



Functional Servicing Report

Hillsburgh Trails Subdivision
Part Lot 23, Concession 7
Town of Erin (Hillsburgh)

File No.: 121132 / 2401061

Revised November 2024

TABLE OF CONTENTS

1.0	INTRODUCTION	2
2.0	EXISTING CONDITIONS	2
3.1	Land Use.....	2
3.2	Topography.....	2
3.3	Soils	3
3.4	Groundwater.....	3
3.0	PROPOSED DEVELOPMENT	4
3.1	Site Grading	4
3.2	Streets	4
3.3	Water Supply	4
3.4	Sanitary Sewer	5
3.5	Storm Sewer	6
4.0	STORMWATER MANAGEMENT CRITERIA	7
5.0	STORMWATER MANAGEMENT PLAN	9
5.1	Pre-Development Conditions	9
5.2	Post-Development Conditions	10
5.3	Stormwater Management Overview.....	11
5.4	Proposed Stormwater Management Facility	13
5.5	Stormwater Management Facility Outlet to Existing Woodlot.....	17
5.6	Superpipe Storage	19
5.7	Major Flow Conveyance	20
5.8	Comparison to Pre-Development Flows	20
6.0	INFILTRATION ASSESSMENT	22
6.1	Overall Site Water Balance	22
6.2	Wetland Water Balance.....	25
6.3	First 5 mm Detention	26
7.0	SEDIMENT AND EROSION CONTROL PLAN	27
8.0	CONCLUSIONS.....	28

LIST OF FIGURES

After Page

1.	Site Location	2
2.	Draft Plan of Subdivision	4
3.	Pre-Development Drainage Plan.....	9
4.	Post-Development Drainage Area.....	10

APPENDICES

A	Geotechnical Investigation by V.A. Wood (Guelph) Inc, 2015
B	Preliminary Sanitary Sewer Design Calculations
C	Preliminary Storm Sewer Design Calculations
D	Pre-Development Conditions Stormwater Management Analysis
E	Post-Development Conditions Stormwater Management Analysis
F	Water Balance and First 5 mm On-Site Detention Calculations

**FUNCTIONAL SERVICING REPORT
HILLSBURGH TRAILS SUBDIVISION
PART LOT 23, CONCESSION 7
TOWN OF ERIN (HILLSBURGH)
REVISED NOVEMBER 2024
GMBP FILE: 121132**

1.0 INTRODUCTION

GM BluePlan Engineering Limited has prepared this Functional Servicing Report to address the site servicing and stormwater management requirements for the proposed development in support of the Draft Plan approval. The Draft Plan of Subdivision has been prepared by GSP Group.

The proposed 14.14 ha development (site) is located north of Wellington Road 22 and west of Trafalgar Road in Hillsburgh, Town of Erin. **Figure 1** shows the location of the proposed development and the surrounding area. The boundaries of the development include future development lands to the north and east of the site, agricultural areas to the west and Wellington Road 22 followed by additional wooded areas to the south of the site. The woodlot area east of the site is regulated by the Credit Valley Conservation Authority (CVC) and is a component of the West Credit River Wetland Complex and the Erin Branch of the Credit River. The easterly property boundary of the site also falls under Credit Valley Conservation Authority regulation.

2.0 EXISTING CONDITIONS

3.1 Land Use

The site is currently a vacant agricultural field. An existing dwelling is located southwest of the site, and it is to remain under post-development conditions. Along Wellington Road 22, the existing properties mainly consist of rural county lots, agricultural lands and wooded areas.

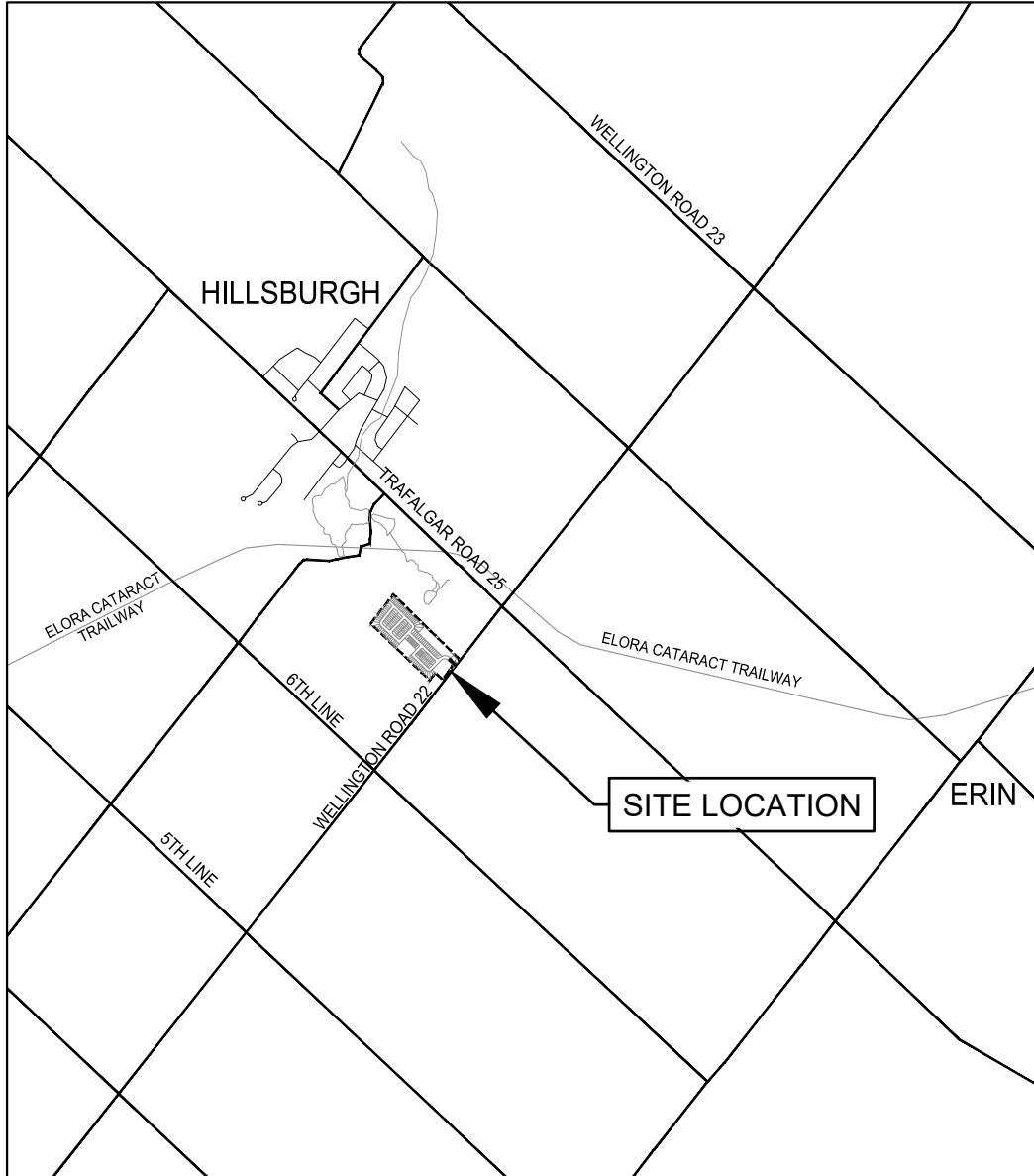
3.2 Topography

The site has undulating topography with slopes ranging from 3% to 7% and high points ranging from 443.5m to 449m above sea level along the central portion of the site. From the high points on site, there is a drop of 5 to 10 m in the easterly direction, 3m to 5m in the westerly direction and 3m to 6m in the southerly direction. The existing site drainage is split into the east, west and south directions.

The majority of the site drains by sheetflow in the easterly direction towards the existing woodlot ultimately discharging to the West Credit River Wetland Complex and the Erin Branch of the Credit River. The remaining parts of the site drain by sheetflow to the existing farm field located in the easterly direction and to the existing Wellington Road 22 roadside ditch located south of the site. The existing Wellington Road 22 roadside ditch will eventually drain to the Erin Branch of the Credit River downstream of the site.

121132
HILLSBURGH SUBDIVISION
TOWN OF ERIN (HILLSBURGH)

FUNCTIONAL SERVICING REPORT



N



LEGEND

----- PROPOSED
SUBDIVISION

SITE LOCATION

Figure No. 1



121132
MAY 2023
Scale: 1:50,000 | NAD 1983 UTM Zone 17N

3.3 Soils

Per the Ontario Soil Surveys Report No. 35, Wellington County, the predominant surface soil type throughout the site and adjoining areas is categorized as Hillsburgh Fine Sandy Loam consisting of fine to medium sand and good drainage characteristics. Hillsburgh Fine Sandy Loam is considered a Hydrologic Group A soil.

A Geotechnical Investigation has been completed by V.A. Wood (Guelph) Incorporated in 2015. The geotechnical investigation consisted of six (6) boreholes across the site to depths ranging from 4.9 m to 6.6 m below the ground surface (bgs). Based on the 2015 geotechnical investigation, the site soils generally consist of approximately 300mm thick topsoil followed by silt (sandy to clayey) and clayey silt tills. It is noted that the boreholes were dry upon the completion of the 2015 geotechnical investigation.

A copy of the Geotechnical Investigation is included in **Appendix A**.

GM BluePlan Engineering Limited completed a Hydrogeological Study for the site (revised November 2024). The study initiated in 2016 with the drilling of six (6) boreholes and the collection of soil samples to categorize the stratigraphy of the underlying soils.

The Hydrogeological Study concludes that the site soils are generally composed of the following:

- Approximately 0.3m thick topsoil (sandy silt to clayey silt texture)
- Silt, approximately 2.5 m to 6 m thick, overlying
- Upper Till (Sandy Silt to Clayey Silt), approximately 4.5 m to 6 m thick, overlying
- Gravel and Sand to Sand and Silt Deposit, overlying
- Lower Till (Clayey Silt).

For additional soil information, please refer to the Hydrogeological Study completed by GM BluePlan Engineering Limited.

3.4 Groundwater

GM BluePlan Engineering Limited completed a Hydrogeological Study for the site (revised November 2024). As part of the hydrogeological study, six (6) boreholes were drilled in 2016 and a monitoring well was installed at each borehole location. The borehole depths range from 8 m to 14.3 m below ground surface. An initial groundwater elevation was recorded in September 2016 to establish the baseline data followed by additional manual readings in 2022 and 2023 to determine the seasonal high groundwater levels.

Groundwater monitoring results indicate that the seasonal high groundwater levels on site vary from 3.6 m below ground surface at the southwest portion of the site (MW-02) to approximately 11.5 m below ground surface towards the northerly portion of the site (MW-04). The deepest seasonal high groundwater reading is at (MW-05) located at the central/westerly portion of the site at an elevation of approximately 12.1 m below ground surface.

The Hydrogeological Study recommends that the proposed stormwater management facility be lined with an impermeable liner such as a clay liner or geosynthetic membrane to mitigate the passage of water between the stormwater management facility and the underlying aquifer. The impermeable liner thickness, material and exact locations are to be confirmed by the geotechnical engineer at the detail design stage.

For additional information, please refer to the Hydrogeological Study completed by GM BluePlan Engineering Limited.

3.0 PROPOSED DEVELOPMENT

The proposed 14.14 ha residential development generally consists of 142 single-detached lots, two on-street townhome blocks (24 units), a multiple residential block (± 48 units), an open space block, a park block, internal roadways, a stormwater management block and a sanitary sewage pumping station block. **Figure 2** illustrates the proposed Draft Plan of Subdivision prepared by GSP Group.

The main connection to the site will be via the Street A connection to Wellington Road 22. A secondary connection will be provided in the future via Street C once the lands to the north of the site will develop. For the time being, a block the size of a single-detached lot has been provided on the Draft Plan of Subdivision to accommodate the construction of a temporary turning circle at the Street C terminus until the future development of the lands to the north occurs.

3.1 Site Grading

The site grading for the proposed residential lots, open spaces, internal roads and stormwater management facilities is shown on the Preliminary Grading Plans. The site has been graded to match the Street A entrance elevation at Wellington Road 22, and the property boundaries along the north, south, east and west portions of the site. It is noted that the proposed site grading has been designed to mitigate the amount of excess fill generated from the site.

Internal roadways are graded with slopes ranging from 0.5% to 5%, while lots are generally graded with slopes ranging from 2% to 6% per the Town of Erin Standards. The proposed lot grading patterns generally consists of split-drainage lots, back to front draining lots and walkout type lots. 3:1 transition slopes are proposed in rear yard areas of select lots to accommodate the grade relief across the site and in areas matching into the existing woodlot buffers.

3.2 Streets

The internal roadways will be constructed as a 20 m wide urban cross section complete with concrete curb and gutter per Town of Erin Standards (Erin SD.102). The Street A right-of-way connection at Wellington Road 22 will be 24 m in width and will contain a center island. Street A will transition into a 20 m wide right-of-way section within the first 100 m from Wellington Road 22.

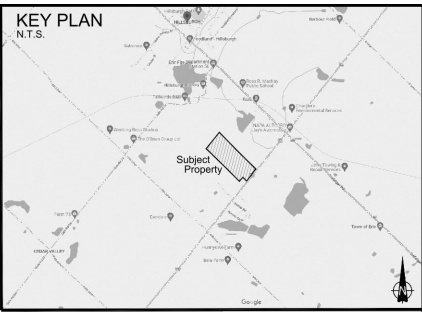
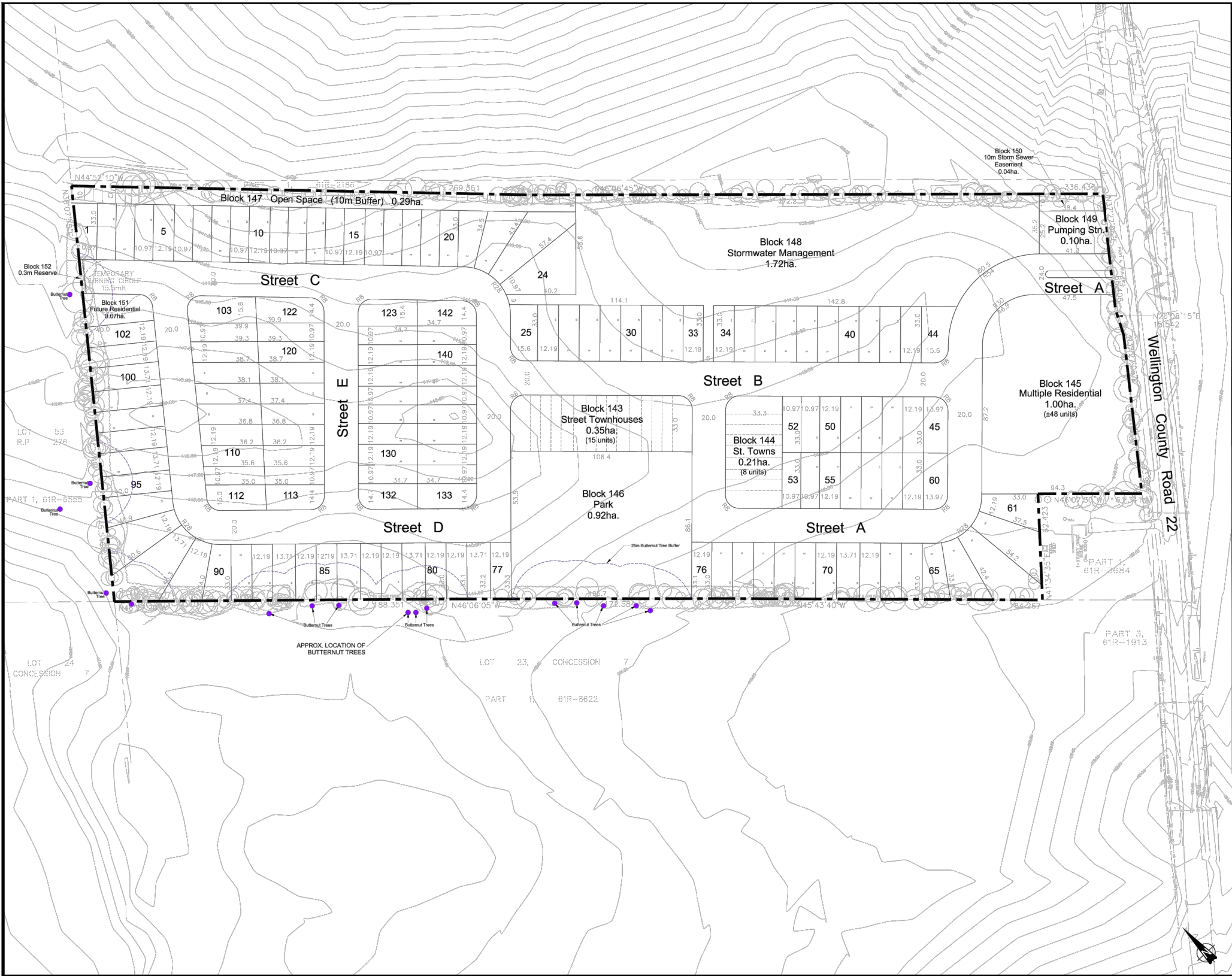
1.5 m wide concrete sidewalks will be constructed on both sides of the street per Town of Erin Design Standards (Erin SD.102).

3.3 Water Supply

The Town of Erin Servicing and Settlement Master Plan Final Report (2014) illustrates that a future watermain will be extended south along Trafalgar Road to the Wellington Road 22 intersection. The proposed development will be serviced by extending a watermain along Wellington Road 22 from Trafalgar Road in the westerly direction to the site limit followed by which a local watermain will be extended throughout the site via the internal road network. The proposed watermain sizing will be completed as part of the detail design of the site once Draft Plan approval has been received.

Preliminary domestic water demands for the proposed development are calculated in Table 1 below.

FILE: \\gmsby.local\GMP\Projects\Guelph\121-2021\121132 Hillsburgh Subdivision\5 Work in Progress\Drafting\Sheets\Figures\121132-DraftPlan.dwg LAYOUT: DP FIG
LAST SAVED BY: PmcCarthy, 5/31/2023 7:11:38 AM PLOTTED BY: Paul McCartney - GM BluePlan 5/31/2023 7:12:30 AM



DRAFT PLAN OF SUBDIVISION

Part of Lot 23, Concession 7
(Geographic Township of Erin)
Town of Erin
Wellington County
9354 Wellington County Road 22

LAND USE SCHEDULE

DESCRIPTION	LOTS/BLKS.	UNITS	AREA (ha.)
Single Detached Residential	1-142	142	6.39
Street Townhouses	143,144	24	0.56
Multiple Residential	145	±48	1.00
Park	146		0.92
Open Space	147		0.29
Stormwater Management	148		1.72
Pumping Station	149		0.10
10m Sewer Easement	150		0.04
Future Residential	151	1	0.07
0.3m Reserve	152		0.00
Roads			3.05
Total		±215	14.14

NOTES

1. TOPOGRAPHIC SURVEY PREPARED BY VAN HARTEN SURVEYING INC., DECEMBER 2021.

ADDITIONAL INFORMATION
(UNDER SECTION 51(17) OF THE PLANNING ACT)

INFORMATION REQUIRED BY CLAUSES a,b,c,d,e,f,g,j and l ARE AS SHOWN ON THE DRAFT PLAN.

h) Municipal water supply
i) All sanitary and storm sewers as required

OWNER'S CERTIFICATE

I AUTHORIZE THE GSP GROUP INC. TO PREPARE AND SUBMIT THIS DRAFT PLAN OF SUBDIVISION TO THE COUNTY OF WELLINGTON.

Thomas Field October 27, 2022
THOMASFIELD HOMES LIMITED DATE

SURVEYOR'S CERTIFICATE

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

Jamie Laws October 19, 2022
JAMIE LAWS, O.L.S. DATE
Van Harten Surveying Inc.

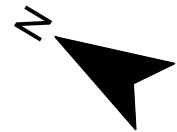
PLANNING | URBAN DESIGN | LANDSCAPE ARCHITECTURE
gspgroup.ca

Date: February 16, 2023 Drawn By: S.L. Dwg. File Name: dp202000c.dwg
Scale: 1:1,000 metric Project No.: 20200

REVISIONS
March 6, 2023

121132
HILLSBURGH SUBDIVISION
TOWN OF ERIN (HILLSBURGH)

FUNCTIONAL SERVICING
REPORT



DRAFT PLAN OF
SUBDIVISION

Figure No. 2



Table No. 1: Preliminary Domestic Water Demand Requirements

Unit Type	Population	Average Day (290 Lpcd)	Min Hour (Factor = 0.40)	Max Day (Factor = 2.75)	Max Hour (Factor = 4.13)
142 Single Family Lots (at 2.8 persons/lot)	398	1.34 L/s	0.53 L/s	3.67 L/s	5.52 L/s
24 On-Street Townhome Units (at 2.8 persons per lot)	67	0.22 L/s	0.09 L/s	0.62 L/s	0.93 L/s
48 Multiple Residential – Block 145 (at 2.8 persons per unit)	134	0.45 L/s	0.18 L/s	1.24 L/s	1.86 L/s
Total On-site Domestic Demands	599	2.01 L/s	0.80 L/s	5.53 L/s	8.30 L/s

Note: Population has been rounded to the nearest whole number.

