  0.0307

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--------------------
| CALIB            |
| STANDHYD (  0202)|   Area    (ha)=   0.56
|ID= 1 DT= 5.0 min |   Total Imp(%)=  85.00   Dir. Conn.(%)=  85.00
--------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.48         0.08
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      61.10        40.00
     Mannings n             =     0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                              ---- TRANSFORMED HYETOGRAPH ----
               TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
              0.083    2.26 | 1.583    5.93 | 3.083    7.02 |  4.58    3.11
              0.167    2.26 | 1.667    5.93 | 3.167    7.02 |  4.67    3.11
              0.250    2.41 | 1.750    7.55 | 3.250    6.08 |  4.75    2.94
              0.333    2.41 | 1.833    7.55 | 3.333    6.08 |  4.83    2.94
              0.417    2.59 | 1.917   10.73 | 3.417    5.38 |  4.92    2.80
              0.500    2.59 | 2.000   10.73 | 3.500    5.38 |  5.00    2.80
              0.583    2.80 | 2.083   21.19 | 3.583    4.85 |  5.08    2.67
              0.667    2.80 | 2.167   21.19 | 3.667    4.85 |  5.17    2.67
              0.750    3.05 | 2.250  189.52 | 3.750    4.41 |  5.25    2.55
              0.833    3.05 | 2.333  189.52 | 3.833    4.41 |  5.33    2.55
              0.917    3.36 | 2.417   24.89 | 3.917    4.06 |  5.42    2.44
              1.000    3.36 | 2.500   24.89 | 4.000    4.06 |  5.50    2.44
              1.083    3.74 | 2.583   14.37 | 4.083    3.77 |  5.58    2.34
              1.167    3.74 | 2.667   14.37 | 4.167    3.77 |  5.67    2.34
              1.250    4.24 | 2.750   10.47 | 4.250    3.52 |  5.75    2.25
              1.333    4.24 | 2.833   10.47 | 4.333    3.52 |  5.83    2.25
              1.417    4.93 | 2.917    8.36 | 4.417    3.30 |  5.92    2.17
              1.500    4.93 | 3.000    8.36 | 4.500    3.30 |  6.00    2.17

     Max.Eff.Inten.(mm/hr)=     189.52       111.47
               over (min)        5.00         5.00
     Storage Coeff.  (min)=      1.47 (ii)    4.20 (ii)
     Unit Hyd. Tpeak (min)=      5.00         5.00
     Unit Hyd. peak  (cms)=      0.33         0.24
                                                    *TOTALS*
```

```
                              Post-Development_Major_System
      PEAK FLOW       (cms)=       0.25         0.03          0.276 (iii)
      TIME TO PEAK    (hrs)=       2.33         2.33           2.33
      RUNOFF VOLUME    (mm)=      63.68        36.48          59.60
      TOTAL RAINFALL   (mm)=      64.68        64.68          64.68
      RUNOFF COEFFICIENT   =       0.98         0.56           0.92

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  87.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  4002)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE    |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)    |   (cms)     (ha.m.)
                          0.0000     0.0000    |   0.0690      0.0240

                                  AREA     QPEAK     TPEAK       R.V.
                                  (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0202)      0.560      0.276      2.33       59.60
   OUTFLOW: ID= 1 (  4002)      0.560      0.051      2.42       59.45

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 18.43
                  TIME SHIFT OF PEAK FLOW         (min)=  5.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0177

--------------------------------------------------------------------------------
--------------------
| CALIB             |
| STANDHYD (  0212)|   Area    (ha)=   0.75
|ID= 1 DT= 5.0 min |   Total Imp(%)=  75.00   Dir. Conn.(%)=  75.00
--------------------

                               IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.56         0.19
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      70.71        40.00
     Mannings n           =      0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                              ---- TRANSFORMED HYETOGRAPH ----
               TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
```

Post-Development_Major_System

hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	2.26	1.583	5.93	3.083	7.02	4.58	3.11
0.167	2.26	1.667	5.93	3.167	7.02	4.67	3.11
0.250	2.41	1.750	7.55	3.250	6.08	4.75	2.94
0.333	2.41	1.833	7.55	3.333	6.08	4.83	2.94
0.417	2.59	1.917	10.73	3.417	5.38	4.92	2.80
0.500	2.59	2.000	10.73	3.500	5.38	5.00	2.80
0.583	2.80	2.083	21.19	3.583	4.85	5.08	2.67
0.667	2.80	2.167	21.19	3.667	4.85	5.17	2.67
0.750	3.05	2.250	189.52	3.750	4.41	5.25	2.55
0.833	3.05	2.333	189.52	3.833	4.41	5.33	2.55
0.917	3.36	2.417	24.89	3.917	4.06	5.42	2.44
1.000	3.36	2.500	24.89	4.000	4.06	5.50	2.44
1.083	3.74	2.583	14.37	4.083	3.77	5.58	2.34
1.167	3.74	2.667	14.37	4.167	3.77	5.67	2.34
1.250	4.24	2.750	10.47	4.250	3.52	5.75	2.25
1.333	4.24	2.833	10.47	4.333	3.52	5.83	2.25
1.417	4.93	2.917	8.36	4.417	3.30	5.92	2.17
1.500	4.93	3.000	8.36	4.500	3.30	6.00	2.17

Max.Eff.Inten.(mm/hr)=	189.52	111.47	
over (min)	5.00	10.00	
Storage Coeff. (min)=	1.61 (ii)	5.13 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.32	0.16	
			TOTALS
PEAK FLOW (cms)=	0.30	0.04	0.335 (iii)
TIME TO PEAK (hrs)=	2.33	2.42	2.33
RUNOFF VOLUME (mm)=	63.68	36.48	56.88
TOTAL RAINFALL (mm)=	64.68	64.68	64.68
RUNOFF COEFFICIENT =	0.98	0.56	0.88

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB	
STANDHYD (0209)	Area (ha)= 0.02
ID= 1 DT= 5.0 min	Total Imp(%)= 75.00 Dir. Conn.(%)= 75.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.01	0.00
Dep. Storage	(mm)=	1.00	1.50

Post-Development_Major_System

Average Slope	(%)=	1.00	2.00
Length	(m)=	11.55	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.26	1.583	5.93	3.083	7.02	4.58	3.11
0.167	2.26	1.667	5.93	3.167	7.02	4.67	3.11
0.250	2.41	1.750	7.55	3.250	6.08	4.75	2.94
0.333	2.41	1.833	7.55	3.333	6.08	4.83	2.94
0.417	2.59	1.917	10.73	3.417	5.38	4.92	2.80
0.500	2.59	2.000	10.73	3.500	5.38	5.00	2.80
0.583	2.80	2.083	21.19	3.583	4.85	5.08	2.67
0.667	2.80	2.167	21.19	3.667	4.85	5.17	2.67
0.750	3.05	2.250	189.52	3.750	4.41	5.25	2.55
0.833	3.05	2.333	189.52	3.833	4.41	5.33	2.55
0.917	3.36	2.417	24.89	3.917	4.06	5.42	2.44
1.000	3.36	2.500	24.89	4.000	4.06	5.50	2.44
1.083	3.74	2.583	14.37	4.083	3.77	5.58	2.34
1.167	3.74	2.667	14.37	4.167	3.77	5.67	2.34
1.250	4.24	2.750	10.47	4.250	3.52	5.75	2.25
1.333	4.24	2.833	10.47	4.333	3.52	5.83	2.25
1.417	4.93	2.917	8.36	4.417	3.30	5.92	2.17
1.500	4.93	3.000	8.36	4.500	3.30	6.00	2.17

Max.Eff.Inten.(mm/hr)=		189.52	111.41	
over (min)		5.00	5.00	
Storage Coeff. (min)=		0.54 (ii)	4.06 (ii)	
Unit Hyd. Tpeak (min)=		5.00	5.00	
Unit Hyd. peak (cms)=		0.34	0.24	
				TOTALS
PEAK FLOW	(cms)=	0.01	0.00	0.009 (iii)
TIME TO PEAK	(hrs)=	2.33	2.33	2.33
RUNOFF VOLUME	(mm)=	63.68	36.96	56.98
TOTAL RAINFALL	(mm)=	64.68	64.68	64.68
RUNOFF COEFFICIENT	=	0.98	0.57	0.88

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 85.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

Post-Development_Major_System

CALIB	
STANDHYD (0214)	Area (ha)= 0.08
ID= 1 DT= 5.0 min	Total Imp(%)= 75.00 Dir. Conn.(%)= 75.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.06	0.02
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	23.09	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.26	1.583	5.93	3.083	7.02	4.58	3.11
0.167	2.26	1.667	5.93	3.167	7.02	4.67	3.11
0.250	2.41	1.750	7.55	3.250	6.08	4.75	2.94
0.333	2.41	1.833	7.55	3.333	6.08	4.83	2.94
0.417	2.59	1.917	10.73	3.417	5.38	4.92	2.80
0.500	2.59	2.000	10.73	3.500	5.38	5.00	2.80
0.583	2.80	2.083	21.19	3.583	4.85	5.08	2.67
0.667	2.80	2.167	21.19	3.667	4.85	5.17	2.67
0.750	3.05	2.250	189.52	3.750	4.41	5.25	2.55
0.833	3.05	2.333	189.52	3.833	4.41	5.33	2.55
0.917	3.36	2.417	24.89	3.917	4.06	5.42	2.44
1.000	3.36	2.500	24.89	4.000	4.06	5.50	2.44
1.083	3.74	2.583	14.37	4.083	3.77	5.58	2.34
1.167	3.74	2.667	14.37	4.167	3.77	5.67	2.34
1.250	4.24	2.750	10.47	4.250	3.52	5.75	2.25
1.333	4.24	2.833	10.47	4.333	3.52	5.83	2.25
1.417	4.93	2.917	8.36	4.417	3.30	5.92	2.17
1.500	4.93	3.000	8.36	4.500	3.30	6.00	2.17

Max.Eff.Inten.(mm/hr)=		189.52	111.41	
over (min)		5.00	5.00	
Storage Coeff. (min)=		0.82 (ii)	4.34 (ii)	
Unit Hyd. Tpeak (min)=		5.00	5.00	
Unit Hyd. peak (cms)=		0.34	0.23	
				TOTALS
PEAK FLOW	(cms)=	0.03	0.01	0.038 (iii)
TIME TO PEAK	(hrs)=	2.33	2.33	2.33
RUNOFF VOLUME	(mm)=	63.68	36.96	56.98
TOTAL RAINFALL	(mm)=	64.68	64.68	64.68
RUNOFF COEFFICIENT	=	0.98	0.57	0.88

Post-Development_Major_System

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 85.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (1005)					
1 + 2 = 3		AREA	QPEAK	TPEAK	R.V.
		(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0209):		0.02	0.009	2.33	56.98
+ ID2= 2 (0214):		0.08	0.038	2.33	56.98
ID = 3 (1005):		0.10	0.047	2.33	56.98

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

DUHYD (3003)					
Inlet Cap.= 0.014					
#of Inlets= 1					
Total(cms)= 0.0		AREA	QPEAK	TPEAK	R.V.
		(ha)	(cms)	(hrs)	(mm)
TOTAL HYD.(ID= 1):		0.10	0.05	2.33	56.98
MAJOR SYS.(ID= 2):		0.03	0.03	2.33	56.98
MINOR SYS.(ID= 3):		0.07	0.01	2.25	56.98

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB				
STANDHYD (6005)		Area (ha)=	0.08	
ID= 1 DT= 5.0 min		Total Imp(%)=	75.00	Dir. Conn.(%)= 75.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.06	0.02
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	23.09	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.26	1.583	5.93	3.083	7.02	4.58	3.11
0.167	2.26	1.667	5.93	3.167	7.02	4.67	3.11
0.250	2.41	1.750	7.55	3.250	6.08	4.75	2.94
0.333	2.41	1.833	7.55	3.333	6.08	4.83	2.94
0.417	2.59	1.917	10.73	3.417	5.38	4.92	2.80
0.500	2.59	2.000	10.73	3.500	5.38	5.00	2.80
0.583	2.80	2.083	21.19	3.583	4.85	5.08	2.67
0.667	2.80	2.167	21.19	3.667	4.85	5.17	2.67
0.750	3.05	2.250	189.52	3.750	4.41	5.25	2.55
0.833	3.05	2.333	189.52	3.833	4.41	5.33	2.55
0.917	3.36	2.417	24.89	3.917	4.06	5.42	2.44
1.000	3.36	2.500	24.89	4.000	4.06	5.50	2.44
1.083	3.74	2.583	14.37	4.083	3.77	5.58	2.34
1.167	3.74	2.667	14.37	4.167	3.77	5.67	2.34
1.250	4.24	2.750	10.47	4.250	3.52	5.75	2.25
1.333	4.24	2.833	10.47	4.333	3.52	5.83	2.25
1.417	4.93	2.917	8.36	4.417	3.30	5.92	2.17
1.500	4.93	3.000	8.36	4.500	3.30	6.00	2.17

			TOTALS
Max.Eff.Inten.(mm/hr)=	189.52	111.47	
over (min)	5.00	5.00	
Storage Coeff. (min)=	0.82 (ii)	4.34 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.34	0.23	
PEAK FLOW (cms)=	0.03	0.01	0.038 (iii)
TIME TO PEAK (hrs)=	2.33	2.33	2.33
RUNOFF VOLUME (mm)=	63.68	36.48	56.86
TOTAL RAINFALL (mm)=	64.68	64.68	64.68
RUNOFF COEFFICIENT =	0.98	0.56	0.88

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

DUHYD (3002)
Inlet Cap.= 0.012
#of Inlets= 1

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Total(cms)= 0.0	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
TOTAL HYD.(ID= 1):	0.08	0.04	2.33	56.86
MAJOR SYS.(ID= 2):	0.03	0.03	2.33	56.86
MINOR SYS.(ID= 3):	0.05	0.01	2.25	56.86

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (5008) | 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (1004):	0.85	0.143	2.42	41.36
+ ID2= 2 (0212):	0.75	0.335	2.33	56.88
ID = 3 (5008):	1.60	0.475	2.33	48.63

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (5008) | 3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (5008):	1.60	0.475	2.33	48.63
+ ID2= 2 (3002):	0.05	0.012	2.25	56.86
ID = 1 (5008):	1.65	0.487	2.33	48.90

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (5008) | 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (5008):	1.65	0.487	2.33	48.90
+ ID2= 2 (3003):	0.07	0.014	2.25	56.98
ID = 3 (5008):	1.72	0.501	2.33	49.22

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (5008)

```
                                Post-Development_Major_System
|   3 +  2 =  1    |          AREA     QPEAK     TPEAK      R.V.
--------------------          (ha)     (cms)     (hrs)      (mm)
        ID1= 3 (  5008):      1.72    0.501      2.33     49.22
      + ID2= 2 (  4002):      0.56    0.051      2.42     59.45
        ================================================
        ID = 1 (  5008):      2.28    0.542      2.33     51.73

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  5008)|
|   1 +  2 =  3    |          AREA     QPEAK     TPEAK      R.V.
--------------------          (ha)     (cms)     (hrs)      (mm)
        ID1= 1 (  5008):      2.28    0.542      2.33     51.73
      + ID2= 2 (  4005):      0.97    0.088      2.42     59.51
        ================================================
        ID = 3 (  5008):      3.25    0.611      2.33     54.05

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  4007)|     OVERFLOW IS ON
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE    |  OUTFLOW    STORAGE
--------------------       (cms)     (ha.m.)    |   (cms)     (ha.m.)
                           0.0000     0.0000    |   0.3132      0.0397

                                  AREA     QPEAK     TPEAK       R.V.
                                  (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  5008)      3.251      0.611      2.33      54.05
   OUTFLOW: ID= 1 (  4007)      3.251      0.274      2.58      54.04
   OVERFLOW:ID= 3 (  0003)      0.000      0.000      0.00       0.00

                  TOTAL NUMBER OF SIMULATION OVERFLOW  =     0
                  CUMULATIVE TIME OF OVERFLOW  (HOURS) =  0.00
                  PERCENTAGE OF TIME OVERFLOWING   (%) =  0.00

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 44.81
                  TIME SHIFT OF PEAK FLOW         (min)= 15.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0350

--------------------------------------------------------------------------------
--------------------
| SHIFT HYD(  3000)|
| IN= 2---> OUT= 1 |
| SHIFT=  1.0 min  |      AREA     QPEAK     TPEAK      R.V.
--------------------      (ha)     (cms)     (hrs)      (mm)
          ID= 2 (  4007):    0.00     0.00      0.00      0.00
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                              Post-Development_Major_System
     SHIFT ID= 1 (  3000):    0.00     0.00      0.00      0.00

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  6003)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
*** W A R N I N G :  HYDROGRAPH   3000 <ID= 1> IS DRY.
*** W A R N I N G :  HYDROGRAPH   6003 = HYDROGRAPH 4007
        ID1= 1 (  3000):     0.00   0.000     0.00     0.00
      + ID2= 2 (  4007):     3.25   0.274     2.58    54.04
        ==================================================
        ID = 3 (  6003):     3.25   0.274     2.58    54.04

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0211)|   Area    (ha)=   0.32
|ID= 1 DT= 5.0 min |   Total Imp(%)=  75.00   Dir. Conn.(%)=  75.00
--------------------
                             IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.24         0.08
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      46.19        40.00
     Mannings n             =    0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                        ---- TRANSFORMED HYETOGRAPH ----
      TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
       hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
     0.083    2.26 | 1.583    5.93 | 3.083    7.02 |  4.58    3.11
     0.167    2.26 | 1.667    5.93 | 3.167    7.02 |  4.67    3.11
     0.250    2.41 | 1.750    7.55 | 3.250    6.08 |  4.75    2.94
     0.333    2.41 | 1.833    7.55 | 3.333    6.08 |  4.83    2.94
     0.417    2.59 | 1.917   10.73 | 3.417    5.38 |  4.92    2.80
     0.500    2.59 | 2.000   10.73 | 3.500    5.38 |  5.00    2.80
     0.583    2.80 | 2.083   21.19 | 3.583    4.85 |  5.08    2.67
     0.667    2.80 | 2.167   21.19 | 3.667    4.85 |  5.17    2.67
     0.750    3.05 | 2.250  189.52 | 3.750    4.41 |  5.25    2.55
     0.833    3.05 | 2.333  189.52 | 3.833    4.41 |  5.33    2.55
     0.917    3.36 | 2.417   24.89 | 3.917    4.06 |  5.42    2.44
     1.000    3.36 | 2.500   24.89 | 4.000    4.06 |  5.50    2.44
     1.083    3.74 | 2.583   14.37 | 4.083    3.77 |  5.58    2.34
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Post-Development_Major_System

1.167	3.74	2.667	14.37	4.167	3.77	5.67	2.34
1.250	4.24	2.750	10.47	4.250	3.52	5.75	2.25
1.333	4.24	2.833	10.47	4.333	3.52	5.83	2.25
1.417	4.93	2.917	8.36	4.417	3.30	5.92	2.17
1.500	4.93	3.000	8.36	4.500	3.30	6.00	2.17

Max.Eff.Inten.(mm/hr)=	189.52	111.47	
over (min)	5.00	5.00	
Storage Coeff. (min)=	1.24 (ii)	4.77 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.33	0.22	
			TOTALS
PEAK FLOW (cms)=	0.13	0.02	0.150 (iii)
TIME TO PEAK (hrs)=	2.33	2.33	2.33
RUNOFF VOLUME (mm)=	63.68	36.48	56.87
TOTAL RAINFALL (mm)=	64.68	64.68	64.68
RUNOFF COEFFICIENT =	0.98	0.56	0.88

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB	
STANDHYD (0201)	Area (ha)= 0.80
ID= 1 DT= 5.0 min	Total Imp(%)= 85.00 Dir. Conn.(%)= 85.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.68	0.12
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	73.03	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.26	1.583	5.93	3.083	7.02	4.58	3.11
0.167	2.26	1.667	5.93	3.167	7.02	4.67	3.11
0.250	2.41	1.750	7.55	3.250	6.08	4.75	2.94
0.333	2.41	1.833	7.55	3.333	6.08	4.83	2.94

Post-Development_Major_System

0.417	2.59	1.917	10.73	3.417	5.38	4.92	2.80
0.500	2.59	2.000	10.73	3.500	5.38	5.00	2.80
0.583	2.80	2.083	21.19	3.583	4.85	5.08	2.67
0.667	2.80	2.167	21.19	3.667	4.85	5.17	2.67
0.750	3.05	2.250	189.52	3.750	4.41	5.25	2.55
0.833	3.05	2.333	189.52	3.833	4.41	5.33	2.55
0.917	3.36	2.417	24.89	3.917	4.06	5.42	2.44
1.000	3.36	2.500	24.89	4.000	4.06	5.50	2.44
1.083	3.74	2.583	14.37	4.083	3.77	5.58	2.34
1.167	3.74	2.667	14.37	4.167	3.77	5.67	2.34
1.250	4.24	2.750	10.47	4.250	3.52	5.75	2.25
1.333	4.24	2.833	10.47	4.333	3.52	5.83	2.25
1.417	4.93	2.917	8.36	4.417	3.30	5.92	2.17
1.500	4.93	3.000	8.36	4.500	3.30	6.00	2.17

Max.Eff.Inten.(mm/hr)=	189.52	111.47	
over (min)	5.00	5.00	
Storage Coeff. (min)=	1.64 (ii)	4.37 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.32	0.23	
			TOTALS
PEAK FLOW (cms)=	0.36	0.04	0.394 (iii)
TIME TO PEAK (hrs)=	2.33	2.33	2.33
RUNOFF VOLUME (mm)=	63.68	36.48	59.59
TOTAL RAINFALL (mm)=	64.68	64.68	64.68
RUNOFF COEFFICIENT =	0.98	0.56	0.92

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(4001)	OVERFLOW IS OFF			
IN= 2---> OUT= 1				
DT= 5.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.0980	0.0345

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0201)	0.800	0.394	2.33	59.59
OUTFLOW: ID= 1 (4001)	0.800	0.072	2.42	59.49

PEAK FLOW REDUCTION [Qout/Qin](%)= 18.23

Post-Development_Major_System

TIME SHIFT OF PEAK FLOW (min)= 5.00
MAXIMUM STORAGE USED (ha.m.)= 0.0254

CALIB	
STANDHYD (0210)	Area (ha)= 0.02
ID= 1 DT= 5.0 min	Total Imp(%)= 75.00 Dir. Conn.(%)= 75.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.01	0.00
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	11.55	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.26	1.583	5.93	3.083	7.02	4.58	3.11
0.167	2.26	1.667	5.93	3.167	7.02	4.67	3.11
0.250	2.41	1.750	7.55	3.250	6.08	4.75	2.94
0.333	2.41	1.833	7.55	3.333	6.08	4.83	2.94
0.417	2.59	1.917	10.73	3.417	5.38	4.92	2.80
0.500	2.59	2.000	10.73	3.500	5.38	5.00	2.80
0.583	2.80	2.083	21.19	3.583	4.85	5.08	2.67
0.667	2.80	2.167	21.19	3.667	4.85	5.17	2.67
0.750	3.05	2.250	189.52	3.750	4.41	5.25	2.55
0.833	3.05	2.333	189.52	3.833	4.41	5.33	2.55
0.917	3.36	2.417	24.89	3.917	4.06	5.42	2.44
1.000	3.36	2.500	24.89	4.000	4.06	5.50	2.44
1.083	3.74	2.583	14.37	4.083	3.77	5.58	2.34
1.167	3.74	2.667	14.37	4.167	3.77	5.67	2.34
1.250	4.24	2.750	10.47	4.250	3.52	5.75	2.25
1.333	4.24	2.833	10.47	4.333	3.52	5.83	2.25
1.417	4.93	2.917	8.36	4.417	3.30	5.92	2.17
1.500	4.93	3.000	8.36	4.500	3.30	6.00	2.17

Max.Eff.Inten.(mm/hr)=		189.52	111.41	
over (min)		5.00	5.00	
Storage Coeff. (min)=		0.54 (ii)	4.06 (ii)	
Unit Hyd. Tpeak (min)=		5.00	5.00	
Unit Hyd. peak (cms)=		0.34	0.24	
				TOTALS
PEAK FLOW	(cms)=	0.01	0.00	0.009 (iii)
TIME TO PEAK	(hrs)=	2.33	2.33	2.33

Post-Development_Major_System

RUNOFF VOLUME	(mm)=	63.68	36.96	56.98
TOTAL RAINFALL	(mm)=	64.68	64.68	64.68
RUNOFF COEFFICIENT	=	0.98	0.57	0.88

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 85.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB			
STANDHYD (0213)	Area (ha)=	0.11	
ID= 1 DT= 5.0 min	Total Imp(%)=	75.00	Dir. Conn.(%)= 75.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.08	0.03
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	27.08	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.26	1.583	5.93	3.083	7.02	4.58	3.11
0.167	2.26	1.667	5.93	3.167	7.02	4.67	3.11
0.250	2.41	1.750	7.55	3.250	6.08	4.75	2.94
0.333	2.41	1.833	7.55	3.333	6.08	4.83	2.94
0.417	2.59	1.917	10.73	3.417	5.38	4.92	2.80
0.500	2.59	2.000	10.73	3.500	5.38	5.00	2.80
0.583	2.80	2.083	21.19	3.583	4.85	5.08	2.67
0.667	2.80	2.167	21.19	3.667	4.85	5.17	2.67
0.750	3.05	2.250	189.52	3.750	4.41	5.25	2.55
0.833	3.05	2.333	189.52	3.833	4.41	5.33	2.55
0.917	3.36	2.417	24.89	3.917	4.06	5.42	2.44
1.000	3.36	2.500	24.89	4.000	4.06	5.50	2.44
1.083	3.74	2.583	14.37	4.083	3.77	5.58	2.34
1.167	3.74	2.667	14.37	4.167	3.77	5.67	2.34
1.250	4.24	2.750	10.47	4.250	3.52	5.75	2.25
1.333	4.24	2.833	10.47	4.333	3.52	5.83	2.25
1.417	4.93	2.917	8.36	4.417	3.30	5.92	2.17
1.500	4.93	3.000	8.36	4.500	3.30	6.00	2.17

Post-Development_Major_System

```
      Max.Eff.Inten.(mm/hr)=     189.52       111.41
                 over (min)        5.00         5.00
      Storage Coeff.  (min)=       0.90 (ii)    4.43 (ii)
      Unit Hyd. Tpeak (min)=       5.00         5.00
      Unit Hyd. peak  (cms)=       0.34         0.23
                                                          *TOTALS*
      PEAK FLOW       (cms)=       0.04         0.01          0.052 (iii)
      TIME TO PEAK    (hrs)=       2.33         2.33           2.33
      RUNOFF VOLUME    (mm)=      63.68        36.96          56.98
      TOTAL RAINFALL   (mm)=      64.68        64.68          64.68
      RUNOFF COEFFICIENT   =       0.98         0.57           0.88

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  85.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  1006)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0210):     0.02   0.009     2.33    56.98
      + ID2= 2 (  0213):     0.11   0.052     2.33    56.98
        ================================================
        ID = 3 (  1006):     0.13   0.061     2.33    56.98

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| DUHYD    (  3004)|
| Inlet Cap.= 0.019|
| #of Inlets=     1|
| Total(cms)=   0.0|      AREA     QPEAK     TPEAK    R.V.
--------------------      (ha)     (cms)     (hrs)    (mm)
     TOTAL HYD.(ID= 1):   0.13      0.06      2.33   56.98
     ================================================
     MAJOR SYS.(ID= 2):   0.04      0.04      2.33   56.98
     MINOR SYS.(ID= 3):   0.09      0.02      2.25   56.98

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
```

Post-Development_Major_System

```
--------------------
| ADD HYD  (  1000)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0211):     0.32   0.150     2.33    56.87
      + ID2= 2 (  3004):     0.09   0.019     2.25    56.98
        ================================================
        ID = 3 (  1000):     0.41   0.169     2.33    56.89

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  1000)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  1000):     0.41   0.169     2.33    56.89
      + ID2= 2 (  4001):     0.80   0.072     2.42    59.49
        ================================================
        ID = 1 (  1000):     1.21   0.226     2.33    58.62

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  4006)|     OVERFLOW IS ON
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE    |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)    |   (cms)     (ha.m.)
                          0.0000     0.0000    |   0.1183      0.0131

                                AREA     QPEAK     TPEAK       R.V.
                                (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  1000)      1.208      0.226      2.33      58.62
   OUTFLOW: ID= 1 (  4006)      1.208      0.104      2.50      58.60
   OVERFLOW:ID= 3 (  0003)      0.000      0.000      0.00       0.00

                  TOTAL NUMBER OF SIMULATION OVERFLOW  =     0
                  CUMULATIVE TIME OF OVERFLOW  (HOURS) =  0.00
                  PERCENTAGE OF TIME OVERFLOWING   (%) =  0.00

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 45.75
                  TIME SHIFT OF PEAK FLOW         (min)= 10.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0115

--------------------------------------------------------------------------------
--------------------
| SHIFT HYD(  3001)|
| IN= 2---> OUT= 1 |
| SHIFT=  1.0 min  |      AREA     QPEAK     TPEAK      R.V.
```

```
                              Post-Development_Major_System
--------------------        (ha)     (cms)     (hrs)      (mm)
          ID= 2 (  4006):    0.00      0.00      0.00      0.00
    SHIFT ID= 1 (  3001):    0.00      0.00      0.00      0.00


--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  6004)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
*** W A R N I N G :  HYDROGRAPH   3001 <ID= 1> IS DRY.
*** W A R N I N G :  HYDROGRAPH   6004 = HYDROGRAPH 4006
        ID1= 1 (  3001):     0.00   0.000     0.00     0.00
      + ID2= 2 (  4006):     1.21   0.104     2.50    58.60
        ================================================
        ID = 3 (  6004):     1.21   0.104     2.50    58.60

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  6001)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  3003):     0.03   0.033     2.33    56.98
      + ID2= 2 (  3004):     0.04   0.042     2.33    56.98
        ================================================
        ID = 3 (  6001):     0.08   0.075     2.33    56.98

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  6001)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  6001):     0.08   0.075     2.33    56.98
      + ID2= 2 (  6003):     3.25   0.274     2.58    54.04
        ================================================
        ID = 1 (  6001):     3.33   0.274     2.58    54.11

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  6001)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
```

```
                              Post-Development_Major_System
          ID1= 1 (  6001):     3.33   0.274     2.58    54.11
        + ID2= 2 (  6004):     1.21   0.104     2.50    58.60
          ================================================
          ID = 3 (  6001):     4.53   0.376     2.58    55.31

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  6000)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
          ID1= 1 (  3002):     0.03   0.026     2.33    56.86
        + ID2= 2 (  6001):     4.53   0.376     2.58    55.31
          ================================================
          ID = 3 (  6000):     4.56   0.376     2.58    55.31

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
================================================================================
========================

         V    V   I    SSSSS  U   U    A    L              (v 6.2.2010)
         V    V   I    SS     U   U   A A   L
          V  V    I     SS    U   U  AAAAA  L
          V  V    I      SS   U   U  A   A  L
           VV     I    SSSSS  UUUUU  A   A  LLLLL

          OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
         O   O    T      T    H   H   Y Y   MM MM  O   O
         O   O    T      T    H   H    Y    M   M  O   O
          OOO     T      T    H   H    Y    M   M   OOO
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                    *****  D E T A I L E D   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat

  Output  filename:
C:\Users\ykoshenkov\AppData\Local\Civica\VH5\95aa6302-d561-466b-a85b-2e34c191f114\5
0dc555a-e741-4e27-84d5-b179fb6e08ba\s
  Summary filename:
C:\Users\ykoshenkov\AppData\Local\Civica\VH5\95aa6302-d561-466b-a85b-2e34c191f114\5
0dc555a-e741-4e27-84d5-b179fb6e08ba\s
```

Post-Development_Major_System

DATE: 06-30-2022 TIME: 05:05:54

USER:

COMMENTS: _____

****
** SIMULATION : 50-year storm **
****

| CHICAGO STORM |
| Ptotal= 76.56 mm |

IDF curve parameters: A=1415.386
B= 0.000
C= 0.800
used in: INTENSITY = A / (t + B)^C

Duration of storm = 6.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.38

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.00	2.68	1.50	7.02	3.00	8.31	4.50	3.68
0.17	2.86	1.67	8.94	3.17	7.20	4.67	3.49
0.33	3.07	1.83	12.71	3.33	6.37	4.83	3.31
0.50	3.31	2.00	25.08	3.50	5.74	5.00	3.16
0.67	3.61	2.17	224.32	3.67	5.23	5.17	3.02
0.83	3.97	2.33	29.45	3.83	4.81	5.33	2.89
1.00	4.43	2.50	17.01	4.00	4.46	5.50	2.77
1.17	5.02	2.67	12.39	4.17	4.16	5.67	2.67
1.33	5.84	2.83	9.90	4.33	3.90	5.83	2.57

| CALIB |
| NASHYD (0215)| Area (ha)= 0.22 Curve Number (CN)= 87.0
|ID= 1 DT=10.0 min | Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.17

Unit Hyd Qpeak (cms)= 0.049

PEAK FLOW (cms)= 0.048 (i)

Post-Development_Major_System

TIME TO PEAK (hrs)= 2.333
RUNOFF VOLUME (mm)= 44.599
TOTAL RAINFALL (mm)= 76.555
RUNOFF COEFFICIENT = 0.583

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB	
STANDHYD (0203)	Area (ha)= 0.22
ID= 1 DT= 5.0 min	Total Imp(%)= 20.00 Dir. Conn.(%)= 1.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.04	0.18
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	38.30	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.68	1.583	7.02	3.083	8.31	4.58	3.68
0.167	2.68	1.667	7.02	3.167	8.31	4.67	3.68
0.250	2.86	1.750	8.94	3.250	7.20	4.75	3.49
0.333	2.86	1.833	8.94	3.333	7.20	4.83	3.49
0.417	3.07	1.917	12.71	3.417	6.37	4.92	3.31
0.500	3.07	2.000	12.71	3.500	6.37	5.00	3.31
0.583	3.31	2.083	25.08	3.583	5.74	5.08	3.16
0.667	3.31	2.167	25.08	3.667	5.74	5.17	3.16
0.750	3.61	2.250	224.32	3.750	5.23	5.25	3.02
0.833	3.61	2.333	224.32	3.833	5.23	5.33	3.02
0.917	3.97	2.417	29.46	3.917	4.81	5.42	2.89
1.000	3.97	2.500	29.45	4.000	4.81	5.50	2.89
1.083	4.43	2.583	17.01	4.083	4.46	5.58	2.77
1.167	4.43	2.667	17.01	4.167	4.46	5.67	2.77
1.250	5.02	2.750	12.39	4.250	4.16	5.75	2.67
1.333	5.02	2.833	12.39	4.333	4.16	5.83	2.67
1.417	5.84	2.917	9.90	4.417	3.91	5.92	2.57
1.500	5.84	3.000	9.90	4.500	3.90	6.00	2.57

Max.Eff.Inten.(mm/hr)=		224.32	197.50
over (min)		5.00	10.00
Storage Coeff. (min)=		1.04 (ii)	6.42 (ii)
Unit Hyd. Tpeak (min)=		5.00	10.00

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                              Post-Development_Major_System
      Unit Hyd. peak  (cms)=       0.34         0.14
                                                                  *TOTALS*
      PEAK FLOW       (cms)=       0.00         0.07           0.067 (iii)
      TIME TO PEAK    (hrs)=       2.33         2.42            2.42
      RUNOFF VOLUME    (mm)=      75.56        50.96           51.19
      TOTAL RAINFALL   (mm)=      76.56        76.56           76.56
      RUNOFF COEFFICIENT   =       0.99         0.67            0.67

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
***** WARNING:FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20%
               YOU SHOULD CONSIDER SPLITTING THE AREA.

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  87.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  1003)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0203):     0.22   0.067     2.42    51.19
      + ID2= 2 (  0215):     0.22   0.048     2.33    44.60
        ================================================
        ID = 3 (  1003):     0.44   0.111     2.33    47.89

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| CALIB            |
| NASHYD   (  0216)|   Area     (ha)=   0.12   Curve Number   (CN)= 87.0
|ID= 1 DT=10.0 min |   Ia       (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.17

     Unit Hyd Qpeak  (cms)=   0.026

     PEAK FLOW       (cms)=   0.025 (i)
     TIME TO PEAK    (hrs)=   2.333
     RUNOFF VOLUME    (mm)=  44.599
     TOTAL RAINFALL   (mm)=  76.555
     RUNOFF COEFFICIENT   =   0.583

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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Post-Development_Major_System

CALIB	
STANDHYD (0206)	Area (ha)= 0.12
ID= 1 DT= 5.0 min	Total Imp(%)= 20.00 Dir. Conn.(%)= 1.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.02	0.09
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	27.69	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.68	1.583	7.02	3.083	8.31	4.58	3.68
0.167	2.68	1.667	7.02	3.167	8.31	4.67	3.68
0.250	2.86	1.750	8.94	3.250	7.20	4.75	3.49
0.333	2.86	1.833	8.94	3.333	7.20	4.83	3.49
0.417	3.07	1.917	12.71	3.417	6.37	4.92	3.31
0.500	3.07	2.000	12.71	3.500	6.37	5.00	3.31
0.583	3.31	2.083	25.08	3.583	5.74	5.08	3.16
0.667	3.31	2.167	25.08	3.667	5.74	5.17	3.16
0.750	3.61	2.250	224.32	3.750	5.23	5.25	3.02
0.833	3.61	2.333	224.32	3.833	5.23	5.33	3.02
0.917	3.97	2.417	29.46	3.917	4.81	5.42	2.89
1.000	3.97	2.500	29.45	4.000	4.81	5.50	2.89
1.083	4.43	2.583	17.01	4.083	4.46	5.58	2.77
1.167	4.43	2.667	17.01	4.167	4.46	5.67	2.77
1.250	5.02	2.750	12.39	4.250	4.16	5.75	2.67
1.333	5.02	2.833	12.39	4.333	4.16	5.83	2.67
1.417	5.84	2.917	9.90	4.417	3.91	5.92	2.57
1.500	5.84	3.000	9.90	4.500	3.90	6.00	2.57

Max.Eff.Inten.(mm/hr)=		224.32	197.50	
over (min)		5.00	10.00	
Storage Coeff. (min)=		0.86 (ii)	6.23 (ii)	
Unit Hyd. Tpeak (min)=		5.00	10.00	
Unit Hyd. peak (cms)=		0.34	0.15	
				TOTALS
PEAK FLOW	(cms)=	0.00	0.04	0.035 (iii)
TIME TO PEAK	(hrs)=	2.33	2.42	2.42
RUNOFF VOLUME	(mm)=	75.56	50.96	51.18
TOTAL RAINFALL	(mm)=	76.56	76.56	76.56
RUNOFF COEFFICIENT	=	0.99	0.67	0.67

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

Post-Development_Major_System

***** WARNING:FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20%
YOU SHOULD CONSIDER SPLITTING THE AREA.

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (1001)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
	ID1= 1 (0206):	0.12	0.035	2.42	51.18
	+ ID2= 2 (0216):	0.12	0.025	2.33	44.60
	ID = 3 (1001):	0.23	0.058	2.33	47.89

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB		
STANDHYD (0204)	Area (ha)=	0.18
ID= 1 DT= 5.0 min	Total Imp(%)=	85.00 Dir. Conn.(%)= 85.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.15	0.03
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	34.64	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.68	1.583	7.02	3.083	8.31	4.58	3.68
0.167	2.68	1.667	7.02	3.167	8.31	4.67	3.68
0.250	2.86	1.750	8.94	3.250	7.20	4.75	3.49
0.333	2.86	1.833	8.94	3.333	7.20	4.83	3.49
0.417	3.07	1.917	12.71	3.417	6.37	4.92	3.31
0.500	3.07	2.000	12.71	3.500	6.37	5.00	3.31
0.583	3.31	2.083	25.08	3.583	5.74	5.08	3.16
0.667	3.31	2.167	25.08	3.667	5.74	5.17	3.16
0.750	3.61	2.250	224.32	3.750	5.23	5.25	3.02

Post-Development_Major_System

0.833	3.61	2.333	224.32	3.833	5.23	5.33	3.02
0.917	3.97	2.417	29.46	3.917	4.81	5.42	2.89
1.000	3.97	2.500	29.45	4.000	4.81	5.50	2.89
1.083	4.43	2.583	17.01	4.083	4.46	5.58	2.77
1.167	4.43	2.667	17.01	4.167	4.46	5.67	2.77
1.250	5.02	2.750	12.39	4.250	4.16	5.75	2.67
1.333	5.02	2.833	12.39	4.333	4.16	5.83	2.67
1.417	5.84	2.917	9.90	4.417	3.91	5.92	2.57
1.500	5.84	3.000	9.90	4.500	3.90	6.00	2.57

			TOTALS
Max.Eff.Inten.(mm/hr)=	224.32	144.73	
over (min)	5.00	5.00	
Storage Coeff. (min)=	0.98 (ii)	3.53 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.34	0.26	
PEAK FLOW (cms)=	0.10	0.01	0.107 (iii)
TIME TO PEAK (hrs)=	2.33	2.33	2.33
RUNOFF VOLUME (mm)=	75.56	46.76	71.22
TOTAL RAINFALL (mm)=	76.56	76.56	76.56
RUNOFF COEFFICIENT =	0.99	0.61	0.93

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(4004)	OVERFLOW IS OFF			
IN= 2---> OUT= 1				
DT= 5.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0007	0.0220	0.0085

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0204)	0.180	0.107	2.33	71.22
OUTFLOW: ID= 1 (4004)	0.180	0.019	2.42	66.86

PEAK FLOW REDUCTION [Qout/Qin](%)= 17.74
TIME SHIFT OF PEAK FLOW (min)= 5.00
MAXIMUM STORAGE USED (ha.m.)= 0.0074

Post-Development_Major_System

ADD HYD (1002)		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3	ID1= 1 (1001):	0.23	0.058	2.33	47.89
	+ ID2= 2 (4004):	0.18	0.019	2.42	66.86
	ID = 3 (1002):	0.41	0.076	2.42	56.22

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (1004)		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3	ID1= 1 (1002):	0.41	0.076	2.42	56.22
	+ ID2= 2 (1003):	0.44	0.111	2.33	47.89
	ID = 3 (1004):	0.85	0.185	2.42	51.91

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0205)	Area (ha)= 0.97
ID= 1 DT= 5.0 min	Total Imp(%)= 85.00 Dir. Conn.(%)= 85.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.82	0.15
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	80.42	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.68	1.583	7.02	3.083	8.31	4.58	3.68
0.167	2.68	1.667	7.02	3.167	8.31	4.67	3.68
0.250	2.86	1.750	8.94	3.250	7.20	4.75	3.49
0.333	2.86	1.833	8.94	3.333	7.20	4.83	3.49
0.417	3.07	1.917	12.71	3.417	6.37	4.92	3.31
0.500	3.07	2.000	12.71	3.500	6.37	5.00	3.31
0.583	3.31	2.083	25.08	3.583	5.74	5.08	3.16
0.667	3.31	2.167	25.08	3.667	5.74	5.17	3.16

Post-Development_Major_System

0.750	3.61	2.250	224.32	3.750	5.23	5.25	3.02
0.833	3.61	2.333	224.32	3.833	5.23	5.33	3.02
0.917	3.97	2.417	29.46	3.917	4.81	5.42	2.89
1.000	3.97	2.500	29.45	4.000	4.81	5.50	2.89
1.083	4.43	2.583	17.01	4.083	4.46	5.58	2.77
1.167	4.43	2.667	17.01	4.167	4.46	5.67	2.77
1.250	5.02	2.750	12.39	4.250	4.16	5.75	2.67
1.333	5.02	2.833	12.39	4.333	4.16	5.83	2.67
1.417	5.84	2.917	9.90	4.417	3.91	5.92	2.57
1.500	5.84	3.000	9.90	4.500	3.90	6.00	2.57

Max.Eff.Inten.(mm/hr)=	224.32	144.73	
over (min)	5.00	5.00	
Storage Coeff. (min)=	1.62 (ii)	4.18 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.32	0.24	
			TOTALS
PEAK FLOW (cms)=	0.51	0.06	0.571 (iii)
TIME TO PEAK (hrs)=	2.33	2.33	2.33
RUNOFF VOLUME (mm)=	75.56	46.76	71.23
TOTAL RAINFALL (mm)=	76.56	76.56	76.56
RUNOFF COEFFICIENT =	0.99	0.61	0.93

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(4005)		OVERFLOW IS OFF			
IN= 2---> OUT= 1					
DT= 5.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)	
	0.0000	0.0000	0.1190	0.0415	

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0205)	0.970	0.571	2.33	71.23
OUTFLOW: ID= 1 (4005)	0.970	0.105	2.42	71.15

PEAK FLOW REDUCTION [Qout/Qin](%)= 18.38
TIME SHIFT OF PEAK FLOW (min)= 5.00
MAXIMUM STORAGE USED (ha.m.)= 0.0367

Post-Development_Major_System

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| CALIB            |
| STANDHYD (  0202)|   Area    (ha)=   0.56
|ID= 1 DT= 5.0 min |   Total Imp(%)=  85.00   Dir. Conn.(%)=  85.00
--------------------
                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.48         0.08
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      61.10        40.00
     Mannings n             =     0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.
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---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.68	1.583	7.02	3.083	8.31	4.58	3.68
0.167	2.68	1.667	7.02	3.167	8.31	4.67	3.68
0.250	2.86	1.750	8.94	3.250	7.20	4.75	3.49
0.333	2.86	1.833	8.94	3.333	7.20	4.83	3.49
0.417	3.07	1.917	12.71	3.417	6.37	4.92	3.31
0.500	3.07	2.000	12.71	3.500	6.37	5.00	3.31
0.583	3.31	2.083	25.08	3.583	5.74	5.08	3.16
0.667	3.31	2.167	25.08	3.667	5.74	5.17	3.16
0.750	3.61	2.250	224.32	3.750	5.23	5.25	3.02
0.833	3.61	2.333	224.32	3.833	5.23	5.33	3.02
0.917	3.97	2.417	29.46	3.917	4.81	5.42	2.89
1.000	3.97	2.500	29.45	4.000	4.81	5.50	2.89
1.083	4.43	2.583	17.01	4.083	4.46	5.58	2.77
1.167	4.43	2.667	17.01	4.167	4.46	5.67	2.77
1.250	5.02	2.750	12.39	4.250	4.16	5.75	2.67
1.333	5.02	2.833	12.39	4.333	4.16	5.83	2.67
1.417	5.84	2.917	9.90	4.417	3.91	5.92	2.57
1.500	5.84	3.000	9.90	4.500	3.90	6.00	2.57

Max.Eff.Inten.(mm/hr)=	224.32	144.73	
over (min)	5.00	5.00	
Storage Coeff. (min)=	1.38 (ii)	3.93 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.33	0.24	
			TOTALS
PEAK FLOW (cms)=	0.30	0.03	0.330 (iii)
TIME TO PEAK (hrs)=	2.33	2.33	2.33
RUNOFF VOLUME (mm)=	75.56	46.76	71.23
TOTAL RAINFALL (mm)=	76.56	76.56	76.56
RUNOFF COEFFICIENT =	0.99	0.61	0.93

Post-Development_Major_System

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

| RESERVOIR(4002)| OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT= 5.0 min | OUTFLOW STORAGE | OUTFLOW STORAGE
(cms) (ha.m.) | (cms) (ha.m.)
0.0000 0.0000 | 0.0690 0.0240

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
INFLOW : ID= 2 (0202)	0.560	0.330	2.33	71.23
OUTFLOW: ID= 1 (4002)	0.560	0.061	2.42	71.09

PEAK FLOW REDUCTION [Qout/Qin](%)= 18.45
TIME SHIFT OF PEAK FLOW (min)= 5.00
MAXIMUM STORAGE USED (ha.m.)= 0.0212

CALIB	
STANDHYD (0212)	Area (ha)= 0.75
ID= 1 DT= 5.0 min	Total Imp(%)= 75.00 Dir. Conn.(%)= 75.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.56	0.19
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	70.71	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.68	1.583	7.02	3.083	8.31	4.58	3.68
0.167	2.68	1.667	7.02	3.167	8.31	4.67	3.68
0.250	2.86	1.750	8.94	3.250	7.20	4.75	3.49
0.333	2.86	1.833	8.94	3.333	7.20	4.83	3.49
0.417	3.07	1.917	12.71	3.417	6.37	4.92	3.31

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0.500	3.07	2.000	12.71	3.500	6.37	5.00	3.31
0.583	3.31	2.083	25.08	3.583	5.74	5.08	3.16
0.667	3.31	2.167	25.08	3.667	5.74	5.17	3.16
0.750	3.61	2.250	224.32	3.750	5.23	5.25	3.02
0.833	3.61	2.333	224.32	3.833	5.23	5.33	3.02
0.917	3.97	2.417	29.46	3.917	4.81	5.42	2.89
1.000	3.97	2.500	29.45	4.000	4.81	5.50	2.89
1.083	4.43	2.583	17.01	4.083	4.46	5.58	2.77
1.167	4.43	2.667	17.01	4.167	4.46	5.67	2.77
1.250	5.02	2.750	12.39	4.250	4.16	5.75	2.67
1.333	5.02	2.833	12.39	4.333	4.16	5.83	2.67
1.417	5.84	2.917	9.90	4.417	3.91	5.92	2.57
1.500	5.84	3.000	9.90	4.500	3.90	6.00	2.57

Max.Eff.Inten.(mm/hr)=	224.32	144.73	
over (min)	5.00	5.00	
Storage Coeff. (min)=	1.50 (ii)	4.79 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.33	0.22	
			TOTALS
PEAK FLOW (cms)=	0.35	0.07	0.422 (iii)
TIME TO PEAK (hrs)=	2.33	2.33	2.33
RUNOFF VOLUME (mm)=	75.56	46.76	68.35
TOTAL RAINFALL (mm)=	76.56	76.56	76.56
RUNOFF COEFFICIENT =	0.99	0.61	0.89

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB			
STANDHYD (0209)	Area (ha)=	0.02	
ID= 1 DT= 5.0 min	Total Imp(%)=	75.00	Dir. Conn.(%)= 75.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.01	0.00
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	11.55	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

Post-Development_Major_System

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.68	1.583	7.02	3.083	8.31	4.58	3.68
0.167	2.68	1.667	7.02	3.167	8.31	4.67	3.68
0.250	2.86	1.750	8.94	3.250	7.20	4.75	3.49
0.333	2.86	1.833	8.94	3.333	7.20	4.83	3.49
0.417	3.07	1.917	12.71	3.417	6.37	4.92	3.31
0.500	3.07	2.000	12.71	3.500	6.37	5.00	3.31
0.583	3.31	2.083	25.08	3.583	5.74	5.08	3.16
0.667	3.31	2.167	25.08	3.667	5.74	5.17	3.16
0.750	3.61	2.250	224.32	3.750	5.23	5.25	3.02
0.833	3.61	2.333	224.32	3.833	5.23	5.33	3.02
0.917	3.97	2.417	29.46	3.917	4.81	5.42	2.89
1.000	3.97	2.500	29.45	4.000	4.81	5.50	2.89
1.083	4.43	2.583	17.01	4.083	4.46	5.58	2.77
1.167	4.43	2.667	17.01	4.167	4.46	5.67	2.77
1.250	5.02	2.750	12.39	4.250	4.16	5.75	2.67
1.333	5.02	2.833	12.39	4.333	4.16	5.83	2.67
1.417	5.84	2.917	9.90	4.417	3.91	5.92	2.57
1.500	5.84	3.000	9.90	4.500	3.90	6.00	2.57