A 25mm diameter water service lateral will be provided for each dwelling. Fire hydrants will be installed at a minimum radius of 120m for single-detached residential lots and minimum 90m radius for townhome lots in accordance with Town of Erin Design Standards.

The preliminary watermain network layout is shown on the Preliminary Servicing Plans.

3.4 Sanitary Sewer

The Town of Erin is in the process of designing a gravity sanitary sewer system along the Elora Cataract Trailway to service future developments. As part of the pre-consultation with the Town of Erin, it was determined that a gravity connection from the subject lands to the proposed sanitary sewer at the Elora Cataract Trailway via Wellington Road 22 was not feasible due to the elevation of the Credit River culvert crossing and sag in the road located downstream of the site. The Town of Erin provided an invert elevation of approximately 421.1 m for the sanitary sewer at the Elora Cataract Trailway crossing and Wellington Road 22. Extending the sanitary sewer in the westerly direction along Wellington Road 22 at a slope of 0.5% would produce an invert that is approximately 1.5 m higher than the existing road elevation at the sag location. To achieve standard sanitary sewer depth at the sag in the road and avoid conflict with the culvert crossing, the sanitary sewer at the Elora Cataract Trailway would have to be lowered by approximately 4 m. Through discussions with the Town of Erin, it was concluded that lowering of the sanitary sewer is not feasible and that the site will need to be serviced by a sanitary sewage pumping station and forcemain.

The sanitary sewage pumping station will pump the sanitary flows from the site via a proposed forcemain along Wellington Road 22 to the proposed gravity sanitary sewer located at the Elora Cataract Trailway crossing and Wellington Road 22 intersection.

A block has been allocated on the Draft Plan for the proposed sanitary sewage pumping station. The design of the proposed sanitary sewage pumping station and forcemain will be completed as part of the detail design of the site once Draft Plan approval has been granted.

The proposed development will be serviced by a 200 mm diameter gravity sanitary sewer extended along the internal streets which will connect to the proposed sanitary sewage pumping station.

Each dwelling will be serviced via a proposed 125 mm diameter sanitary service lateral per Town of Erin Design Standards.

Preliminary sanitary sewer design calculations have been attached as **Appendix B**. The preliminary sanitary sewer layout is shown on the Preliminary Servicing Plans.

3.5 Storm Sewer

The storm sewer system on the internal roads will be sized to convey the 5-year design storm to the stormwater management facility per the Town of Erin Design Standards. Major storm events will be conveyed overland through the municipal rights-of-way to the stormwater management facility.

The stormwater management facility will outlet to the existing roadside ditch along Wellington Road 22 and the existing wooded area located at the east portion of the site to maintain existing drainage patterns.

Each lot will have a proposed 150 mm diameter storm service lateral connected to the proposed storm sewer system in the municipal right-of-way. Foundation drainage will be provided via sump pump discharge to the storm service lateral.

100 mm diameter subdrains are proposed to be constructed under the curb for the full length of the roadway per Town of Erin Design Standards.

4.0 STORMWATER MANAGEMENT CRITERIA

The studies, policies and guidelines used to develop the stormwater management plan are as follows:

- 1) The Stormwater Management Practices Planning and Design Manual, 1994
- 2) Stormwater Management Planning and Design Manual, 2003
- 3) The Interim Stormwater Quality Control Guidelines, 1991
- 4) The Stormwater Quality Best Management Practices Manual, 1991
- 5) The MTO Drainage Management Technical Guidelines, 1989
- 6) The Ontario Urban Drainage Design Guidelines, 1987
- 7) Low Impact Development Stormwater Management Planning and Design Guide, 2010

The stormwater management criteria specified by the Credit Valley Conservation Authority (CVC) for the Hillsburgh Trails Subdivision, are as follows:

- 1) Post-development flow rates for the site must be controlled to pre-development rates for the 2 to 100 year design storm events.
- 2) Provide Enhanced level of quality control (80% Total Suspended Solids (TSS) removal) from all runoff discharging from the site.
- 3) On-site retention of the first 5 mm of rainfall.
- 4) Extended detention of the 25 mm storm event for a period of 48 hours (for sited with stormwater management facility)
- 5) Major storm flows are to be routed overland to an appropriate outlet.
- 6) Maintain pre-development recharge rates for the site.
- 7) Hydrologic Model return period peak flows based on 24-hour SCS Type II design storm distribution.

The method used to evaluate and design the stormwater management plan is as follows:

A 24-hour SCS Type II design storm distribution was used to generate the mass rainfall data required to model the 2, 5, 10, 25, 50 and 100-year design storms. The Town of Erin Intensity Duration Frequency (IDF) equation constants have been used to generate the 24-hour SCS Type II design storm distribution. A scenario was also modelled with 50% blockage of outlets from the stormwater management facility during the 100-year design storm event. The Town of Erin IDF equation constants for each storm are shown below in **Table 2**.

Table No. 2: Town of Erin IDF Equation Constants

	2-Year	5-Year	10-Year	25-Year	50-Year	100-Year
A	566	744	869	1011	1126	1248
B	1.77	1.76	1.79	1.75	1.76	1.83
C	0.730	0.729	0.730	0.728	0.729	0.732
Duration (hrs)	24	24	24	24	24	24
Rainfall Depth (mm)	67.15	88.91	103.09	121.70	134.56	145.92

The Regional Storm (Hurricane Hazel) was also modelled.

The SCS (Soil Conservation Service) infiltration method was used in the runoff calculations.

From the Ontario Soil Surveys, Report No. 35, Wellington County, the soils on site are described as Hillsburgh Fine Sandy Loam. Hillsburgh Fine Sandy Loam is classified as hydrologic type A soil.

SCS infiltration parameters for a hydrologic type A soil have been used in the analysis of the stormwater

management system. The Curve Numbers (CN) used in the modelling are indicated in **Table 3** below.

Table No. 3: SCS Curve Numbers

	Impervious Areas	Pervious Areas
Pre-Development	98	72 (agricultural)
Post-Development	98	74 (urban lawns)

The hydrologic model Visual OTTHYMO was used to create the runoff hydrographs and to route the flows through the storage structures.

5.0 STORMWATER MANAGEMENT PLAN

5.1 Pre-Development Conditions

For pre-development conditions analysis purposes, the site was modelled as three (3) drainage catchments. The pre-development condition drainage catchments are shown on **Figure 3** and described below. The existing conditions Visual OTTHYMO computer modelling is attached in **Appendix D**.

Catchment 101 (6.44 hectares, 0% impervious) represents the easterly portion of the site. Runoff generated from Catchment 101 sheetflows overland in the easterly direction to the existing woodlot which then continues to sheetflow to the existing West Credit River Wetland Complex (Wetland 1, as identified in the EIS Report by NRSI, dated 2024) and Erin Branch of the Credit River located downstream of the site.

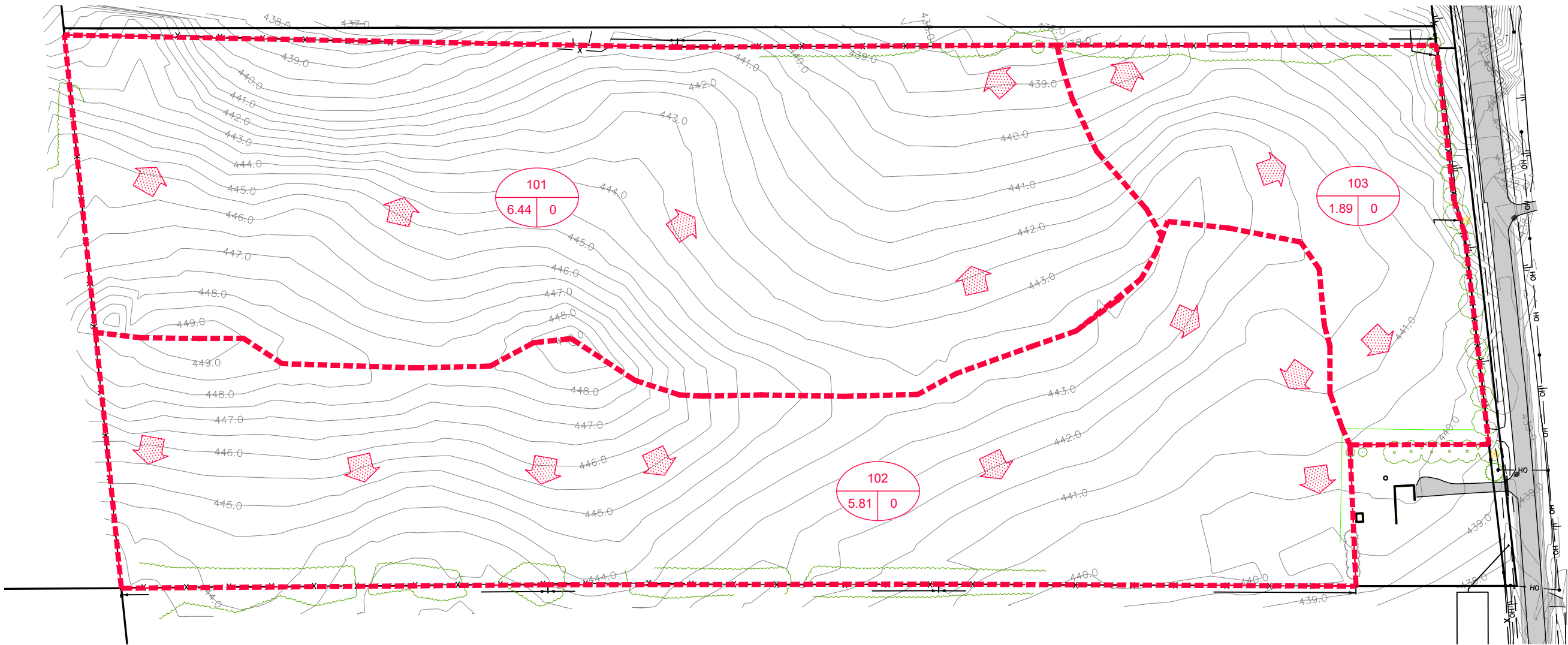
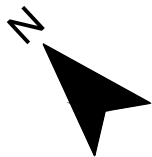
Catchment 102 (5.81 hectares, 0% impervious) represents the westerly portion of the site. Runoff generated from Catchment 102 sheetflows overland in the westerly direction to the adjacent farm field.

Catchment 103 (1.89 hectares, 0% impervious) represents the southern portion of the site. Runoff generated from Catchment 103 sheetflows overland to the existing roadside ditch on Wellington Road 22, ultimately discharging to the existing West Credit River Wetland Complex (Wetland 2, as identified in the EIS Report by NRSI, dated 2024) and Erin Branch of the Credit River Complex downstream of the site.

Table 4 lists the flow rates discharging from each catchment under pre-development conditions.

Table 4: Pre-Development Condition Flow Rates

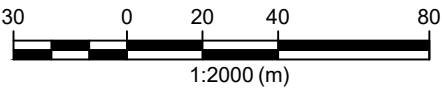
	2-Year (m ³ /s)	5-Year (m ³ /s)	10-Year (m ³ /s)	25-Year (m ³ /s)	50-Year (m ³ /s)	100-Year (m ³ /s)	Regional Storm (m ³ /s)
Catchment 101	0.386	0.626	0.797	1.033	1.203	1.357	0.851
Catchment 102	0.384	0.624	0.796	1.034	1.206	1.361	0.768
Catchment 103	0.115	0.186	0.237	0.308	0.358	0.404	0.25
Total Flow Rate	0.874	1.414	1.798	2.329	2.71	3.054	1.869



LEGEND

AREA IN HECTARES 101 CATCHMENT NUMBER
6.44 0 PERCENT IMPERVIOUS

----- CATCHMENT BOUNDARY



PRE-DEVELOPMENT
DRAINAGE PLAN

Figure No. 3



5.2 Post-Development Conditions

For post-development analysis purposes, the site was modelled as four (4) drainage catchments. The post-development drainage catchments are shown on **Figure 4** and described below. The post-development Visual OTTHYMO computer modelling is attached in **Appendix E**.

Catchment 200 (10.86 hectares, 60% impervious) represents the majority of the proposed development. Runoff generated from Catchment 200 will be directed to the proposed stormwater management facility.

Catchment 201 (1.43 hectares, 50% impervious) represents the proposed stormwater management facility. The proposed stormwater management facility is designed to provide the required Enhanced level of protection prior to discharging off-site. The stormwater management facility will contain two outlet structures to two separate locations to maintain pre-development drainage patterns. Outlet Structure No. 1 will discharge to the existing Wellington Road 22 roadside ditch located south of the site. The Wellington Road 22 roadside ditch outlets to the West Credit River Wetland Complex (Wetland 2) and the Erin Branch of the Credit River at the existing sag in the road located east of the site. Outlet Structure No. 2 will discharge to a linear energy dissipation and dispersion trench which will spread the flows over a wide area, preventing a point source discharge, prior to outletting to the existing woodlot and ultimately to the West Credit River Wetland Complex (Wetland 1) and Erin Branch of the Credit River located downstream of the site.

Catchment 202 (1.26 hectares, 55% impervious) represents the rear yard areas of Lots 1 to 23 and the buffer areas located east of the proposed stormwater management facility. Runoff from Catchment 202 sheetflows in the easterly direction towards the existing woodlot, ultimately discharging to the West Credit River Wetland Complex (Wetland 1) and Erin Branch of the Credit River.

Catchment 203 (0.29 hectares, 7% impervious) represents a portion of the proposed park block. Runoff from Catchment 203 will drain to the adjacent farm field located west of the site.

Catchment 204 (0.30 hectares, 60% impervious) represents the Street A roadway connection to Wellington Road 22 and proposed sanitary sewage pumping station block. Due to the grade differential across the site, drainage from this area cannot be directed to the proposed stormwater management facility. Runoff from Catchment 204 is attenuated by a proposed superpipe system prior to discharging to the existing roadside ditch on Wellington Road 22, ultimately discharging to the West Credit River Wetland Complex (Wetland 2) and the Erin Branch of the Credit River.

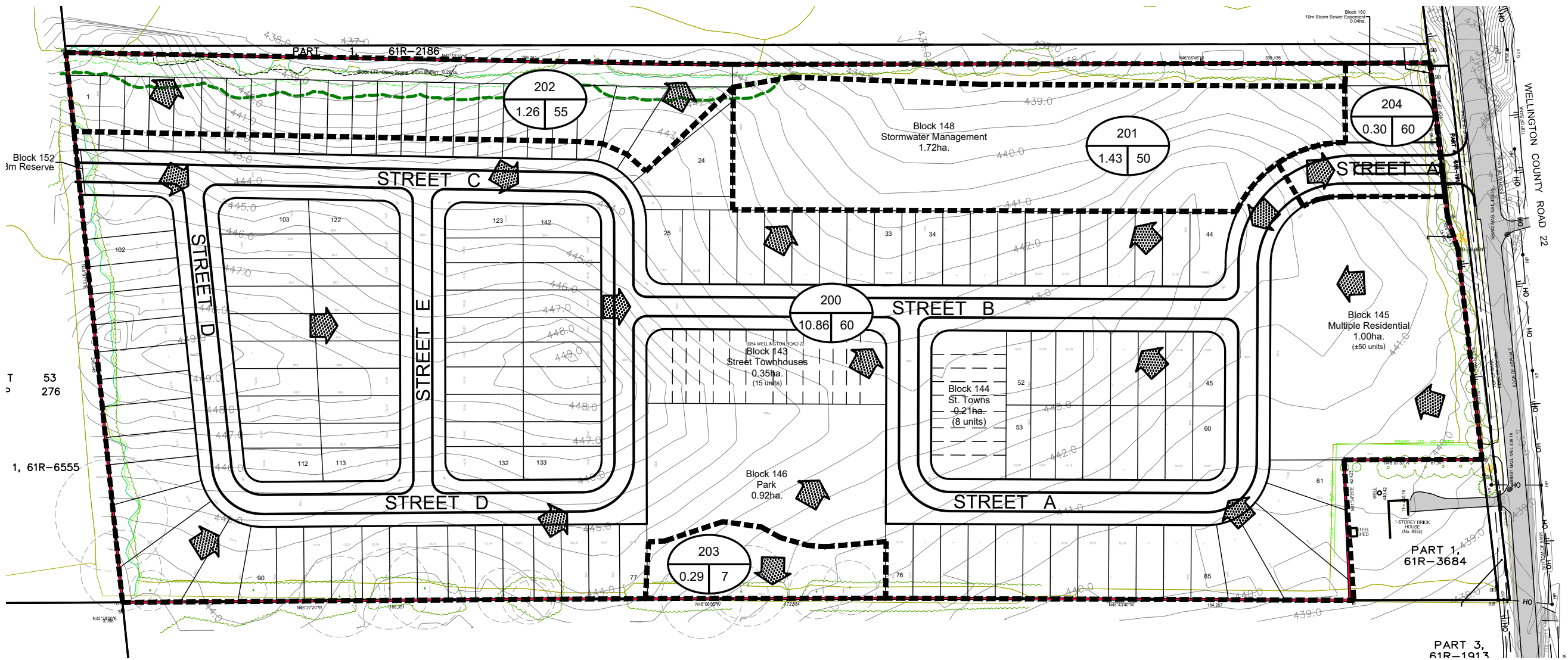
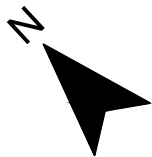
Table 5 lists the post-development uncontrolled flow rates for each catchment under the 2 to 100-year design storms and Regional Storm.

Table 5: Post-Development Uncontrolled Flow Rates

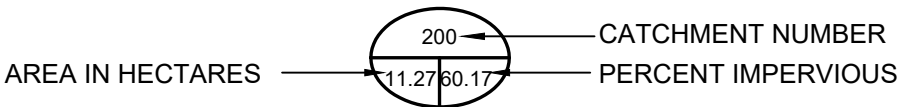
	2-Year (m ³ /s)	5-Year (m ³ /s)	10-Year (m ³ /s)	25-Year (m ³ /s)	50-Year (m ³ /s)	100-Year (m ³ /s)	Regional Storm (m ³ /s)
Catchment 200	1.528	2.294	2.793	3.420	3.862	4.256	1.542
Catchment 201	0.200	0.298	0.358	0.440	0.504	0.555	0.201
Catchment 202	0.176	0.257	0.313	0.387	0.440	0.486	0.179
Catchment 203	0.026	0.042	0.054	0.070	0.090	0.101	0.039
Catchment 204	0.048	0.069	0.083	0.101	0.118	0.130	0.043
Total Flow Rate	1.979	2.961	3.600	4.418	5.013	5.529	2.004

121132
HILLSBURGH SUBDIVISION
TOWN OF ERIN (HILLSBURGH)

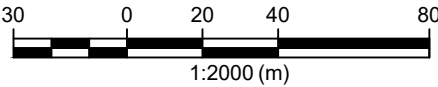
FUNCTIONAL SERVICING
REPORT



LEGEND



CATCHMENT BOUNDARY



POST-DEVELOPMENT
DRAINAGE PLAN

Figure No. 4



5.3 Stormwater Management Overview

In line with current practices and guidelines, the stormwater management approach for the Hillsburgh Trails Subdivision is designed as a “treatment train” to remove sediments and any absorbed contaminants prior to the discharge of runoff from the development to the receiving outlets. The “treatment train” approach will include a combination of lot level, conveyance and end-of-pipe best management practices and is proposed to filter and remove sediments from stormwater runoff prior to discharging off-site.

Lot Level Controls

Stormwater management practices recommended for providing lot level controls on this site are as follows:

a) Rooftop Infiltration

Each lot will have a rear yard infiltration gallery designed to infiltrate the 25 mm storm runoff from the proposed rooftop. The gallery connection to the roof downspout will include a splash pad and overflow for storm events greater than the 25 mm storm to discharge to ground surface followed by which the roof runoff will be directed to the grassed areas of the lot. The runoff for any event large enough to generate flow to the sewer system will be adequately filtered by the grass.

The infiltration galleries will be designed to meet the following guidelines from the CVC Low Impact Development Stormwater Management Planning and Design Guide (2010) and the Ministry of Environment Stormwater Management Planning and Design Manual (2003).

Guideline	Design Conditions
Facilities receiving road or parking lot runoff should not be located within two (2) year time-of-travel wellhead protection areas.	The proposed infiltration galleries will not be receiving road or parking lot runoff.
Facilities cannot be located on natural slopes greater than 15%.	The proposed lots have average slopes less than 15%.
The bottom of the facility should be vertically separated by one (1) metre from the seasonally high water table or top of bedrock elevation.	The Hydrogeological Study (GM BluePlan Engineering Limited) noted high groundwater as a maximum of 3.6m below original grade surface.
Soakaways, infiltration trenches and chambers can be constructed over any soil type, but hydrologic soil group A or B are best. If possible, facilities should be located in portions of the site with the highest infiltration rates. Designers should verify the soil infiltration rate at the proposed location and depth through field measurements of hydraulic conductivity under field saturated conditions.	The Geotechnical Investigation Report (V.A. Wood, dated 2015) noted Hydrologic Soil Group C or D across all boreholes.
Typically design with an impervious drainage area to treatment facility area ratio of between 5:1 and 20:1.	The proposed infiltration galleries will not be receiving road or parking lot runoff for treatment.
To protect groundwater from possible contamination, runoff from pollution hot spots should not be treated by infiltration.	The proposed infiltration galleries will not be receiving road or parking lot runoff for treatment.
Contributing drainage area of less than 0.5 ha	The proposed infiltration galleries will be designed for each lot.