			TOTALS
Max.Eff.Inten.(mm/hr)=	224.32	143.04	
over (min)	5.00	5.00	
Storage Coeff. (min)=	0.51 (ii)	3.80 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.34	0.25	
PEAK FLOW (cms)=	0.01	0.00	0.011 (iii)
TIME TO PEAK (hrs)=	2.33	2.33	2.33
RUNOFF VOLUME (mm)=	75.56	46.99	68.40
TOTAL RAINFALL (mm)=	76.56	76.56	76.56
RUNOFF COEFFICIENT =	0.99	0.61	0.89

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 85.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB	
STANDHYD (0214)	Area (ha)= 0.08
ID= 1 DT= 5.0 min	Total Imp(%)= 75.00 Dir. Conn.(%)= 75.00

Post-Development_Major_System

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.06	0.02
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	23.09	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.68	1.583	7.02	3.083	8.31	4.58	3.68
0.167	2.68	1.667	7.02	3.167	8.31	4.67	3.68
0.250	2.86	1.750	8.94	3.250	7.20	4.75	3.49
0.333	2.86	1.833	8.94	3.333	7.20	4.83	3.49
0.417	3.07	1.917	12.71	3.417	6.37	4.92	3.31
0.500	3.07	2.000	12.71	3.500	6.37	5.00	3.31
0.583	3.31	2.083	25.08	3.583	5.74	5.08	3.16
0.667	3.31	2.167	25.08	3.667	5.74	5.17	3.16
0.750	3.61	2.250	224.32	3.750	5.23	5.25	3.02
0.833	3.61	2.333	224.32	3.833	5.23	5.33	3.02
0.917	3.97	2.417	29.46	3.917	4.81	5.42	2.89
1.000	3.97	2.500	29.45	4.000	4.81	5.50	2.89
1.083	4.43	2.583	17.01	4.083	4.46	5.58	2.77
1.167	4.43	2.667	17.01	4.167	4.46	5.67	2.77
1.250	5.02	2.750	12.39	4.250	4.16	5.75	2.67
1.333	5.02	2.833	12.39	4.333	4.16	5.83	2.67
1.417	5.84	2.917	9.90	4.417	3.91	5.92	2.57
1.500	5.84	3.000	9.90	4.500	3.90	6.00	2.57

Max.Eff.Inten.(mm/hr)=		224.32	143.04	
over (min)		5.00	5.00	
Storage Coeff. (min)=		0.77 (ii)	4.06 (ii)	
Unit Hyd. Tpeak (min)=		5.00	5.00	
Unit Hyd. peak (cms)=		0.34	0.24	
				TOTALS
PEAK FLOW	(cms)=	0.04	0.01	0.045 (iii)
TIME TO PEAK	(hrs)=	2.33	2.33	2.33
RUNOFF VOLUME	(mm)=	75.56	46.99	68.39
TOTAL RAINFALL	(mm)=	76.56	76.56	76.56
RUNOFF COEFFICIENT	=	0.99	0.61	0.89

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 85.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL



THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (1005)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
	ID1= 1 (0209):	0.02	0.011	2.33	68.40
	+ ID2= 2 (0214):	0.08	0.045	2.33	68.39
	ID = 3 (1005):	0.10	0.057	2.33	68.40

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

DUHYD (3003)					
Inlet Cap.= 0.014					
#of Inlets= 1					
Total(cms)= 0.0		AREA	QPEAK	TPEAK	R.V.
		(ha)	(cms)	(hrs)	(mm)
TOTAL HYD.(ID= 1):		0.10	0.06	2.33	68.40
MAJOR SYS.(ID= 2):		0.04	0.04	2.33	68.40
MINOR SYS.(ID= 3):		0.06	0.01	2.25	68.40

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB			
STANDHYD (6005)	Area (ha)= 0.08		
ID= 1 DT= 5.0 min	Total Imp(%)= 75.00	Dir. Conn.(%)= 75.00	
		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.06	0.02
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	23.09	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.68	1.583	7.02	3.083	8.31	4.58	3.68

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0.167	2.68	1.667	7.02	3.167	8.31	4.67	3.68
0.250	2.86	1.750	8.94	3.250	7.20	4.75	3.49
0.333	2.86	1.833	8.94	3.333	7.20	4.83	3.49
0.417	3.07	1.917	12.71	3.417	6.37	4.92	3.31
0.500	3.07	2.000	12.71	3.500	6.37	5.00	3.31
0.583	3.31	2.083	25.08	3.583	5.74	5.08	3.16
0.667	3.31	2.167	25.08	3.667	5.74	5.17	3.16
0.750	3.61	2.250	224.32	3.750	5.23	5.25	3.02
0.833	3.61	2.333	224.32	3.833	5.23	5.33	3.02
0.917	3.97	2.417	29.46	3.917	4.81	5.42	2.89
1.000	3.97	2.500	29.45	4.000	4.81	5.50	2.89
1.083	4.43	2.583	17.01	4.083	4.46	5.58	2.77
1.167	4.43	2.667	17.01	4.167	4.46	5.67	2.77
1.250	5.02	2.750	12.39	4.250	4.16	5.75	2.67
1.333	5.02	2.833	12.39	4.333	4.16	5.83	2.67
1.417	5.84	2.917	9.90	4.417	3.91	5.92	2.57
1.500	5.84	3.000	9.90	4.500	3.90	6.00	2.57

Max.Eff.Inten.(mm/hr)=	224.32	144.73	
over (min)	5.00	5.00	
Storage Coeff. (min)=	0.77 (ii)	4.06 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.34	0.24	
			TOTALS
PEAK FLOW (cms)=	0.04	0.01	0.045 (iii)
TIME TO PEAK (hrs)=	2.33	2.33	2.33
RUNOFF VOLUME (mm)=	75.56	46.76	68.34
TOTAL RAINFALL (mm)=	76.56	76.56	76.56
RUNOFF COEFFICIENT =	0.99	0.61	0.89

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

DUHYD (3002)
Inlet Cap.= 0.012
#of Inlets= 1
Total(cms)= 0.0

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
TOTAL HYD.(ID= 1):	0.08	0.05	2.33	68.34
MAJOR SYS.(ID= 2):	0.03	0.03	2.33	68.34
MINOR SYS.(ID= 3):	0.05	0.01	2.25	68.34



NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (5008)					
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.	
	(ha)	(cms)	(hrs)	(mm)	
ID1= 1 (1004):	0.85	0.185	2.42	51.91	
+ ID2= 2 (0212):	0.75	0.422	2.33	68.35	
ID = 3 (5008):	1.60	0.606	2.33	59.62	

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (5008)					
3 + 2 = 1	AREA	QPEAK	TPEAK	R.V.	
	(ha)	(cms)	(hrs)	(mm)	
ID1= 3 (5008):	1.60	0.606	2.33	59.62	
+ ID2= 2 (3002):	0.05	0.012	2.25	68.34	
ID = 1 (5008):	1.65	0.618	2.33	59.89	

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (5008)					
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.	
	(ha)	(cms)	(hrs)	(mm)	
ID1= 1 (5008):	1.65	0.618	2.33	59.89	
+ ID2= 2 (3003):	0.06	0.014	2.25	68.40	
ID = 3 (5008):	1.72	0.632	2.33	60.21	

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (5008)					
3 + 2 = 1	AREA	QPEAK	TPEAK	R.V.	
	(ha)	(cms)	(hrs)	(mm)	
ID1= 3 (5008):	1.72	0.632	2.33	60.21	
+ ID2= 2 (4002):	0.56	0.061	2.42	71.09	
ID = 1 (5008):	2.28	0.681	2.33	62.88	




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     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
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| ADD HYD  (  5008)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  5008):     2.28   0.681     2.33    62.88
      + ID2= 2 (  4005):     0.97   0.105     2.42    71.15
        ================================================
        ID = 3 (  5008):     3.25   0.764     2.33    65.35

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  4007)|     OVERFLOW IS ON
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE    |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)    |   (cms)     (ha.m.)
                          0.0000     0.0000    |   0.3132      0.0397

                                  AREA     QPEAK     TPEAK       R.V.
                                  (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  5008)      3.246      0.764      2.33      65.35
   OUTFLOW: ID= 1 (  4007)      3.192      0.313      2.50      65.38
   OVERFLOW:ID= 3 (  0003)      0.054      0.064      2.50      65.38

                  TOTAL NUMBER OF SIMULATION OVERFLOW  =     0
                  CUMULATIVE TIME OF OVERFLOW  (HOURS) =  0.00
                  PERCENTAGE OF TIME OVERFLOWING   (%) =  0.00

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 40.97
                  TIME SHIFT OF PEAK FLOW         (min)= 10.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0397

--------------------------------------------------------------------------------
--------------------
| SHIFT HYD(  3000)|
| IN= 2---> OUT= 1 |
| SHIFT=  1.0 min  |      AREA     QPEAK     TPEAK      R.V.
--------------------      (ha)     (cms)     (hrs)      (mm)
          ID= 2 (  4007):    0.05     0.06      2.50     65.38
    SHIFT ID= 1 (  3000):    0.05     0.06      2.50     65.38


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Post-Development_Major_System

ADD HYD (6003)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
ID1= 1 (3000):		0.05	0.064	2.50	65.38
+ ID2= 2 (4007):		3.19	0.313	2.50	65.38
ID = 3 (6003):		3.25	0.377	2.50	65.38

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0211) | ID= 1 DT= 5.0 min	Area (ha)= 0.32 Total Imp(%)= 75.00 Dir. Conn.(%)= 75.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.24	0.08
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	46.19	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.68	1.583	7.02	3.083	8.31	4.58	3.68
0.167	2.68	1.667	7.02	3.167	8.31	4.67	3.68
0.250	2.86	1.750	8.94	3.250	7.20	4.75	3.49
0.333	2.86	1.833	8.94	3.333	7.20	4.83	3.49
0.417	3.07	1.917	12.71	3.417	6.37	4.92	3.31
0.500	3.07	2.000	12.71	3.500	6.37	5.00	3.31
0.583	3.31	2.083	25.08	3.583	5.74	5.08	3.16
0.667	3.31	2.167	25.08	3.667	5.74	5.17	3.16
0.750	3.61	2.250	224.32	3.750	5.23	5.25	3.02
0.833	3.61	2.333	224.32	3.833	5.23	5.33	3.02
0.917	3.97	2.417	29.46	3.917	4.81	5.42	2.89
1.000	3.97	2.500	29.45	4.000	4.81	5.50	2.89
1.083	4.43	2.583	17.01	4.083	4.46	5.58	2.77
1.167	4.43	2.667	17.01	4.167	4.46	5.67	2.77
1.250	5.02	2.750	12.39	4.250	4.16	5.75	2.67
1.333	5.02	2.833	12.39	4.333	4.16	5.83	2.67
1.417	5.84	2.917	9.90	4.417	3.91	5.92	2.57
1.500	5.84	3.000	9.90	4.500	3.90	6.00	2.57

Max.Eff.Inten.(mm/hr)=		224.32	144.73
over (min)		5.00	5.00

Post-Development_Major_System

Storage Coeff. (min)=	1.16 (ii)	4.46 (ii)		
Unit Hyd. Tpeak (min)=	5.00	5.00		
Unit Hyd. peak (cms)=	0.34	0.23		
			TOTALS	
PEAK FLOW (cms)=	0.15	0.03	0.181 (iii)	
TIME TO PEAK (hrs)=	2.33	2.33	2.33	
RUNOFF VOLUME (mm)=	75.56	46.76	68.35	
TOTAL RAINFALL (mm)=	76.56	76.56	76.56	
RUNOFF COEFFICIENT =	0.99	0.61	0.89	

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB	
STANDHYD (0201)	Area (ha)= 0.80
ID= 1 DT= 5.0 min	Total Imp(%)= 85.00 Dir. Conn.(%)= 85.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.68	0.12
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	73.03	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.68	1.583	7.02	3.083	8.31	4.58	3.68
0.167	2.68	1.667	7.02	3.167	8.31	4.67	3.68
0.250	2.86	1.750	8.94	3.250	7.20	4.75	3.49
0.333	2.86	1.833	8.94	3.333	7.20	4.83	3.49
0.417	3.07	1.917	12.71	3.417	6.37	4.92	3.31
0.500	3.07	2.000	12.71	3.500	6.37	5.00	3.31
0.583	3.31	2.083	25.08	3.583	5.74	5.08	3.16
0.667	3.31	2.167	25.08	3.667	5.74	5.17	3.16
0.750	3.61	2.250	224.32	3.750	5.23	5.25	3.02
0.833	3.61	2.333	224.32	3.833	5.23	5.33	3.02
0.917	3.97	2.417	29.46	3.917	4.81	5.42	2.89
1.000	3.97	2.500	29.45	4.000	4.81	5.50	2.89



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                              Post-Development_Major_System
                    1.083    4.43 | 2.583   17.01 | 4.083    4.46 |  5.58    2.77
                    1.167    4.43 | 2.667   17.01 | 4.167    4.46 |  5.67    2.77
                    1.250    5.02 | 2.750   12.39 | 4.250    4.16 |  5.75    2.67
                    1.333    5.02 | 2.833   12.39 | 4.333    4.16 |  5.83    2.67
                    1.417    5.84 | 2.917    9.90 | 4.417    3.91 |  5.92    2.57
                    1.500    5.84 | 3.000    9.90 | 4.500    3.90 |  6.00    2.57

     Max.Eff.Inten.(mm/hr)=     224.32       144.73
               over (min)         5.00         5.00
     Storage Coeff.  (min)=       1.53 (ii)    4.08 (ii)
     Unit Hyd. Tpeak (min)=       5.00         5.00
     Unit Hyd. peak  (cms)=       0.33         0.24
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.42         0.05          0.471 (iii)
     TIME TO PEAK    (hrs)=       2.33         2.33           2.33
     RUNOFF VOLUME    (mm)=      75.56        46.76          71.23
     TOTAL RAINFALL   (mm)=      76.56        76.56          76.56
     RUNOFF COEFFICIENT   =       0.99         0.61           0.93

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  87.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  4001)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE    |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)    |   (cms)     (ha.m.)
                          0.0000     0.0000    |   0.0980      0.0345

                                  AREA     QPEAK     TPEAK       R.V.
                                  (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0201)      0.800      0.471      2.33       71.23
   OUTFLOW: ID= 1 (  4001)      0.800      0.086      2.42       71.13

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 18.25
                  TIME SHIFT OF PEAK FLOW         (min)=  5.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0303

--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0210)|   Area    (ha)=   0.02
|ID= 1 DT= 5.0 min |   Total Imp(%)=  75.00   Dir. Conn.(%)=  75.00
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Post-Development_Major_System

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.01	0.00
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	11.55	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.68	1.583	7.02	3.083	8.31	4.58	3.68
0.167	2.68	1.667	7.02	3.167	8.31	4.67	3.68
0.250	2.86	1.750	8.94	3.250	7.20	4.75	3.49
0.333	2.86	1.833	8.94	3.333	7.20	4.83	3.49
0.417	3.07	1.917	12.71	3.417	6.37	4.92	3.31
0.500	3.07	2.000	12.71	3.500	6.37	5.00	3.31
0.583	3.31	2.083	25.08	3.583	5.74	5.08	3.16
0.667	3.31	2.167	25.08	3.667	5.74	5.17	3.16
0.750	3.61	2.250	224.32	3.750	5.23	5.25	3.02
0.833	3.61	2.333	224.32	3.833	5.23	5.33	3.02
0.917	3.97	2.417	29.46	3.917	4.81	5.42	2.89
1.000	3.97	2.500	29.45	4.000	4.81	5.50	2.89
1.083	4.43	2.583	17.01	4.083	4.46	5.58	2.77
1.167	4.43	2.667	17.01	4.167	4.46	5.67	2.77
1.250	5.02	2.750	12.39	4.250	4.16	5.75	2.67
1.333	5.02	2.833	12.39	4.333	4.16	5.83	2.67
1.417	5.84	2.917	9.90	4.417	3.91	5.92	2.57
1.500	5.84	3.000	9.90	4.500	3.90	6.00	2.57

Max.Eff.Inten.(mm/hr)=		224.32	143.04	
over (min)		5.00	5.00	
Storage Coeff. (min)=		0.51 (ii)	3.80 (ii)	
Unit Hyd. Tpeak (min)=		5.00	5.00	
Unit Hyd. peak (cms)=		0.34	0.25	
				TOTALS
PEAK FLOW	(cms)=	0.01	0.00	0.011 (iii)
TIME TO PEAK	(hrs)=	2.33	2.33	2.33
RUNOFF VOLUME	(mm)=	75.56	46.99	68.40
TOTAL RAINFALL	(mm)=	76.56	76.56	76.56
RUNOFF COEFFICIENT	=	0.99	0.61	0.89

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 85.0 Ia = Dep. Storage (Above)

Post-Development_Major_System

(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB	
STANDHYD (0213)	Area (ha)= 0.11
ID= 1 DT= 5.0 min	Total Imp(%)= 75.00 Dir. Conn.(%)= 75.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.08	0.03
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	27.08	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.68	1.583	7.02	3.083	8.31	4.58	3.68
0.167	2.68	1.667	7.02	3.167	8.31	4.67	3.68
0.250	2.86	1.750	8.94	3.250	7.20	4.75	3.49
0.333	2.86	1.833	8.94	3.333	7.20	4.83	3.49
0.417	3.07	1.917	12.71	3.417	6.37	4.92	3.31
0.500	3.07	2.000	12.71	3.500	6.37	5.00	3.31
0.583	3.31	2.083	25.08	3.583	5.74	5.08	3.16
0.667	3.31	2.167	25.08	3.667	5.74	5.17	3.16
0.750	3.61	2.250	224.32	3.750	5.23	5.25	3.02
0.833	3.61	2.333	224.32	3.833	5.23	5.33	3.02
0.917	3.97	2.417	29.46	3.917	4.81	5.42	2.89
1.000	3.97	2.500	29.45	4.000	4.81	5.50	2.89
1.083	4.43	2.583	17.01	4.083	4.46	5.58	2.77
1.167	4.43	2.667	17.01	4.167	4.46	5.67	2.77
1.250	5.02	2.750	12.39	4.250	4.16	5.75	2.67
1.333	5.02	2.833	12.39	4.333	4.16	5.83	2.67
1.417	5.84	2.917	9.90	4.417	3.91	5.92	2.57
1.500	5.84	3.000	9.90	4.500	3.90	6.00	2.57

Max.Eff.Inten.(mm/hr)=		224.32	143.04	
over (min)		5.00	5.00	
Storage Coeff. (min)=		0.84 (ii)	4.14 (ii)	
Unit Hyd. Tpeak (min)=		5.00	5.00	
Unit Hyd. peak (cms)=		0.34	0.24	
				TOTALS
PEAK FLOW	(cms)=	0.05	0.01	0.062 (iii)

```
                              Post-Development_Major_System
      TIME TO PEAK     (hrs)=       2.33         2.33          2.33
      RUNOFF VOLUME    (mm)=       75.56        46.99         68.39
      TOTAL RAINFALL   (mm)=       76.56        76.56         76.56
      RUNOFF COEFFICIENT   =        0.99         0.61          0.89

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  85.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
| ADD HYD  (  1006)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0210):     0.02   0.011     2.33    68.40
      + ID2= 2 (  0213):     0.11   0.062     2.33    68.39
        ================================================
        ID = 3 (  1006):     0.13   0.074     2.33    68.39

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| DUHYD    (  3004)|
| Inlet Cap.= 0.019|
| #of Inlets=     1|
| Total(cms)=   0.0|      AREA     QPEAK     TPEAK    R.V.
--------------------      (ha)     (cms)     (hrs)    (mm)
     TOTAL HYD.(ID= 1):   0.13      0.07      2.33   68.39
     ================================================
     MAJOR SYS.(ID= 2):   0.05      0.05      2.33   68.39
     MINOR SYS.(ID= 3):   0.08      0.02      2.25   68.39

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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--------------------
| ADD HYD  (  1000)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0211):     0.32   0.181     2.33    68.35
      + ID2= 2 (  3004):     0.08   0.019     2.25    68.39
        ================================================
        ID = 3 (  1000):     0.40   0.200     2.33    68.36
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     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
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--------------------
| ADD HYD  (  1000)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  1000):     0.40   0.200     2.33    68.36
      + ID2= 2 (  4001):     0.80   0.086     2.42    71.13
        ================================================
        ID = 1 (  1000):     1.20   0.268     2.33    70.20

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  4006)|     OVERFLOW IS ON
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE    |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)    |   (cms)     (ha.m.)
                          0.0000     0.0000    |   0.1183      0.0131

                                  AREA     QPEAK     TPEAK       R.V.
                                  (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  1000)      1.204      0.268      2.33      70.20
   OUTFLOW: ID= 1 (  4006)      1.193      0.118      2.42      70.23
   OVERFLOW:ID= 3 (  0003)      0.011      0.016      2.42      70.23

                  TOTAL NUMBER OF SIMULATION OVERFLOW  =     0
                  CUMULATIVE TIME OF OVERFLOW  (HOURS) =  0.00
                  PERCENTAGE OF TIME OVERFLOWING   (%) =  0.00

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 44.07
                  TIME SHIFT OF PEAK FLOW         (min)=  5.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0131

--------------------------------------------------------------------------------
--------------------
| SHIFT HYD(  3001)|
| IN= 2---> OUT= 1 |
| SHIFT=  1.0 min  |      AREA     QPEAK     TPEAK      R.V.
--------------------      (ha)     (cms)     (hrs)      (mm)
          ID= 2 (  4006):    0.01     0.02      2.42     70.23
    SHIFT ID= 1 (  3001):    0.01     0.02      2.42     70.23


--------------------------------------------------------------------------------

--------------------
```

Post-Development_Major_System

```
| ADD HYD  (  6004)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  3001):     0.01   0.016     2.42    70.23
      + ID2= 2 (  4006):     1.19   0.118     2.42    70.23
        ====================================================
        ID = 3 (  6004):     1.20   0.134     2.42    70.23

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
```

```
--------------------
| ADD HYD  (  6001)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  3003):     0.04   0.043     2.33    68.40
      + ID2= 2 (  3004):     0.05   0.055     2.33    68.39
        ====================================================
        ID = 3 (  6001):     0.08   0.097     2.33    68.39

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
```

```
--------------------
| ADD HYD  (  6001)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  6001):     0.08   0.097     2.33    68.39
      + ID2= 2 (  6003):     3.25   0.377     2.50    65.38
        ====================================================
        ID = 1 (  6001):     3.33   0.377     2.50    65.46

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
```

```
--------------------
| ADD HYD  (  6001)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  6001):     3.33   0.377     2.50    65.46
      + ID2= 2 (  6004):     1.20   0.134     2.42    70.23
        ====================================================
        ID = 3 (  6001):     4.53   0.501     2.50    66.73

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
```

```
--------------------
| ADD HYD  (  6000)|
```

```
                                Post-Development_Major_System
|   1 +  2 =  3    |             AREA     QPEAK     TPEAK      R.V.
--------------------            (ha)     (cms)     (hrs)      (mm)
        ID1= 1 (  3002):      0.03    0.033      2.33     68.34
      + ID2= 2 (  6001):      4.53    0.501      2.50     66.73
        ====================================================
        ID = 3 (  6000):      4.56    0.501      2.50     66.74

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
------------------------------------------------------------------------------
==============================================================================
========================

       V    V   I    SSSSS  U   U    A    L              (v 6.2.2010)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat

  Output  filename:
C:\Users\ykoshenkov\AppData\Local\Civica\VH5\95aa6302-d561-466b-a85b-2e34c191f114\5
440959a-ebb9-46ad-9721-631751a12f2b\s
  Summary filename:
C:\Users\ykoshenkov\AppData\Local\Civica\VH5\95aa6302-d561-466b-a85b-2e34c191f114\5
440959a-ebb9-46ad-9721-631751a12f2b\s


DATE: 06-30-2022                          TIME: 05:05:54

USER:


COMMENTS: _____________________________________________________________
```

```
  **********************************************
  ** SIMULATION : 5-year storm                 **
  **********************************************

--------------------
| CHICAGO STORM    |    IDF curve parameters: A= 812.624
| Ptotal= 46.62 mm |                          B=   0.000
--------------------                          C=   0.790
                         used in:   INTENSITY =  A / (t + B)^C

                         Duration of storm  =  6.00 hrs
                         Storm time step    = 10.00 min
                         Time to peak ratio =  0.38
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.00	1.71	1.50	4.43	3.00	5.23	4.50	2.34
0.17	1.82	1.67	5.63	3.17	4.54	4.67	2.22
0.33	1.96	1.83	7.96	3.33	4.03	4.83	2.11
0.50	2.11	2.00	15.58	3.50	3.63	5.00	2.01
0.67	2.30	2.17	131.79	3.67	3.31	5.17	1.92
0.83	2.53	2.33	18.26	3.83	3.05	5.33	1.84
1.00	2.81	2.50	10.62	4.00	2.83	5.50	1.77
1.17	3.18	2.67	7.77	4.17	2.64	5.67	1.70
1.33	3.69	2.83	6.22	4.33	2.48	5.83	1.64

```
--------------------
| CALIB            |
| NASHYD   (  0215)|   Area    (ha)=   0.22   Curve Number   (CN)= 87.0
|ID= 1 DT=10.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.17

     Unit Hyd Qpeak  (cms)=   0.049

     PEAK FLOW       (cms)=   0.020 (i)
     TIME TO PEAK    (hrs)=   2.333
     RUNOFF VOLUME    (mm)=  20.763
     TOTAL RAINFALL   (mm)=  46.618
     RUNOFF COEFFICIENT   =   0.445

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------
| CALIB            |
```

Post-Development_Major_System

| STANDHYD (0203)| Area (ha)= 0.22
|ID= 1 DT= 5.0 min | Total Imp(%)= 20.00 Dir. Conn.(%)= 1.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.04	0.18
Dep. Storage (mm)=	1.00	5.00
Average Slope (%)=	1.00	2.00
Length (m)=	38.30	40.00
Mannings n =	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.71	1.583	4.43	3.083	5.23	4.58	2.34
0.167	1.71	1.667	4.43	3.167	5.23	4.67	2.34
0.250	1.82	1.750	5.63	3.250	4.54	4.75	2.22
0.333	1.82	1.833	5.63	3.333	4.54	4.83	2.22
0.417	1.96	1.917	7.96	3.417	4.03	4.92	2.11
0.500	1.96	2.000	7.96	3.500	4.03	5.00	2.11
0.583	2.11	2.083	15.58	3.583	3.63	5.08	2.01
0.667	2.11	2.167	15.58	3.667	3.63	5.17	2.01
0.750	2.30	2.250	131.79	3.750	3.31	5.25	1.92
0.833	2.30	2.333	131.79	3.833	3.31	5.33	1.92
0.917	2.53	2.417	18.26	3.917	3.05	5.42	1.84
1.000	2.53	2.500	18.26	4.000	3.05	5.50	1.84
1.083	2.81	2.583	10.62	4.083	2.83	5.58	1.77
1.167	2.81	2.667	10.62	4.167	2.83	5.67	1.77
1.250	3.18	2.750	7.77	4.250	2.64	5.75	1.70
1.333	3.18	2.833	7.77	4.333	2.64	5.83	1.70
1.417	3.69	2.917	6.22	4.417	2.48	5.92	1.64
1.500	3.69	3.000	6.22	4.500	2.48	6.00	1.64

			TOTALS
Max.Eff.Inten.(mm/hr)=	131.79	89.30	
over (min)	5.00	10.00	
Storage Coeff. (min)=	1.29 (ii)	8.67 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.33	0.12	
PEAK FLOW (cms)=	0.00	0.03	0.028 (iii)
TIME TO PEAK (hrs)=	2.33	2.42	2.42
RUNOFF VOLUME (mm)=	45.62	24.75	24.94
TOTAL RAINFALL (mm)=	46.62	46.62	46.62
RUNOFF COEFFICIENT =	0.98	0.53	0.53

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
***** WARNING:FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20%

Post-Development_Major_System
YOU SHOULD CONSIDER SPLITTING THE AREA.

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (1003)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
	ID1= 1 (0203):	0.22	0.028	2.42	24.94
	+ ID2= 2 (0215):	0.22	0.020	2.33	20.76
	ID = 3 (1003):	0.44	0.046	2.42	22.85

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB NASHYD (0216)				
ID= 1 DT=10.0 min	Area (ha)=	0.12	Curve Number (CN)=	87.0
	Ia (mm)=	5.00	# of Linear Res.(N)=	3.00
	U.H. Tp(hrs)=	0.17		

Unit Hyd Qpeak (cms)= 0.026

PEAK FLOW (cms)= 0.011 (i)
TIME TO PEAK (hrs)= 2.333
RUNOFF VOLUME (mm)= 20.763
TOTAL RAINFALL (mm)= 46.618
RUNOFF COEFFICIENT = 0.445

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB STANDHYD (0206)				
ID= 1 DT= 5.0 min	Area (ha)=	0.12		
	Total Imp(%)=	20.00	Dir. Conn.(%)=	1.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.02	0.09
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	27.69	40.00
Mannings n	=	0.013	0.250

Post-Development_Major_System

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.71	1.583	4.43	3.083	5.23	4.58	2.34
0.167	1.71	1.667	4.43	3.167	5.23	4.67	2.34
0.250	1.82	1.750	5.63	3.250	4.54	4.75	2.22
0.333	1.82	1.833	5.63	3.333	4.54	4.83	2.22
0.417	1.96	1.917	7.96	3.417	4.03	4.92	2.11
0.500	1.96	2.000	7.96	3.500	4.03	5.00	2.11
0.583	2.11	2.083	15.58	3.583	3.63	5.08	2.01
0.667	2.11	2.167	15.58	3.667	3.63	5.17	2.01
0.750	2.30	2.250	131.79	3.750	3.31	5.25	1.92
0.833	2.30	2.333	131.79	3.833	3.31	5.33	1.92
0.917	2.53	2.417	18.26	3.917	3.05	5.42	1.84
1.000	2.53	2.500	18.26	4.000	3.05	5.50	1.84
1.083	2.81	2.583	10.62	4.083	2.83	5.58	1.77
1.167	2.81	2.667	10.62	4.167	2.83	5.67	1.77
1.250	3.18	2.750	7.77	4.250	2.64	5.75	1.70
1.333	3.18	2.833	7.77	4.333	2.64	5.83	1.70
1.417	3.69	2.917	6.22	4.417	2.48	5.92	1.64
1.500	3.69	3.000	6.22	4.500	2.48	6.00	1.64

			TOTALS
Max.Eff.Inten.(mm/hr)=	131.79	89.30	
over (min)	5.00	10.00	
Storage Coeff. (min)=	1.06 (ii)	8.44 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.34	0.12	
PEAK FLOW (cms)=	0.00	0.01	0.015 (iii)
TIME TO PEAK (hrs)=	2.33	2.42	2.42
RUNOFF VOLUME (mm)=	45.62	24.75	24.92
TOTAL RAINFALL (mm)=	46.62	46.62	46.62
RUNOFF COEFFICIENT =	0.98	0.53	0.53

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
***** WARNING:FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20%
YOU SHOULD CONSIDER SPLITTING THE AREA.

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

```
--------------------
| ADD HYD  (  1001)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0206):     0.12   0.015     2.42    24.92
     + ID2= 2 (  0216):     0.12   0.011     2.33    20.76
       ================================================
       ID = 3 (  1001):     0.23   0.024     2.42    22.84

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
```

```
--------------------
| CALIB            |
| STANDHYD (  0204)|   Area    (ha)=   0.18
|ID= 1 DT= 5.0 min |   Total Imp(%)=  85.00   Dir. Conn.(%)=  85.00
--------------------
                            IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.15         0.03
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      34.64        40.00
     Mannings n             =     0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.
```

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.71	1.583	4.43	3.083	5.23	4.58	2.34
0.167	1.71	1.667	4.43	3.167	5.23	4.67	2.34
0.250	1.82	1.750	5.63	3.250	4.54	4.75	2.22
0.333	1.82	1.833	5.63	3.333	4.54	4.83	2.22
0.417	1.96	1.917	7.96	3.417	4.03	4.92	2.11
0.500	1.96	2.000	7.96	3.500	4.03	5.00	2.11
0.583	2.11	2.083	15.58	3.583	3.63	5.08	2.01
0.667	2.11	2.167	15.58	3.667	3.63	5.17	2.01
0.750	2.30	2.250	131.79	3.750	3.31	5.25	1.92
0.833	2.30	2.333	131.79	3.833	3.31	5.33	1.92
0.917	2.53	2.417	18.26	3.917	3.05	5.42	1.84
1.000	2.53	2.500	18.26	4.000	3.05	5.50	1.84
1.083	2.81	2.583	10.62	4.083	2.83	5.58	1.77
1.167	2.81	2.667	10.62	4.167	2.83	5.67	1.77
1.250	3.18	2.750	7.77	4.250	2.64	5.75	1.70
1.333	3.18	2.833	7.77	4.333	2.64	5.83	1.70
1.417	3.69	2.917	6.22	4.417	2.48	5.92	1.64
1.500	3.69	3.000	6.22	4.500	2.48	6.00	1.64

```
                              Post-Development_Major_System
      Max.Eff.Inten.(mm/hr)=     131.79        61.79
                  over (min)       5.00         5.00
      Storage Coeff.  (min)=       1.21 (ii)    4.37 (ii)
      Unit Hyd. Tpeak (min)=       5.00         5.00
      Unit Hyd. peak  (cms)=       0.33         0.23
                                                          *TOTALS*
      PEAK FLOW       (cms)=       0.06         0.00         0.061 (iii)
      TIME TO PEAK    (hrs)=       2.33         2.33          2.33
      RUNOFF VOLUME    (mm)=      45.62        21.77         42.03
      TOTAL RAINFALL   (mm)=      46.62        46.62         46.62
      RUNOFF COEFFICIENT   =       0.98         0.47          0.90

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  87.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  4004)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000     0.0007   |   0.0220      0.0085

                                  AREA     QPEAK     TPEAK       R.V.
                                  (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0204)      0.180      0.061      2.33       42.03
   OUTFLOW: ID= 1 (  4004)      0.180      0.010      2.42       37.70

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 17.21
                  TIME SHIFT OF PEAK FLOW         (min)=  5.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0044

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  1002)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  1001):     0.23   0.024     2.42    22.84
      + ID2= 2 (  4004):     0.18   0.010     2.42    37.70
        ================================================
        ID = 3 (  1002):     0.41   0.035     2.42    29.36

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
```

Post-Development_Major_System

ADD HYD (1004)		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3	ID1= 1 (1002):	0.41	0.035	2.42	29.36
	+ ID2= 2 (1003):	0.44	0.046	2.42	22.85
	ID = 3 (1004):	0.85	0.080	2.42	25.99

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0205)	Area (ha)= 0.97		
ID= 1 DT= 5.0 min	Total Imp(%)= 85.00	Dir. Conn.(%)= 85.00	

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.82	0.15
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	80.42	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.71	1.583	4.43	3.083	5.23	4.58	2.34
0.167	1.71	1.667	4.43	3.167	5.23	4.67	2.34
0.250	1.82	1.750	5.63	3.250	4.54	4.75	2.22
0.333	1.82	1.833	5.63	3.333	4.54	4.83	2.22
0.417	1.96	1.917	7.96	3.417	4.03	4.92	2.11
0.500	1.96	2.000	7.96	3.500	4.03	5.00	2.11
0.583	2.11	2.083	15.58	3.583	3.63	5.08	2.01
0.667	2.11	2.167	15.58	3.667	3.63	5.17	2.01
0.750	2.30	2.250	131.79	3.750	3.31	5.25	1.92
0.833	2.30	2.333	131.79	3.833	3.31	5.33	1.92
0.917	2.53	2.417	18.26	3.917	3.05	5.42	1.84
1.000	2.53	2.500	18.26	4.000	3.05	5.50	1.84
1.083	2.81	2.583	10.62	4.083	2.83	5.58	1.77
1.167	2.81	2.667	10.62	4.167	2.83	5.67	1.77
1.250	3.18	2.750	7.77	4.250	2.64	5.75	1.70
1.333	3.18	2.833	7.77	4.333	2.64	5.83	1.70
1.417	3.69	2.917	6.22	4.417	2.48	5.92	1.64
1.500	3.69	3.000	6.22	4.500	2.48	6.00	1.64

Post-Development_Major_System

```
      Max.Eff.Inten.(mm/hr)=     131.79        61.79
                 over (min)        5.00        10.00
      Storage Coeff.  (min)=       2.01 (ii)    5.17 (ii)
      Unit Hyd. Tpeak (min)=       5.00        10.00
      Unit Hyd. peak  (cms)=       0.31         0.16
                                                          *TOTALS*
      PEAK FLOW       (cms)=       0.30         0.02          0.317 (iii)
      TIME TO PEAK    (hrs)=       2.33         2.42           2.33
      RUNOFF VOLUME    (mm)=      45.62        21.77          42.04
      TOTAL RAINFALL   (mm)=      46.62        46.62          46.62
      RUNOFF COEFFICIENT   =       0.98         0.47           0.90

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  87.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  4005)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000     0.0000   |   0.1190      0.0415

                                  AREA     QPEAK     TPEAK       R.V.
                                  (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0205)      0.970      0.317      2.33      42.04
   OUTFLOW: ID= 1 (  4005)      0.970      0.060      2.50      41.95

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 18.93
                  TIME SHIFT OF PEAK FLOW         (min)= 10.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0210

--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0202)|   Area    (ha)=   0.56
|ID= 1 DT= 5.0 min |   Total Imp(%)=  85.00   Dir. Conn.(%)=  85.00
--------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.48         0.08
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      61.10        40.00
```

Post-Development_Major_System

Mannings n = 0.013 0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.71	1.583	4.43	3.083	5.23	4.58	2.34
0.167	1.71	1.667	4.43	3.167	5.23	4.67	2.34
0.250	1.82	1.750	5.63	3.250	4.54	4.75	2.22
0.333	1.82	1.833	5.63	3.333	4.54	4.83	2.22
0.417	1.96	1.917	7.96	3.417	4.03	4.92	2.11
0.500	1.96	2.000	7.96	3.500	4.03	5.00	2.11
0.583	2.11	2.083	15.58	3.583	3.63	5.08	2.01
0.667	2.11	2.167	15.58	3.667	3.63	5.17	2.01
0.750	2.30	2.250	131.79	3.750	3.31	5.25	1.92
0.833	2.30	2.333	131.79	3.833	3.31	5.33	1.92
0.917	2.53	2.417	18.26	3.917	3.05	5.42	1.84
1.000	2.53	2.500	18.26	4.000	3.05	5.50	1.84
1.083	2.81	2.583	10.62	4.083	2.83	5.58	1.77
1.167	2.81	2.667	10.62	4.167	2.83	5.67	1.77
1.250	3.18	2.750	7.77	4.250	2.64	5.75	1.70
1.333	3.18	2.833	7.77	4.333	2.64	5.83	1.70
1.417	3.69	2.917	6.22	4.417	2.48	5.92	1.64
1.500	3.69	3.000	6.22	4.500	2.48	6.00	1.64

			TOTALS
Max.Eff.Inten.(mm/hr)=	131.79	61.79	
over (min)	5.00	5.00	
Storage Coeff. (min)=	1.70 (ii)	4.86 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.32	0.22	
PEAK FLOW (cms)=	0.17	0.01	0.188 (iii)
TIME TO PEAK (hrs)=	2.33	2.33	2.33
RUNOFF VOLUME (mm)=	45.62	21.77	42.04
TOTAL RAINFALL (mm)=	46.62	46.62	46.62
RUNOFF COEFFICIENT =	0.98	0.47	0.90

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

Post-Development_Major_System

| RESERVOIR(4002)| OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT= 5.0 min | OUTFLOW STORAGE | OUTFLOW STORAGE
(cms) (ha.m.) | (cms) (ha.m.)
0.0000 0.0000 | 0.0690 0.0240

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
INFLOW : ID= 2 (0202)	0.560	0.188	2.33	42.04
OUTFLOW: ID= 1 (4002)	0.560	0.035	2.42	41.89

PEAK FLOW REDUCTION [Qout/Qin](%)= 18.63
TIME SHIFT OF PEAK FLOW (min)= 5.00
MAXIMUM STORAGE USED (ha.m.)= 0.0122

| CALIB | Area (ha)= 0.75
| STANDHYD (0212)| Total Imp(%)= 75.00 Dir. Conn.(%)= 75.00
|ID= 1 DT= 5.0 min |

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.56	0.19
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	70.71	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.71	1.583	4.43	3.083	5.23	4.58	2.34
0.167	1.71	1.667	4.43	3.167	5.23	4.67	2.34
0.250	1.82	1.750	5.63	3.250	4.54	4.75	2.22
0.333	1.82	1.833	5.63	3.333	4.54	4.83	2.22
0.417	1.96	1.917	7.96	3.417	4.03	4.92	2.11
0.500	1.96	2.000	7.96	3.500	4.03	5.00	2.11
0.583	2.11	2.083	15.58	3.583	3.63	5.08	2.01
0.667	2.11	2.167	15.58	3.667	3.63	5.17	2.01
0.750	2.30	2.250	131.79	3.750	3.31	5.25	1.92
0.833	2.30	2.333	131.79	3.833	3.31	5.33	1.92
0.917	2.53	2.417	18.26	3.917	3.05	5.42	1.84
1.000	2.53	2.500	18.26	4.000	3.05	5.50	1.84
1.083	2.81	2.583	10.62	4.083	2.83	5.58	1.77
1.167	2.81	2.667	10.62	4.167	2.83	5.67	1.77
1.250	3.18	2.750	7.77	4.250	2.64	5.75	1.70

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1.333	3.18	2.833	7.77	4.333	2.64	5.83	1.70
1.417	3.69	2.917	6.22	4.417	2.48	5.92	1.64
1.500	3.69	3.000	6.22	4.500	2.48	6.00	1.64

			TOTALS
Max.Eff.Inten.(mm/hr)=	131.79	61.79	
over (min)	5.00	10.00	
Storage Coeff. (min)=	1.86 (ii)	5.93 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.32	0.15	
PEAK FLOW (cms)=	0.21	0.02	0.225 (iii)
TIME TO PEAK (hrs)=	2.33	2.42	2.33
RUNOFF VOLUME (mm)=	45.62	21.77	39.65
TOTAL RAINFALL (mm)=	46.62	46.62	46.62
RUNOFF COEFFICIENT =	0.98	0.47	0.85

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB	
STANDHYD (0209)	Area (ha)= 0.02
ID= 1 DT= 5.0 min	Total Imp(%)= 75.00 Dir. Conn.(%)= 75.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.01	0.00
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	11.55	40.00
Mannings n =	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.71	1.583	4.43	3.083	5.23	4.58	2.34
0.167	1.71	1.667	4.43	3.167	5.23	4.67	2.34
0.250	1.82	1.750	5.63	3.250	4.54	4.75	2.22
0.333	1.82	1.833	5.63	3.333	4.54	4.83	2.22
0.417	1.96	1.917	7.96	3.417	4.03	4.92	2.11
0.500	1.96	2.000	7.96	3.500	4.03	5.00	2.11

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0.583	2.11	2.083	15.58	3.583	3.63	5.08	2.01
0.667	2.11	2.167	15.58	3.667	3.63	5.17	2.01
0.750	2.30	2.250	131.79	3.750	3.31	5.25	1.92
0.833	2.30	2.333	131.79	3.833	3.31	5.33	1.92
0.917	2.53	2.417	18.26	3.917	3.05	5.42	1.84
1.000	2.53	2.500	18.26	4.000	3.05	5.50	1.84
1.083	2.81	2.583	10.62	4.083	2.83	5.58	1.77
1.167	2.81	2.667	10.62	4.167	2.83	5.67	1.77
1.250	3.18	2.750	7.77	4.250	2.64	5.75	1.70
1.333	3.18	2.833	7.77	4.333	2.64	5.83	1.70
1.417	3.69	2.917	6.22	4.417	2.48	5.92	1.64
1.500	3.69	3.000	6.22	4.500	2.48	6.00	1.64

Max.Eff.Inten.(mm/hr)=	131.79	64.30	
over (min)	5.00	5.00	
Storage Coeff. (min)=	0.63 (ii)	4.70 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.34	0.22	
			TOTALS
PEAK FLOW (cms)=	0.01	0.00	0.006 (iii)
TIME TO PEAK (hrs)=	2.33	2.33	2.33
RUNOFF VOLUME (mm)=	45.62	22.63	38.77
TOTAL RAINFALL (mm)=	46.62	46.62	46.62
RUNOFF COEFFICIENT =	0.98	0.49	0.83

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 85.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB	
STANDHYD (0214)	Area (ha)= 0.08
ID= 1 DT= 5.0 min	Total Imp(%)= 75.00 Dir. Conn.(%)= 75.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.06	0.02
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	23.09	40.00
Mannings n =	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

Post-Development_Major_System

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.71	1.583	4.43	3.083	5.23	4.58	2.34
0.167	1.71	1.667	4.43	3.167	5.23	4.67	2.34
0.250	1.82	1.750	5.63	3.250	4.54	4.75	2.22
0.333	1.82	1.833	5.63	3.333	4.54	4.83	2.22
0.417	1.96	1.917	7.96	3.417	4.03	4.92	2.11
0.500	1.96	2.000	7.96	3.500	4.03	5.00	2.11
0.583	2.11	2.083	15.58	3.583	3.63	5.08	2.01
0.667	2.11	2.167	15.58	3.667	3.63	5.17	2.01
0.750	2.30	2.250	131.79	3.750	3.31	5.25	1.92
0.833	2.30	2.333	131.79	3.833	3.31	5.33	1.92
0.917	2.53	2.417	18.26	3.917	3.05	5.42	1.84
1.000	2.53	2.500	18.26	4.000	3.05	5.50	1.84
1.083	2.81	2.583	10.62	4.083	2.83	5.58	1.77
1.167	2.81	2.667	10.62	4.167	2.83	5.67	1.77
1.250	3.18	2.750	7.77	4.250	2.64	5.75	1.70
1.333	3.18	2.833	7.77	4.333	2.64	5.83	1.70
1.417	3.69	2.917	6.22	4.417	2.48	5.92	1.64
1.500	3.69	3.000	6.22	4.500	2.48	6.00	1.64

			TOTALS
Max.Eff.Inten.(mm/hr)=	131.79	64.30	
over (min)	5.00	10.00	
Storage Coeff. (min)=	0.95 (ii)	5.02 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.34	0.16	
PEAK FLOW (cms)=	0.02	0.00	0.024 (iii)
TIME TO PEAK (hrs)=	2.33	2.42	2.33
RUNOFF VOLUME (mm)=	45.62	22.63	39.84
TOTAL RAINFALL (mm)=	46.62	46.62	46.62
RUNOFF COEFFICIENT =	0.98	0.49	0.85

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 85.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (1005)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0209):	0.02	0.006	2.33	38.77

Post-Development_Major_System

```
       + ID2= 2 (  0214):     0.08   0.024     2.33    39.84
         ================================================
         ID = 3 (  1005):     0.10   0.031     2.33    39.63

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| DUHYD    (  3003)|
| Inlet Cap.= 0.014|
| #of Inlets=     1|
| Total(cms)=   0.0|      AREA     QPEAK     TPEAK     R.V.
--------------------      (ha)     (cms)     (hrs)     (mm)
     TOTAL HYD.(ID= 1):   0.10      0.03      2.33    39.63
     ================================================
     MAJOR SYS.(ID= 2):   0.02      0.02      2.33    39.63
     MINOR SYS.(ID= 3):   0.08      0.01      2.25    39.63

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  6005)|   Area    (ha)=   0.08
|ID= 1 DT= 5.0 min |   Total Imp(%)=  75.00   Dir. Conn.(%)=  75.00
--------------------
                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.06         0.02
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      23.09        40.00
     Mannings n             =    0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                      ---- TRANSFORMED HYETOGRAPH ----
  TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
   hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
 0.083    1.71 | 1.583    4.43 | 3.083    5.23 |  4.58    2.34
 0.167    1.71 | 1.667    4.43 | 3.167    5.23 |  4.67    2.34
 0.250    1.82 | 1.750    5.63 | 3.250    4.54 |  4.75    2.22
 0.333    1.82 | 1.833    5.63 | 3.333    4.54 |  4.83    2.22
 0.417    1.96 | 1.917    7.96 | 3.417    4.03 |  4.92    2.11
 0.500    1.96 | 2.000    7.96 | 3.500    4.03 |  5.00    2.11
 0.583    2.11 | 2.083   15.58 | 3.583    3.63 |  5.08    2.01
 0.667    2.11 | 2.167   15.58 | 3.667    3.63 |  5.17    2.01
 0.750    2.30 | 2.250  131.79 | 3.750    3.31 |  5.25    1.92
 0.833    2.30 | 2.333  131.79 | 3.833    3.31 |  5.33    1.92
 0.917    2.53 | 2.417   18.26 | 3.917    3.05 |  5.42    1.84
```

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1.000	2.53	2.500	18.26	4.000	3.05	5.50	1.84
1.083	2.81	2.583	10.62	4.083	2.83	5.58	1.77
1.167	2.81	2.667	10.62	4.167	2.83	5.67	1.77
1.250	3.18	2.750	7.77	4.250	2.64	5.75	1.70
1.333	3.18	2.833	7.77	4.333	2.64	5.83	1.70
1.417	3.69	2.917	6.22	4.417	2.48	5.92	1.64
1.500	3.69	3.000	6.22	4.500	2.48	6.00	1.64

Max.Eff.Inten.(mm/hr)=	131.79	61.79	
over (min)	5.00	10.00	
Storage Coeff. (min)=	0.95 (ii)	5.02 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.34	0.16	
			TOTALS
PEAK FLOW (cms)=	0.02	0.00	0.024 (iii)
TIME TO PEAK (hrs)=	2.33	2.42	2.33
RUNOFF VOLUME (mm)=	45.62	21.77	39.62
TOTAL RAINFALL (mm)=	46.62	46.62	46.62
RUNOFF COEFFICIENT =	0.98	0.47	0.85

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

DUHYD (3002)				
Inlet Cap.= 0.012				
#of Inlets= 1				
Total(cms)= 0.0	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
TOTAL HYD.(ID= 1):	0.08	0.02	2.33	39.62
MAJOR SYS.(ID= 2):	0.02	0.01	2.33	39.62
MINOR SYS.(ID= 3):	0.06	0.01	2.25	39.62

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (5008)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (1004):	0.85	0.080	2.42	25.99



Post-Development_Major_System

```
      + ID2= 2 (  0212):     0.75   0.225     2.33    39.65
        ================================================
        ID = 3 (  5008):     1.60   0.301     2.33    32.39

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
-------------------------------------------------------------------------------

--------------------
| ADD HYD  (  5008)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  5008):     1.60   0.301     2.33    32.39
      + ID2= 2 (  3002):     0.06   0.012     2.25    39.62
        ================================================
        ID = 1 (  5008):     1.66   0.313     2.33    32.67

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
-------------------------------------------------------------------------------