Other design considerations that will be implemented in the infiltration galleries' designs include:

- Located beneath frost penetration depth and minimum of 4 metres away from building

- foundations
- A 100-150mm diameter perforated vertical standpipe for inspection and flushing
- Leaf screens on downspouts
- 50mm clear stone with 30 to 40% void space
- Geotextile installed around the reservoir which considers their percent open area, load bearing ratio, and the texture and permeability of native soils

b) Rear Yard Swales

The grading of the lots will be to current Town of Erin Design Standards. Where practical, the length of the rear lot swales between catch basins will be increased to extend the contact time with the grassed surfaces.

To promote more infiltration on the lots and in the swales, it is recommended that the average depth of graded topsoil be 300 mm.

c) Foundation Drainage

Foundation drainage will be provided for each lot via sump-pumps discharging to storm service laterals.

Conveyance Controls

Conveyance controls will be achieved through municipal maintenance of the storm sewer system. The regular cleanout of the manholes and catchbasin sumps will remove the heavier sediments deposited from the runoff during storm events.

End of Pipe Facilities

The end-of-pipe component for Catchments 200 and 201 consists of the proposed stormwater management facility located near the south-easterly edge of the property, adjacent to the existing woodlot and within proximity to Wellington Road 22. The stormwater management facility will have two (2) outlet structures to maintain the existing drainage patterns for the site. Outlet Structure No. 1 consists of a reverse draw outlet from the deep outlet pool and an 1800mm diameter Hickenbottom Structure with a 115mm diameter minor flow orifice and a 265mm diameter major flow orifice, which will discharge to the existing Wellington Road 22 roadside ditch which drains to the West Credit River Wetland Complex (Wetland 2) and the Erin Branch of the Credit River downstream of the site. Outlet Structure No. 2 will discharge to a linear energy dissipation and dispersion trench which will spread the flows over a wide area preventing a point source discharge prior to outletting to the existing woodlot located east of the site and ultimately to the West Credit River Wetland Complex (Wetland 1) and Erin Branch of the Credit River.

The proposed stormwater management facility has been designed as wetland type facility complete with a forebay and a 0.3 m deep permanent pool to provide the required water quality controls. The proposed stormwater management facility will have a reverse draw outlet for the 4-hour 25 mm storm event (quality storm) to draw cooler water from the deeper parts of the stormwater management facility, prior to outletting to the existing Wellington Road 22 roadside ditch. The proposed outlet structure is designed to provide a 48-hour extended detention of the 4-hour 25 mm design storm event as per the Credit Valley Conservation Authority requirements.

Runoff from Catchment 204, Street A connection to Wellington Road 22 and sanitary sewage pumping station block, will be attenuated by a proposed superpipe system located within the municipal right of way. The superpipe will provide attenuation for the runoff so that the pre-development peak flow rates to the Wellington Road 22 roadside ditch will not be exceeded. The superpipe system will consist of a 50m long 675mm diameter pipe at a slope of 0.2% complete with a 260mm diameter orifice plate proposed at the downstream manhole prior to discharging to the existing roadside ditch.

5.4 Proposed Stormwater Management Facility

Water Quality

The proposed stormwater management facility has been designed to function as a wetland. From Table 3.2, Stormwater Management Planning and Design Manual, 2003, in order to provide Enhanced water quality treatment, a wetland facility requires 110 m³/ha of storage volume for a contributing drainage area that is 60% impervious. 40 m³/ha of the required storage volume is extended detention volume, while the remaining 70 m³/ha is permanent pool.

Based on a contributing site area of 12.29 hectares (Catchments 200 and 201) and a requirement for 70 m³/ha of permanent pool storage volume to achieve Enhanced treatment, the required permanent pool storage is 861 m³.

The proposed stormwater management facility has been designed with a 0.3-metre-deep permanent pool, which provides 1,641 m³ of permanent pool volume. Additional permanent pool volume of 585 m³ will be provided in the sediment forebay.

Extended Detention

Extended detention volume is calculated based on the runoff volume generated by the 4-hour 25 mm design storm event. The outlet structure has been designed to provide a 52.5-hour detention of the required extended detention volume, which corresponds to a release rate of 0.016 m³/s.

From the design of the stormwater management facility, a storage volume of 1,613 m³ corresponds to a ponding depth of approximately 0.26 metres. The outlet structure has been designed with a 115 mm diameter orifice, which will control the extended detention volume for the 52.5-hour detention time.

Drawdown calculations for the 4-hour 25 mm storm event are included in **Appendix E**.

Routing

Table 6 compares the routing results through the stormwater management facility with the available stage/storage/ discharge capacities.

Table 6: Stormwater Management Facility – Stage/Storage/Discharge Comparison

Control	Available Capacity			Actual Capacity Used		
	Peak Flow m ³ /s	Storage Volume m ³	Storage Elevation m	Peak Flow m ³ /s	Storage Volume m ³	Storage Elevation m
Outlet Structure No. 1 / Bottom of Stormwater Management Facility	0.000	0	437.60	--	--	--
25 mm Storm	--	--	--	0.016	1,613	437.86
2 Year Storm	--	--	--	0.086	3,814	438.19
5 Year Storm	--	--	--	0.117	5,361	438.39
Outlet Structure No. 2	0.118	5,426	438.40	--	--	--
Weir	0.152	6,219	438.50	--	--	--
10 Year Storm	--	--	--	0.186	6,279	438.51
25 Year Storm	--	--	--	0.547	6,909	438.58
50 Year Storm	--	--	--	0.917	7,325	438.63
100 Year Storm	--	--	--	1.321	7,730	438.68
100 Year Storm (with 50% Blockage)	--	--	--	1.386	7,892	438.70
Regional Storm	--	--	--	1.669	8,028	438.72
Top of Stormwater Management Facility	5.596	10,585	439.00	--	--	--
Overflow	7.374	11,579	439.10	--	--	--

The stormwater management facility outlet will comprise of two (2) outlet structures to maintain the existing drainage patterns from the site. Outlet Structure No. 1 is proposed to discharge to the existing roadside ditch along Wellington Road 22 and ultimately to the West Credit River Wetland Complex (Wetland 2) and Erin Branch of the Credit River downstream of the site. Outlet Structure No. 2 will discharge to the existing woodlot located at the easterly portion of the site and ultimately to the West Credit River Wetland Complex (Wetland 1) and Erin Branch of the Credit River. A linear energy dissipation and dispersion trench is proposed at the second outlet to help spread the flows over a wide area, preventing a point source discharge prior to outletting to the existing woodlot.

In an effort to maintain flows to the existing woodlot and downstream West Credit River Wetland Complex (Wetland 1), the weir from the stormwater management facility is designed to outlet to the existing woodlot. Due to the elevation differential at the easterly property boundary, the elevation of Outlet Structure No. 2 is governed by the existing property line elevations. As such, the smaller storm events (up to and including the 5-year design storm) are directed to Outlet Structure No. 1 followed by larger storm events being split between the two outlets. The weir is designed to overflow storm events greater than the 5-year design storm to the woodlot as there is limited opportunity to convey this flow via a piped outlet given the shallow

depth of the outlet with respect to the various storm events. Additional discussions regarding the flow split to the existing woodlot and Wellington Road 22 is provided in the subsequent sections.

Sediment Forebay Design

The proposed stormwater management facility has been designed with one sediment forebay located at the facility inlet. The sediment forebay is 1.0 m deep and has been designed per the Ministry of Environment Stormwater Management Planning and Design Manual guidelines. The full sediment forebay sizing information has been included in **Appendix E**.

Table No. 7 summarizes the required and provided parameters within the sediment forebay design.

Table No. 7: Sediment Forebay Design Details

Required	Dispersion Length (m)	41.5
	Settling Length (m)	12.2
	Flow Velocity (m/s)	0.15
	Length to Width Ratio	2:1
	Settling Velocity (m/s)	0.0003
Provided	Forebay Length (m)	45
	Flow Velocity (m/s)	0.14
	Length to Width Ratio	2.8:1

Therefore, the sediment forebays have been designed to provide the required dispersion and flow lengths.

Sediment Loading and Cleanout Frequency

Table No. 8 illustrates sediment loading to the sediment forebay as well as the subsequent cleanout frequency required to maintain this system.

Table No. 8: Sediment Loading and Cleanout Frequency – Sediment Forebays

Catchment Area	Imp. (%)	Annual Sediment Loading	TSS Removal	Annual TSS Reduction	Storage Volume	Cleanout Frequency
12.3 ha	60%	27.1 m ³ (based on 2.2 m ³ /ha)	80%	21.7 m ³	195 m ³ (1/3 of forebay)	~ 9 years

Sediment loadings obtained from Table 6.3 of the MOE Stormwater Management Planning and Design Manual, 2003 and prorated based on catchment percent impervious.

Therefore, it is estimated that the sediment forebay will require cleaning every 9 years.

Thermal Mitigation

Thermal mitigation management practices have been implemented into the design of the proposed stormwater management facility prior to discharge to the existing Wellington Road 22 roadside ditch (Outlet Structure No. 1) and ultimately to the Erin Branch of the Credit River. Due to the existing property line elevation along the easterly portion of the site, the elevation of Outlet Structure No. 2 is limited to the existing property line grades and is higher than Outlet Structure No. 1. As such, smaller storm events (2 year design storm or less) are discharged via Outlet Structure No.1 and 5 year design storm events and greater are discharged via both outlet structures.

The Stormwater Management Planning and Design Manual, Ministry of Environment 2003 and the Data Synthesis and Design Considerations for Stormwater Thermal Mitigations Measures, Sustainable Technologies Evaluation Program 2019 have been used to design the reverse draw at Outlet Structure No. 1 and deep pool to provide the required thermal mitigation measures for the facility. It is noted that facility outflow temperatures will decrease at elevations starting at 0.5 m below the permanent pool level with more significant temperatures reductions at a depth of at least 1.2 m below the permanent pool level. Deep draw outlets can reduce the inflow temperature by as much as 3 to 5 degrees Celsius with the most effective outlet depth being at least 2 m below the permanent pool level. Due to the size of the stormwater management facility and area available to grade a deep pool, the proposed design uses an outlet depth of 1.2 m between the top of permanent pool and the obvert of the pipe.

The proposed stormwater management facility has been designed to function as a wetland complete with a reverse draw from the deep pool portion of the facility. The reverse draw has been designed for the 4-hour 25 mm storm event to allow cooler water to be discharged from the facility under the quality storm event per the Stormwater Management Planning and Design Manual guidelines. The reverse draw outlet consists of a 150 mm diameter pipe with an obvert depth of 1.2 m below the permanent pool elevation and a deep pool bottom depth of 0.9 m below the reverse draw outlet to allow for 33% of permanent pool sediment build-up ($1.2 \text{ m} \times 0.33 = 0.4 \text{ m}$) and 0.5 m freeboard from the sediment level per the criteria set out in the Data Synthesis and Design Considerations for Stormwater Thermal Mitigations Measures.

Flows greater than the 25 mm storm event will discharge through the perforations in the outlet structure riser.

In addition to the reverse draw from the deep pool portion of the proposed stormwater management facility, it is recommended that the landscape design of the facility includes plantings along the permanent pool, outlet structure and banks that help shade the facility and mitigate the thermal impacts of the development.

5.5 Stormwater Management Facility Outlet to Existing Woodlot

In an effort to maintain flows to the existing woodlot and downstream wetland, Outlet Structure No. 2 from the stormwater management facility will discharge via a proposed linear energy dissipation and dissipation trench to the existing woodlot area located easterly of the site. Due to the elevation differential at the easterly property boundary, the elevation of Outlet Structure No. 2 is governed by the existing property line elevations. As such, the minor storm events (up to and including 5-year design storm) are directed to Outlet Structure No. 1 followed by the remainder of the design storm events being split between the two outlets. The weir from the stormwater management facility is designed to overflow storm events greater than the 5-year design storm to the woodlot as there is limited opportunity to convey this flow via a piped outlet given the shallow depth of the outlet with respect to the various storm events. Runoff from the woodlot will be conveyed by sheetflow downstream to the West Credit River Wetland Complex (Wetland 1) and Erin Branch of the Credit River.

The 15m long, 2m wide, 1m deep linear energy dissipation and dispersion trench will spread the flows over a wide area, preventing a point source discharge and will be constructed flat to allow the trench to fill-up gradually then spill evenly over the length of the trench.

Table 9 summarizes the flow rate and flow depth from the linear energy dissipation and dispersion trench to the existing woodlot and ultimately to the West Credit River Wetland Complex (Wetland 1) and Erin Branch of the Credit River located downstream of the site.

Table 9: Linear Energy Dissipation and Dispersion Trench Flow to Existing Woodlot

Design Storm	Flow Rate (m ³ /s)	Flow Depth (m)
2-Year	--	--
5-Year	--	--
10-Year	0.023	0.010
25-Year	0.039	0.013
50-Year	0.052	0.015
100-Year	0.067	0.017
Regional	0.076	0.018

As illustrated in Table No. 9 above, the linear energy dissipation and dispersion trench will help spread the flows discharging from the proposed stormwater management facility Outlet No. 2 over a wide area, reducing flow depth and avoiding a point source discharge. The depth of flow from the 15 m long linear energy dissipation and dispersion trench will range from 10 mm (0.010 m) under the 10-year storm event to 18 mm (0.018 m) under the Regional Storm event.

Table No. 10 below summarizes the flow rate and flow depth from the stormwater management facility weir to the existing woodlot and ultimately to the West Credit River Wetland Complex (Wetland 1) and Erin Branch of the Credit River located downstream of the site.

Table No. 10: Weir Flow to Existing Woodlot

Design Storm	Flow Rate (m ³ /s)	Flow Depth (m)
2-Year	--	--
5-Year	--	--
10-Year	0.032	0.007
25-Year	0.368	0.084
50-Year	0.719	0.134
100-Year	1.104	0.180
Regional	1.439	0.215

As illustrated in Table No. 10 above, the depth of flow from the 10 m long weir will range from 7 mm (0.007 m) under the 10-year storm event to 215 mm (0.215 m) under the Regional Storm event.

Table No. 11 below compares the pre and post development flow rates and volumes to the existing woodlot and ultimately to the West Credit River Wetland Complex (Wetland 1) and Erin Branch of the Credit River located downstream of the site.

Table No. 11: Comparison of Pre and Post-Development Flows and Volumes to the Existing Woodlot

	Pre-Development		Post-Development	
Design Storm	Flow Rate (m ³ /s)	Volume (m ³)	Flow Rate (m ³ /s)	Volume (m ³)
2-Year	0.386	1,542	0.176	554
5-Year	0.626	2,477	0.257	792
10-Year	0.797	3,141	0.313	1,386
25-Year	1.033	4,062	0.464	3,127
50-Year	1.203	4,724	0.868	4,408
100-Year	1.357	5,324	1.324	5,571
Regional	0.851	13,242	1.694	19,034

Therefore, during post-development conditions, the flow rates and volumes to the existing woodlot have been mitigated to resemble pre-development drainage patterns, however, the outlet elevation to the woodlot is limited by the existing easterly property line elevations. In higher storm events such as the 50-year, 100-year and Regional storm event, the post-development flow rates and volumes to the woodlot closely resemble pre-development conditions. However, in lower storm events, this is not achievable due to the existing property line elevations along the easterly portion of the site (along the woodlot).

In storm events equal to or less than the 5-year design storm event, runoff from the facility is discharged to the existing Wellington Road 22 ditch as the existing ditch elevation is significantly lower than the facility bottom. Only storm events greater than the 5-year design storm will begin to discharge to the existing woodlot as only then the existing property line elevation is lower than the design storm water levels in the facility. Due to the elevation of the easterly property boundary, the opportunity to outlet storm events lower than the 5-year design storm from the stormwater management facility to the existing woodlot is limited as this would involve raising the stormwater management facility elevation and would introduce challenges in draining other parts of the site. Therefore, only runoff from Catchment 202 (rear

yard areas of lots 1 to 23 and buffer areas east of the stormwater management facility) will contribute to drainage to the woodlot under the 5-year design storm or less.

5.6 Superpipe Storage

Flows from Catchment 204 will be attenuated by a proposed superpipe system located within the Street A municipal right of way. The superpipe system will consist of a 50m long 675mm diameter pipe at a slope of 0.2% complete with a 260mm diameter orifice plate proposed at the downstream manhole prior to discharging to the existing roadside ditch.

Table No. 12 below compares the routing results through the superpipe with the available stage/storage/discharge capacities.

Table No. 12: Superpipe – Stage/Storage/Discharge Comparison

Control	Available Capacity			Actual Capacity Used		
	Peak Flow m ³ /s	Storage Volume m ³	Storage Elevation m	Peak Flow m ³ /s	Storage Volume m ³	Storage Elevation m
Pipe Invert	0.000	0	0	--	--	--
2 Year Storm	--	--	--	0.046	6	0.24
5 Year Storm	--	--	--	0.064	9	0.34
10 Year Storm	--	--	--	0.075	12	0.41
25 Year Storm	--	--	--	0.089	16	0.53
Pipe Obvert	0.104	17	0.68	--	--	--
50 Year Storm	--	--	--	0.119	17	0.85
100 Year Storm	--	--	--	0.146	17	1.21
Regional Storm	--	--	--	0.043	5	0.23
Top of Grate / Weir	0.157	17	1.38	--	--	--
Overflow	0.535	18	1.48	--	--	--

5.7 Major Flow Conveyance

The anticipated major flows on the right-of-way are the 100-year inflows to the stormwater management facility minus the runoff that will be captured and conveyed by on-site storm sewers, which have been designed for the 5-year design storm event, to the stormwater management facility. The major overland flows are then approximately 2.220 m³/s (4.812 m³/s - 2.592 m³/s). The proposed 20m right-of-way, with standard barrier curb and gutter and 2% cross fall has a conveyance capacity of approximately 3.455 m³/s at a longitudinal grade of 0.5%. Therefore, the proposed right-of-way has sufficient capacity to convey major flows to the proposed stormwater management facility. The major flow conveyance modelling has been included in Appendix E.

5.8 Comparison to Pre-Development Flows

Tables No. 13 - 16 below compares the pre and post-development flow rates from the site to Wellington Road 22, existing woodlot and existing farm field to the west of the site.

Table No. 13: Comparison of Pre and Post-Development Flows - to Wellington Road 22

Design Storm	Pre-Development (m ³ /s)	Controlled Post-Development (m ³ /s)
2-Year	0.090	0.089
5-Year	0.145	0.145
10-Year	0.185	0.174
25-Year	0.239	0.206
50-Year	0.278	0.242
100-Year	0.314	0.282
Regional	0.194	0.197

Table No. 14: Comparison of Pre and Post-Development Flows - to Woodlot

Design Storm	Pre-Development (m ³ /s)	Controlled Post-Development (m ³ /s)
2-Year	0.411	0.176
5-Year	0.667	0.257
10-Year	0.849	0.313
25-Year	1.101	0.464
50-Year	1.282	0.868
100-Year	1.445	1.324
Regional	0.906	1.694

Table No. 15: Comparison of Pre and Post-Development Flows - to West Farm Field

Design Storm	Pre-Development (m ³ /s)	Uncontrolled Post-Development (m ³ /s)	Controlled Post-Development (m ³ /s)
2-Year	0.384	0.026	0.026
5-Year	0.624	0.042	0.042
10-Year	0.796	0.054	0.054
25-Year	1.034	0.070	0.070
50-Year	1.206	0.090	0.090
100-Year	1.361	0.101	0.101
Regional	0.768	0.039	0.039

Table No. 16: Comparison of Pre and Post-Development Flows - Totals from the Site

Design Storm	Pre-Development (m ³ /s)	Uncontrolled Post-Development (m ³ /s)	Controlled Post-Development (m ³ /s)
2-Year	0.874	1.979	0.289
5-Year	1.414	2.961	0.444
10-Year	1.797	3.600	0.540
25-Year	2.328	4.418	0.663
50-Year	2.709	5.013	1.046
100-Year	3.053	5.529	1.524
Regional	1.869	2.004	1.931

Therefore, the post-development flow rates discharging from the site during the 2 to 100-year design storm events are less than the pre-development flow rates from the site. The flow rate during the Regional storm event has increased under post development conditions. The Regional storm event will be conveyed overland through the site at each of the outlet locations summarized in the table above.

6.0 INFILTRATION ASSESSMENT

6.1 Overall Site Water Balance

Based on the Canadian Climate Normals for the Orangeville MOE Station from 1981 to 2010, the average annual precipitation for the area in which the site is located is estimated to be 901.6 mm. It has been estimated that the potential annual evapotranspiration for this area is 527.6 mm for pervious surfaces. Therefore, 374 mm remains available for infiltration and runoff. Based on the sandy silt to clayey silt till soils throughout the site, the potential infiltration across the site has been estimated as 187 mm annually, with the remaining 187 mm being runoff. For impervious surfaces within the development, the annual evapotranspiration is estimated to be 20% of the yearly precipitation amount resulting in 180.3 mm evapotranspiration and the remainder 721.3 mm available for runoff and infiltration.