--------------------
| ADD HYD  (  5008)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  5008):     1.66   0.313     2.33    32.67
      + ID2= 2 (  3003):     0.08   0.014     2.25    39.63
        ================================================
        ID = 3 (  5008):     1.74   0.327     2.33    32.97

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
-------------------------------------------------------------------------------

--------------------
| ADD HYD  (  5008)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  5008):     1.74   0.327     2.33    32.97
      + ID2= 2 (  4002):     0.56   0.035     2.42    41.89
        ================================================
        ID = 1 (  5008):     2.30   0.355     2.33    35.14

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
-------------------------------------------------------------------------------

--------------------
| ADD HYD  (  5008)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  5008):     2.30   0.355     2.33    35.14
      + ID2= 2 (  4005):     0.97   0.060     2.50    41.95
```

```
                              Post-Development_Major_System
          ================================================
          ID = 3 (  5008):     3.27   0.401     2.33    37.16

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  4007)|     OVERFLOW IS ON
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE    |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)    |   (cms)     (ha.m.)
                          0.0000     0.0000    |   0.3132      0.0397

                                    AREA     QPEAK     TPEAK       R.V.
                                    (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  5008)      3.269      0.401      2.33      37.16
   OUTFLOW: ID= 1 (  4007)      3.269      0.182      2.58      37.15
   OVERFLOW:ID= 3 (  0003)      0.000      0.000      0.00       0.00

                   TOTAL NUMBER OF SIMULATION OVERFLOW  =     0
                   CUMULATIVE TIME OF OVERFLOW  (HOURS) =  0.00
                   PERCENTAGE OF TIME OVERFLOWING   (%) =  0.00

                   PEAK   FLOW   REDUCTION [Qout/Qin](%)= 45.25
                   TIME SHIFT OF PEAK FLOW         (min)= 15.00
                   MAXIMUM  STORAGE   USED       (ha.m.)=  0.0231

--------------------------------------------------------------------------------
--------------------
| SHIFT HYD(  3000)|
| IN= 2---> OUT= 1 |
| SHIFT=  1.0 min  |      AREA     QPEAK     TPEAK      R.V.
--------------------      (ha)     (cms)     (hrs)      (mm)
          ID= 2 (  4007):    0.00      0.00      0.00      0.00
    SHIFT ID= 1 (  3000):    0.00      0.00      0.00      0.00


--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  6003)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
*** W A R N I N G :  HYDROGRAPH   3000 <ID= 1> IS DRY.
*** W A R N I N G :  HYDROGRAPH   6003 = HYDROGRAPH 4007
        ID1= 1 (  3000):     0.00   0.000     0.00     0.00
      + ID2= 2 (  4007):     3.27   0.182     2.58    37.15
        ================================================
        ID = 3 (  6003):     3.27   0.182     2.58    37.15
```

Post-Development_Major_System

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB	
STANDHYD (0211)	Area (ha)= 0.32
ID= 1 DT= 5.0 min	Total Imp(%)= 75.00 Dir. Conn.(%)= 75.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.24	0.08
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	46.19	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.71	1.583	4.43	3.083	5.23	4.58	2.34
0.167	1.71	1.667	4.43	3.167	5.23	4.67	2.34
0.250	1.82	1.750	5.63	3.250	4.54	4.75	2.22
0.333	1.82	1.833	5.63	3.333	4.54	4.83	2.22
0.417	1.96	1.917	7.96	3.417	4.03	4.92	2.11
0.500	1.96	2.000	7.96	3.500	4.03	5.00	2.11
0.583	2.11	2.083	15.58	3.583	3.63	5.08	2.01
0.667	2.11	2.167	15.58	3.667	3.63	5.17	2.01
0.750	2.30	2.250	131.79	3.750	3.31	5.25	1.92
0.833	2.30	2.333	131.79	3.833	3.31	5.33	1.92
0.917	2.53	2.417	18.26	3.917	3.05	5.42	1.84
1.000	2.53	2.500	18.26	4.000	3.05	5.50	1.84
1.083	2.81	2.583	10.62	4.083	2.83	5.58	1.77
1.167	2.81	2.667	10.62	4.167	2.83	5.67	1.77
1.250	3.18	2.750	7.77	4.250	2.64	5.75	1.70
1.333	3.18	2.833	7.77	4.333	2.64	5.83	1.70
1.417	3.69	2.917	6.22	4.417	2.48	5.92	1.64
1.500	3.69	3.000	6.22	4.500	2.48	6.00	1.64

Max.Eff.Inten.	(mm/hr)=	131.79	61.79	
	over (min)	5.00	10.00	
Storage Coeff.	(min)=	1.44 (ii)	5.51 (ii)	
Unit Hyd. Tpeak	(min)=	5.00	10.00	
Unit Hyd. peak	(cms)=	0.33	0.16	
				TOTALS
PEAK FLOW	(cms)=	0.09	0.01	0.097 (iii)
TIME TO PEAK	(hrs)=	2.33	2.42	2.33
RUNOFF VOLUME	(mm)=	45.62	21.77	39.64
TOTAL RAINFALL	(mm)=	46.62	46.62	46.62

Post-Development_Major_System

RUNOFF COEFFICIENT = 0.98 0.47 0.85

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 87.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB	
STANDHYD (0201)	Area (ha)= 0.80
ID= 1 DT= 5.0 min	Total Imp(%)= 85.00 Dir. Conn.(%)= 85.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.68	0.12
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	73.03	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.71	1.583	4.43	3.083	5.23	4.58	2.34
0.167	1.71	1.667	4.43	3.167	5.23	4.67	2.34
0.250	1.82	1.750	5.63	3.250	4.54	4.75	2.22
0.333	1.82	1.833	5.63	3.333	4.54	4.83	2.22
0.417	1.96	1.917	7.96	3.417	4.03	4.92	2.11
0.500	1.96	2.000	7.96	3.500	4.03	5.00	2.11
0.583	2.11	2.083	15.58	3.583	3.63	5.08	2.01
0.667	2.11	2.167	15.58	3.667	3.63	5.17	2.01
0.750	2.30	2.250	131.79	3.750	3.31	5.25	1.92
0.833	2.30	2.333	131.79	3.833	3.31	5.33	1.92
0.917	2.53	2.417	18.26	3.917	3.05	5.42	1.84
1.000	2.53	2.500	18.26	4.000	3.05	5.50	1.84
1.083	2.81	2.583	10.62	4.083	2.83	5.58	1.77
1.167	2.81	2.667	10.62	4.167	2.83	5.67	1.77
1.250	3.18	2.750	7.77	4.250	2.64	5.75	1.70
1.333	3.18	2.833	7.77	4.333	2.64	5.83	1.70
1.417	3.69	2.917	6.22	4.417	2.48	5.92	1.64
1.500	3.69	3.000	6.22	4.500	2.48	6.00	1.64

Max.Eff.Inten.(mm/hr)= 131.79 61.79

```
                              Post-Development_Major_System
                  over (min)        5.00        10.00
      Storage Coeff.  (min)=        1.89 (ii)    5.05 (ii)
      Unit Hyd. Tpeak (min)=        5.00        10.00
      Unit Hyd. peak  (cms)=        0.32         0.16
                                                            *TOTALS*
      PEAK FLOW       (cms)=        0.25         0.02          0.262 (iii)
      TIME TO PEAK    (hrs)=        2.33         2.42           2.33
      RUNOFF VOLUME    (mm)=       45.62        21.77          42.04
      TOTAL RAINFALL   (mm)=       46.62        46.62          46.62
      RUNOFF COEFFICIENT   =        0.98         0.47           0.90

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  87.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  4001)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE    |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)    |   (cms)     (ha.m.)
                          0.0000     0.0000    |   0.0980      0.0345

                                  AREA     QPEAK     TPEAK       R.V.
                                  (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0201)      0.800      0.262      2.33      42.04
   OUTFLOW: ID= 1 (  4001)      0.800      0.049      2.50      41.93

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 18.77
                  TIME SHIFT OF PEAK FLOW         (min)= 10.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0174

--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0210)|   Area    (ha)=   0.02
|ID= 1 DT= 5.0 min |   Total Imp(%)=  75.00   Dir. Conn.(%)=  75.00
--------------------
                               IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.01         0.00
     Dep. Storage     (mm)=       1.00         1.50
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      11.55        40.00
     Mannings n           =      0.013        0.250
```

Post-Development_Major_System

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.71	1.583	4.43	3.083	5.23	4.58	2.34
0.167	1.71	1.667	4.43	3.167	5.23	4.67	2.34
0.250	1.82	1.750	5.63	3.250	4.54	4.75	2.22
0.333	1.82	1.833	5.63	3.333	4.54	4.83	2.22
0.417	1.96	1.917	7.96	3.417	4.03	4.92	2.11
0.500	1.96	2.000	7.96	3.500	4.03	5.00	2.11
0.583	2.11	2.083	15.58	3.583	3.63	5.08	2.01
0.667	2.11	2.167	15.58	3.667	3.63	5.17	2.01
0.750	2.30	2.250	131.79	3.750	3.31	5.25	1.92
0.833	2.30	2.333	131.79	3.833	3.31	5.33	1.92
0.917	2.53	2.417	18.26	3.917	3.05	5.42	1.84
1.000	2.53	2.500	18.26	4.000	3.05	5.50	1.84
1.083	2.81	2.583	10.62	4.083	2.83	5.58	1.77
1.167	2.81	2.667	10.62	4.167	2.83	5.67	1.77
1.250	3.18	2.750	7.77	4.250	2.64	5.75	1.70
1.333	3.18	2.833	7.77	4.333	2.64	5.83	1.70
1.417	3.69	2.917	6.22	4.417	2.48	5.92	1.64
1.500	3.69	3.000	6.22	4.500	2.48	6.00	1.64

			TOTALS
Max.Eff.Inten.(mm/hr)=	131.79	64.30	
over (min)	5.00	5.00	
Storage Coeff. (min)=	0.63 (ii)	4.70 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.34	0.22	
PEAK FLOW (cms)=	0.01	0.00	0.006 (iii)
TIME TO PEAK (hrs)=	2.33	2.33	2.33
RUNOFF VOLUME (mm)=	45.62	22.63	38.77
TOTAL RAINFALL (mm)=	46.62	46.62	46.62
RUNOFF COEFFICIENT =	0.98	0.49	0.83

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 85.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB	
STANDHYD (0213)	Area (ha)= 0.11

Post-Development_Major_System

|ID= 1 DT= 5.0 min | Total Imp(%)= 75.00 Dir. Conn.(%)= 75.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.08	0.03
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	27.08	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.71	1.583	4.43	3.083	5.23	4.58	2.34
0.167	1.71	1.667	4.43	3.167	5.23	4.67	2.34
0.250	1.82	1.750	5.63	3.250	4.54	4.75	2.22
0.333	1.82	1.833	5.63	3.333	4.54	4.83	2.22
0.417	1.96	1.917	7.96	3.417	4.03	4.92	2.11
0.500	1.96	2.000	7.96	3.500	4.03	5.00	2.11
0.583	2.11	2.083	15.58	3.583	3.63	5.08	2.01
0.667	2.11	2.167	15.58	3.667	3.63	5.17	2.01
0.750	2.30	2.250	131.79	3.750	3.31	5.25	1.92
0.833	2.30	2.333	131.79	3.833	3.31	5.33	1.92
0.917	2.53	2.417	18.26	3.917	3.05	5.42	1.84
1.000	2.53	2.500	18.26	4.000	3.05	5.50	1.84
1.083	2.81	2.583	10.62	4.083	2.83	5.58	1.77
1.167	2.81	2.667	10.62	4.167	2.83	5.67	1.77
1.250	3.18	2.750	7.77	4.250	2.64	5.75	1.70
1.333	3.18	2.833	7.77	4.333	2.64	5.83	1.70
1.417	3.69	2.917	6.22	4.417	2.48	5.92	1.64
1.500	3.69	3.000	6.22	4.500	2.48	6.00	1.64

Max.Eff.Inten.(mm/hr)=		131.79	64.30	
over (min)		5.00	10.00	
Storage Coeff. (min)=		1.04 (ii)	5.12 (ii)	
Unit Hyd. Tpeak (min)=		5.00	10.00	
Unit Hyd. peak (cms)=		0.34	0.16	
				TOTALS
PEAK FLOW	(cms)=	0.03	0.00	0.034 (iii)
TIME TO PEAK	(hrs)=	2.33	2.42	2.33
RUNOFF VOLUME	(mm)=	45.62	22.63	39.84
TOTAL RAINFALL	(mm)=	46.62	46.62	46.62
RUNOFF COEFFICIENT	=	0.98	0.49	0.85

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:



```
                          Post-Development_Major_System
            CN*  =  85.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  1006)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0210):     0.02   0.006     2.33    38.77
      + ID2= 2 (  0213):     0.11   0.034     2.33    39.84
        ================================================
        ID = 3 (  1006):     0.13   0.040     2.33    39.67

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| DUHYD    (  3004)|
| Inlet Cap.= 0.019|
| #of Inlets=     1|
| Total(cms)=   0.0|      AREA     QPEAK     TPEAK    R.V.
--------------------      (ha)     (cms)     (hrs)    (mm)
     TOTAL HYD.(ID= 1):   0.13      0.04      2.33   39.67
     ================================================
     MAJOR SYS.(ID= 2):   0.03      0.02      2.33   39.67
     MINOR SYS.(ID= 3):   0.10      0.02      2.25   39.67

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  1000)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0211):     0.32   0.097     2.33    39.64
      + ID2= 2 (  3004):     0.10   0.019     2.25    39.67
        ================================================
        ID = 3 (  1000):     0.42   0.116     2.33    39.65

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  1000)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
```

```
                              Post-Development_Major_System
          ID1= 3 (  1000):     0.42   0.116     2.33    39.65
        + ID2= 2 (  4001):     0.80   0.049     2.50    41.93
          ================================================
          ID = 1 (  1000):     1.22   0.154     2.33    41.15

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  4006)|     OVERFLOW IS ON
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000     0.0000   |   0.1183      0.0131

                                    AREA     QPEAK     TPEAK       R.V.
                                    (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  1000)      1.220      0.154      2.33      41.15
   OUTFLOW: ID= 1 (  4006)      1.220      0.073      2.50      41.13
   OVERFLOW:ID= 3 (  0003)      0.000      0.000      0.00       0.00

                  TOTAL NUMBER OF SIMULATION OVERFLOW  =     0
                  CUMULATIVE TIME OF OVERFLOW  (HOURS) =  0.00
                  PERCENTAGE OF TIME OVERFLOWING   (%) =  0.00

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 47.11
                  TIME SHIFT OF PEAK FLOW         (min)= 10.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0081

--------------------------------------------------------------------------------
--------------------
| SHIFT HYD(  3001)|
| IN= 2---> OUT= 1 |
| SHIFT=  1.0 min  |      AREA     QPEAK     TPEAK      R.V.
--------------------      (ha)     (cms)     (hrs)      (mm)
          ID= 2 (  4006):    0.00      0.00      0.00      0.00
    SHIFT ID= 1 (  3001):    0.00      0.00      0.00      0.00


--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  6004)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
*** W A R N I N G :  HYDROGRAPH   3001 <ID= 1> IS DRY.
*** W A R N I N G :  HYDROGRAPH   6004 = HYDROGRAPH 4006
          ID1= 1 (  3001):     0.00   0.000     0.00     0.00
        + ID2= 2 (  4006):     1.22   0.073     2.50    41.13
          ================================================
```



Post-Development_Major_System

```
         ID = 3 (  6004):     1.22   0.073     2.50    41.13

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
------------------------------------------------------------------------------

--------------------
| ADD HYD  (  6001)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
         ID1= 1 (  3003):     0.02   0.017     2.33    39.63
       + ID2= 2 (  3004):     0.03   0.021     2.33    39.67
         ================================================
         ID = 3 (  6001):     0.05   0.038     2.33    39.65

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
------------------------------------------------------------------------------

--------------------
| ADD HYD  (  6001)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
         ID1= 3 (  6001):     0.05   0.038     2.33    39.65
       + ID2= 2 (  6003):     3.27   0.182     2.58    37.15
         ================================================
         ID = 1 (  6001):     3.32   0.182     2.58    37.19

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
------------------------------------------------------------------------------

--------------------
| ADD HYD  (  6001)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
         ID1= 1 (  6001):     3.32   0.182     2.58    37.19
       + ID2= 2 (  6004):     1.22   0.073     2.50    41.13
         ================================================
         ID = 3 (  6001):     4.54   0.253     2.58    38.25

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
------------------------------------------------------------------------------