Based on the annual infiltration rates, as shown on the Monthly Water Balance calculations attached in **Appendix F**, the existing annual average groundwater recharge occurring within the 14.14-hectare site is estimated to be 26,448 m³. Under post-development conditions, the annual natural groundwater recharge occurring on-site is estimated to be 11,211 m³ prior to the addition of the enhanced infiltration system.

Under existing conditions, the annual average runoff from the site is estimated to be 26,448 m³. As a result of the proposed development the impervious area (rooftop and paved surfaces) of the site increases which causes an increase in runoff volume to 69,941 m³ per year prior to the addition of the enhanced infiltration system.

An enhanced infiltration system is proposed on site to mitigate the difference between existing and post-development condition infiltration volumes. The enhanced infiltration system will consist of rear lot infiltration galleries designed to infiltrate the 25mm storm event from the proposed building rooftops. The enhanced infiltration calculations assume that only the back half of the roof area from a townhome unit can be captured and infiltrated while for a single detached lot, the entire roof area is captured and infiltrated. For the multiple residential block, it has been assumed that 25% of the block area is available for infiltration. A table has been included in **Appendix F** which calculates the roof area and the size of each infiltration gallery based on the different lot widths proposed for the subdivision.

Infiltration gallery drawdown time has been calculated based on an average hydraulic conductivity of 1×10^{-5} cm/s obtained from the 2015 geotechnical investigation prepared by V.A. Wood (Guelph) Inc. The hydraulic conductivity rate of 1×10^{-5} cm/s was converted into an infiltration rate of 25 mm/hr using Figure C1 from the Low Impact Development Stormwater Management Planning and Design Guide. A safety factor of 2.5 has been added to the infiltration rate in the drawdown calculations. The average drawdown time of the infiltration galleries is estimated at 24.75 hours. The contributing runoff was then compared to the number of times the infiltration galleries could be filled with runoff (i.e. runoff available and available capacity to infiltrate) and a safety factor of 0.85 was applied to the resulting runoff depth each month.

As part of the detail design stage, once Draft Plan approval has been granted, we will conduct the required Guelph Permeameter Testing to confirm the in-situ infiltration rates as required by the Stormwater Management Planning and Design Guide. **Appendix F** includes the infiltration rate conversion using Figure C1 and the drawdown time calculations for the proposed infiltration galleries. With the addition of the enhanced infiltration system, the comparison between existing conditions and post-development recharge and runoff volumes from the overall site are summarized in Tables 17 to 19 below.

Table No. 17: Site Water Balance – Summary of Input and Output Depths

	Precipitation (mm)	Evapotranspiration (mm)	Runoff (mm)	Recharge (mm)
To Woodlot				
Pre-Development (Catchment 101)	901.6	527.6	187.0	187.0
Post-Development – without Mitigation (Catchment 202)		336.6	480.9	83.5
Post-Development – with Mitigation (Catchment 202)		336.6	462.8	102.2
To West Farm Field				
Pre-Development (Catchment 102)	901.6	527.6	187.0	187.0
Post-Development – without Mitigation (Catchment 203)		503.3	224.4	173.9
Post-Development – with Mitigation (Catchment 203)		503.3	224.4	173.9
To Wellington County Road 22				
Pre-Development (Catchment 103)	901.6	527.6	187.0	187.0
Post-Development – without Mitigation (Catchments 201, 202, 204)		336.6	480.9	83.5
Post-Development – with Mitigation (Catchments 201, 202, 204)		336.6	462.8	180.8

Table No. 18: Summary of Runoff Volumes – Overall Site

	Total Estimated Runoff
To Woodlot	
Pre-Development (Catchment 101)	12,046 m ³
Post-Development Conditions (without Mitigations) (Catchment 202)	6,059 m ³
Post-Development Conditions (with Mitigations)	3,788 m ³
Change from Existing Conditions (comparing to Post-Development with Mitigations)	-68.6%
To West Farm Field	
Pre-Development (Catchment 102)	10,867 m ³
Post-Development – without Mitigation (Catchment 203)	651 m ³
Post-Development – with Mitigation (Catchment 203)	651 m ³
Change from Existing Conditions (comparing to Post-Development with Mitigations)	-94.0%
To Wellington County Road 22	
Pre-Development (Catchment 103)	3,535 m ³
Post-Development – without Mitigation (Catchments 201, 202, 204)	63,232 m ³
Post-Development – with Mitigation (Catchments 201, 202, 204)	50,124 m ³
Change from Existing Conditions (comparing to Post-Development with Mitigations)	+1,317.9%

Table No. 19: Summary of Recharge Volumes – Overall Site

	Total Estimated Recharge
Pre-Development	26,448 m ³
Post-Development Conditions (without Mitigations)	11,211 m ³
Post-Development Conditions (with Mitigations)	26,603 m ³
Change from Existing Conditions (comparing to Post-Development with Mitigations)	+0.6%

Therefore, the infiltration targets for the site are being achieved through the implementation of the proposed enhanced infiltration system.

6.2 Wetland Water Balance

The water balance to the West Credit River Wetland Complex located downstream of the site has been analyzed under pre- and post-development conditions based on the contributing runoff from the site. The Wetland Monthly Water Balance calculations are attached in **Appendix F**.

The existing annual average groundwater recharge volume contributing from the site to the West Credit River Wetland Complex (Catchments 101 and 103) is estimated to be 15,581 m³. Under post-development conditions, the annual natural groundwater recharge contributing from the site to the existing wetland (Catchments 200, 201, 202, 204) is estimated to be 10,707 m³ prior to the addition of the enhanced infiltration system.

Under existing conditions, the annual average runoff from the site to the West Credit River Wetland Complex is estimated to be 15,581 m³. As a result of the proposed development the impervious area (rooftop and paved surfaces) of the site increases which causes the runoff volume to the West Credit River Wetland Complex to increase to 69,291 m³ per year prior to the addition of the enhanced infiltration system.

With the addition of the enhanced infiltration system, the comparison between existing conditions and post-development recharge and runoff volumes to the West Credit River Wetland Complex are summarized in Table 20 and Table 21 below.

Table No. 20: Wetland Water Balance Summary

	Precipitation (mm)	Evapotranspiration (mm)	Runoff (mm)	Recharge (mm)
Pre-Development	901.6	527.6	187.0	187.0
Post-Development – without Mitigation		329.6	500.3	77.3
Post-Development – with Mitigation		324.4	389.3	188.4

Table No. 21: Summary of Recharge and Runoff Volume from Site to West Credit River Wetland Complex

	Total Estimated Recharge	Total Estimate Runoff
Existing Conditions	15,581 m ³	15,581 m ³
Post-Development Conditions (without Mitigations)	10,159 m ³	69,291 m ³
Post-Development Conditions (with Mitigations)	26,099 m ³	53,912 m ³
Change from Existing Conditions (comparing to Post-Development with Mitigations)	67.5%	246.0%

Therefore, as a result of the proposed development and enhanced infiltration system, the West Credit River Wetland Complex will receive additional recharge and runoff volumes from the site.

6.3 First 5 mm Detention

The Credit Valley Conservation Authority requires on-site detention of first 5 mm of rainfall. Based on a contributing site area of 14.14 ha, a volume of 707 m³ is required to achieve the 5 mm detention requirement. The proposed infiltration galleries have been sized to accept 25 mm of runoff from the proposed building rooftops, providing a detention volume of 623 m³. It is assumed that 5 mm of natural infiltration will occur in grassed/pervious areas on site, amounting to an additional detention volume of 301 m³. Minimum of 300 mm thick topsoil is proposed on-site to help increase the natural infiltration occurring through pervious areas.

The total estimated detention volume is 924 m³ (6.5 mm) which is greater than the 707 m³ (5 mm) detention requirement. Therefore, the Credit Valley Conservation Authority criteria to detain the first 5 mm of rainfall on-site is met. Please see additional calculations provided in **Appendix F**.

7.0 SEDIMENT AND EROSION CONTROL PLAN

Primary sediment control will be achieved with the installation of Type 2 sediment fence around the property boundary. The silt fence will eliminate the opportunity for water borne sediments to be transported from the site.

Temporary rock check dams will be installed in rear and side yard swales after the initial grading has been completed to slow the flow rates and promote the settlement of waterborne sediments before they reach the silt fences and the stormwater management facility.

Upon completion of the grading, any area not subject to active construction within 30 days will be topsoiled and seeded as per OPSS 572.

The stormwater management facility will be graded and shaped at the start of any construction or pre-grading activity and act as a sediment pond. Per the Erosion and Sediment Control Guide for Urban Construction (CVC), a sediment pond should be designed with 125 m³/ha of permanent pool volume. For the maximum contributing area of 13 ha (given grading constraints), the required permanent pool volume is 1,625 m³. The stormwater management facility will provide 1,641.4 m³ of permanent pool. A silt fence will be placed around the outlet structures to restrict the movement of sediment.

Once catch basins have been installed, the grates will be wrapped in filter cloth. This will be maintained until all building and landscaping has been completed.

Inspection and maintenance of all silt fencing and the sediment pond will start after installation is complete. These features will be inspected on a weekly basis or after a rainfall event of 13 mm or greater. Maintenance will be carried out, within 48 hours, on any part of the facility found to need repair.

Monthly reports on the condition of the sediment and erosion control measures will be submitted to the Town of Erin and the Credit Valley Conservation Authority.

Once construction has been substantially completed, the silt fence will be removed from within the pond, any accumulated sediment will be removed and the landscaping and planting of the stormwater management facility will be completed.

After construction of the complete development, erosion will not occur and sediment transport will be minimal. The stormwater management facility will provide all sediment removal.

8.0 CONCLUSIONS

In summary, the features of the design for the proposed development are as follows:

1. Sanitary service for the site will be provided by a proposed sanitary sewage pumping station located at the southeast portion of the site. A sanitary forcemain is proposed to be extended from the proposed sanitary pumping station along Wellington Road 22 to the proposed gravity sanitary sewer located at the intersection of Elora Cataract Trailway and Wellington Road 22. Sanitary pumping station and forcemain design to be completed at the detail design stage.
2. A gravity sanitary sewer will be extended from the proposed sanitary pumping station through the site along the proposed municipal rights-of-way to service the proposed development.
3. Water servicing for the site will be provided by extending a watermain south along Trafalgar Road to the Wellington Road 22 intersection, then extending the watermain along Wellington Road 22 from Trafalgar Road in the westerly direction to the site limits. An internal watermain will then be extended throughout the site via the municipal rights-of-way to provide water service for the proposed development. Watermain sizing is to be confirmed at the detail design stage.
4. Storm sewers will be sized at the detail design stage to convey the 5-year design storm event to the proposed stormwater management facility. Major overland flows will be directed towards the municipal rights-of-way to the proposed stormwater management facility.
5. The proposed stormwater management facility is designed to function as a wetland with 0.3 m deep permanent pool and forebay to provide an Enhanced level of quality control (80% Total Suspended Solid removal).
6. A superpipe system is proposed on Street A to provide quantity controls for areas that cannot be conveyed to the proposed stormwater management facility due to the elevation differential.
7. The post-development flow rates discharging from the site during the 2 to 100-year design storm events are less than the pre-development flow rates from the site. The Regional storm event is conveyed overland through the site to the existing outlet locations.
8. The proposed development will continue to discharge flows to the existing woodlot located at the east portion of the site and ultimately to the West Credit River Wetland Complex (Wetland 1) and Erin Branch of the Credit River.
9. Infiltration galleries sized to infiltrate the 25 mm design storm event from building rooftops will be implemented in rear yard areas of the proposed lots to meet the infiltration requirements for the site.
10. The detention of the first 5 mm of rainfall will be achieved by the proposed infiltration galleries and natural infiltration through pervious surfaces.
11. The stormwater management systems meet the current Provincial and Municipal guidelines.
12. The principles of "Stormwater Management Practices", the Ministry of Environment Stormwater Management Planning and Design Manual 2003 have been used in the design of the stormwater management system.

All of which is respectfully submitted.

GM Blue Plan Engineering Limited
Per:

A handwritten signature in blue ink, appearing to read 'AKroetsch'.

Angela Kroetsch, P.Eng.

AK/pw



B:\Working\THOMASFIELD HOMES LIMITED\2401061 - 121132 Hillsburgh Subdivision\5 Work in Progress\Reports_Manuals_Contracts\121132 FSR_Hillsburgh - revised - 2024-11-07.docx

APPENDIX A
GEOTECHNICAL INVESTIGATION (V.A. WOOD (GUELPH) INC.,
DATED 2015)



V.A. WOOD (GUELPH) INCORPORATED
CONSULTING GEOTECHNICAL ENGINEERS

405 YORK ROAD, GUELPH, ONTARIO N1E 3H3
TELEPHONE: 519-763-3101

PRELIMINARY GEOTECHNICAL INVESTIGATION
PROPOSED RESIDENTIAL SUBDIVISION
9354 WELLINGTON ROAD 22
TOWN OF ERIN (HILLSBURGH), ONTARIO

Ref. No. G3584-5-4
April, 2015

Prepared for:

Thomasfield Homes Ltd.
295 Southgate Drive
Guelph, Ontario
N1H 6N2

Distribution:

- (2) Copies – Thomasfield Homes Ltd.*
- (2) Copies – GM Blueplan Engineering Ltd.*
- (2) Copies - V.A. Wood (Guelph) Inc.*



CONTENTS

	<u>Page</u>
1.0 INTRODUCTION	1
2.0 FIELD WORK	2
3.0 SUBSURFACE CONDITIONS	3
4.0 GROUNDWATER CONDITONS	5
5.0 DISCUSSION AND RECOMMENDATIONS	6
6.0 STATEMENT OF LIMITATIONS	11

APPENDIX

APPENDIX 'A' Statement of Limitations

ENCLOSURES

	<u>No.</u>
BOREHOLE LOCATION PLAN	1
BOREHOLE LOGS	2 - 7
GRAIN SIZE DISTRIBUTION CURVES	8 - 11

1.0 INTRODUCTION:

V. A. Wood (Guelph) Inc. was retained by Thomasfield Homes Ltd. to carry out a preliminary geotechnical investigation for the proposed residential subdivision at 9354 Wellington Road 22 in the Town of Erin, Ontario.

Details concerning the proposed development were not available at the time of this report.

The purpose of the investigation was to reveal the subsurface conditions and to determine the relevant soil properties for preliminary recommendations concerning the design and construction of the site services, houses, pavement areas, sanitary sewage and storm water management systems.

2.0 FIELD WORK:

The fieldwork was carried out on March 30, 2015 and consisted of six (6) boreholes at the locations shown on Enclosure 1. The boreholes were advanced to the sampling depths by means of a track-mounted, power-auger machine equipped for soil sampling. Standard Penetration tests were carried out at frequent intervals of depth and the results are shown on the Borehole Logs as N-values. The subsurface soils were visually inspected, logged and sampled at the borehole locations.

A soils technician supervised the fieldwork program. The boreholes were laid out in the field and the ground elevation at each borehole was provided by GM Blueplan Engineering Ltd.

3.0 SUBSURFACE CONDITIONS:

Full details of the soils encountered in each borehole are given on the Borehole Logs, Enclosures 2 to 7, inclusive and the following notes are intended to summarize this data.

*The boreholes encountered a surficial deposit of **topsoil** ranging between 175 and 350mm in thickness.*

*The topsoil at Boreholes 1, 4 and 5 was underlain by a deposit of brown **sandy silt** to depths ranging between 0.8 and 1.6 metres below grade. Standard Penetration tests in this material gave N-values ranging between 4 and 30 blows/300mm and the natural moisture content was found to range from 15 to 24%. A typical grain size distribution curve for this material can be found on Enclosure 8.*

Based on the test results, the deposit of sandy silt is considered to have a generally loose to compact relative density. It is noted that the presence of frost in the deposit of sandy silt may have resulted in high N-values and these may not accurately represent the relative density of the soil.

*The topsoil at Boreholes 2, 3 and 6 and the sandy silt at Boreholes 1, 4 and 5 were underlain by a deposit of brown **clayey silt** to depths ranging between 2.3 and 6.1 metres below grade. Standard Penetration tests in this material gave N-values ranging between 5 and greater than 100 blows/300mm and the natural moisture content was found to range from 9 to 32%. A typical grain size distribution curve for this material can be found on Enclosure 9.*

Based on the test results, the deposit of clayey silt is considered have a generally medium to hard consistency. It is noted that the presence of cobble in the deposit of clayey silt may have resulted in high N-values and these may not accurately represent the relative density of the soil.

*The clayey silt at Borehole 2 was underlain by a deposit of brown **sand** to a depth of 3.1 metres below grade. A Standard Penetration test in this material gave an N-value of 17 blows/300mm. A typical grain size distribution curve for this material can be found on Enclosure 10.*

Based on the test results, the deposit of sand is considered to have a generally compact relative density.

*The sand at Borehole 2, and the clayey silt at Boreholes 1, 3 and 5 were underlain by a deposit of brown **sandy silt** to depths ranging between 4.6 and 6.1 metres below grade and the full depth of the investigation (i.e. 4.9 to metres below grade). Standard Penetration tests in this material gave N-values ranging between 36 and greater than 100 blows/300mm and the natural moisture content was found to range from 4 to 17%.*

Based on the test results, the deposit of sandy silt is considered to have a generally compact to very dense relative density.

*The sandy silt at Boreholes 3 and 5 and the clayey silt at Boreholes 4 and 6 were underlain by a deposit of brown or grey **clayey silt till**, which extended to the full depth of the investigation (i.e. 5.9 to 6.6 metres below grade). Standard Penetration tests in this material gave N-values ranging between 23 and greater than 100 blows/300mm and the natural moisture content was found to range from 12 to 21%. A typical grain size distribution curve for this material can be found on Enclosure 11.*

Based on the test results, the deposit of clayey silt till is considered to have a generally very stiff to hard consistency.

3.0 GROUNDWATER CONDITIONS:

The boreholes were dry and open to the full depth upon the completion of the fieldwork program.

An examination of the soil samples indicated that they were generally moist to wet.

It is noted that no sub-artesian water pressures were encountered in any of the boreholes.

A colour change from brown to grey was noted at Borehole 3 at El. 436.6 (i.e. 6.1 metres below grade).

Based on the foregoing, the permanent groundwater table is considered to be located at a depth of at least 6.6 metres below grade, although perched groundwater conditions can be expected in the looser upper zones underlain by the less permeable clayey silts and/or tills.

5.0 DISCUSSION AND RECOMMENDATIONS:

5.1 General:

The boreholes encountered surficial deposits of topsoil underlain by loose to compact sandy silt and/or medium to hard clayey silt on very stiff to hard clayey silt till.

The permanent groundwater table is considered to be located at least 6.6 metres below grade, although perched groundwater conditions can be expected in the looser upper zones underlain by the less permeable clayey silts and/or tills.

Details concerning the proposed development were not available at the time of this report, therefore the following should be considered preliminary and should be reviewed when more details are available.

5.2 Sewers:

It is anticipated that the sewer inverts will be located at depths ranging between 3 and 4 metres below the proposed finished grades.

Reference to the Borehole Logs indicates that the subgrade will generally consist of competent deposits of sandy silt and clayey silt which will generally provide adequate support for the pipes and allow the use of normal Class 'B' bedding using Granular 'A' material. Clear crushed stone should not be used as bedding otherwise fines may migrate into the voids of the stone and cause undesirable settlements. Where the exposed subgrade is less competent than the materials identified in the Borehole Logs, the bedding thickness may have to be increased and it may be necessary to protect the excavation with a skim coat of concrete immediately after it has been exposed.

Where sewer trench grades are below the groundwater table, provisions may be required to lower the groundwater table through pumping from local sumps as and where required. The sides of the excavation to a depth of more than 1.2 metres (and above the water table) should either be cut back at a side slope of 1 to 1 or supported using adequately braced closed sheeting.

The excavated materials will be generally suitable for use as trench backfill provided that they are free of topsoil and boulders. If the on-site materials become wet, they should be air dried prior to re-use as trench backfill. The trench backfill should be placed in 150 to 200mm thick layers and uniformly compacted to at least 95% of its Standard Proctor maximum dry density.

The backfill around manholes should consist of well-graded and well-compacted granular material.

To minimize potential problems and wetting of the subgrade material, backfilling operations should follow closely after excavations, so that only a minimal length of trench is exposed at a time. Should construction be carried out in the winter season, particular attention should be given to make sure no frozen material is used for backfill.

5.3 Foundations:

The boreholes encountered a surficial deposit of topsoil which is not considered to be a suitable bearing stratum. Therefore, the foundations for the proposed structures should extend to below the surface of underlying native soils and designed to an allowable bearing pressure of up to 150 kPa (3 ksf).

If there are requirements for cut and fill grading, the foundation grade could be raised using "engineered fill", which would be suitable for supporting normal spread footings designed to an allowable bearing pressure of up to 150 kPa (3 ksf).

The procedure for "engineered fill" would consist of the following:

- 1. The total removal of topsoil from beneath the proposed development envelopes.*
- 2. Geotechnical personnel from V.A. Wood (Guelph) Inc. prior to placement of "engineered fill" should inspect the exposed subgrade. Any loose or soft zones which are encountered should be removed and replaced with approved on-site or approved imported granular material, compacted to at least 98% Standard Proctor maximum dry density.*
- 3. The areas should then be brought up to the final subgrade level with approved on-site or approved imported granular material placed in typically 200mm thick lifts and compacted to at least 98% Standard Proctor maximum dry density.*
- 4. The "engineered fill" under all structures to be supported should extend to at least 0.6 metres laterally beyond the edge of their perimeter at the founding level and at least a distance equal to the depths of the fill pad, at the level of the approved subgrade.*
- 5. The "engineered fill" should be in place at least one month prior to foundation construction to minimize settlement.*

This "engineered fill" will satisfy the raising of the founding levels to the proposed grades and provide a suitable subgrade for the proposed structures.

All exterior house footings or footings in unheated areas should be located at least 1.2 metres below finished grade for adequate frost protection.

Elevation differences between adjacent footings should not be more than a half of the horizontal distance between them.

It is estimated that the total and differential settlements of the footings designed to the above stated bearing pressures will be less than 25 and 20mm respectively, which are normally considered to be acceptable for the proposed structures.

It is recommended that all foundation excavations be inspected by geotechnical personnel from V.A. Wood (Guelph) Inc. to ensure that the founding soils are similar to those identified in the Borehole Logs and that the founding soils are capable of supporting the design loads.

5.4 Excavation and Groundwater Control:

No major construction problems due to water are anticipated with excavations above elevation 435.2m±. However, provision should be made for the control of any surface water run-off and minor seepage from any wet sand seams by pumping from local sumps on an as and where required basis.

Excavations to a depth of more than 1.2 metres below grade should be cut back to a side slope of 1 to 1 or, supported using adequately braced sheeting.

5.5 Floor Slabs:

All topsoil should be stripped from the building areas and the proposed subgrade should be re-compacted from the surface to at least 95% of its Standard Proctor maximum dry density. Any loose/wet material encountered should be sub-excavated and replaced with approved fill.

The fill may consist of approved on-site materials free of cobbles/boulders or approved imported fill. All fill materials should be placed in 150 to 200mm thick lifts and compacted to at least 95% of its Standard Proctor maximum dry density. It is recommended the underfloor fill be placed at least one month prior to floor construction in order to minimize settlement.

A layer of well-graded, free-draining material, at least 150mm thick and compacted to at least 98% of its Standard Proctor maximum dry density, should be placed under the floor slabs to provide a uniform bearing surface and to act as a vapour barrier.

Frequent inspections by geotechnical personnel from V.A. Wood (Guelph) Inc. should be carried out during construction to verify compaction of the subgrade and base courses by in-situ density testing using nuclear gauges.

5.6 Pavement Designs:

All topsoil should be stripped from the paved areas. The proposed subgrade should then be re-compacted from the surface to at least 95% of its Standard Proctor maximum dry density prior to the road construction. Any loose areas which are detected should be sub-excavated and backfilled with suitable on-site material or approved imported fill. All fill should be placed in 150 to 200mm thick lifts and compacted to at least 95% of its Standard Proctor maximum dry density.

Considering the probable traffic requirements and subsoil conditions, the following pavement designs are recommended:

	<i>Passenger Car Parking (Light Duty) (mm)</i>	<i>Access Road (Medium Duty) (mm)</i>
<i>Asphaltic Concrete</i>	<i>50</i>	<i>90</i>
<i>Granular 'A' Base Course</i>	<i>150</i>	<i>150</i>
<i>Granular 'B' Sub-base Course</i>	<i>200</i>	<i>300</i>

The base and sub-base granular materials should be compacted to at least 100% Standard Proctor maximum dry density. The asphalt should be compacted to OPS Specifications.

Frequent inspections by geotechnical personnel from V. A. Wood (Guelph) Inc. should be carried out during construction to verify the compaction of the subgrade, base courses and asphaltic concrete by in-situ density testing using nuclear gauges.

5.7 Hydraulic Conductivity of Subsoils:

The grain size distribution curves prepared for the representative soil samples obtained at the boreholes were compared to the family of curves presented in the Supplementary Standard SB-6 of the 2012 Building Code Compendium. According to the Unified Soils Classification System and taking into consideration the specific physical nature of the soil samples, the soils are considered to have the following properties:

Description	Material				Unified Soils Classification Group	Estimated Co-efficient of Permeability (k) (cm/sec.)	Estimated T-time (min/cm.)	Design T-time Estimate (min/cm.)
	Gravel (%)	Sand (%)	Silt (%)	Clay (%)				
Sand, trace silt, trace clay	0.0	88.0	7.5	4.5	(SM)	$10^{-3} - 10^{-5}$	8 - 20	10
Sandy Silt, Some gravel, trace silt	11.0	32.7	47.6	8.7	(ML)	10^{-5} to 10^{-6}	20 - 50	40
Clayey Silt, trace sand	0.4	7.2	71.8	20.6	(CL-ML)	10^{-6} or less	>50	>50
Clayey Silt Till, trace sand	0.0	2.6	73.3	24.1	(CL-ML)	10^{-6} or less	>50	>50

6.0 STATEMENT OF LIMITATIONS:

The Statement of Limitations presented on Appendix 'A' is an integral part of this report.

V. A. WOOD (GUELPH) INC.



J. Broad, B.A.
General Manager

JB:sm

Encls.

4 copies



APPENDIX

STATEMENT OF LIMITATIONS:

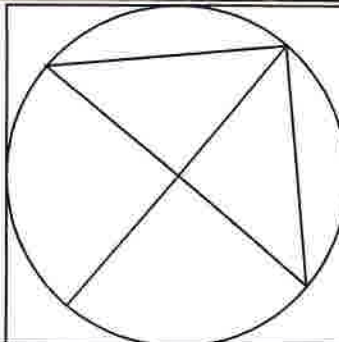
The conclusions and recommendations in this report are based on information determined at the borehole locations and on geological data of a general nature, which may be available, for the area investigated. Soil and groundwater conditions between and beyond the boreholes may differ from those encountered at the borehole locations and conditions may become apparent during construction, which would not be detected or anticipated at the time of the soil investigation.

*We recommend that we be retained to ensure that all necessary stripping, subgrade preparation and compaction requirements are met, and to confirm that the soil conditions do not deviate materially from those encountered in the boreholes. **In cases where this recommendation is not followed the company's responsibility is limited to interpreting accurately the information encountered at the boreholes.***

This report is applicable only to the project described in the introduction, constructed substantially in accordance with details of alignment and elevations quoted in the text.

This report was prepared by V. A. Wood (Guelph) Inc. for Thomasfield Homes Ltd. The material in it reflects V. A. Wood (Guelph) Inc. judgment in light of the information available to it at the time of preparation. Any use which a Third Party makes of this report, or any reliance on decisions to be made based on it, is the responsibility of such Third Parties. V. A. Wood (Guelph) Inc. accepts no responsibility for damages, if any, suffered by any Third Party as a result of decisions made or actions based on this report.

ENCLOSURES



V.A. WOOD (GUELPH) INC.
Consulting Geotechnical Engineers

405 York Road, Guelph, Ontario N1E 3F3
 Ph. (519) 763-3101 Fax. (519) 763-5912

Borehole Location Plan
9354 Wellington Road 22
Erin, Ontario

Scale: NTS

Ref. No. G3584-5-3

Date: March 31, 2015

Enclosure 1

REFERENCE No: G3584-5-4

BOREHOLE No: 1

CLIENT: Thomasfield Homes Ltd.

V.A. WOOD (GUELPH) INC.
CONSULTING GEOTECHNICAL ENGINEERS

PROJECT: Proposed Subdivision

ENCLOSURE No: 2

LOCATION: 9354 Wellington Road 22, Erin ON

SUPERVISOR: J.D.

 405 YORK ROAD, GUELPH, ONTARIO N1E 3H3
 PH. (519) 763-3101 FAX (519) 763-5912

SUBSURFACE PROFILE					SAMPLE			PENETRATION RESISTANCE BLOWS/0.3m				WATER CONTENT %					UNIT WEIGHT
DEPTH (m)	DESCRIPTION	ELEVATION	SYMBOL	GROUND WATER	NUMBER	TYPE	'N' BLOWS/0.3m										
0.0	Ground Surface	445.7															
0.3	300mm Topsoil	445.4			1	SS	9										
0.8	brown, loose SANDY SILT some gravel, trace clay, moist	444.9			1	SS	4										
	brown, stiff to very stiff CLAYEY SILT trace sand, moist to wet				2	SS	16										
					3	SS	11										
					4	SS	20										
3.1		442.6															
	brown, very dense SANDY SILT some gravel, trace clay, moist				5	SS	72										
					6	SS	61										
6.6		439.2			7	SS	92										
	End of Borehole																

DRILLED BY: London Soil Test Ltd.

HOLE DIAMETER: 210mm

DRILL METHOD: Hollow Stem Augers

DATUM: Geodetic

DRILL DATE: March 30, 2015

SHEET: 1 of 1

REFERENCE No: G3584-5-4

BOREHOLE No: 2

CLIENT: Thomasfield Homes Ltd.

V.A. WOOD (GUELPH) INC.
CONSULTING GEOTECHNICAL ENGINEERS

PROJECT: Proposed Subdivision

ENCLOSURE No: 3

LOCATION: 9354 Wellington Road 22, Erin ON

SUPERVISOR: J.D.

405 YORK ROAD, GUELPH, ONTARIO N1E 3H3
PH. (519) 763-3101 FAX (519) 763-5912

SUBSURFACE PROFILE					SAMPLE			PENETRATION RESISTANCE									UNIT WEIGHT
DEPTH (m)	DESCRIPTION	ELEVATION	SYMBOL	GROUND	NUMBER	TYPE	N-Values										
0.0	Ground Surface	446.1		DRY (31-Mar-15)													
0.3	325mm Topsoil	445.8			1	SS	21										
	brown, stiff to very stiff CLAYEY SILT trace sand, moist				1	SS	24										
					2	SS	8										
2.3		443.8			3	SS	10										
	brown, compact SAND trace silt, trace clay, moist				4	SS	17										
3.1		443.0															
	brown, very dense SANDY SILT some gravel, trace clay, moist				5	SS	50										
4.9		441.2			6	SS	50										
	Probable Boulder/Bedrock Refusal																

DRILLED BY: London Soil Test Ltd.

HOLE DIAMETER: 210mm

DRILL METHOD: Hollow Stem Augers

DATUM: Geodetic

DRILL DATE: March 30, 2015

SHEET: 1 of 1

REFERENCE No: G3584-5-4

BOREHOLE No: 3

CLIENT: Thomasfield Homes Ltd.

V.A. WOOD (GUELPH) INC.
CONSULTING GEOTECHNICAL ENGINEERS

PROJECT: Proposed Subdivision

ENCLOSURE No: 4

LOCATION: 9354 Wellington Road 22, Erin ON

SUPERVISOR: J.D.

405 YORK ROAD, GUELPH, ONTARIO N1E 3H3
PH. (519) 763-3101 FAX (519) 763-5912

SUBSURFACE PROFILE					SAMPLE			PENETRATION RESISTANCE BLOWS/0.3m				WATER CONTENT %					UNIT WEIGHT
DEPTH (m)	DESCRIPTION	ELEVATION	SYMBOL	GROUND WATER	NUMBER	TYPE	'N' BLOWS/0.3m										
0.0	Ground Surface	442.7															
0.3	300mm Topsoil	442.4	{ } { }		1	SS	21										
	brown, stiff to very stiff CLAYEY SILT trace sand, moist		{ } { }		1	SS	17										
			{ } { }		2	SS	5										
			{ } { }		3	SS	10										
2.3		440.4	{ } { }		4	SS	50										
	brown, very dense SANDY SILT some gravel, trace clay, moist		{ } { }		5	SS	50										
			{ } { }		6	SS	50										
6.1		436.6	{ } { }		7	SS	50										
6.6	grey, hard CLAYEY SILT TILL trace sand, moist	436.2	{ } { }														
	End of Borehole																

DRILLED BY: London Soil Test Ltd.

HOLE DIAMETER: 210mm

DRILL METHOD: Hollow Stem Augers

DATUM: Geodetic

DRILL DATE: March 30, 2015

SHEET: 1 of 1

REFERENCE No: G3584-5-4

BOREHOLE No: 4

CLIENT: Thomasfield Homes Ltd.

V.A. WOOD (GUELPH) INC.
CONSULTING GEOTECHNICAL ENGINEERS

PROJECT: Proposed Subdivision

ENCLOSURE No: 5

LOCATION: 9354 Wellington Road 22, Erin ON

SUPERVISOR: J.D.

405 YORK ROAD, GUELPH, ONTARIO N1E 3H3
PH. (519) 763-3101 FAX (519) 763-5912

SUBSURFACE PROFILE					SAMPLE			PENETRATION RESISTANCE BLOWS/0.3m				WATER CONTENT %					UNIT WEIGHT
DEPTH (m)	DESCRIPTION	ELEVATION	SYMBOL	GROUND WATER	NUMBER	TYPE	N BLOWS/0.3m										
0.0	Ground Surface	444.2															
0.4	350mm Topsoil	443.8			1	SS	21										
	brown, compact SANDY SILT some gravel, trace clay, moist				1	SS	21										
1.6		442.6			2	SS	12										
	brown, stiff to hard CLAYEY SILT trace sand, moist to wet				3	SS	12										
					4	SS	18										
					5	SS	51										
					6	SS	50										
6.1		438.1															
6.6	brown, hard CLAYEY SILT TILL trace sand, moist	437.7			7	SS	23										
	End of Borehole																

DRILLED BY: London Soil Test Ltd.

HOLE DIAMETER: 210mm

DRILL METHOD: Hollow Stem Augers

DATUM: Geodetic

DRILL DATE: March 30, 2015

SHEET: 1 of 1

REFERENCE No: G3584-5-4

BOREHOLE No: 5

CLIENT: Thomasfield Homes Ltd.

V.A. WOOD (GUELPH) INC.
CONSULTING GEOTECHNICAL ENGINEERS

PROJECT: Proposed Subdivision

ENCLOSURE No: 6

LOCATION: 9354 Wellington Road 22, Erin ON

SUPERVISOR: J.D.

405 YORK ROAD, GUELPH, ONTARIO N1E 3H3
PH. (519) 763-3101 FAX (519) 763-5912

SUBSURFACE PROFILE					SAMPLE			PENETRATION RESISTANCE									UNIT WEIGHT
DEPTH (m)	DESCRIPTION	ELEVATION	SYMBOL	GROUND	NUMBER	TYPE	N-Values										
0.0	Ground Surface	441.1		DRY (31-Mar-15)													
0.3	275mm Topsoil	440.8			1	SS	22										
1.6	brown, compact SANDY SILT some gravel, trace clay, moist	439.5			1	SS	30										
					2	SS	24										
					3	SS	5										
3.1	brown, stiff to very stiff CLAYEY SILT trace sand, moist to wet	438.0			4	SS	19										
					5	SS	36										
4.6	brown, dense SANDY SILT some gravel, trace clay, moist	436.5															
5.9	brown, hard CLAYEY SILT TILL trace sand, moist	435.2			6	SS	45										
					7	SS	50										
	Probable Boulder/Bedrock Refusal																

DRILLED BY: London Soil Test Ltd.

HOLE DIAMETER: 210mm

DRILL METHOD: Hollow Stem Augers

DATUM: Geodetic

DRILL DATE: March 30, 2015

SHEET: 1 of 1

REFERENCE No: G3584-5-4

BOREHOLE No: 6

CLIENT: Thomasfield Homes Ltd.

V.A. WOOD (GUELPH) INC.
CONSULTING GEOTECHNICAL ENGINEERS

PROJECT: Proposed Subdivision

ENCLOSURE No: 7

LOCATION: 9354 Wellington Road 22, Erin ON

SUPERVISOR: J.D.

 405 YORK ROAD, GUELPH, ONTARIO N1E 3H3
 PH. (519) 763-3101 FAX (519) 763-5912

SUBSURFACE PROFILE					SAMPLE			PENETRATION RESISTANCE BLOWS/0.3m				WATER CONTENT %					UNIT WEIGHT
DEPTH (m)	DESCRIPTION	ELEVATION	SYMBOL	GROUND WATER	NUMBER	TYPE	"N" BLOWS/0.3m										
0.0	Ground Surface	443.1															
0.2	175mm Topsoil	442.9			1	SS	25										
	brown, very stiff to hard CLAYEY SILT trace sand, moist to wet				1	SS	33										
					2	SS	26										
					3	SS	43										
					4	SS	34										
					5	SS	43										
					6	SS	22										
6.1		437.0															
6.6	brown, very stiff CLAYEY SILT TILL trace sand, moist	436.6			7	SS	24										
	End of Borehole																

DRILLED BY: London Soil Test Ltd.

HOLE DIAMETER: 210mm

DRILL METHOD: Hollow Stem Augers

DATUM: Geodetic

DRILL DATE: March 30, 2015

SHEET: 1 of 1

GRAIN SIZE DISTRIBUTION

OUR REFERENCE N° G3584-5-4

UNIFIED SOIL CLASSIFICATION SYSTEM

SILT & CLAY

FINE

SAND

MEDIUM

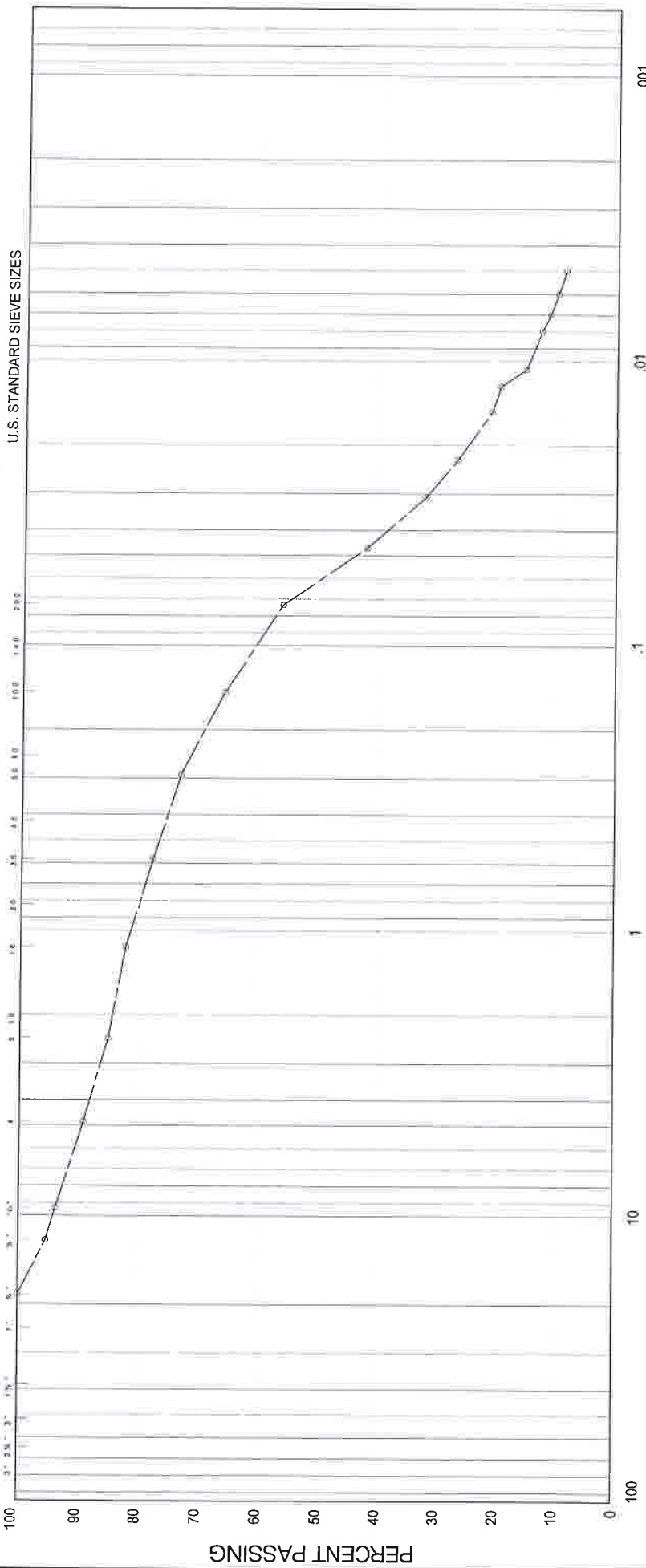
COARSE

FINE

GRAVEL

COARSE

U.S. STANDARD SIEVE SIZES



Grain Size in Millimeters

PROJECT: Proposed Subdivision
 LOCATION: 9354 Wellington Rd. 22, Erin, ON
 BOREHOLE N°: 5
 SAMPLE N°: 2
 DEPTH: 0.8 - 1.2m±
 ELEVATION: 440.3 - 439.9m±

COEFFICIENT OF UNIFORMITY:
 COEFFICIENT OF CURVATURE:

PLASTIC PROPERTIES
 LIQUID LIMIT % =
 PLASTIC LIMIT % =
 PLASTICITY INDEX % =
 MOISTURE CONTENT % = 8.3

Classification of Sample and Group Symbol:

SANDY SILT, some gravel, trace clay (ML)

ENCLOSURE N° 8



GRAIN SIZE DISTRIBUTION

OUR REFERENCE N° G3584-5-4

UNIFIED SOIL CLASSIFICATION SYSTEM

SILT & CLAY

FINE

MEDIUM

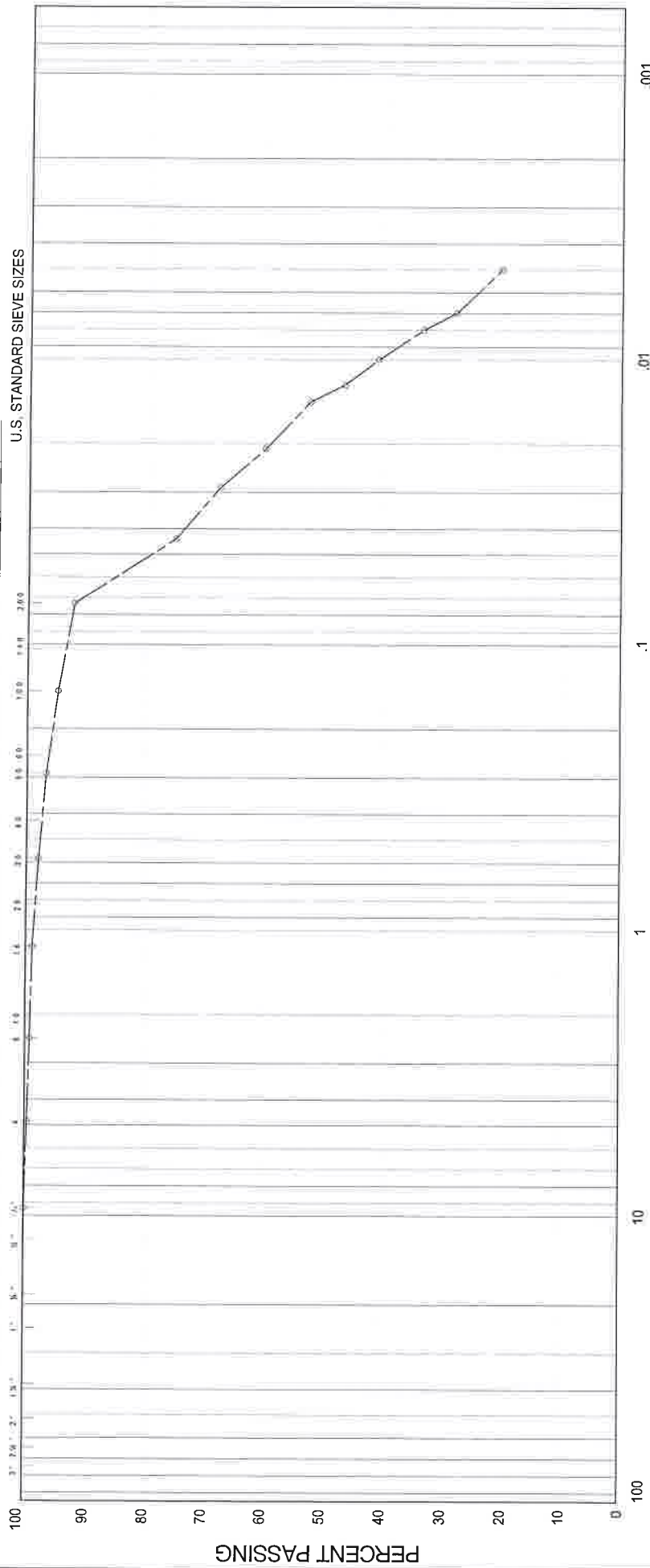
COARSE

FINE

GRAVEL

COARSE

U.S. STANDARD SIEVE SIZES



Grain Size in Millimeters

COEFFICIENT OF UNIFORMITY:
COEFFICIENT OF CURVATURE:

PLASTIC PROPERTIES
LIQUID LIMIT % = 26.5
PLASTIC LIMIT % = 21.3
PLASTICITY INDEX % = 5.2
MOISTURE CONTENT % = 24.0

Classification of Sample and Group Symbol:

CLAYEY SILT, trace sand (CL-ML)

PROJECT: Proposed Subdivision
LOCATION: 9354 Wellington Road 22., Erin, ON.
BOREHOLE N°: 3
SAMPLE N°: 2
DEPTH: 0.8 - 1.2m±
ELEVATION: 441.9 - 441.5m±

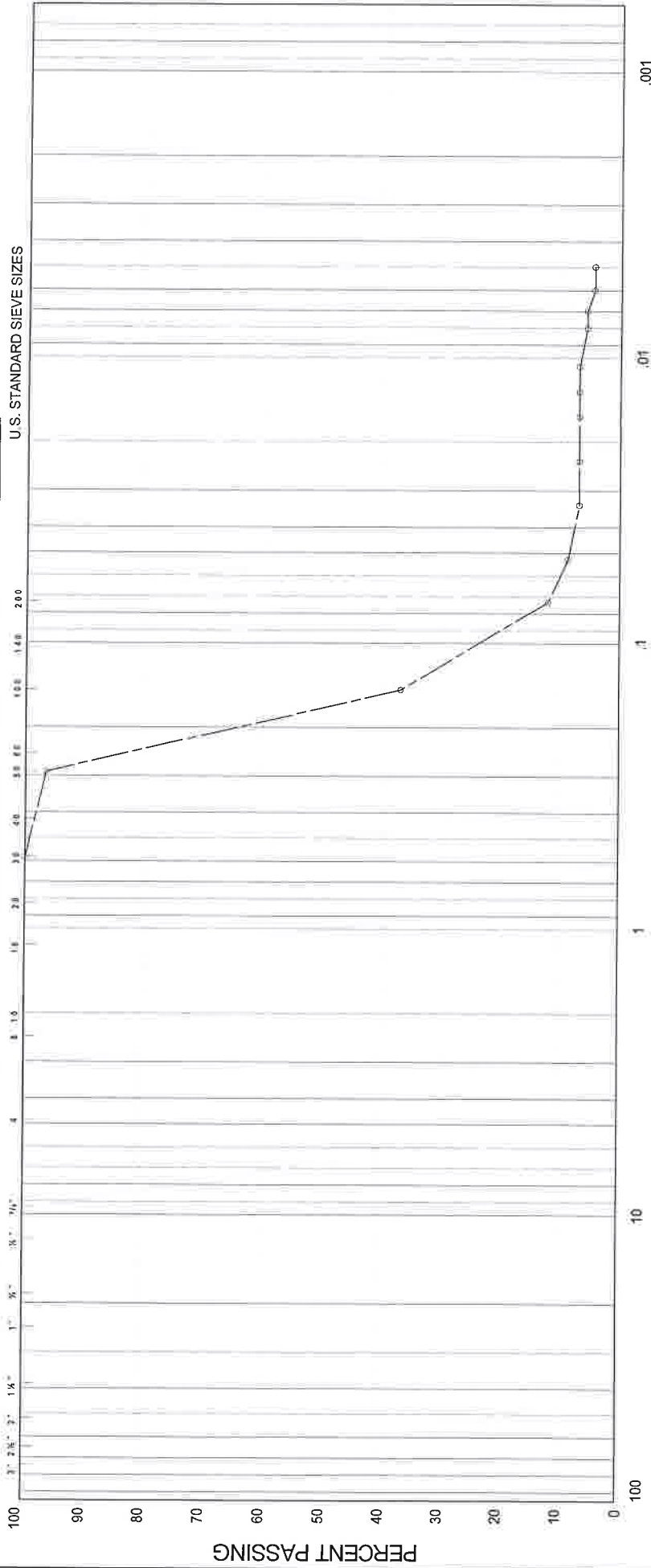
ENCLOSURE N° 9

GRAIN SIZE DISTRIBUTION

OUR REFERENCE N° G3584-5-4

UNIFIED SOIL CLASSIFICATION SYSTEM

GRAVEL		SAND			SILT & CLAY	
COARSE	FINE	COARSE	MEDIUM	FINE		



Grain Size in Millimeters

PROJECT: Proposed Subdivision
 LOCATION: 9354 Wellington Rd. 22, Erin, ON
 BOREHOLE N°: 2
 SAMPLE N°: 4
 DEPTH: 2.3 - 2.7m±
 ELEVATION: 443.8 - 443.4m±

COEFFICIENT OF UNIFORMITY:
 COEFFICIENT OF CURVATURE:

PLASTIC PROPERTIES
 LIQUID LIMIT % =
 PLASTIC LIMIT % =
 PLASTICITY INDEX % =
 MOISTURE CONTENT % = 2.5

Classification of Sample and Group Symbol:

SAND, trace silt, trace clay, (SM)

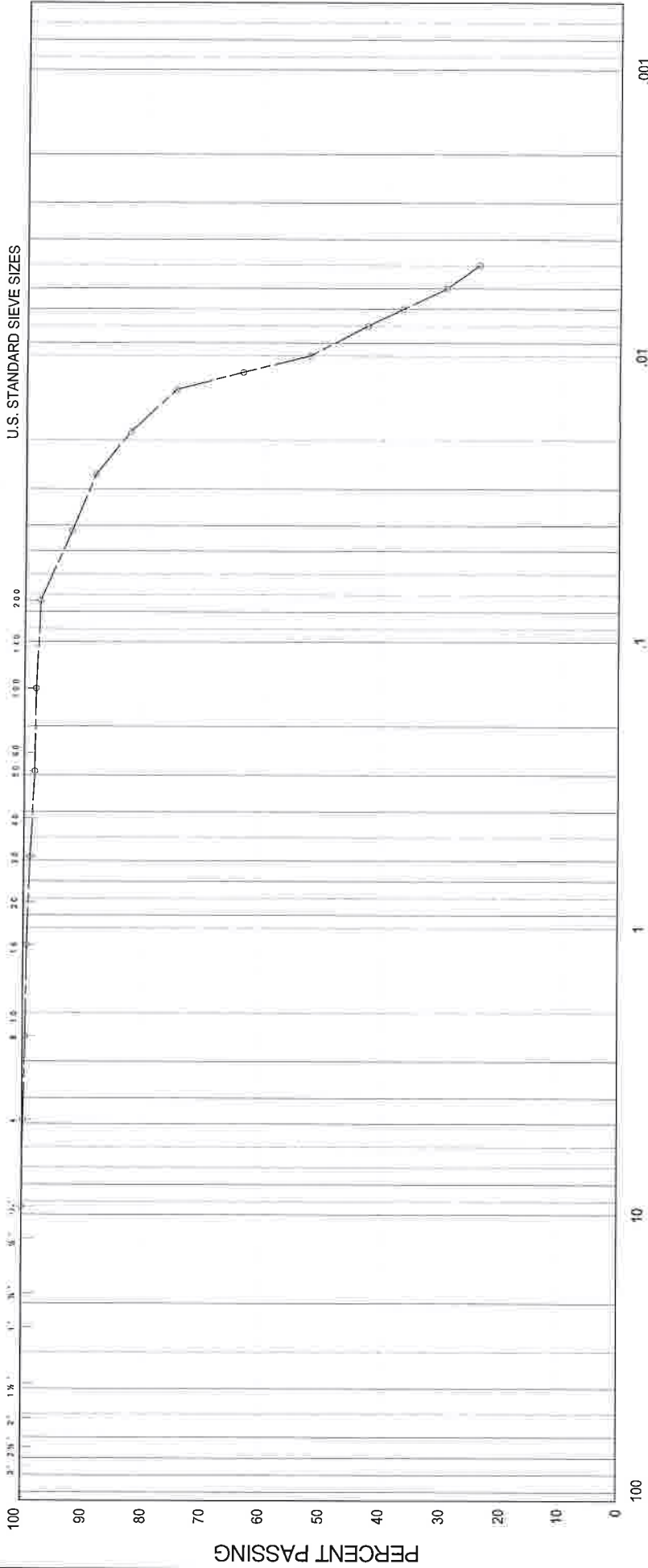
ENCLOSURE N° 10

GRAIN SIZE DISTRIBUTION

OUR REFERENCE N° G3584-5-4

UNIFIED SOIL CLASSIFICATION SYSTEM

GRAVEL		SAND			SILT & CLAY	
COARSE	FINE	COARSE	MEDIUM	FINE		



Grain Size in Millimeters

PROJECT: Proposed Residential Development
 LOCATION: 9354 Wellington Rd. 22, Erin Twp, ON.
 BOREHOLE N°: 6
 SAMPLE N°: 7
 DEPTH: 6.1 - 6.6m±
 ELEVATION: 437.0 - 436.5m±

Classification of Sample and Group Symbol:
 CLAYEY SILT TILL, trace sand (CL-ML)

PLASTIC PROPERTIES
 LIQUID LIMIT % = 24.8
 PLASTIC LIMIT % = 20.2
 PLASTICITY INDEX % = 4.6
 MOISTURE CONTENT % = 17.5

ENCLOSURE N° 11

APPENDIX B
PRELIMINARY SANITARY SEWER DESIGN CALCULATIONS

q = average daily per capita flow (290 L/cap/d)

i = unit of peak extraneous flow (0.29 L/s/ha)

A = Tributary area in gross hectares

M = Peaking factor

Qp = peak population flow (L/s)

Qi = peak extraneous flow (L/s)

Qd = peak design flow (m³/s)

PPU = 2.8 people per unit for singles, on-street towns and semi-detached units. 2.65 people per unit for multi-res/apartments

SANITARY SEWER DESIGN

HILLSBURGH SUBDIVISION

Town of Erin

M = 1 + $\frac{14}{P}$ where P is population in 1000's

$$4 + (P)^{1/2}$$

$$Q(p) = \frac{PqM}{86.4} \text{ (L/s)}$$

$$86.4$$

$$Q_i = iA$$

$$Q_d = Q_p + Q_i + Q_c + Q_{in} \text{ (m}^3\text{/s)}$$

				Residential								Commercial (28 m³/ha/d)			Institutional (28 m³/ha/d)											
Location				Indiv. Pop'n	Cumul. Pop'n	Area (ha)	Cumul. Area	Calculated Peaking Factor (M)	Actual Peaking Factor (M)	Pop. Flow Qp (L/s)	Res. Infiltr. Flow Qi (L/s)	Comm. Area (ha)	Cumul. Area	Comm. Flow Qc (L/s)	Inst. Area (ha)	Cumul. Area	Inst. Flow Qin (L/s)	Peak Design Flow Q (m³/s)	Proposed Sewer							
Street	Catchment	From	To																Length (m)	Pipe Size (mm)	Type of Pipe	Grade %	Capacity (m³/s)	Full Flow Velocity (m/s)	Actual velocity at Q(d)	
FUTURE DEVELOPMENT LANDS	100	EXT	MH1A	70	70	8.20	8.20	4.283	4.0	1.01	2.38	0.00	0.00	0.00	0.00	0.00	0.00	0.003	370.0	200	0.013	0.50	0.023	0.738	0.170	
STREET C	101	MH1A	MH2A	14	84	0.29	8.49	4.264	4.0	1.20	2.46	0.00	0.00	0.00	0.00	0.00	0.00	0.004	47.7	200	0.013	0.87	0.031	0.974	0.224	
STREET D	102	MH9A	MH2A	39	39	0.89	0.89	4.335	4.0	0.57	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.001	93.7	200	0.013	3.02	0.057	1.814	0.417	
STREET C	103	MH2A	MH3A	25	148	0.52	9.90	4.193	4.0	2.09	2.87	0.00	0.00	0.00	0.00	0.00	0.00	0.005	102.7	200	0.013	0.50	0.023	0.738	0.170	
STREET E	104	MH4A	MH3A	34	34	0.71	0.71	4.347	4.0	0.49	0.21	0.00	0.00	0.00	0.00	0.00	0.00	0.001	85.2	200	0.013	3.40	0.060	1.925	0.443	
STREET C	105	MH3A	MH4A	20	202	0.40	11.01	4.147	4.0	2.81	3.19	0.00	0.00	0.00	0.00	0.00	0.00	0.006	70.0	200	0.013	0.50	0.023	0.738	0.170	
STREET C	106	MH4A	MH5A	6	207	0.18	11.19	4.142	4.0	2.88	3.25	0.00	0.00	0.00	0.00	0.00	0.00	0.006	12.5	200	0.013	0.50	0.023	0.738	0.170	
STREET C		MH5A	MH6A	0	207	0.00	11.19	4.142	4.0	2.88	3.25	0.00	0.00	0.00	0.00	0.00	0.00	0.006	12.5	200	0.013	0.50	0.023	0.738	0.170	
STREET C	107	MH6A	MH7A	11	218	0.37	11.56	4.134	4.0	3.03	3.35	0.00	0.00	0.00	0.00	0.00	0.00	0.006	36.0	200	0.013	1.00	0.033	1.044	0.240	
STREET D	108	MH9A	MH10A	17	17	0.37	0.37	4.390	4.0	0.25	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.000	35.6	200	0.013	1.00	0.033	1.044	0.240	
STREET D	109	MH10A	MH11A	6	22	0.23	0.60	4.374	4.0	0.33	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.001	14.1	200	0.013	1.85	0.045	1.420	0.327	
STREET D	110	MH11A	MH12A	3	25	0.08	0.68	4.366	4.0	0.37	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.001	9.6	200	0.013	1.51	0.040	1.283	0.295	
STREET D	111	MH12A	MH13A	17	42	0.39	1.07	4.329	4.0	0.61	0.31	0.00	0.00	0.00	0.00	0.00	0.00	0.001	72.4	200	0.013	1.49	0.040	1.274	0.293	
STREET E	112	MH8A	MH13A	22	22	0.47	0.47	4.374	4.0	0.33	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.000	55.8	200	0.013	2.04	0.047	1.491	0.343	
STREET D	113	MH13A	MH14A	17	81	0.39	1.93	4.267	4.0	1.16	0.56	0.00	0.00	0.00	0.00	0.00	0.00	0.002	69.9	200	0.013	1.30	0.037	1.190	0.274	
STREET D	114	MH14A	MH15A	6	87	0.12	2.05	4.260	4.0	1.24	0.59	0.00	0.00	0.00	0.00	0.00	0.00	0.002	12.5	200	0.013	3.08	0.058	1.832	0.421	
STREET D		MH15A	MH16A	0	87	0.00	2.05	4.260	4.0	1.24	0.59	0.00	0.00	0.00	0.00	0.00	0.00	0.002	12.5	200	0.013	0.50	0.023	0.738	0.170	
STREET D	115	MH16A	MH7A	17	104	0.41	2.46	4.239	4.0	1.47	0.71	0.00	0.00	0.00	0.00	0.00	0.00	0.002	70.1	200	0.013	0.50	0.023	0.738	0.170	
STREET B	116	MH7A	MH19	31	353	0.49	14.51	4.047	4.0	4.79	4.21	0.00	0.00	0.00	0.00	0.00	0.00	0.009	66.4	200	0.013	0.75	0.028	0.904	0.208	
STREET B	117	MH19	MH17A	34	386	0.49	15.00	4.029	4.0	5.23	4.35	0.00	0.00	0.00	0.00	0.00	0.00	0.010	64.7	200	0.013	1.61	0.042	1.325	0.305	
STREET A	118	MH31A	MH32A	6	5.6	0.16	0.16	4.436	4.0	0.08	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.000	12.7	200	0.013	1.00	0.033	1.044	0.240	
STREET A	119	MH32A	MH33A	8	14	0.24	0.40	4.399	4.0	0.21	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.000	12.7	200	0.013	0.50	0.023	0.738	0.170	
STREET A	120	MH33A	MH34A	28	42	0.55	0.95	4.329	4.0	0.61	0.28	0.00	0.00	0.00	0.00	0.00	0.00	0.001	61.2	200	0.013	1.09	0.034	1.090	0.251	
STREET A	121	MH34A	MH35A	20	61.6	0.38	1.33	4.296	4.0	0.89	0.39	0.00	0.00	0.00	0.00	0.00	0.00	0.001	53.1	200	0.013	0.50	0.023	0.738	0.170	
STREET A	122	MH35A	MH24A	6	67.2	0.11	1.44	4.287	4.0	0.97	0.42	0.00	0.00	0.00	0.00	0.00	0.00	0.001	12.6	200	0.013	0.50	0.023	0.738	0.170	
STREET A	123	MH24A	MH30A	3	70	0.07	1.51	4.283	4.0	1.01	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.001	12.6	200	0.013	0.50	0.023	0.738	0.170	
STREET A	124	MH30A	MH17A	20	90	0.31	1.82	4.256	4.0	1.28	0.53	0.00	0.00	0.00	0.00	0.00	0.00	0.002	69.5	200	0.013	0.55	0.024	0.774	0.178	
STREET B	125	MH17A	MH20A	25	501	0.50	17.32	3.974	3.974	6.68	5.02	0.00	0.00	0.00	0.00	0.00	0.00	0.012	73.2	200	0.013	0.50	0.023	0.738	0.170	
STREET B	126	MH20A	MH18A	28	529	0.57	17.89	3.961	3.961	7.04	5.19	0.00	0.00	0.00	0.00	0.00	0.00	0.012	72.4	200	0.013	0.50	0.023	0.738	0.170	
STREET A	127	MH31A	MH18A	133	133	1.14	1.14	4.208	4.0	1.87	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.002	69.4	200	0.013	1.00	0.033	1.044	0.240	
STREET A (TO PUMPING STATION)	128	MH18A	MH21A	0	662	0.36	19.39	3.909	3.909	8.68	5.62	0.00	0.00	0.00	0.00	0.00	0.00	0.014	20.5	200	0.013	0.50	0.023	0.738	0.170	
STREET A (TO PUMPING STATION)	128	MH21A	MH22A	0	662	0.00	19.39	3.909	3.909	8.68	5.62	0.00	0.00	0.00	0.00	0.00	0.00	0.014	31.6	200	0.013	0.50	0.023	0.738	0.170	
STREET A (TO PUMPING STATION)	128	MH22A	MH23A	0	662	0.00	19.39	3.909	3.909	8.68	5.62	0.00	0.00	0.00	0.00	0.00	0.00	0.014	33.3	200	0.013	0.58	0.025	0.795	0.183	

q = average daily per capita flow (290 L/cap/d)
i = unit of peak extraneous flow (0.29 L/s/ha)
A = Tributary area in gross hectares
M = Peaking factor
Qp = peak population flow (L/s)
Qi = peak extraneous flow (L/s)
Qd = peak design flow (m³/s)