--------------------
| ADD HYD  (  6000)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
         ID1= 1 (  3002):     0.02   0.012     2.33    39.62
       + ID2= 2 (  6001):     4.54   0.253     2.58    38.25
         ================================================
         ID = 3 (  6000):     4.56   0.253     2.58    38.26
```

Post-Development_Major_System

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

Choice Properties REIT

Infrastructure Intelligence Services Inc.

INTEGRITY | COLLABORATION | PERFORMANCE

Existing Stormwater Connectivity Assessment
Bloor and Dundas, Toronto

Study Area



I2S Ref #: 2022-601I
June 29, 2022

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Milton, Ontario
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June 29, 2022

Choice Properties REIT
The Weston Centre
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I2S Infrastructure Intelligence Services Inc.
INTEGRITY | COLLABORATION | PERFORMANCE

Att: Kelly Martin

RE: Existing Stormwater Connectivity Assessment
Bloor and Dundas, Toronto

Infrastructure Intelligence Services Inc. (I2S Inc.) is pleased to submit the attached results of a stormwater drainage assessment completed for 2238-2290 Dundas St West, Toronto. These inspections were completed to determine the connectivity of on-site stormwater drainage features to the municipal sewers. An investigation map is presented in **Appendix A**. The findings are as follows:

2288 Dundas St W

- **Parking Lot Storm Sewer -** The internal storm sewer network was mapped out using line-of-sight and connectivity was verified using dye testing. The parking lot's stormwater drains to a private sanitary manhole close to Dundas St before draining to the combined sewer in the street.
- **Loblaws and Warehouse Building -** Both roofs drain to the storm sewer in the parking lot.
- **LCBO Building -** A number of dye tests were run for over 30 mins each but it was not possible to find the dye in any sewers. It is likely that there is some rettention in the system, either through a stormwater tank or a leak to the building foundation and/or soil.

Kal Tire Building

- The entire roof area drains directly to the combined sewer on Dundas St with no dye observed in private sewer network.

2264 Dundas St – Pizza Nova

- This building has a low-pitched roof that drains to the rear of the property and then to the parking lot of 2288 Dundas St W.

2252 Dundas St – Apartment

- The roof from this building drains to the combined sewer on Dundas St W.

2238 Dundas St – Medical Building

- The roof from this building drains to the storm sewer on Dundas St W.

The videos and photographs from the investigation have been provided via download link.

Please feel free to contact the undersigned if you have questions/comments.

Niall Quinlan
Manager, I&I Services
Tel.: 647-229-9175
Email: niall.quinlan@i2sinc.ca

CC'd:
Attached: Existing Stormwater Connectivity Assessment

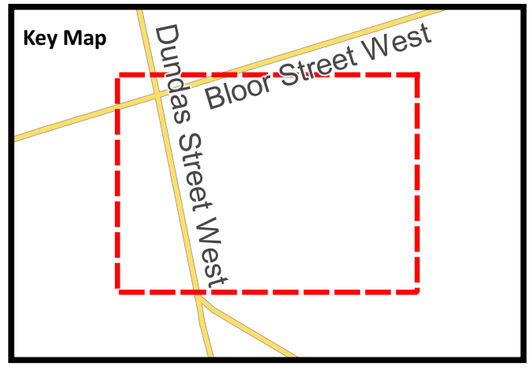
Appendix A

Investigation Map

615 Main St. E.
Milton, Ontario
L9T 3J2

905-699-1065
info@i2sinc.ca
I2Sinc.ca





General Notes

Map Legend

- Extent

Dye Testing

- Dye Injection Point
- Likely Dye Path
- Dye Observation Point

Drainage Area-Outlet

- Combined Sewer
- Surface Overland
- Storm Sewer
- Unknown

Sewerlines

- Combined
- CSO
- DUAL
- Foundation Drain
- Sanitary
- Storm CSO
- SSO
- Storm

Prepared By: I2S

Associated With: counterpoint ENGINEERING

Drawn: N.Quinlan Jun 29, 2022

Checked:

Approved:

Revision History

Project: Bloor and Dundas, Toronto

Drawing: Existing Stormwater Connectivity Assessment

I2S Ref #: 2022-6011

Appendix B

Digital Package of Files

Inspection Videos & Photos

615 Main St. E.
Milton, Ontario
L9T 3J2

905-699-1065
info@i2sinc.ca
I2Sinc.ca

APPENDIX C

Counterpoint Engineering Inc.

Existing Site Conditions

Project: 2280 Dundas Street West
Project No: 22027
Location: Toronto
Site Area: 4.39 ha

City of Toronto Sanitary Guidelines

Average Flow		
Residential	240	litres/person/day
Office	180,000	litres/ha/day
Commercial	180,000	litres/ha/day
Infiltration	0.26	litres/second/ha

Retail/Residential Population Criteria		
1B/Studio	1.4	ppu
2B	2.1	ppu
3B	3.1	ppu
Townhouse	2.7	ppu
Single Detached	3.5	ppu
Parkland	10	p/ha
Commercial	1.1	pp/100m^2
Office	3.3	pp/100m^2

	Residential Units					Commercial	Office	Park
Drainage Area ID	**1 Bedroom**	**2 Bedroom**	**3 Bedroom**	**Townhouse**	**Total Units**	**Area (m^2)**	**Area (m^2)**	**Area (m^2)**
Ex. Mall	0	0	0	0	0	9,144	0	0
Ex. Lowblaw's	0	0	0	0	0	2,653	0	0
Ex. Mechanic Shop	0	0	0	0	0	693	0	0
Ex. Pizza Nova Bldg	0	1	0	0	0	325	0	0
Ex. Apartment Rental Bldg	16	0	0	0	0	0	0	0
Ex. Medical Bldg	0	0	0	0	0	0	4,720	0
TOTAL	**16**	**1**	**0**	**0**	**0**	**12,815**	**4,720**	**0**

	Population 1B/ Studio	Population 2B/2B+D	Population 3B/3B+D	Population Townhouse	Other	TOTAL RES. POPULATION	Average Flow (l/day)	Average Flow (l/s)
Residential	22	2	0	0	0	**25**	6,000	**0.07**

	Total Non-Res Area	Average Flow (l/day)	Average Flow (l/s)
Retail/Office	17,535	74,182	0.86

Harmon Peaking Factor

Total Res. Population + Park	Harmon Peak Factor
25	**4.37**

Non-Residential Peak Sanitary Flow	0.86	**l/s**
Residential Peak Sanitary Flow	0.30	**l/s**
Total Sanitary Flow	1.16	**l/s**
Infiltration	1.14	**l/s**
Groundwater Rate	0.00	**l/s**
Total Peak Flow	**2.30**	**l/s**

Counterpoint Engineering Inc.

Proposed Conditions - STREET A Leg

Project: 2280 Dundas Street West
Project No: 22027
Location: Toronto
Site Area: 2.32 ha

City of Toronto Sanitary Guidelines

Average Flow		
Residential	240	litres/person/day
ICI	250	litres/person/day
Office - not used	180,000	litres/ha/day
Commercial - not used	180,000	litres/ha/day
Infiltration	0.26	litres/second/ha

Population Criteria		
1B/Studio	1.4	ppu
2B	2.1	ppu
3B	3.1	ppu
Single Detached	3.5	ppu
Towns/Semi-Detached	2.7	ppu
Commercial	1.1	pp/100m^2
Office	3.3	pp/100m^2
Parkland	4.0	pp/Ha

	Residential Units					Parkland	Retail	Office
	1 Bedroom	2 Bedroom	3 Bedroom	Townhomes	Total Units	Area (Ha)	Area (m^2)	Area (m^2)
Block 1 (Building 1A & 1B)	308	196	53	0	557	0.00	1948.00	0.00
Block 1 (Building 2)	281	51	71	7	410	0.00	0.00	0.00
Block 2 (Building 3)	122	72	26	0	220	0.00	5814.00	7596.00
Block 3 (Parkland)	0	0	0	0	0	0.44	0.00	0.00
Block 4 (Building 4)	212	65	53	4	334	0.00	0.00	0.00
TOTAL	**923**	**384**	**203**	**11**	**1521**	**0.44**	**7762.00**	**7596.00**

	Population Density 1B/ Studio	Population Density 2B/2B+D	Population Density 3B/3B+D	Population Density Towns/Semis	Population Density Parkland	TOTAL RES. POPULATION	Average Flow (l/day)	l/s
Residential	1292	806	629	30	2	2760	662400	7.67

	Total Non-Res Population	Average Flow (l/day)	l/s
Retail/Office	336.05	84013	0.97

Harmon Peaking Factor

Total Res. Population	Harmon Peak Factor
2760	**3.47**

Non-Residential Peak Sanitary Flow	0.97	**l/s**
Residential Peak Sanitary Flow	26.63	**l/s**
Total Sanitary Flow	27.60	**l/s**
Infiltration	0.60	**l/s**
Total Peak Flow	**28.20**	**l/s**

Counterpoint Engineering Inc.

Proposed Conditions - STREET B Leg

Project: 2280 Dundas Street West
Project No: 22027
Location: Toronto
Site Area: 2.02 ha

City of Toronto Sanitary Guidelines

Average Flow		
Residential	240	litres/person/day
ICI	250	litres/person/day
Office - not used	180,000	litres/ha/day
Commercial - not used	180,000	litres/ha/day
Infiltration	0.26	litres/second/ha

Population Criteria		
1B/Studio	1.4	ppu
2B	2.1	ppu
3B	3.1	ppu
Single Detached	3.5	ppu
Towns/Semi-Detached	2.7	ppu
Commercial	1.1	pp/100m^2
Office	3.3	pp/100m^2
Parkland	4.0	pp/Ha

	Residential Units					Parkland	Retail	Office
	1 Bedroom	2 Bedroom	3 Bedroom	Townhomes	Total Units	Area (Ha)	Area (m^2)	Area (m^2)
Block 5 (Building 5)	108	52	17	0	177	0.00	1263.00	0.00
Block 5 (Building 6)	55	11	10	8	84	0.00	0.00	0.00
Block 5 (Building 7)	81	38	11	11	141	0.00	0.00	0.00
TOTAL	**244**	**101**	**38**	**19**	**402**	**0.00**	**1263.00**	**0.00**

	Population Density 1B/ Studio	Population Density 2B/2B+D	Population Density 3B/3B+D	Population Density Towns/Semis	Population Density Parkland	TOTAL RES. POPULATION	Average Flow (l/day)	l/s
Residential	342	212	118	51	0	723	173520	2.01

	Total Non-Res Population	Average Flow (l/day)	l/s
Retail/Office	13.89	3473	0.04

Harmon Peaking Factor

Total Res. Population	Harmon Peak Factor
723	**3.89**

Non-Residential Peak Sanitary Flow	0.04	**l/s**
Residential Peak Sanitary Flow	7.81	**l/s**
Total Sanitary Flow	7.85	**l/s**
Infiltration	0.52	**l/s**
Total Peak Flow	**8.37**	**l/s**

SANITARY SEWER DESIGN SHEET
2280 DUNDAS STREET WEST
CITY OF TORONTO, EAST-YORK DISTRICT

Min. Sewer Diameter (mm) = 250 | **Infiltration Rate (L/s/ha) = 0.26**
Mannings "n"= 0.013 | **Max. Harmon Peaking Factor= 4.5**
Minimum Velocity (m/s) = 0.60 | **Min. Harmon Peaking Factor= 1.5**
Minimum Pipe Grade (%) = 0.5 | **Maximum Velocity (m/s) = 3.7**
Avg. Flow Per Capite (L/cap/d) = 450
Commercial Average Peak Flows (L/Floor ha/day) = 180,000
Office Average Peak Flows (L/Floor ha/day) = 180,000

Project: 2280 Dundas Street West
Project No: 22027
Date: June 30, 2022
Designed by: GD
Checked by: JY

STREET	MANHOLE		AREA			RESIDENTIAL FLOWS				RETAIL FLOWS			OFFICE FLOWS			INFILTRATION FLOWS			GROUNDWATER FLOWS		Q	LENGTH	SLOPE	D	TYPE	ROUGH.	Q	Velocity	Velocity	Capacity
	FROM	TO	Residential Density	INCREM. AREA ha	CUMM. AREA	INCREM. POP.	CUMM. POP.	M	PEAK FLOW l/s	AREA m^2	INCREM. AREA l/s	PEAK FLOW l/s	AREA m^2	INCREM. AREA l/s	PEAK FLOW l/s	A SITE ha	A GROSS ha	I l/s	G Inc. l/s	G Cum. l/s	**TOTAL l/s**	(m)	S %	(mm)	OF PIPE	COEFF.	FULL (L/s)	Full (m/s)	Actual (m/s)	(%)
STREET A																													
Block 4 (Bldg 4)	MH10A-10	MH10A	3139	0.19	0.19	609	609	3.93	12.46	0	0	0.0	0	0	0.0	0.19	0.19	0.05	0.00	0.00	**12.5**	8.8	2.0	200	PVC	0.013	48.26	1.49	1.24	26%
STRT 9	MH10A	MH9A	0	0.07	0.27	0	609	3.93	12.46	0	0	0.0	0	0	0.0	0.07	0.19	0.05	0.00	0.00	**12.5**	48.0	1.0	250	PVC	0.013	62.04	1.22	0.95	20%
Block 1 (Bldg 2)	MH9A-A	MH9A	1973	0.38	0.38	740	740	3.88	14.96	0	0	0.0	0	0	0.0	0.38	0.38	0.10	0.00	0.00	**15.1**	11.9	2.0	200	PVC	0.013	48.26	1.49	1.31	31.2%
STRT8	MH9A	MH8A	0	0.01	0.65	0	1349	3.71	26.08	0	0	0.0	0	0	0.0	0.01	0.65	0.17	0.00	0.00	**26.3**	2.5	0.5	250	PVC	0.013	43.87	0.87	0.90	60%
Block 3 (Parkland)	MH8A-8-8	MH8A	10	0.44	0.44	4	4	4.44	0.10	0	0	0.0	0	0	0.0	0.44	0.44	0.11	0.00	0.00	**0.2**	8.3	2.0	200	PVC	0.013	48.26	1.49	0.33	0%
STRT 7	MH8A	MH7A	0	0.13	1.22	0	1353	3.71	26.16	0	0	0.0	0	0	0.0	0.13	1.22	0.32	0.00	0.00	**26.5**	69.5	0.5	250	PVC	0.013	43.87	0.87	0.91	60%
Block 1 (Bldg 1)	MH7A-7	MH7A	2361	0.43	0.43	1008	1008	3.80	19.94	1,948	1,948	0.4	0	0	0.0	0.43	0.43	0.11	0.00	0.00	**20.5**	11.9	2.0	200	PVC	0.013	48.26	1.49	1.42	42%
STRT 6	MH7A	MH6A	0	0.01	1.65	0	2361	3.53	43.40	0	1,948	0.4	0	0	0.0	0.01	1.65	0.43	0.00	0.00	**44.2**	2.5	0.8	250	PVC	0.013	55.49	1.10	1.21	80%
Block 2 (Bldg 3)	MH6A-6-6	MH6A	717	0.56	0.56	403	403	4.02	8.44	5,814	5,814	1.2	7,596	7,596	1.6	0.56	0.56	0.15	0.00	0.00	**11.4**	8.5	2.0	200	PVC	0.013	48.26	1.49	1.22	24%
STRT 5	MH6A	MH5A	0	0.01	2.21	0	2764	3.47	49.99	0	7,762	1.6	0	7,596	1.6	0.01	2.21	0.58	0.00	0.00	**53.8**	2.5	0.5	300	PVC	0.013	71.46	0.98	1.07	75%
STRT 4	MH5A	MH4A	0	0.03	2.24	0	2764	3.47	49.99	0	7,762	1.6	0	15,192	3.2	0.03	2.24	0.58	0.00	0.00	**55.4**	14.1	0.5	300	PVC	0.013	71.46	0.98	1.08	77%
STRT 3	MH4A	MH3A	0	0.01	2.25	0	2764	3.47	49.99	0	7,762	0.0	0	15,192	3.2	0.01	2.25	0.58	0.00	0.00	**53.7**	2.5	0.5	300	PVC	0.013	71.46	0.98	1.07	75%
STRT 2	MH3A	MH2A	0	0.08	2.32	0	2764	3.47	49.99	0	7,762	1.6	0	15,192	3.2	0.08	2.32	0.60	0.00	0.00	**55.4**	32.5	0.5	300	PVC	0.013	71.46	0.98	1.08	77%
STRT 1	MH2A	MH1A	0	0.01	2.34	0	2764	3.47	49.99	0	7,762	1.6	0	15,192	3.2	0.01	2.34	0.61	0.00	0.00	**55.4**	12.5	0.5	300	PVC	0.013	71.46	0.98	1.08	78%
STREET B																													
Block 5 (Bldg 7)	MH11A-11	MH11A	615	0.42	0.42	257	257	4.11	5.50	0	0	0.0	0	0	0.0	0.42	0.42	0.11	0.00	0.00	**5.6**	8.9	2.00	200	PVC	0.013	48.26	1.49	1.00	12%
STRT 10	MH11A	MH12A	0	0.61	1.03	0	257	4.11	5.50	0	0	0.0	0	0	0.0	0.61	1.03	0.27	0.00	0.00	**5.8**	6.4	1.00	250	PVC	0.013	62.04	1.22	0.75	9%
STRT 11	MH12A	MH13A	0	0.01	1.04	0	257	4.11	5.50	0	0	0.0	0	0	0.0	0.01	1.04	0.27	0.00	0.00	**5.8**	90.0	0.54	250	PVC	0.013	45.59	0.90	0.62	13%
Block 5 (Bldg 6)	MH13A-13	MH13A	643	0.24	0.24	153	153	4.19	3.34	0	0	0.0	0	0	0.0	0.24	0.24	0.06	0.00	0.00	**3.4**	8.9	2.00	200	PVC	0.013	48.26	1.49	0.83	7%
STRT 12	MH13A	MH14A	0	0.17	1.44	0	410	4.02	8.58	0	0	0.0	0	0	0.0	0.17	1.44	0.37	0.00	0.00	**9.0**	79.5	0.50	250	PVC	0.013	43.87	0.87	0.67	20%
Block 5 (Bldg 5)	MH15A-15	MH15A	1053	0.32	0.32	335	335	4.06	7.08	1,263	1,263	0.3	0	0	0.0	0.32	0.32	0.08	0.00	0.00	**7.4**	8.9	2.00	200	PVC	0.013	48.26	1.49	1.07	15%
STRT 13	MH14A	MH15A	0	0.15	1.91	0	745	3.88	15.05	0	1,263	0.3	0	0	0.0	0.15	1.91	0.50	0.00	0.00	**15.8**	28.7	0.50	250	PVC	0.013	43.87	0.87	0.79	36%
STRT 14	MH15A	MH16A	0	0.05	1.96	0	745	3.88	15.05	0	1,263	0.3	0	0	0.0	0.05	1.96	0.51	0.00	0.00	**15.8**	28.8	0.50	250	PVC	0.013	43.87	0.87	0.79	36%
STRT 15	MH16A	MH17A	0	0.05	2.01	0	745	3.88	15.05	0	1,263	0.3	0	0	0.0	0.05	2.01	0.52	0.00	0.00	**15.8**	28.8	0.50	250	PVC	0.013	43.87	0.87	0.79	36%

Cell in right red indicate service connections with actual flow velocities below minimum due to low contributing population

APPENDIX D

Counterpoint Engineering Inc.

WATER DEMANDS BY BLOCK AND BUILDING

Project: 2280 Dundas Street West
Project No: 22027
Location: Toronto

Per Capita Demand

Single Family	320	litres/person/day
Multi-Unit	190	litres/person/day

Retail/Residential Population Criteria

1 Bedroom	1.4	ppu
2 Bedroom	2.1	ppu
3 Bedroom	3.1	ppu
Townhome	2.7	ppu
Commercial/Retail	1.1	persons/100m^2
Office	3.3	persons/100m^2
Parkland	4.0	persons/10,000m^2

Units per Bldg.		Unit Type Count			
Bldg.	Units	1 Bdrm.	2 Bdrm.	3 Bdrm.	Townhomes
B1	557	308	196	53	0
B2	410	281	51	71	7
B3	220	122	72	26	0
Parkland	0	0	0	0	0
B4	334	212	65	53	4
B5	177	108	52	17	0
B6	84	55	11	10	8
B7	141	81	38	11	11
Total	**1875**	**1085**	**568**	**192**	**30**

Unit and Floor Area Breakdown

POPULATION AND AVERAGE DAY DEMANDS SUMMARY

Location	1 Bedroom Units	2 Bedroom Units	3 Bedroom Units	Total Residential Units*	Total Residential Population	Residential Average Demand	Office (m^2)	Total Office Population	Office Average Demand	Retail/ Commercial (m^2)	Retail/ Commercial Average Demand (28m^3/ha/day)
	1.4 persons/unit	2.1 persons/unit	3.1 persons/unit	Units	Equivalent Population	L/s	Area	Equivalent Population	L/s	Area	L/s
B1	308	196	53	557	1007	2.21	-	0.0	0.00	1,948.0	0.06
B2	281	51	71	403	721	1.58	-	0.0	0.00	-	0.00
B3	122	72	26	220	403	0.89	7,596.0	250.7	0.55	5,814.0	0.19
Parkland	0	0	0	0	2	0.00	-	0.0	0.00	-	0.00
B4	212	65	53	330	598	1.31	-	0.0	0.00	-	0.00
B5	108	52	17	177	313	0.69	-	0.0	0.00	1,263.0	0.04
B6	55	11	10	76	131	0.29	-	0.0	0.00	-	0.00
B7	81	38	11	130	227	0.50	-	0.0	0.00	-	0.00
Totals:	**1,167**	**485**	**241**	**1,893**	**3,401**	**7.48**	**7,596**	**251**	**0.55**	**9,025**	**0.29**

**Note: total units rounded up due to rounding when applying unit mix ratio percentages.*

Peaking Factors

Land Use	Minimum Hour	Maximum Hour	Maximum Day
Apartment	0.84	2.50	1.30
Commercial	0.84	1.20	1.10
Industrial	0.84	1.90	1.10
Institutional	0.84	1.90	1.10

Summary of Demands

Block	Building	Daily Water Demand (L/sec)	Max Day Water Demand (L/sec)	Peak Hour Water Demand (L/sec)	Fire Demand Required (L/sec)	Max Day plus Fire Demand (L/sec)
1	B1	2.28	2.95	5.61	116.67	119.62
	B2	1.58	2.06	3.96	83.33	85.39
2	B3	1.63	1.96	3.10	116.67	118.63
3	Parkland	0.00	0.01	0.01	0.00	0.01
4	B4	1.31	1.71	3.29	50.00	51.71
5	B5	0.73	0.94	1.77	116.67	117.61
	B6	0.29	0.37	0.72	66.67	67.04
	B7	0.50	0.65	1.25	83.33	83.98

Counterpoint Engineering Inc.

REQUIRED FIRE FLOW WORKSHEET - PROPOSED DEVELOPMENT

Project: 2280 Dundas Street West **BLDG 1**
Project No: 22027
Location: Toronto

Guide for Determination of Required Flow Copyright I.S.O

$$F = 220C\sqrt{A}$$

where
F = the required fire flow in litres per minute.
C = coefficient related to the type of construction.
= 1.5 for wood frame construction (structure essentially all combustible).
= 1.0 for ordinary construction (brick or other masonry walls, combustible floor and interior).
= 0.8 for non-combustible construction (unprotected metal structural components, masonry or metal walls).
= 0.6 for fire-resistive construction (fully protected frame, floors, roof).
A = The total floor area in square metres (including all storeys, but excluding basements at least 50 percent below grade) in the building being considered.

Type of Construction		Class Factor
WF	Wood Frame	1.5
OC	Ordinary Construction	1.0
NC	Non-Combustible	0.8
FC	Fire-Resistive	0.6

Contents		% Reduction
NC	Non-Combustible	25
LC	Limited Combustible	15
C	Combustible	0
FB	Free Burning	15
RB	Rapid Burning	25

Area Notes for Fire Resistive Buildings (from FUS manual, 1999):

If Vertical Openings are inadequately protected (less than 1-hour fire rating): Area is the total of the two largest adjoining floors (above ground level) plus 50% of the area of each of the next 8 adjoining floors above that.

If Vertical Openings are adequately protected (at least 1-hour fire rating): Area is the total of the largest floor (above ground level) plus 25% of the area of each of the next 2 immediately adjoining floors above that.

1) Fire Flow

Type of Construction:	FC
C=	0.6
A=	2,897.00 m^2
F=	**7,105 L/min**

Assumes Fire Resistive type of construction with vertical openings adequately protected. Largest floor = level 1.

2) Occupancy Reduction/Surcharge

Contents Factor:		C			
Reduction/Surcharge of		0%	=	0	L/min
F=	7105L/min +	0	L/min =	7,105	**L/min**

3) System Type Reduction

NFPA 13 Sprinkler:		YES	30%		
Standard Water Supply:		YES	10%		
Fully Supervised:		YES	10%		
Total			50%		
Reduction of		50%	L/min =	3,552	L/min
F=	7105L/min -	3,552	L/min =	3,552	**L/min**

4) Separation Charge

Building Face	Dist(m)	Charge
North	12.5	15%
East	19.5	15%
South	23	10%
West	25	10%
Total		50% **of** 7104.74 **L/min = 3,552 L/min**

(max exposure charge can be 75%)

Separation	Charge	Separation	Charge
0 to 3m	25%	20.1 to 30 m	10%
3.1 to 10m	20%	30.1 to 45m	5%
10.1 to 20m	15%		

F = 3552L/min + 3552L/min = **7,105 L/min** (2,000L/min<F<45,000L/min)

F =	**7,000**	**L/min**
F =	**117**	**L/s**
F =	**1,849**	**gpm**

(round to the nearest 1,000L/min)

Counterpoint Engineering Inc.

REQUIRED FIRE FLOW WORKSHEET - PROPOSED DEVELOPMENT

Project: 2280 Dundas Street West **BLDG 2**
Project No: 22027
Location: Toronto

Guide for Determination of Required Flow Copyright I.S.O

$$F = 220C\sqrt{A}$$

where

F = the required fire flow in litres per minute.
C = coefficient related to the type of construction.
= 1.5 for wood frame construction (structure essentially all combustible).
= 1.0 for ordinary construction (brick or other masonry walls, combustible floor and interior).
= 0.8 for non-combustible construction (unprotected metal structural components, masonry or metal walls).
= 0.6 for fire-resistive construction (fully protected frame, floors, roof).

A = The total floor area in square metres (including all storeys, but excluding basements at least 50 percent below grade) in the building being considered.

Type of Construction		Class Factor
WF	Wood Frame	1.5
OC	Ordinary Construction	1.0
NC	Non-Combustible	0.8
FC	Fire-Resistive	0.6

Contents		% Reduction
NC	Non-Combustible	25
LC	Limited Combustible	15
C	Combustible	0
FB	Free Burning	15
RB	Rapid Burning	25

Area Notes for Fire Resistive Buildings (from FUS manual, 1999):

If Vertical Openings are inadequately protected (less than 1-hour fire rating): Area is the total of the two largest adjoining floors (above ground level) plus 50% of the area of each of the next 8 adjoining floors above that.

If Vertical Openings are adequately protected (at least 1-hour fire rating): Area is the total of the largest floor (above ground level) plus 25% of the area of each of the next 2 immediately adjoining floors above that.

1) Fire Flow

Type of Construction:	FC
C=	0.6
A=	1,850.50 m^2
F=	5,678 **L/min**

Assumes Fire Resistive type of construction with vertical openings adequately protected. Largest floor = level 1.

2) Occupancy Reduction/Surcharge

Contents Factor:		LC			
Reduction/Surcharge of		-15%	=	-852	L/min
F=	5678L/min +	-852	L/min =	4,827	**L/min**

3) System Type Reduction

NFPA 13 Sprinkler:		YES	30%		
Standard Water Supply:		YES	10%		
Fully Supervised:		YES	10%		
Total			50%		
Reduction of		50%	L/min =	2,413	L/min
F=	4827L/min -	2,413	L/min =	2,413	**L/min**

4) Separation Charge

Building Face	Dist(m)	Charge
North	5	20%
East	50	0%
South	22.5	10%
West	19.6	15%
Total		45% **of** 4826.56 **L/min** = 2,172 **L/min**

(max exposure charge can be 75%)

Separation	Charge	Separation	Charge
0 to 3m	25%	20.1 to 30 m	10%
3.1 to 10m	20%	30.1 to 45m	5%
10.1 to 20m	15%		

F = 2413L/min + 2172L/min = 4,585 **L/min** (2,000L/min<F<45,000L/min)

F =	5,000	**L/min** (round to the nearest 1,000L/min)
F =	83	**L/s**
F =	1,321	**gpm**

Counterpoint Engineering Inc.

REQUIRED FIRE FLOW WORKSHEET - PROPOSED DEVELOPMENT

Project: 2280 Dundas Street West **BLDG 3**
Project No: 22027
Location: Toronto

Guide for Determination of Required Flow Copyright I.S.O

$$F = 220C\sqrt{A}$$

where

F = the required fire flow in litres per minute.
C = coefficient related to the type of construction.
= 1.5 for wood frame construction (structure essentially all combustible).
= 1.0 for ordinary construction (brick or other masonry walls, combustible floor and interior).
= 0.8 for non-combustible construction (unprotected metal structural components, masonry or metal walls).
= 0.6 for fire-resistive construction (fully protected frame, floors, roof).

A = The total floor area in square metres (including all storeys, but excluding basements at least 50 percent below grade) in the building being considered.

Type of Construction		Class Factor
WF	Wood Frame	1.5
OC	Ordinary Construction	1.0
NC	Non-Combustible	0.8
FC	Fire-Resistive	0.6

Contents		% Reduction
NC	Non-Combustible	25
LC	Limited Combustible	15
C	Combustible	0
FB	Free Burning	15
RB	Rapid Burning	25

Area Notes for Fire Resistive Buildings (from FUS manual, 1999):

If Vertical Openings are inadequately protected (less than 1-hour fire rating): Area is the total of the two largest adjoining floors (above ground level) plus 50% of the area of each of the next 8 adjoining floors above that.

If Vertical Openings are adequately protected (at least 1-hour fire rating): Area is the total of the largest floor (above ground level) plus 25% of the area of each of the next 2 immediately adjoining floors above that.

1) Fire Flow

Type of Construction:	FC
C=	0.6
A=	4,259.25 m^2
F=	**8,615 L/min**

Assumes Fire Resistive type of construction with vertical openings adequately protected. Largest floor = level 1.

2) Occupancy Reduction/Surcharge

Contents Factor:		C			
Reduction/Surcharge of		0%	=	0	L/min
F=	8615L/min +	0	L/min =	8,615	**L/min**

3) System Type Reduction

NFPA 13 Sprinkler:		YES	30%		
Standard Water Supply:		YES	10%		
Fully Supervised:		YES	10%		
Total			50%		
Reduction of		50%	L/min =	4,307	L/min
F=	8615L/min -	4,307	L/min =	4,307	**L/min**

4) Separation Charge

Building Face	Dist(m)	Charge
North	22.7	10%
East	75	0%
South	22.7	10%
West	26	10%
Total		30%

of 8614.71 **L/min** = 2,584 **L/min**
(max exposure charge can be 75%)

Separation	Charge	Separation	Charge
0 to 3m	25%	20.1 to 30 m	10%
3.1 to 10m	20%	30.1 to 45m	5%
10.1 to 20m	15%		

F = 4307L/min + 2584L/min = 6,892 **L/min** (2,000L/min<F<45,000L/min)

F =	7,000	**L/min** (round to the nearest 1,000L/min)
F =	117	**L/s**
F =	1,849	**gpm**

Counterpoint Engineering Inc.

REQUIRED FIRE FLOW WORKSHEET - PROPOSED DEVELOPMENT

Project: 2280 Dundas Street West **BLDG 4**
Project No: 22027
Location: Toronto

Guide for Determination of Required Flow Copyright I.S.O

$$F = 220C\sqrt{A}$$

where

F = the required fire flow in litres per minute.
C = coefficient related to the type of construction.
= 1.5 for wood frame construction (structure essentially all combustible).
= 1.0 for ordinary construction (brick or other masonry walls, combustible floor and interior).
= 0.8 for non-combustible construction (unprotected metal structural components, masonry or metal walls).
= 0.6 for fire-resistive construction (fully protected frame, floors, roof).

A = The total floor area in square metres (including all storeys, but excluding basements at least 50 percent below grade) in the building being considered.

Type of Construction		Class Factor
WF	Wood Frame	1.5
OC	Ordinary Construction	1.0
NC	Non-Combustible	0.8
FC	Fire-Resistive	0.6

Contents		% Reduction
NC	Non-Combustible	25
LC	Limited Combustible	15
C	Combustible	0
FB	Free Burning	15
RB	Rapid Burning	25

Area Notes for Fire Resistive Buildings (from FUS manual, 1999):

If Vertical Openings are inadequately protected (less than 1-hour fire rating): Area is the total of the two largest adjoining floors (above ground level) plus 50% of the area of each of the next 8 adjoining floors above that.

If Vertical Openings are adequately protected (at least 1-hour fire rating): Area is the total of the largest floor (above ground level) plus 25% of the area of each of the next 2 immediately adjoining floors above that.

1) Fire Flow

Type of Construction:	FC
C=	0.6
A=	1,681.50 m^2
F=	**5,413 L/min**

Assumes Fire Resistive type of construction with vertical openings adequately protected. Largest floor = level 1.

2) Occupancy Reduction/Surcharge

Contents Factor:		LC			
Reduction/Surcharge of		-15%	=	-812	L/min
F=	**5413L/min +**	**-812**	**L/min =**	**4,601**	**L/min**

3) System Type Reduction

NFPA 13 Sprinkler:		YES	30%		
Standard Water Supply:		YES	10%		
Fully Supervised:		YES	10%		
Total			50%		
Reduction of		50%	L/min =	2,300	L/min
F=	**4601L/min -**	**2,300**	**L/min =**	**2,300**	**L/min**

4) Separation Charge

Building Face	Dist(m)	Charge
North	22.1	10%
East	50	0%
South	25	10%
West	75	0%
Total		20%

of 4600.88 L/min = 920 L/min
(max exposure charge can be 75%)

Separation	Charge	Separation	Charge
0 to 3m	25%	20.1 to 30 m	10%
3.1 to 10m	20%	30.1 to 45m	5%
10.1 to 20m	15%		

F = 2300L/min + 920L/min = 3,221 L/min (2,000L/min<F<45,000L/min)

F =	**3,000**	**L/min**
F =	**50**	**L/s**
F =	**793**	**gpm**

(round to the nearest 1,000L/min)

Counterpoint Engineering Inc.

REQUIRED FIRE FLOW WORKSHEET - PROPOSED DEVELOPMENT

Project: 2280 Dundas Street West **BLDG 5**
Project No: 22027
Location: Toronto

Guide for Determination of Required Flow Copyright I.S.O

$$F = 220C\sqrt{A}$$

where
F = the required fire flow in litres per minute.
C = coefficient related to the type of construction.
= 1.5 for wood frame construction (structure essentially all combustible).
= 1.0 for ordinary construction (brick or other masonry walls, combustible floor and interior).
= 0.8 for non-combustible construction (unprotected metal structural components, masonry or metal walls).
= 0.6 for fire-resistive construction (fully protected frame, floors, roof).
A = The total floor area in square metres (including all storeys, but excluding basements at least 50 percent below grade) in the building being considered.

Type of Construction		Class Factor
WF	Wood Frame	1.5
OC	Ordinary Construction	1.0
NC	Non-Combustible	0.8
FC	Fire-Resistive	0.6

Contents		% Reduction
NC	Non-Combustible	25
LC	Limited Combustible	15
C	Combustible	0
FB	Free Burning	15
RB	Rapid Burning	25

Area Notes for Fire Resistive Buildings (from FUS manual, 1999):

If Vertical Openings are inadequately protected (less than 1-hour fire rating): Area is the total of the two largest adjoining floors (above ground level) plus 50% of the area of each of the next 8 adjoining floors above that.

If Vertical Openings are adequately protected (at least 1-hour fire rating): Area is the total of the largest floor (above ground level) plus 25% of the area of each of the next 2 immediately adjoining floors above that.

1) Fire Flow

Type of Construction:	FC
C=	0.6
A*=	2,459.25 m^2
F=	**6,546 L/min**

Assumes Fire Resistive type of construction with vertical openings adequately protected. Largest floor = level 1.

2) Occupancy Reduction/Surcharge

Contents Factor:		C			
Reduction/Surcharge of		0%	=	0	L/min
F=	6546L/min +	0	L/min =	6,546	**L/min**

3) System Type Reduction

NFPA 13 Sprinkler:		YES	30%		
Standard Water Supply:		YES	10%		
Fully Supervised:		YES	10%		
Total			50%		
Reduction of		50%	L/min =	3,273	L/min
F=	6546L/min -	3,273	L/min =	3,273	**L/min**

4) Separation Charge

Building Face	Dist(m)	Charge
North	22.5	10%
East	19.6	15%
South	1	25%
West	25	10%
Total		60%

of 6545.99 **L/min** = 3,928 **L/min**
(max exposure charge can be 75%)

Separation	Charge	Separation	Charge
0 to 3m	25%	20.1 to 30 m	10%
3.1 to 10m	20%	30.1 to 45m	5%
10.1 to 20m	15%		

F = 3273L/min + 3928L/min = 7,201 **L/min** (2,000L/min<F<45,000L/min)

F =	**7,000**	**L/min**
F =	**117**	**L/s**
F =	**1,849**	**gpm**

(round to the nearest 1,000L/min)

Counterpoint Engineering Inc.

REQUIRED FIRE FLOW WORKSHEET - PROPOSED DEVELOPMENT

Project: 2280 Dundas Street West **BLDG 6**
Project No: 22027
Location: Toronto

Guide for Determination of Required Flow Copyright I.S.O

$$F = 220C\sqrt{A}$$

where

F = the required fire flow in litres per minute.
C = coefficient related to the type of construction.
= 1.5 for wood frame construction (structure essentially all combustible).
= 1.0 for ordinary construction (brick or other masonry walls, combustible floor and interior).
= 0.8 for non-combustible construction (unprotected metal structural components, masonry or metal walls).
= 0.6 for fire-resistive construction (fully protected frame, floors, roof).

A = The total floor area in square metres (including all storeys, but excluding basements at least 50 percent below grade) in the building being considered.

Type of Construction		Class Factor
WF	Wood Frame	1.5
OC	Ordinary Construction	1.0
NC	Non-Combustible	0.8
FC	Fire-Resistive	0.6

Contents		% Reduction
NC	Non-Combustible	25
LC	Limited Combustible	15
C	Combustible	0
FB	Free Burning	15
RB	Rapid Burning	25

Area Notes for Fire Resistive Buildings (from FUS manual, 1999):

If Vertical Openings are inadequately protected (less than 1-hour fire rating): Area is the total of the two largest adjoining floors (above ground level) plus 50% of the area of each of the next 8 adjoining floors above that.

If Vertical Openings are adequately protected (at least 1-hour fire rating): Area is the total of the largest floor (above ground level) plus 25% of the area of each of the next 2 immediately adjoining floors above that.

1) Fire Flow

Type of Construction:	FC
C=	0.6
A*=	1,345.50 m^2
F=	**4,842 L/min**

Assumes Fire Resistive type of construction with vertical openings adequately protected. Largest floor = level 1.

2) Occupancy Reduction/Surcharge

Contents Factor:		LC			
Reduction/Surcharge of		-15%	=	-726	L/min
F=	4842L/min +	-726 L/min	=	4,116	**L/min**

3) System Type Reduction

NFPA 13 Sprinkler:		YES	30%		
Standard Water Supply:		YES	10%		
Fully Supervised:		YES	10%		
Total			50%		
Reduction of		50%	L/min =	2,058	L/min
F=	4116L/min -	2,058 L/min	=	2,058	**L/min**

4) Separation Charge

Building Face	Dist(m)	Charge
North	22.5	10%
East	10.6	15%
South	11.6	15%
West	19.6	15%
Total		55% **of** 4115.61 **L/min** = 2,264 **L/min**

(max exposure charge can be 75%)

Separation	Charge	Separation	Charge
0 to 3m	25%	20.1 to 30 m	10%
3.1 to 10m	20%	30.1 to 45m	5%
10.1 to 20m	15%		

F = 2058L/min + 2264L/min = 4,321 **L/min** (2,000L/min<F<45,000L/min)

F =	4,000	**L/min** (round to the nearest 1,000L/min)
F =	67	**L/s**
F =	1,057	**gpm**

Counterpoint Engineering Inc.

REQUIRED FIRE FLOW WORKSHEET - PROPOSED DEVELOPMENT

Project: 2280 Dundas Street West **BLDG 7**
Project No: 22027
Building: Toronto

Guide for Determination of Required Flow Copyright I.S.O

$$F = 220C\sqrt{A}$$

where

F = the required fire flow in litres per minute.
C = coefficient related to the type of construction.
= 1.5 for wood frame construction (structure essentially all combustible).
= 1.0 for ordinary construction (brick or other masonry walls, combustible floor and interior).
= 0.8 for non-combustible construction (unprotected metal structural components, masonry or metal walls).
= 0.6 for fire-resistive construction (fully protected frame, floors, roof).

A = The total floor area in square metres (including all storeys, but excluding basements at least 50 percent below grade) in the building being considered.

Type of Construction		Class Factor
WF	Wood Frame	1.5
OC	Ordinary Construction	1.0
NC	Non-Combustible	0.8
FC	Fire-Resistive	0.6

Contents		% Reduction
NC	Non-Combustible	25
LC	Limited Combustible	15
C	Combustible	0
FB	Free Burning	15
RB	Rapid Burning	25

Area Notes for Fire Resistive Buildings (from FUS manual, 1999):

If Vertical Openings are inadequately protected (less than 1-hour fire rating): Area is the total of the two largest adjoining floors (above ground level) plus 50% of the area of each of the next 8 adjoining floors above that.

If Vertical Openings are adequately protected (at least 1-hour fire rating): Area is the total of the largest floor (above ground level) plus 25% of the area of each of the next 2 immediately adjoining floors above that.

1) Fire Flow

Type of Construction:	FC
C=	0.6
A*=	2,203.25 m^2
F=	6,196 **L/min**

Assumes Fire Resistive type of construction with vertical openings adequately protected. Largest floor = level 1.

2) Occupancy Reduction/Surcharge

Contents Factor:		LC			
Reduction/Surcharge of		-15%	=	-929	L/min
F=	6196L/min +	-929	L/min =	5,267	**L/min**

3) System Type Reduction

NFPA 13 Sprinkler:		YES	30%		
Standard Water Supply:		YES	10%		
Fully Supervised:		YES	10%		
Total			50%		
Reduction of		50%	L/min =	2,633	L/min
F=	5267L/min -	2,633	L/min =	2,633	**L/min**

4) Separation Charge

Building Face	Dist(m)	Charge
North	25	10%
East	50	0%
South	7	20%
West	10.6	15%
Total		45%

of 5266.53 **L/min** = 2,370 **L/min**
(max exposure charge can be 75%)

Separation	Charge	Separation	Charge
0 to 3m	25%	20.1 to 30 m	10%
3.1 to 10m	20%	30.1 to 45m	5%
10.1 to 20m	15%		

F = 2633L/min + 2370L/min = 5,003 **L/min** (2,000L/min<F<45,000L/min)

F =	5,000	**L/min** (round to the nearest 1,000L/min)
F =	83	**L/s**
F =	1,321	**gpm**

Counterpoint Engineering Inc.

NFPA Theoretical Flow Calculations

Project: 2280 Dundas Street West
Project No: 22027
Flow Hydrant: 2288 Dundas Street West
Residual Hydrant: Next Hydrant South

Based on National Fire Protection Association Guidelines, the available flow at the minimum residual pressure of 20psi can be calculated based on the observed flow at the observed pressure readings, as follows:

$$\mathbf{Q_F = 29.83 \times c \times d^2 \times p^{0.5}}$$, where

Q_F = observed flow (US GPM)
c = hydrant nozzle coefficient (0.90 - 0.95)
d = nozzle diameter (in)
p = observed pitot pressure

$$\mathbf{Q_R = Q_F \times h_F^{0.54} / h_R^{0.54}}$$, where

Q_R = available flow
Q_F = observed flow (US GPM)
h_F = drop from measured static to desired baseline pressure
h_R = drop from measured static to measured residual pressure

Based on flow test results obtained by *Lozzi Aqua Check, May 20, 2022.*

c =	0.9	
d =	2.5	in
number of ports =	2	
p =	20	

Q_F = 1497 US GPM

Measured Static Pressure =	71	psi	
Measured Residual Pressure =	49	psi	
Desired Residual Pressure =	20	psi	, minimum per City of Toronto design criteria

Q_R = 2357 US GPM per fire conneciton
8,923 L/min
148.72 L/s

Lozzi Aqua Check Massimo Lozzi

12307 Woodbine Ave, P.O. Box 519 Cell: 416 990-2131

Gormley, ON L0H 1G0 E-mail: lozziaquacheck@gmail.com

Hydrant Flow Test Form

Job Location: 2280 Dundas St. W Date: May 20, 2022

Time of Test: 8:00 am

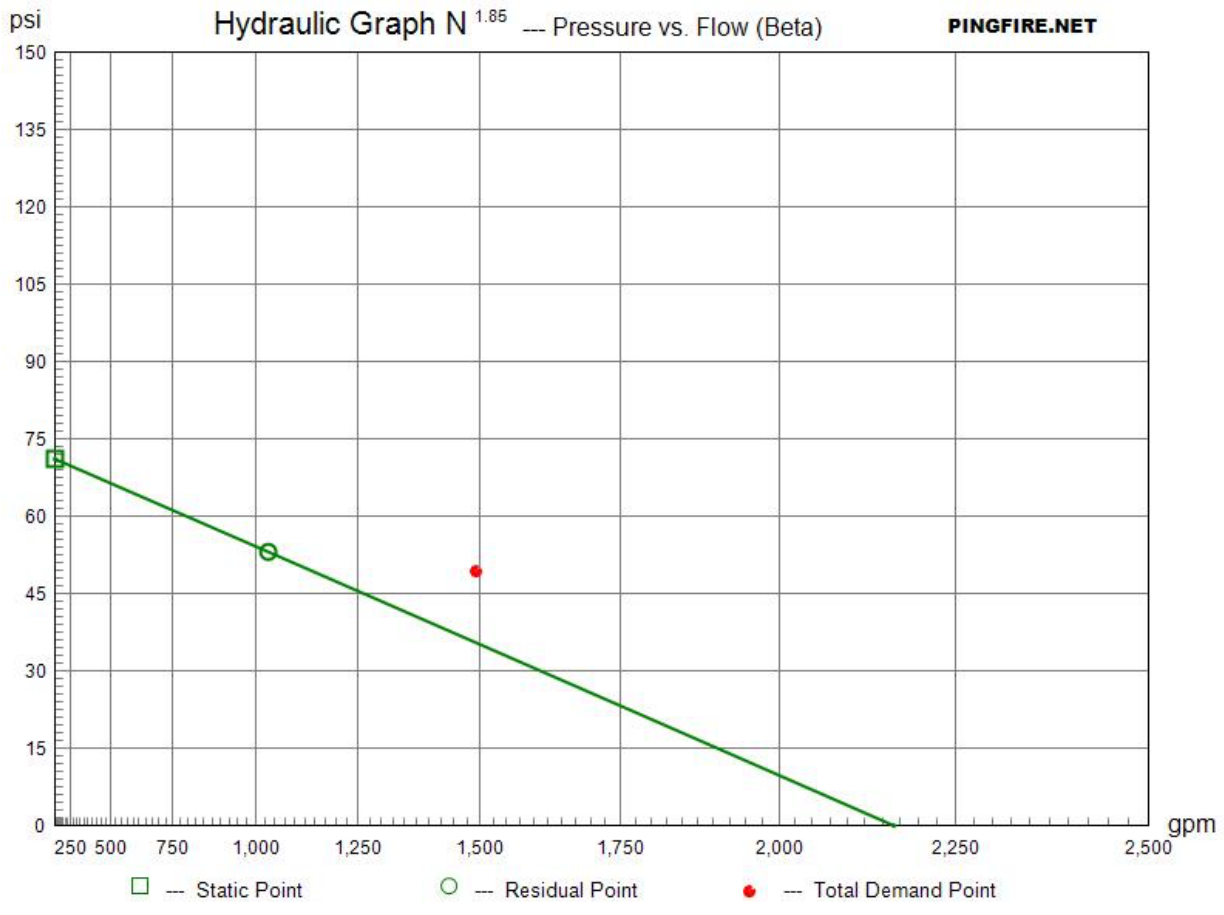
Location of Flow Hydrant: 2288 Dundas St. W

Residual: Next hydrant South

Main Size: N/A Static Pressure: 71 psi

	Number of Outlets & Orifice Size	Pitot Pressure (psi)	Flow (U.S. G.P.M.)	Residual Pressure (psi)
1.	Static	0	0	71
2.	1 x 2 ½	38	1032	53
3.	2 x 2 ½	20	1497	49

Note: Flow test conducted in accordance with NFPA 291



Lozzi Aqua Check

12307 Woodbine Ave, P.O. Box 519

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Massimo Lozzi

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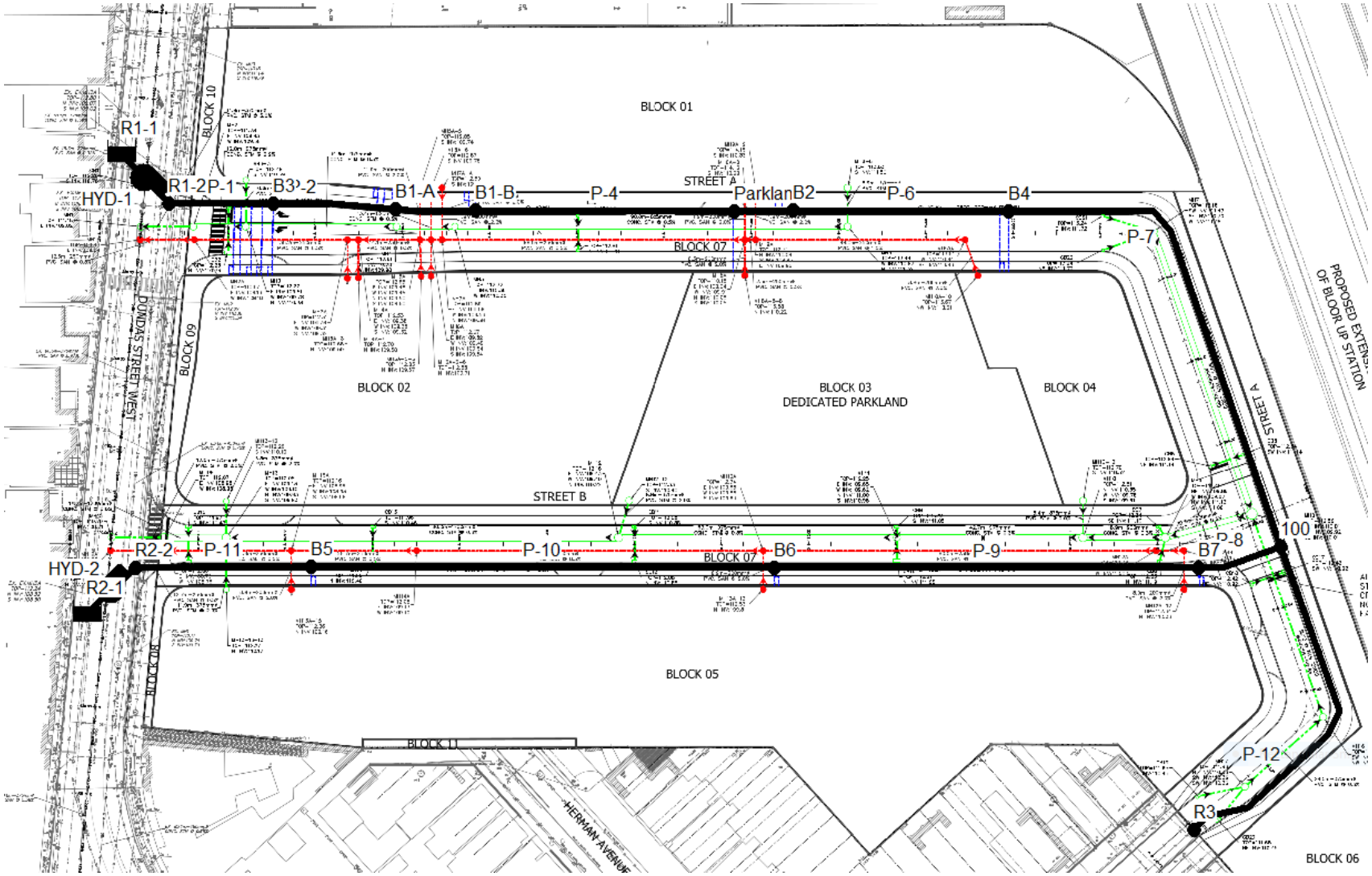
Site Map:



EPANET Schematic



Counterpoint Engineering Inc.

Junction Table

Junction	Approx. Ground Elev. (m)	Node Elev. (m)	Contributing Building	Average Day Demand (L/s)	Maximum Day Demand (L/s)	Peak Hour Demand (L/s)	Fire Flow Demand (L/s)	Max. Day + Fire Flow Demand (L/s)
R-1	112.84	111.04						
R-2	112.28	110.48						
R-3	111.71	109.91						
B3	112.48	110.68	B3	1.63	1.96	3.10	117	118.63
B1-A	112.65	110.85	-					
B1-B	112.82	111.02	B1	2.28	2.95	5.61	117	119.62
Parkland	113.30	111.50	Parkland	0.00	0.01	0.01	0	0.01
B2	113.45	111.65	B2	1.58	2.06	3.96	83	85.39
B4	113.46	111.66	B4	1.31	1.71	3.29	50	51.71
100	112.57	110.77	-					
B7	112.42	110.62	B7	0.50	0.65	1.25	83	83.98
B6	112.40	110.60	B6	0.29	0.37	0.72	67	67.04
B5	112.18	110.38	B5	0.73	0.94	1.77	117	117.61
Total	**-**	**-**		**8.32**	**10.65**	**19.71**	**-**	**-**

Notes: *1. Ground Elevation approximated based on Functional Grading Plan*
2. Node elevation = Ground Elevation - 1.8m (required cover)

Counterpoint Engineering Inc.

Pipe Table

Pipe	Length (m)	Diameter (mm)	Hazen-Williams C	Appurtenances	Minor Loss
P-1	23.9	200	110	valve	0.20
P-2	28.0	200	110	long-radius elbow	0.60
P-3	18.4	200	110	long-radius elbow	0.60
P-4	59.1	200	110	standard tee - flow through run	0.60
P-5	13.8	200	110		
P-6	49.3	200	110	standard tee - flow through run	0.60
P-7	115.8	200	110	medium-radius elbow; long-radius elbow; standard tee - flow through run	2.00
P-8	19.4	200	110	long-radius elbow	0.60
P-9	97.3	200	110	standard tee - flow through run	0.60
P-10	106.3	200	110	standard tee - flow through run	0.60
P-11	40.0	200	110	valve	0.20
P-12	84.3	200	110	4 x long-radius elbow; standard tee - flow through run; reducer	3.50

Counterpoint Engineering Inc.

Hydrant Fire Flow Testing Results

Location of Test: 2288 Dundas St. W

Ground Elevation (m)	Node Elevation (m)	Flow		Residual Pressure			HGL
		(GPM)	(L/s)	(psi)	(kPa)	(m)	(m)
112.49	113.09	0	0	71	490	49.93	163.02
		1032	65	53	365	37.27	150.36
		1497	94	49	338	34.46	147.55
		2357	149	20	138	14.06	127.15

Notes:
1. Hydrant fire flow testing conducted by Lozzi Aqua Check on May 20, 2022
2. Node Elevation estimated based on ground elevation plus 0.6m
3. Flow at 20 psi estimated based NFPA 291

Counterpoint Engineering Inc.

Residual Pressure based on Maximum Day Demand + Fire Flow

Fire Flow at Building	Max. Velocity (m/s)	Lowest Pressure			Satisfies Fire Flow Requirements?
		Pressure ($m H_2O$)	Pressure (psi)	**Pressure (kPa)**	
B1	2.53	34.69	49	340	Yes
B2	1.69	38.26	54	375	Yes
B3	2.66	36.71	52	360	Yes
B4	1.04	43.69	62	428	Yes
B5	2.55	36.78	52	361	Yes
B6	1.32	42.48	60	416	Yes
B7	1.52	39.15	56	384	Yes

Notes: *1. Fire flow requirements satisfied if lowest pressure in system > 140 kPa (20 psi)*
2. Maximum allowable flow velocity during fire flow conditions equals 3 m/s

Residual Pressure during Other Scenarios

Scenario	Lowest Pressure			Satisfies Pressure Requirements?
	Pressure ($m H_2O$)	Pressure (psi)	**Pressure (kPa)**	
Max. Day	50.29	72	493	Yes
Peak Hour	49.32	70	484	Yes

Scenario	Highest Pressure			Satisfies Pressure Requirements?
	Pressure ($m H_2O$)	Pressure (psi)	**Pressure (kPa)**	
Max. Day	52.05	74	510	Yes
Peak Hour	51.11	73	501	Yes

Notes: *1. Prefered design pressure during average day and maximum day is 350 kPa to 550 kPA*
2. Prefered design pressure during minimum hour and peak hour is 275 kPa to 700 kPA
3. The minimum pressure under any non-fire demand scenario should not be less than 275 kPa

```
************************************************************************
*                          E P A N E T                                 *
*                  Hydraulic and Water Quality                         *
*                  Analysis for Pipe Networks                          *
*                        Version 2.2                                   *
************************************************************************

Input File: 2280_Dundas_max day.net
```

Link - Node Table:

Link ID	Start Node	End Node	Length m	Diameter mm	
P-1	R1-2	B3	23.9	200	
P-2	B3	B1-A	28.0	200	
P-3	B1-A	B1-B	18.4	200	
P-4	B1-B	Parkland	59.1	200	
P-5	Parkland	B2	13.8	200	
P-6	B2	B4	49.3	200	
P-7	B4	100	115.8	200	
P-8	100	B7	19.4	200	
P-9	B7	B6	97.3	200	
P-10	B6	B5	106.3	200	
P-11	B5	R2-2	40.0	200	
P-12	100	R3	84.3	200	
HYD-1	R1-1	R1-2	#N/A	#N/A	Pump
HYD-2	R2-1	R2-2	#N/A	#N/A	Pump

Energy Usage:

Pump	Usage Factor	Avg. Effic.	Kw-hr /m3	Avg. Kw	Peak Kw	Cost /day
HYD-1	100.00	75.00	0.59	11.54	11.54	0.00
HYD-2	100.00	75.00	0.59	11.00	11.00	0.00
				Demand Charge:		0.00
				Total Cost:		0.00

Node Results:

Node ID	Demand LPS	Head m	Pressure m	Quality
R1-2	0.00	161.96	50.92	0.00
B3	1.96	161.95	51.27	0.00
B1-A	0.00	161.95	51.10	0.00
B1-B	2.95	161.94	50.92	0.00
Parkland	0.01	161.94	50.44	0.00
B2	2.06	161.94	50.29	0.00

Page 2
Node Results: (continued)

Node ID	Demand LPS	Head m	Pressure m	Quality	
B4	1.71	161.95	50.29	0.00	
100	0.00	161.96	51.19	0.00	
B7	0.65	161.96	51.34	0.00	
B6	0.37	161.98	51.38	0.00	
B5	0.94	162.00	51.62	0.00	
R2-2	0.00	162.01	51.53	0.00	
R3	0.00	161.96	52.05	0.00	
R1-1	-5.45	0.00	0.00	0.00	Reservoir
R2-1	-5.20	0.00	0.00	0.00	Reservoir

Link Results:

Link ID	Flow LPS	Velocity m/s	Unit Headloss m/km	Status	
P-1	5.45	0.17	0.30	Open	
P-2	3.49	0.11	0.14	Open	
P-3	3.49	0.11	0.15	Open	
P-4	0.54	0.02	0.00	Open	
P-5	0.53	0.02	0.00	Open	
P-6	-1.53	0.05	0.03	Open	
P-7	-3.24	0.10	0.12	Open	
P-8	-3.24	0.10	0.13	Open	
P-9	-3.89	0.12	0.16	Open	
P-10	-4.26	0.14	0.19	Open	
P-11	-5.20	0.17	0.27	Open	
P-12	0.00	0.00	0.00	Open	
HYD-1	5.45	0.00	-161.96	Open	Pump
HYD-2	5.20	0.00	-162.01	Open	Pump

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************************************************************************
*                          E P A N E T                                 *
*                  Hydraulic and Water Quality                         *
*                  Analysis for Pipe Networks                          *
*                        Version 2.2                                   *
************************************************************************

Input File: 2280_Dundas_peak hour.net
```