SANITARY SEWER DESIGN

$M = 1 + \frac{14}{4 + (P)^{1/2}}$ where P is population in 1000's
 $Q(p) = \frac{PqM}{86.4}$ (L/s)
 $Q_i = iA$
 $Q_d = Q_p + Q_i + Q_c + Q_{in}$ (m³/s)

HILLSBURGH SUBDIVISION

Town of Erin

PPU = 2.8 people per unit for singles, on-street towns and semi-detached units. 2.65 people per unit for multi-res/apartments

				Residential								Commercial (28 m³/ha/d)			Institutional (28 m³/ha/d)										
Location				Indiv. Pop'n	Cumul. Pop'n	Area (ha)	Cumul. Area	Calculated Peaking Factor (M)	Actual Peaking Factor (M)	Pop. Flow Qp (L/s)	Res. Infiltr. Flow Qi (L/s)	Comm. Area (ha)	Cumul. Area	Comm. Flow Qc (L/s)	Inst. Area (ha)	Cumul. Area	Inst. Flow Qin (L/s)	Peak Design Flow Q (m³/s)	Proposed Sewer						
Street	Catchment	From	To																Length (m)	Pipe Size (mm)	Type of Pipe	Grade %	Capacity (m³/s)	Full Flow Velocity (m/s)	Actual velocity at Q(d)
STREET A (TO PUMPING STATION)	128	MH23A	MH36A	0	662	0.00	19.39	3.909	3.909	8.68	5.62	0.00	0.00	0.00	0.00	0.00	0.00	0.014	19.3	200	0.013	0.50	0.023	0.738	0.170
Minimum diameter = 200 mm Minimum acceptable velocity = 0.6 m/s Maximum acceptable velocity = 3.0 m/s Roughness Coefficient for PVC pipe = 0.010 Note: The final design and size of the sanitary sewers will be completed as part of the detailed engineering design.							Date: November 20, 2024											Project: HILLSBURGH SUBDIVISION							
							Designed By: HB											File: 121132							
							Checked By: PW																		

APPENDIX C
PRELIMINARY STORM SEWER DESIGN CALCULATIONS

TOWN OF ERIN - TABLE 13: IDF EQUATION CONS

A = 744
 B = 1.76
 C = 0.729

Intensity = $A / (t + B)^C$ Q = CiA (m³/s)

STORM SEWER DESIGN

5 Year Design

HILLSBURGH SUBDIVISION TOWN OF ERIN

				Area (ha)	Runoff Coefficient	A x C	Cumulative A x C	Time of Conc. (min.)	Intensity (mm/hr)	Flow (m ³ /s)	Proposed Sewer						
Street	Catchment	From	To								Length (m)	Pipe Size (mm)	Type of Pipe	Grade %	Capacity (m ³ /s)	Full Flow Velocity (m/s)	Time of Flow (min.)
Street A	201	MH63	MH27	0.48	0.80	0.38	0.38	10.00	123.38	0.132	29.9	375	0.013	0.40	0.111	1.00	0.50
Street A	201	MH27	MH28	0.00	0.80	0.00	0.38	10.50	119.72	0.128	23.5	450	0.013	0.50	0.202	1.27	0.31
Street A	203	MH29	MH28	0.72	0.80	0.58	0.58	10.00	123.38	0.197	66.4	450	0.013	1.00	0.285	1.79	0.62
Street B	202	MH28	MH38	0.73	0.50	0.37	1.33	10.81	117.56	0.433	79.4	600	0.013	0.51	0.438	1.55	0.85
Street B	202	MH38	MH1	0.00	0.50	0.00	1.33	11.66	112.07	0.412	72.4	600	0.013	0.46	0.416	1.47	0.82
Street A	204	MH29	MH32	0.00	0.60	0.00	0.00	10.00	123.38	0.000	13.3	375	0.013	1.00	0.175	1.59	0.14
Street A	204	MH32	MH33	0.05	0.60	0.03	0.03	10.14	122.32	0.010	13.8	375	0.013	1.00	0.175	1.59	0.14
Street A	204	MH33	MH56	0.32	0.60	0.19	0.22	10.28	121.25	0.075	42.3	450	0.013	1.00	0.285	1.79	0.39
Street A	204	MH56	MH34	0.26	0.60	0.16	0.38	10.68	118.44	0.124	42.3	450	0.013	2.00	0.403	2.54	0.28
Street A	204	MH34	MH35	0.22	0.60	0.13	0.51	10.96	116.55	0.165	36.5	525	0.013	0.50	0.304	1.40	0.43
Street A	204	MH35	MH36	0.12	0.60	0.07	0.58	11.39	113.74	0.184	13.2	525	0.013	0.50	0.304	1.40	0.16
Street A (PARK BLK 146)	205	PARK	MH36	0.63	0.20	0.13	0.13	10.00	123.38	0.043	10.0	300	0.013	0.50	0.068	0.97	0.17
Street A	204	MH36	MH37	0.06	0.60	0.04	0.74	11.55	112.76	0.233	13.4	600	0.013	0.50	0.434	1.54	0.15
Street A	204	MH37	MH39	0.25	0.60	0.15	0.89	11.69	111.87	0.278	66.5	675	0.013	0.50	0.594	1.66	0.67
Street A	204	MH39	MH1	0.05	0.60	0.03	0.92	12.36	107.99	0.277	16.7	675	0.013	0.50	0.594	1.66	0.17
Street D	206	MH14	MH15	0.88	0.50	0.44	0.44	10.00	123.38	0.151	85.6	450	0.013	2.94	0.489	3.07	0.46
Street D	206	MH15	MH7	0.00	0.50	0.00	0.44	10.46	119.95	0.147	13.3	450	0.013	0.63	0.226	1.42	0.16
Street C	206	MH6	MH7	0.14	0.50	0.07	0.07	10.00	123.38	0.024	43.8	375	0.013	0.50	0.124	1.12	0.65
Street C	206	MH7	MH8	0.14	0.50	0.07	0.58	10.62	118.85	0.191	50.9	525	0.013	0.50	0.304	1.40	0.60
Street C	206	MH8	MH9	0.14	0.50	0.07	0.65	11.22	114.79	0.207	50.8	525	0.013	0.50	0.304	1.40	0.60
Street E	206	MH17	MH9	0.74	0.50	0.37	0.37	10.00	123.38	0.127	85.5	450	0.013	2.94	0.489	3.07	0.46

TOWN OF ERIN - TABLE 13: IDF EQUATION CONS

A = 744
B = 1.76
C = 0.729

Intensity = $A / (t + B)^C$

$Q = CiA \text{ (m}^3\text{/s)}$

STORM SEWER DESIGN

5 Year Design

HILLSBURGH SUBDIVISION TOWN OF ERIN

Street	Catchment	From	To	Area (ha)	Runoff Coefficient	A x C	Cumulative A x C	Time of Conc. (min.)	Intensity (mm/hr)	Flow (m³/s)	Proposed Sewer						
											Length (m)	Pipe Size (mm)	Type of Pipe	Grade %	Capacity (m³/s)	Full Flow Velocity (m/s)	Time of Flow (min.)
Street C	206	MH9	MH10	0.20	0.50	0.10	1.05	11.83	111.05	0.324	73.0	600	0.013	0.50	0.434	1.54	0.79
Street C	206	MH10	MH11	0.05	0.50	0.03	1.08	12.62	106.56	0.318	16.1	675	0.013	0.50	0.594	1.66	0.16
Street C	206	MH11	MH12	0.04	0.50	0.02	1.10	12.78	105.70	0.321	13.4	675	0.013	0.50	0.594	1.66	0.13
Street C	206	MH12	MH16	0.32	0.50	0.16	1.26	12.91	104.99	0.366	39.0	675	0.013	1.28	0.951	2.66	0.24
Street E	207	MH17	MH22	0.39	0.50	0.20	0.20	10.00	123.38	0.067	61.5	375	0.013	2.16	0.258	2.33	0.44
Street D	207	MH14	MH19	0.33	0.50	0.17	0.17	10.00	123.38	0.057	33.8	375	0.013	2.12	0.255	2.31	0.24
Street D	207	MH19	MH20	0.24	0.50	0.12	0.29	10.24	121.55	0.096	10.4	375	0.013	1.30	0.200	1.81	0.10
Street D	207	MH20	MH21	0.00	0.50	0.00	0.29	10.34	120.85	0.096	14.8	450	0.013	0.50	0.202	1.27	0.19
Street D	207	MH21	MH50	0.28	0.50	0.14	0.43	10.53	119.45	0.141	33.9	450	0.013	0.50	0.202	1.27	0.45
Street D	207	MH50	MH22	0.21	0.50	0.11	0.53	10.98	116.39	0.171	38.7	450	0.013	1.81	0.384	2.41	0.27
Street D	207	MH22	MH45	0.21	0.50	0.11	0.64	11.25	114.64	0.202	37.5	525	0.013	0.50	0.304	1.40	0.44
Street D	207	MH45	MH23	0.29	0.50	0.15	0.78	11.69	111.86	0.242	38.1	525	0.013	0.50	0.304	1.40	0.45
Street D	207	MH23	MH24	0.00	0.50	0.00	0.78	12.14	109.20	0.237	12.4	600	0.013	0.50	0.434	1.54	0.13
Street D	207	MH24	MH25	0.07	0.50	0.04	0.82	12.28	108.44	0.245	14.8	600	0.013	0.50	0.434	1.54	0.16
Street D	207	MH25	MH16	0.22	0.50	0.11	0.93	12.44	107.54	0.276	67.1	600	0.013	0.50	0.434	1.54	0.73
Street B	208	MH16	MH26	0.36	0.50	0.18	2.36	13.16	103.73	0.680	62.1	825	0.013	0.60	1.112	2.08	0.50
Street B	208	MH26	MH1	0.35	0.50	0.18	2.54	13.66	101.28	0.713	63.0	825	0.013	1.77	1.910	3.57	0.29
Street B		MH1	MH2	0.00	0.00	0.00	4.78	13.95	99.89	1.327	11.7	1050	0.013	0.40	1.727	1.99	0.10
SWM POND	209	MH2	MH3	0.00	0.00	0.00	4.78	18.73	82.30	1.094	35.7	1050	0.013	0.40	1.727	1.99	0.30
SWM POND	209	MH3	HW	0.00	0.00	0.00	4.78	23.52	70.63	0.939	11.4	1050	0.013	0.40	1.727	1.99	0.10

Minimum diameter = 300 mm
Minimum acceptable velocity = 0.75 m/s, Maximum acceptable velocity = 4.5 m/s
Roughness Coefficient for PVC and Concrete Sewers = 0.013

Note: The final design and size of the storm and sanitary sewers will be completed as part of the detailed engineering design.

Date:	November 20, 2024	Project:	HILLSBURGH SUBDIVISION
Designed By:	HB		
Checked By:	PW	File:	121132

APPENDIX D
PRE-DEVELOPMENT CONDITIONS STORMWATER MANAGEMENT
ANALYSIS

NASHHYD Input Parameters - Pervious Catchments

Catchment # 101
Area (ha) 6.44
of Linear Reservoirs 3 VO Default
Soil: Hillsburgh Fine Sandy Loam
Hydrologic Soil Group: A

Land Uses broken down by types:

Area (ha)	Type	Curve Number	A*CN	Runoff Coefficient	A*RC
0	Imperviousness	98	0	0.7	0
0	Pervious Lawn	74	0	0.13	0
6.44	Pervious Cultivated	72	463.68	0.35	2.254

Total Pervious Area (ha)	6.44
Total Impervious Area (ha)	0
% Impervious	0
Composite Curve Number:	72
Composite Runoff Coefficient:	0.35

Intital Abstraction and Time to Peak Calculations**Intial Abstraction**

Land Use	IA (mm)	Area (ha)	A*IA
Lawn	5	0	0
Cultivated	5	6.44	32.2
Impervious	2	0	0

Time to Peak Calculations

Flow Path Description	
Length (m)	150
Drop (m)	
Slope (%)	5%
use formula	Airport
Time to Peak (hrs)	0.195623886

Two Methods:

Bransby Williams		Airport	
Tc (hr)	0.215343753	Tc (hr)	0.293436
Tp (hr)	0.143562502	Tp (hr)	0.195624

NASHHYD Input Parameters - Pervious Catchments

Catchment # 102
Area (ha) 5.81
of Linear Reservoirs 3 VO Default
Soil: Hillsburgh Fine Sandy Loam
Hydrologic Soil Group: A

Land Uses broken down by types:

Area (ha)	Type	Curve Number	A*CN	Runoff Coefficient	A*RC
0	Imperviousness	98	0	0.7	0
0	Pervious Lawn	74	0	0.13	0
5.81	Pervious Cultivated	72	418.32	0.35	2.0335

Total Pervious Area (ha)	5.81
Total Impervious Area (ha)	0
% Impervious	0
Composite Curve Number:	72
Composite Runoff Coefficient:	0.35

Intital Abstraction and Time to Peak Calculations

Intial Abstraction

Land Use	IA (mm)	Area (ha)	A*IA
Lawn	5	0	0
Cultivated	5	5.81	29.05
Impervious	2	0	0

Time to Peak Calculations

Flow Path Description	
Length (m)	100
Drop (m)	
Slope (%)	5%
use formula	Airport
Time to Peak (hrs)	0.159726234

Two Methods:

Bransby Williams		Airport	
Tc (hr)	0.145048082	Tc (hr)	0.239589
Tp (hr)	0.096698722	Tp (hr)	0.159726

NASHHYD Input Parameters - Pervious Catchments

Catchment # 103
Area (ha) 1.89
of Linear Reservoirs 3 VO Default
Soil: Hillsburgh Fine Sandy Loam
Hydrologic Soil Group: A

Land Uses broken down by types:

Area (ha)	Type	Curve Number	A*CN	Runoff Coefficient	A*RC
0	Imperviousness	98	0	0.7	0
0	Pervious Lawn	74	0	0.13	0
1.89	Pervious Cultivated	72	136.08	0.35	0.6615

Total Pervious Area (ha)	1.89
Total Impervious Area (ha)	0
% Impervious	0
Composite Curve Number:	72
Composite Runoff Coefficient:	0.35

Intital Abstraction and Time to Peak Calculations

Intial Abstraction

Land Use	IA (mm)	Area (ha)	A*IA
Lawn	5	0	0
Cultivated	5	1.89	9.45
Impervious	2	0	0

Time to Peak Calculations

Flow Path Description	
Length (m)	100
Drop (m)	0
Slope (%)	3%
use formula	Airport
Time to Peak (hrs)	0.189054204

Two Methods:

Bransby Williams		Airport	
Tc (hr)	0.179743492	Tc (hr)	0.283581
Tp (hr)	0.119828994	Tp (hr)	0.189054

=====

=====

```
V   V   I   SSSSS   U   U   A   L           (v 6.2.2015)
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
```

Developed and Distributed by Smart City Water Inc

Copyright 2007 - 2022 Smart City Water Inc

All rights reserved.

***** 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\jangsoo.lee\AppData\Local\Civica\VH5\191a91e0-1a14-44fd-bc00-4941023c7dee\e9f544a5-6b63-450d-8cdd-3be1e5a36949\

Summary filename:

C:\Users\jangsoo.lee\AppData\Local\Civica\VH5\191a91e0-1a14-44fd-bc00-4941023c7dee\e9f544a5-6b63-450d-8cdd-3be1e5a36949\

DATE: 09/25/2024

TIME: 11:26:53

USER:

COMMENTS: _____

```
*****
** SIMULATION : 25mm Storm           **
*****
```

```
-----
| CHICAGO STORM   |   IDF curve parameters: A=1581.200
| Ptotal= 25.00 mm |                               B= 13.000
-----                               C= 1.000
used in:   INTENSITY =  A / (t + B)^C

Duration of storm = 4.00 hrs
```

Storm time step = 10.00 min
Time to peak ratio = 0.40

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.00	0.37	1.00	2.87	2.00	5.00	3.00	0.76
0.17	0.47	1.17	5.87	2.17	3.14	3.17	0.63
0.33	0.60	1.33	18.62	2.33	2.16	3.33	0.53
0.50	0.80	1.50	68.75	2.50	1.57	3.50	0.45
0.67	1.13	1.67	22.53	2.67	1.20	3.67	0.38
0.83	1.71	1.83	9.20	2.83	0.94	3.83	0.33

| CALIB |
| NASHYD (0101) | Area (ha)= 6.44 Curve Number (CN)= 72.0
| ID= 1 DT= 5.0 min | Ia (mm)= 5.00 # of Linear Res.(N)= 3.00

U.H. Tp(hrs)= 0.20

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	0.37	1.083	2.87	2.083	5.00	3.08	0.76
0.167	0.37	1.167	2.87	2.167	5.00	3.17	0.76
0.250	0.47	1.250	5.87	2.250	3.14	3.25	0.63
0.333	0.47	1.333	5.87	2.333	3.14	3.33	0.63
0.417	0.60	1.417	18.62	2.417	2.16	3.42	0.53
0.500	0.60	1.500	18.62	2.500	2.16	3.50	0.53
0.583	0.80	1.583	68.75	2.583	1.57	3.58	0.45
0.667	0.80	1.667	68.75	2.667	1.57	3.67	0.45
0.750	1.13	1.750	22.53	2.750	1.20	3.75	0.38
0.833	1.13	1.833	22.53	2.833	1.20	3.83	0.38
0.917	1.71	1.917	9.20	2.917	0.94	3.92	0.33
1.000	1.71	2.000	9.20	3.000	0.94	4.00	0.33

Unit Hyd Qpeak (cms)= 1.258

PEAK FLOW (cms)= 0.087 (i)
TIME TO PEAK (hrs)= 1.833
RUNOFF VOLUME (mm)= 3.360
TOTAL RAINFALL (mm)= 24.999
RUNOFF COEFFICIENT = 0.134

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

| CALIB |
| NASHYD (0102) | Area (ha)= 5.81 Curve Number (CN)= 72.0

0.750	1.13		1.750	22.53		2.750	1.20		3.75	0.38
0.833	1.13		1.833	22.53		2.833	1.20		3.83	0.38
0.917	1.71		1.917	9.20		2.917	0.94		3.92	0.33
1.000	1.71		2.000	9.20		3.000	0.94		4.00	0.33

Unit Hyd Qpeak (cms)= 0.382

PEAK FLOW (cms)= 0.026 (i)
TIME TO PEAK (hrs)= 1.833
RUNOFF VOLUME (mm)= 3.359
TOTAL RAINFALL (mm)= 24.999
RUNOFF COEFFICIENT = 0.134

(i) 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 (0101):	6.44	0.087	1.83	3.36
+ ID2= 2 (0102):	5.81	0.089	1.83	3.35
=====				
ID = 3 (1000):	12.25	0.176	1.83	3.36

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):	12.25	0.176	1.83	3.36
+ ID2= 2 (0103):	1.89	0.026	1.83	3.36
=====				
ID = 1 (1000):	14.14	0.203	1.83	3.36

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

FINISH

=====

=====

=====

=====

```
V   V   I   SSSSS   U   U   A   L           (v 6.2.2015)
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
```

Developed and Distributed by Smart City Water Inc

Copyright 2007 - 2022 Smart City Water Inc

All rights reserved.