Link - Node Table:

Link ID	Start Node	End Node	Length m	Diameter mm	
P-1	R1-2	B3	23.9	200	
P-2	B3	B1-A	28.0	200	
P-3	B1-A	B1-B	18.4	200	
P-4	B1-B	Parkland	59.1	200	
P-5	Parkland	B2	13.8	200	
P-6	B2	B4	49.3	200	
P-7	B4	100	115.8	200	
P-8	100	B7	19.4	200	
P-9	B7	B6	97.3	200	
P-10	B6	B5	106.3	200	
P-11	B5	R2-2	40.0	200	
P-12	100	R3	84.3	200	
HYD-1	R1-1	R1-2	#N/A	#N/A	Pump
HYD-2	R2-1	R2-2	#N/A	#N/A	Pump

Energy Usage:

Pump	Usage Factor	Avg. Effic.	Kw-hr /m3	Avg. Kw	Peak Kw	Cost /day
HYD-1	100.00	75.00	0.58	21.50	21.50	0.00
HYD-2	100.00	75.00	0.59	20.00	20.00	0.00
				Demand Charge:		0.00
				Total Cost:		0.00

Node Results:

Node ID	Demand LPS	Head m	Pressure m	Quality
R1-2	0.00	161.03	49.99	0.00
B3	3.10	161.01	50.33	0.00
B1-A	0.00	160.99	50.14	0.00
B1-B	5.61	160.98	49.96	0.00
Parkland	0.01	160.98	49.48	0.00
B2	3.96	160.98	49.33	0.00

Page 2
Node Results: (continued)

Node ID	Demand LPS	Head m	Pressure m	Quality	
B4	3.29	160.98	49.32	0.00	
100	0.00	161.02	50.25	0.00	
B7	1.25	161.03	50.41	0.00	
B6	0.72	161.08	50.48	0.00	
B5	1.77	161.14	50.76	0.00	
R2-2	0.00	161.17	50.69	0.00	
R3	0.00	161.02	51.11	0.00	
R1-1	-10.22	0.00	0.00	0.00	Reservoir
R2-1	-9.49	0.00	0.00	0.00	Reservoir

Link Results:

Link ID	Flow LPS	Velocity m/s	Unit Headloss m/km	Status	
P-1	10.22	0.33	0.97	Open	
P-2	7.12	0.23	0.53	Open	
P-3	7.12	0.23	0.56	Open	
P-4	1.51	0.05	0.03	Open	
P-5	1.50	0.05	0.03	Open	
P-6	-2.46	0.08	0.07	Open	
P-7	-5.75	0.18	0.35	Open	
P-8	-5.75	0.18	0.37	Open	
P-9	-7.00	0.22	0.47	Open	
P-10	-7.72	0.25	0.57	Open	
P-11	-9.49	0.30	0.83	Open	
P-12	0.00	0.00	0.00	Open	
HYD-1	10.22	0.00	-161.03	Open	Pump
HYD-2	9.49	0.00	-161.17	Open	Pump

```
************************************************************************
*                          E P A N E T                                 *
*                  Hydraulic and Water Quality                         *
*                  Analysis for Pipe Networks                          *
*                        Version 2.2                                   *
************************************************************************

Input File: 2280_Dundas_max day_FF-B1.net


Link - Node Table:
------------------------------------------------------------------------
Link          Start         End                Length  Diameter
ID            Node          Node                    m        mm
------------------------------------------------------------------------
P-1           R1-2          B3                   23.9       200
P-2           B3            B1-A                 28.0       200
P-3           B1-A          B1-B                 18.4       200
P-4           B1-B          Parkland             59.1       200
P-5           Parkland      B2                   13.8       200
P-6           B2            B4                   49.3       200
P-7           B4            100                 115.8       200
P-8           100           B7                   19.4       200
P-9           B7            B6                   97.3       200
P-10          B6            B5                  106.3       200
P-11          B5            R2-2                 40.0       200
P-12          100           R3                   84.3       200
HYD-1         R1-1          R1-2                 #N/A      #N/A Pump
HYD-2         R2-1          R2-2                 #N/A      #N/A Pump

Energy Usage:
------------------------------------------------------------------------
                 Usage   Avg.     Kw-hr      Avg.      Peak      Cost
Pump            Factor Effic.     /m3        Kw        Kw      /day
------------------------------------------------------------------------
HYD-1           100.00  75.00      0.54    154.66    154.66      0.00
HYD-2           100.00  75.00      0.56     96.18     96.18      0.00
------------------------------------------------------------------------
                                           Demand Charge:      0.00
                                           Total Cost:         0.00

Node Results:
------------------------------------------------------------------------
Node               Demand      Head  Pressure   Quality
ID                    LPS         m         m
------------------------------------------------------------------------
R1-2                 0.00    148.96     37.92      0.00
B3                   1.96    147.91     37.23      0.00
B1-A                 0.00    146.62     35.77      0.00
B1-B               119.62    145.71     34.69      0.00
Parkland             0.01    146.52     35.02      0.00
B2                   2.06    146.70     35.05      0.00
```

Page 2
Node Results: (continued)

Node ID	Demand LPS	Head m	Pressure m	Quality	
B4	1.71	147.44	35.78	0.00	
100	0.00	149.39	38.62	0.00	
B7	0.65	149.75	39.13	0.00	
B6	0.37	151.30	40.70	0.00	
B5	0.94	153.03	42.65	0.00	
R2-2	0.00	153.69	43.21	0.00	
R3	0.00	149.39	39.48	0.00	
R1-1	-79.44	0.00	0.00	0.00	Reservoir
R2-1	-47.88	0.00	0.00	0.00	Reservoir

Link Results:

Link ID	Flow LPS	Velocity m/s	Unit Headloss m/km	Status	
P-1	79.44	2.53	43.93	Open	
P-2	77.48	2.47	45.98	Open	
P-3	77.48	2.47	49.44	Open	
P-4	-42.14	1.34	13.67	Open	
P-5	-42.15	1.34	12.74	Open	
P-6	-44.21	1.41	15.15	Open	
P-7	-45.92	1.46	16.81	Open	
P-8	-45.92	1.46	18.30	Open	
P-9	-46.57	1.48	16.02	Open	
P-10	-46.94	1.49	16.19	Open	
P-11	-47.88	1.52	16.72	Open	
P-12	0.00	0.00	0.00	Open	
HYD-1	79.44	0.00	-148.96	Open	Pump
HYD-2	47.88	0.00	-153.69	Open	Pump

```
**************************************************************************
*                            E P A N E T                                 *
*                     Hydraulic and Water Quality                        *
*                     Analysis for Pipe Networks                         *
*                           Version 2.2                                  *
**************************************************************************

Input File: 2280_Dundas_max day_FF-B2.net
```

Link - Node Table:

Link ID	Start Node	End Node	Length m	Diameter mm	
P-1	R1-2	B3	23.9	200	
P-2	B3	B1-A	28.0	200	
P-3	B1-A	B1-B	18.4	200	
P-4	B1-B	Parkland	59.1	200	
P-5	Parkland	B2	13.8	200	
P-6	B2	B4	49.3	200	
P-7	B4	100	115.8	200	
P-8	100	B7	19.4	200	
P-9	B7	B6	97.3	200	
P-10	B6	B5	106.3	200	
P-11	B5	R2-2	40.0	200	
P-12	100	R3	84.3	200	
HYD-1	R1-1	R1-2	#N/A	#N/A	Pump
HYD-2	R2-1	R2-2	#N/A	#N/A	Pump

Energy Usage:

Pump	Usage Factor	Avg. Effic.	Kw-hr /m3	Avg. Kw	Peak Kw	Cost /day
HYD-1	100.00	75.00	0.55	105.98	105.98	0.00
HYD-2	100.00	75.00	0.56	82.82	82.82	0.00
				Demand Charge:		0.00
				Total Cost:		0.00

Node Results:

Node ID	Demand LPS	Head m	Pressure m	Quality
R1-2	0.00	152.68	41.64	0.00
B3	1.96	152.18	41.50	0.00
B1-A	0.00	151.59	40.74	0.00
B1-B	2.95	151.17	40.15	0.00
Parkland	0.01	150.13	38.63	0.00
B2	85.39	149.91	38.26	0.00

Page 2
Node Results: (continued)

Node ID	Demand LPS	Head m	Pressure m	Quality	
B4	1.71	150.45	38.79	0.00	
100	0.00	151.88	41.11	0.00	
B7	0.65	152.14	41.52	0.00	
B6	0.37	153.29	42.69	0.00	
B5	0.94	154.56	44.18	0.00	
R2-2	0.00	155.06	44.58	0.00	
R3	0.00	151.88	41.97	0.00	
R1-1	-53.11	0.00	0.00	0.00	Reservoir
R2-1	-40.87	0.00	0.00	0.00	Reservoir

Link Results:

Link ID	Flow LPS	VelocityUnit m/s	Headloss m/km	Status	
P-1	53.11	1.69	20.77	Open	
P-2	51.15	1.63	21.13	Open	
P-3	51.15	1.63	22.64	Open	
P-4	48.20	1.53	17.55	Open	
P-5	48.19	1.53	16.33	Open	
P-6	-37.20	1.18	10.98	Open	
P-7	-38.91	1.24	12.33	Open	
P-8	-38.91	1.24	13.40	Open	
P-9	-39.56	1.26	11.82	Open	
P-10	-39.93	1.27	11.99	Open	
P-11	-40.87	1.30	12.46	Open	
P-12	0.00	0.00	0.00	Open	
HYD-1	53.11	0.00	-152.68	Open	Pump
HYD-2	40.87	0.00	-155.06	Open	Pump

```
**************************************************************************
*                            E P A N E T                                 *
*                     Hydraulic and Water Quality                        *
*                     Analysis for Pipe Networks                         *
*                           Version 2.2                                  *
**************************************************************************

Input File: 2280_Dundas_max day_FF-B3.net
```

Link - Node Table:

Link ID	Start Node	End Node	Length m	Diameter mm	
P-1	R1-2	B3	23.9	200	
P-2	B3	B1-A	28.0	200	
P-3	B1-A	B1-B	18.4	200	
P-4	B1-B	Parkland	59.1	200	
P-5	Parkland	B2	13.8	200	
P-6	B2	B4	49.3	200	
P-7	B4	100	115.8	200	
P-8	100	B7	19.4	200	
P-9	B7	B6	97.3	200	
P-10	B6	B5	106.3	200	
P-11	B5	R2-2	40.0	200	
P-12	100	R3	84.3	200	
HYD-1	R1-1	R1-2	#N/A	#N/A	Pump
HYD-2	R2-1	R2-2	#N/A	#N/A	Pump

Energy Usage:

Pump	Usage Factor	Avg. Effic.	Kw-hr /m3	Avg. Kw	Peak Kw	Cost /day
HYD-1	100.00	75.00	0.54	162.54	162.54	0.00
HYD-2	100.00	75.00	0.56	88.06	88.06	0.00
				Demand Charge:		0.00
				Total Cost:		0.00

Node Results:

Node ID	Demand LPS	Head m	Pressure m	Quality
R1-2	0.00	148.55	37.51	0.00
B3	118.63	147.39	36.71	0.00
B1-A	0.00	147.68	36.83	0.00
B1-B	2.95	147.88	36.86	0.00
Parkland	0.01	148.54	37.04	0.00
B2	2.06	148.69	37.04	0.00

Page 2
Node Results: (continued)

Node ID	Demand LPS	Head m	Pressure m	Quality	
B4	1.71	149.30	37.64	0.00	
100	0.00	150.93	40.16	0.00	
B7	0.65	151.22	40.60	0.00	
B6	0.37	152.52	41.92	0.00	
B5	0.94	153.97	43.59	0.00	
R2-2	0.00	154.53	44.05	0.00	
R3	0.00	150.93	41.02	0.00	
R1-1	-83.72	0.00	0.00	0.00	Reservoir
R2-1	-43.60	0.00	0.00	0.00	Reservoir

Link Results:

Link ID	Flow LPS	Velocity m/s	Unit Headloss m/km	Status	
P-1	83.72	2.66	48.43	Open	
P-2	-34.91	1.11	10.34	Open	
P-3	-34.91	1.11	11.04	Open	
P-4	-37.86	1.21	11.20	Open	
P-5	-37.87	1.21	10.45	Open	
P-6	-39.93	1.27	12.53	Open	
P-7	-41.64	1.33	14.00	Open	
P-8	-41.64	1.33	15.22	Open	
P-9	-42.29	1.35	13.39	Open	
P-10	-42.66	1.36	13.56	Open	
P-11	-43.60	1.39	14.06	Open	
P-12	0.00	0.00	0.00	Open	
HYD-1	83.72	0.00	-148.55	Open	Pump
HYD-2	43.60	0.00	-154.53	Open	Pump

```
**************************************************************************
*                            E P A N E T                                 *
*                     Hydraulic and Water Quality                        *
*                     Analysis for Pipe Networks                         *
*                           Version 2.2                                  *
**************************************************************************

Input File: 2280_Dundas_max day_FF-B4.net
```

Link - Node Table:

Link ID	Start Node	End Node	Length m	Diameter mm	
P-1	R1-2	B3	23.9	200	
P-2	B3	B1-A	28.0	200	
P-3	B1-A	B1-B	18.4	200	
P-4	B1-B	Parkland	59.1	200	
P-5	Parkland	B2	13.8	200	
P-6	B2	B4	49.3	200	
P-7	B4	100	115.8	200	
P-8	100	B7	19.4	200	
P-9	B7	B6	97.3	200	
P-10	B6	B5	106.3	200	
P-11	B5	R2-2	40.0	200	
P-12	100	R3	84.3	200	
HYD-1	R1-1	R1-2	#N/A	#N/A	Pump
HYD-2	R2-1	R2-2	#N/A	#N/A	Pump

Energy Usage:

Pump	Usage Factor	Avg. Effic.	Kw-hr /m3	Avg. Kw	Peak Kw	Cost /day
HYD-1	100.00	75.00	0.57	66.85	66.85	0.00
HYD-2	100.00	75.00	0.57	57.66	57.66	0.00
				Demand Charge:		0.00
				Total Cost:		0.00

Node Results:

Node ID	Demand LPS	Head m	Pressure m	Quality
R1-2	0.00	156.66	45.62	0.00
B3	1.96	156.46	45.78	0.00
B1-A	0.00	156.23	45.38	0.00
B1-B	2.95	156.07	45.05	0.00
Parkland	0.01	155.70	44.20	0.00
B2	2.06	155.62	43.97	0.00

Page 2
Node Results: (continued)

Node ID	Demand LPS	Head m	Pressure m	Quality	
B4	51.71	155.35	43.69	0.00	
100	0.00	156.02	45.25	0.00	
B7	0.65	156.15	45.53	0.00	
B6	0.37	156.70	46.10	0.00	
B5	0.94	157.32	46.94	0.00	
R2-2	0.00	157.57	47.09	0.00	
R3	0.00	156.02	46.11	0.00	
R1-1	-32.65	0.00	0.00	0.00	Reservoir
R2-1	-28.00	0.00	0.00	0.00	Reservoir

Link Results:

Link ID	Flow LPS	Velocity m/s	Unit Headloss m/km	Status	
P-1	32.65	1.04	8.40	Open	
P-2	30.69	0.98	8.12	Open	
P-3	30.69	0.98	8.66	Open	
P-4	27.74	0.88	6.27	Open	
P-5	27.73	0.88	5.87	Open	
P-6	25.67	0.82	5.50	Open	
P-7	-26.04	0.83	5.83	Open	
P-8	-26.04	0.83	6.30	Open	
P-9	-26.69	0.85	5.69	Open	
P-10	-27.06	0.86	5.82	Open	
P-11	-28.00	0.89	6.17	Open	
P-12	0.00	0.00	0.00	Open	
HYD-1	32.65	0.00	-156.66	Open	Pump
HYD-2	28.00	0.00	-157.57	Open	Pump

```
************************************************************************
*                          E P A N E T                                 *
*                  Hydraulic and Water Quality                         *
*                  Analysis for Pipe Networks                          *
*                        Version 2.2                                   *
************************************************************************

Input File: 2280_Dundas_max day_FF-B5.net
```

Link - Node Table:

Link ID	Start Node	End Node	Length m	Diameter mm	
P-1	R1-2	B3	23.9	200	
P-2	B3	B1-A	28.0	200	
P-3	B1-A	B1-B	18.4	200	
P-4	B1-B	Parkland	59.1	200	
P-5	Parkland	B2	13.8	200	
P-6	B2	B4	49.3	200	
P-7	B4	100	115.8	200	
P-8	100	B7	19.4	200	
P-9	B7	B6	97.3	200	
P-10	B6	B5	106.3	200	
P-11	B5	R2-2	40.0	200	
P-12	100	R3	84.3	200	
HYD-1	R1-1	R1-2	#N/A	#N/A	Pump
HYD-2	R2-1	R2-2	#N/A	#N/A	Pump

Energy Usage:

Pump	Usage Factor	Avg. Effic.	Kw-hr /m3	Avg. Kw	Peak Kw	Cost /day
HYD-1	100.00	75.00	0.56	94.92	94.92	0.00
HYD-2	100.00	75.00	0.54	155.89	155.89	0.00
				Demand Charge:		0.00
				Total Cost:		0.00

Node Results:

Node ID	Demand LPS	Head m	Pressure m	Quality
R1-2	0.00	153.82	42.78	0.00
B3	1.96	153.43	42.75	0.00
B1-A	0.00	152.96	42.11	0.00
B1-B	2.95	152.62	41.60	0.00
Parkland	0.01	151.81	40.31	0.00
B2	2.06	151.63	39.98	0.00

Page 2
Node Results: (continued)

Node ID	Demand LPS	Head m	Pressure m	Quality	
B4	1.71	151.01	39.35	0.00	
100	0.00	149.61	38.84	0.00	
B7	0.65	149.35	38.73	0.00	
B6	0.37	148.29	37.69	0.00	
B5	117.61	147.16	36.78	0.00	
R2-2	0.00	148.90	38.42	0.00	
R3	0.00	149.61	39.70	0.00	
R1-1	-47.21	0.00	0.00	0.00	Reservoir
R2-1	-80.11	0.00	0.00	0.00	Reservoir

Link Results:

Link ID	Flow LPS	Velocity m/s	Unit Headloss m/km	Status	
P-1	47.21	1.50	16.68	Open	
P-2	45.25	1.44	16.79	Open	
P-3	45.25	1.44	17.98	Open	
P-4	42.30	1.35	13.76	Open	
P-5	42.29	1.35	12.82	Open	
P-6	40.23	1.28	12.70	Open	
P-7	38.52	1.23	12.11	Open	
P-8	38.52	1.23	13.15	Open	
P-9	37.87	1.21	10.91	Open	
P-10	37.50	1.19	10.67	Open	
P-11	-80.11	2.55	43.50	Open	
P-12	0.00	0.00	0.00	Open	
HYD-1	47.21	0.00	-153.82	Open	Pump
HYD-2	80.11	0.00	-148.90	Open	Pump

```
************************************************************************
*                          E P A N E T                                 *
*                  Hydraulic and Water Quality                         *
*                  Analysis for Pipe Networks                          *
*                        Version 2.2                                   *
************************************************************************

Input File: 2280_Dundas_max day_FF-B6.net
```

Link - Node Table:

Link ID	Start Node	End Node	Length m	Diameter mm	
P-1	R1-2	B3	23.9	200	
P-2	B3	B1-A	28.0	200	
P-3	B1-A	B1-B	18.4	200	
P-4	B1-B	Parkland	59.1	200	
P-5	Parkland	B2	13.8	200	
P-6	B2	B4	49.3	200	
P-7	B4	100	115.8	200	
P-8	100	B7	19.4	200	
P-9	B7	B6	97.3	200	
P-10	B6	B5	106.3	200	
P-11	B5	R2-2	40.0	200	
P-12	100	R3	84.3	200	
HYD-1	R1-1	R1-2	#N/A	#N/A	Pump
HYD-2	R2-1	R2-2	#N/A	#N/A	Pump

Energy Usage:

Pump	Usage Factor	Avg. Effic.	Kw-hr /m3	Avg. Kw	Peak Kw	Cost /day
HYD-1	100.00	75.00	0.57	72.85	72.85	0.00
HYD-2	100.00	75.00	0.56	84.23	84.23	0.00
				Demand Charge:		0.00
				Total Cost:		0.00

Node Results:

Node ID	Demand LPS	Head m	Pressure m	Quality
R1-2	0.00	156.06	45.02	0.00
B3	1.96	155.83	45.15	0.00
B1-A	0.00	155.55	44.70	0.00
B1-B	2.95	155.36	44.34	0.00
Parkland	0.01	154.91	43.41	0.00
B2	2.06	154.81	43.16	0.00

Page 2
Node Results: (continued)

Node ID	Demand LPS	Head m	Pressure m	Quality	
B4	1.71	154.48	42.82	0.00	
100	0.00	153.76	42.99	0.00	
B7	0.65	153.63	43.01	0.00	
B6	67.04	153.08	42.48	0.00	
B5	0.94	154.40	44.02	0.00	
R2-2	0.00	154.92	44.44	0.00	
R3	0.00	153.76	43.85	0.00	
R1-1	-35.72	0.00	0.00	0.00	Reservoir
R2-1	-41.60	0.00	0.00	0.00	Reservoir

Link Results:

Link ID	Flow LPS	Velocity m/s	Unit Headloss m/km	Status	
P-1	35.72	1.14	9.93	Open	
P-2	33.76	1.07	9.71	Open	
P-3	33.76	1.07	10.36	Open	
P-4	30.81	0.98	7.63	Open	
P-5	30.80	0.98	7.13	Open	
P-6	28.74	0.91	6.79	Open	
P-7	27.03	0.86	6.25	Open	
P-8	27.03	0.86	6.76	Open	
P-9	26.38	0.84	5.57	Open	
P-10	-40.66	1.29	12.40	Open	
P-11	-41.60	1.32	12.88	Open	
P-12	0.00	0.00	0.00	Open	
HYD-1	35.72	0.00	-156.06	Open	Pump
HYD-2	41.60	0.00	-154.92	Open	Pump

```
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**********************************************************************
*                            E P A N E T                             *
*                    Hydraulic and Water Quality                     *
*                    Analysis for Pipe Networks                      *
*                          Version 2.2                               *
**********************************************************************

Input File: 2280_Dundas_max day_FF-B7.net


Link - Node Table:
----------------------------------------------------------------------
Link           Start          End                Length  Diameter
ID             Node           Node                    m        mm
----------------------------------------------------------------------
P-1            R1-2           B3                   23.9       200
P-2            B3             B1-A                 28.0       200
P-3            B1-A           B1-B                 18.4       200
P-4            B1-B           Parkland             59.1       200
P-5            Parkland       B2                   13.8       200
P-6            B2             B4                   49.3       200
P-7            B4             100                 115.8       200
P-8            100            B7                   19.4       200
P-9            B7             B6                   97.3       200
P-10           B6             B5                  106.3       200
P-11           B5             R2-2                 40.0       200
P-12           100            R3                   84.3       200
HYD-1          R1-1           R1-2                 #N/A      #N/A Pump
HYD-2          R2-1           R2-2                 #N/A      #N/A Pump

Energy Usage:
----------------------------------------------------------------------
                  Usage   Avg.     Kw-hr      Avg.      Peak      Cost
Pump             Factor Effic.     /m3        Kw        Kw      /day
----------------------------------------------------------------------
HYD-1            100.00  75.00      0.56     92.92     92.92      0.00
HYD-2            100.00  75.00      0.56     96.07     96.07      0.00
----------------------------------------------------------------------
                                                Demand Charge:      0.00
                                                Total Cost:         0.00

Node Results:
----------------------------------------------------------------------
Node                Demand      Head  Pressure   Quality
ID                     LPS         m         m
----------------------------------------------------------------------
R1-2                  0.00    154.03     42.99      0.00
B3                    1.96    153.65     42.97      0.00
B1-A                  0.00    153.20     42.35      0.00
B1-B                  2.95    152.88     41.86      0.00
Parkland              0.01    152.10     40.60      0.00
B2                    2.06    151.94     40.29      0.00
```

Page 2
Node Results: (continued)

Node ID	Demand LPS	Head m	Pressure m	Quality	
B4	1.71	151.34	39.68	0.00	
100	0.00	150.01	39.24	0.00	
B7	83.98	149.77	39.15	0.00	
B6	0.37	151.32	40.72	0.00	
B5	0.94	153.04	42.66	0.00	
R2-2	0.00	153.71	43.23	0.00	
R3	0.00	150.01	40.10	0.00	
R1-1	-46.16	0.00	0.00	0.00	Reservoir
R2-1	-47.82	0.00	0.00	0.00	Reservoir

Link Results:

Link ID	Flow LPS	VelocityUnit m/s	Headloss m/km	Status	
P-1	46.16	1.47	15.99	Open	
P-2	44.20	1.41	16.07	Open	
P-3	44.20	1.41	17.20	Open	
P-4	41.25	1.31	13.13	Open	
P-5	41.24	1.31	12.24	Open	
P-6	39.18	1.25	12.09	Open	
P-7	37.47	1.19	11.50	Open	
P-8	37.47	1.19	12.49	Open	
P-9	-46.51	1.48	15.98	Open	
P-10	-46.88	1.49	16.16	Open	
P-11	-47.82	1.52	16.69	Open	
P-12	0.00	0.00	0.00	Open	
HYD-1	46.16	0.00	-154.03	Open	Pump
HYD-2	47.82	0.00	-153.71	Open	Pump