***** 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\jangsoo.lee\AppData\Local\Civica\VH5\191a91e0-1a14-44fd-bc00-4941023c7dee\14daaa94-60a8-424e-9e3b-1659aa0d0eeb\

Summary filename:

C:\Users\jangsoo.lee\AppData\Local\Civica\VH5\191a91e0-1a14-44fd-bc00-4941023c7dee\14daaa94-60a8-424e-9e3b-1659aa0d0eeb\

DATE: 09/25/2024

TIME: 11:26:52

USER:

COMMENTS: _____

** SIMULATION : 2yr 24hr 10min SCS Type II **

READ STORM	Filename: C:\Users\jangsoo.lee\AppData
	ata\Local\Temp\
	5d212dc0-a9a6-408a-8363-09ba1dc1c3ac\6dcf778f
Ptotal= 67.15 mm	Comments: 2yr 24hr 10min SCS Type II

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.00	0.00	6.17	1.21	12.33	9.67	18.50	1.21
0.17	0.74	6.33	1.21	12.50	9.67	18.67	1.21
0.33	0.74	6.50	1.21	12.67	4.97	18.83	1.21
0.50	0.74	6.67	1.21	12.83	4.97	19.00	1.21
0.67	0.74	6.83	1.21	13.00	4.97	19.17	1.21
0.83	0.74	7.00	1.21	13.17	3.63	19.33	1.21
1.00	0.74	7.17	1.48	13.33	3.63	19.50	1.21
1.17	0.74	7.33	1.48	13.50	3.63	19.67	1.21
1.33	0.74	7.50	1.48	13.67	2.82	19.83	1.21
1.50	0.74	7.67	1.48	13.83	2.82	20.00	1.21
1.67	0.74	7.83	1.48	14.00	2.82	20.17	0.81
1.83	0.74	8.00	1.48	14.17	2.01	20.33	0.81
2.00	0.74	8.17	1.75	14.33	2.01	20.50	0.81
2.17	0.87	8.33	1.75	14.50	2.01	20.67	0.81
2.33	0.87	8.50	1.75	14.67	2.01	20.83	0.81
2.50	0.87	8.67	1.88	14.83	2.01	21.00	0.81
2.67	0.87	8.83	1.88	15.00	2.01	21.17	0.81
2.83	0.87	9.00	1.88	15.17	2.01	21.33	0.81
3.00	0.87	9.17	2.15	15.33	2.01	21.50	0.81
3.17	0.87	9.33	2.15	15.50	2.01	21.67	0.81
3.33	0.87	9.50	2.15	15.67	2.01	21.83	0.81
3.50	0.87	9.67	2.42	15.83	2.01	22.00	0.81
3.67	0.87	9.83	2.42	16.00	2.01	22.17	0.81
3.83	0.87	10.00	2.42	16.17	1.21	22.33	0.81
4.00	0.87	10.17	3.09	16.33	1.21	22.50	0.81
4.17	1.07	10.33	3.09	16.50	1.21	22.67	0.81
4.33	1.07	10.50	3.09	16.67	1.21	22.83	0.81
4.50	1.07	10.67	4.16	16.83	1.21	23.00	0.81
4.67	1.07	10.83	4.16	17.00	1.21	23.17	0.81
4.83	1.07	11.00	4.16	17.17	1.21	23.33	0.81
5.00	1.07	11.17	6.45	17.33	1.21	23.50	0.81
5.17	1.07	11.33	6.45	17.50	1.21	23.67	0.81
5.33	1.07	11.50	6.45	17.67	1.21	23.83	0.81
5.50	1.07	11.67	19.88	17.83	1.21	24.00	0.81
5.67	1.07	11.83	51.03	18.00	1.21		
5.83	1.07	12.00	82.19	18.17	1.21		
6.00	1.07	12.17	9.67	18.33	1.21		

| CALIB |
| NASHYD (0101) | Area (ha)= 6.44 Curve Number (CN)= 72.0
| ID= 1 DT= 5.0 min | Ia (mm)= 5.00 # of Linear Res.(N)= 3.00

U.H. Tp(hrs)= 0.20

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	0.00	6.167	1.07	12.250	9.68	18.33	1.21
0.167	0.00	6.250	1.21	12.333	9.67	18.42	1.21
0.250	0.74	6.333	1.21	12.417	9.67	18.50	1.21
0.333	0.74	6.417	1.21	12.500	9.67	18.58	1.21
0.417	0.74	6.500	1.21	12.583	9.67	18.67	1.21
0.500	0.74	6.583	1.21	12.667	9.67	18.75	1.21
0.583	0.74	6.667	1.21	12.750	4.97	18.83	1.21
0.667	0.74	6.750	1.21	12.833	4.97	18.92	1.21
0.750	0.74	6.833	1.21	12.917	4.97	19.00	1.21
0.833	0.74	6.917	1.21	13.000	4.97	19.08	1.21
0.917	0.74	7.000	1.21	13.083	4.97	19.17	1.21
1.000	0.74	7.083	1.21	13.167	4.97	19.25	1.21
1.083	0.74	7.167	1.21	13.250	3.63	19.33	1.21
1.167	0.74	7.250	1.48	13.333	3.63	19.42	1.21
1.250	0.74	7.333	1.48	13.417	3.63	19.50	1.21
1.333	0.74	7.417	1.48	13.500	3.63	19.58	1.21
1.417	0.74	7.500	1.48	13.583	3.63	19.67	1.21
1.500	0.74	7.583	1.48	13.667	3.63	19.75	1.21
1.583	0.74	7.667	1.48	13.750	2.82	19.83	1.21
1.667	0.74	7.750	1.48	13.833	2.82	19.92	1.21
1.750	0.74	7.833	1.48	13.917	2.82	20.00	1.21
1.833	0.74	7.917	1.48	14.000	2.82	20.08	1.21
1.917	0.74	8.000	1.48	14.083	2.82	20.17	1.21
2.000	0.74	8.083	1.48	14.167	2.82	20.25	0.81
2.083	0.74	8.167	1.48	14.250	2.01	20.33	0.81
2.167	0.74	8.250	1.75	14.333	2.01	20.42	0.81
2.250	0.87	8.333	1.75	14.417	2.01	20.50	0.81
2.333	0.87	8.417	1.75	14.500	2.01	20.58	0.81
2.417	0.87	8.500	1.75	14.583	2.01	20.67	0.81
2.500	0.87	8.583	1.75	14.667	2.01	20.75	0.81
2.583	0.87	8.667	1.75	14.750	2.01	20.83	0.81
2.667	0.87	8.750	1.88	14.833	2.01	20.92	0.81
2.750	0.87	8.833	1.88	14.917	2.01	21.00	0.81
2.833	0.87	8.917	1.88	15.000	2.01	21.08	0.81
2.917	0.87	9.000	1.88	15.083	2.01	21.17	0.81
3.000	0.87	9.083	1.88	15.167	2.01	21.25	0.81
3.083	0.87	9.167	1.88	15.250	2.01	21.33	0.81
3.167	0.87	9.250	2.15	15.333	2.01	21.42	0.81
3.250	0.87	9.333	2.15	15.417	2.01	21.50	0.81
3.333	0.87	9.417	2.15	15.500	2.01	21.58	0.81
3.417	0.87	9.500	2.15	15.583	2.01	21.67	0.81
3.500	0.87	9.583	2.15	15.667	2.01	21.75	0.81
3.583	0.87	9.667	2.15	15.750	2.01	21.83	0.81
3.667	0.87	9.750	2.42	15.833	2.01	21.92	0.81
3.750	0.87	9.833	2.42	15.917	2.01	22.00	0.81
3.833	0.87	9.917	2.42	16.000	2.01	22.08	0.81
3.917	0.87	10.000	2.42	16.083	2.01	22.17	0.81
4.000	0.87	10.083	2.42	16.167	2.01	22.25	0.81
4.083	0.87	10.167	2.42	16.250	1.21	22.33	0.81
4.167	0.87	10.250	3.09	16.333	1.21	22.42	0.81
4.250	1.07	10.333	3.09	16.417	1.21	22.50	0.81
4.333	1.07	10.417	3.09	16.500	1.21	22.58	0.81

4.417	1.07	10.500	3.09	16.583	1.21	22.67	0.81
4.500	1.07	10.583	3.09	16.667	1.21	22.75	0.81
4.583	1.07	10.667	3.09	16.750	1.21	22.83	0.81
4.667	1.07	10.750	4.16	16.833	1.21	22.92	0.81
4.750	1.07	10.833	4.16	16.917	1.21	23.00	0.81
4.833	1.07	10.917	4.16	17.000	1.21	23.08	0.81
4.917	1.07	11.000	4.16	17.083	1.21	23.17	0.81
5.000	1.07	11.083	4.16	17.167	1.21	23.25	0.81
5.083	1.07	11.167	4.16	17.250	1.21	23.33	0.81
5.167	1.07	11.250	6.45	17.333	1.21	23.42	0.81
5.250	1.07	11.333	6.45	17.417	1.21	23.50	0.81
5.333	1.07	11.417	6.45	17.500	1.21	23.58	0.81
5.417	1.07	11.500	6.45	17.583	1.21	23.67	0.81
5.500	1.07	11.583	6.45	17.667	1.21	23.75	0.81
5.583	1.07	11.667	6.45	17.750	1.21	23.83	0.81
5.667	1.07	11.750	19.87	17.833	1.21	23.92	0.81
5.750	1.07	11.833	19.88	17.917	1.21	24.00	0.81
5.833	1.07	11.917	51.03	18.000	1.21	24.08	0.81
5.917	1.07	12.000	51.03	18.083	1.21	24.17	0.81
6.000	1.07	12.083	82.19	18.167	1.21		
6.083	1.07	12.167	82.19	18.250	1.21		

Unit Hyd Qpeak (cms)= 1.258

PEAK FLOW (cms)= 0.386 (i)
TIME TO PEAK (hrs)= 12.250
RUNOFF VOLUME (mm)= 23.952
TOTAL RAINFALL (mm)= 67.150
RUNOFF COEFFICIENT = 0.357

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

CALIB				
NASHYD (0102)	Area (ha)=	5.81	Curve Number (CN)=	72.0
ID= 1 DT= 5.0 min	Ia (mm)=	5.00	# of Linear Res.(N)=	3.00
-----	U.H. Tp(hrs)=	0.16		

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	0.00	6.167	1.07	12.250	9.68	18.33	1.21
0.167	0.00	6.250	1.21	12.333	9.67	18.42	1.21
0.250	0.74	6.333	1.21	12.417	9.67	18.50	1.21
0.333	0.74	6.417	1.21	12.500	9.67	18.58	1.21
0.417	0.74	6.500	1.21	12.583	9.67	18.67	1.21
0.500	0.74	6.583	1.21	12.667	9.67	18.75	1.21
0.583	0.74	6.667	1.21	12.750	4.97	18.83	1.21
0.667	0.74	6.750	1.21	12.833	4.97	18.92	1.21

0.750	0.74		6.833	1.21		12.917	4.97		19.00	1.21
0.833	0.74		6.917	1.21		13.000	4.97		19.08	1.21
0.917	0.74		7.000	1.21		13.083	4.97		19.17	1.21
1.000	0.74		7.083	1.21		13.167	4.97		19.25	1.21
1.083	0.74		7.167	1.21		13.250	3.63		19.33	1.21
1.167	0.74		7.250	1.48		13.333	3.63		19.42	1.21
1.250	0.74		7.333	1.48		13.417	3.63		19.50	1.21
1.333	0.74		7.417	1.48		13.500	3.63		19.58	1.21
1.417	0.74		7.500	1.48		13.583	3.63		19.67	1.21
1.500	0.74		7.583	1.48		13.667	3.63		19.75	1.21
1.583	0.74		7.667	1.48		13.750	2.82		19.83	1.21
1.667	0.74		7.750	1.48		13.833	2.82		19.92	1.21
1.750	0.74		7.833	1.48		13.917	2.82		20.00	1.21
1.833	0.74		7.917	1.48		14.000	2.82		20.08	1.21
1.917	0.74		8.000	1.48		14.083	2.82		20.17	1.21
2.000	0.74		8.083	1.48		14.167	2.82		20.25	0.81
2.083	0.74		8.167	1.48		14.250	2.01		20.33	0.81
2.167	0.74		8.250	1.75		14.333	2.01		20.42	0.81
2.250	0.87		8.333	1.75		14.417	2.01		20.50	0.81
2.333	0.87		8.417	1.75		14.500	2.01		20.58	0.81
2.417	0.87		8.500	1.75		14.583	2.01		20.67	0.81
2.500	0.87		8.583	1.75		14.667	2.01		20.75	0.81
2.583	0.87		8.667	1.75		14.750	2.01		20.83	0.81
2.667	0.87		8.750	1.88		14.833	2.01		20.92	0.81
2.750	0.87		8.833	1.88		14.917	2.01		21.00	0.81
2.833	0.87		8.917	1.88		15.000	2.01		21.08	0.81
2.917	0.87		9.000	1.88		15.083	2.01		21.17	0.81
3.000	0.87		9.083	1.88		15.167	2.01		21.25	0.81
3.083	0.87		9.167	1.88		15.250	2.01		21.33	0.81
3.167	0.87		9.250	2.15		15.333	2.01		21.42	0.81
3.250	0.87		9.333	2.15		15.417	2.01		21.50	0.81
3.333	0.87		9.417	2.15		15.500	2.01		21.58	0.81
3.417	0.87		9.500	2.15		15.583	2.01		21.67	0.81
3.500	0.87		9.583	2.15		15.667	2.01		21.75	0.81
3.583	0.87		9.667	2.15		15.750	2.01		21.83	0.81
3.667	0.87		9.750	2.42		15.833	2.01		21.92	0.81
3.750	0.87		9.833	2.42		15.917	2.01		22.00	0.81
3.833	0.87		9.917	2.42		16.000	2.01		22.08	0.81
3.917	0.87		10.000	2.42		16.083	2.01		22.17	0.81
4.000	0.87		10.083	2.42		16.167	2.01		22.25	0.81
4.083	0.87		10.167	2.42		16.250	1.21		22.33	0.81
4.167	0.87		10.250	3.09		16.333	1.21		22.42	0.81
4.250	1.07		10.333	3.09		16.417	1.21		22.50	0.81
4.333	1.07		10.417	3.09		16.500	1.21		22.58	0.81
4.417	1.07		10.500	3.09		16.583	1.21		22.67	0.81
4.500	1.07		10.583	3.09		16.667	1.21		22.75	0.81
4.583	1.07		10.667	3.09		16.750	1.21		22.83	0.81
4.667	1.07		10.750	4.16		16.833	1.21		22.92	0.81
4.750	1.07		10.833	4.16		16.917	1.21		23.00	0.81
4.833	1.07		10.917	4.16		17.000	1.21		23.08	0.81
4.917	1.07		11.000	4.16		17.083	1.21		23.17	0.81
5.000	1.07		11.083	4.16		17.167	1.21		23.25	0.81
5.083	1.07		11.167	4.16		17.250	1.21		23.33	0.81

5.167	1.07	11.250	6.45	17.333	1.21	23.42	0.81
5.250	1.07	11.333	6.45	17.417	1.21	23.50	0.81
5.333	1.07	11.417	6.45	17.500	1.21	23.58	0.81
5.417	1.07	11.500	6.45	17.583	1.21	23.67	0.81
5.500	1.07	11.583	6.45	17.667	1.21	23.75	0.81
5.583	1.07	11.667	6.45	17.750	1.21	23.83	0.81
5.667	1.07	11.750	19.87	17.833	1.21	23.92	0.81
5.750	1.07	11.833	19.88	17.917	1.21	24.00	0.81
5.833	1.07	11.917	51.03	18.000	1.21	24.08	0.81
5.917	1.07	12.000	51.03	18.083	1.21	24.17	0.81
6.000	1.07	12.083	82.19	18.167	1.21		
6.083	1.07	12.167	82.19	18.250	1.21		

Unit Hyd Qpeak (cms)= 1.390

PEAK FLOW (cms)= 0.384 (i)
TIME TO PEAK (hrs)= 12.167
RUNOFF VOLUME (mm)= 23.893
TOTAL RAINFALL (mm)= 67.150
RUNOFF COEFFICIENT = 0.356

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

CALIB				
NASHYD (0103)	Area (ha)=	1.89	Curve Number (CN)=	72.0
ID= 1 DT= 5.0 min	Ia (mm)=	5.00	# of Linear Res.(N)=	3.00
-----		U.H. Tp(hrs)=	0.19	

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

---- TRANSFORMED HYETOGRAPH ----							
TIME	RAIN		TIME	RAIN		TIME	RAIN
hrs	mm/hr		hrs	mm/hr		hrs	mm/hr
0.083	0.00		6.167	1.07		12.250	9.68
0.167	0.00		6.250	1.21		12.333	9.67
0.250	0.74		6.333	1.21		12.417	9.67
0.333	0.74		6.417	1.21		12.500	9.67
0.417	0.74		6.500	1.21		12.583	9.67
0.500	0.74		6.583	1.21		12.667	9.67
0.583	0.74		6.667	1.21		12.750	4.97
0.667	0.74		6.750	1.21		12.833	4.97
0.750	0.74		6.833	1.21		12.917	4.97
0.833	0.74		6.917	1.21		13.000	4.97
0.917	0.74		7.000	1.21		13.083	4.97
1.000	0.74		7.083	1.21		13.167	4.97
1.083	0.74		7.167	1.21		13.250	3.63
1.167	0.74		7.250	1.48		13.333	3.63
1.250	0.74		7.333	1.48		13.417	3.63
1.333	0.74		7.417	1.48		13.500	3.63
1.417	0.74		7.500	1.48		13.583	3.63

1.500	0.74		7.583	1.48		13.667	3.63		19.75	1.21
1.583	0.74		7.667	1.48		13.750	2.82		19.83	1.21
1.667	0.74		7.750	1.48		13.833	2.82		19.92	1.21
1.750	0.74		7.833	1.48		13.917	2.82		20.00	1.21
1.833	0.74		7.917	1.48		14.000	2.82		20.08	1.21
1.917	0.74		8.000	1.48		14.083	2.82		20.17	1.21
2.000	0.74		8.083	1.48		14.167	2.82		20.25	0.81
2.083	0.74		8.167	1.48		14.250	2.01		20.33	0.81
2.167	0.74		8.250	1.75		14.333	2.01		20.42	0.81
2.250	0.87		8.333	1.75		14.417	2.01		20.50	0.81
2.333	0.87		8.417	1.75		14.500	2.01		20.58	0.81
2.417	0.87		8.500	1.75		14.583	2.01		20.67	0.81
2.500	0.87		8.583	1.75		14.667	2.01		20.75	0.81
2.583	0.87		8.667	1.75		14.750	2.01		20.83	0.81
2.667	0.87		8.750	1.88		14.833	2.01		20.92	0.81
2.750	0.87		8.833	1.88		14.917	2.01		21.00	0.81
2.833	0.87		8.917	1.88		15.000	2.01		21.08	0.81
2.917	0.87		9.000	1.88		15.083	2.01		21.17	0.81
3.000	0.87		9.083	1.88		15.167	2.01		21.25	0.81
3.083	0.87		9.167	1.88		15.250	2.01		21.33	0.81
3.167	0.87		9.250	2.15		15.333	2.01		21.42	0.81
3.250	0.87		9.333	2.15		15.417	2.01		21.50	0.81
3.333	0.87		9.417	2.15		15.500	2.01		21.58	0.81
3.417	0.87		9.500	2.15		15.583	2.01		21.67	0.81
3.500	0.87		9.583	2.15		15.667	2.01		21.75	0.81
3.583	0.87		9.667	2.15		15.750	2.01		21.83	0.81
3.667	0.87		9.750	2.42		15.833	2.01		21.92	0.81
3.750	0.87		9.833	2.42		15.917	2.01		22.00	0.81
3.833	0.87		9.917	2.42		16.000	2.01		22.08	0.81
3.917	0.87		10.000	2.42		16.083	2.01		22.17	0.81
4.000	0.87		10.083	2.42		16.167	2.01		22.25	0.81
4.083	0.87		10.167	2.42		16.250	1.21		22.33	0.81
4.167	0.87		10.250	3.09		16.333	1.21		22.42	0.81
4.250	1.07		10.333	3.09		16.417	1.21		22.50	0.81
4.333	1.07		10.417	3.09		16.500	1.21		22.58	0.81
4.417	1.07		10.500	3.09		16.583	1.21		22.67	0.81
4.500	1.07		10.583	3.09		16.667	1.21		22.75	0.81
4.583	1.07		10.667	3.09		16.750	1.21		22.83	0.81
4.667	1.07		10.750	4.16		16.833	1.21		22.92	0.81
4.750	1.07		10.833	4.16		16.917	1.21		23.00	0.81
4.833	1.07		10.917	4.16		17.000	1.21		23.08	0.81
4.917	1.07		11.000	4.16		17.083	1.21		23.17	0.81
5.000	1.07		11.083	4.16		17.167	1.21		23.25	0.81
5.083	1.07		11.167	4.16		17.250	1.21		23.33	0.81
5.167	1.07		11.250	6.45		17.333	1.21		23.42	0.81
5.250	1.07		11.333	6.45		17.417	1.21		23.50	0.81
5.333	1.07		11.417	6.45		17.500	1.21		23.58	0.81
5.417	1.07		11.500	6.45		17.583	1.21		23.67	0.81
5.500	1.07		11.583	6.45		17.667	1.21		23.75	0.81
5.583	1.07		11.667	6.45		17.750	1.21		23.83	0.81
5.667	1.07		11.750	19.87		17.833	1.21		23.92	0.81
5.750	1.07		11.833	19.88		17.917	1.21		24.00	0.81
5.833	1.07		11.917	51.03		18.000	1.21		24.08	0.81

5.917	1.07	12.000	51.03	18.083	1.21	24.17	0.81
6.000	1.07	12.083	82.19	18.167	1.21		
6.083	1.07	12.167	82.19	18.250	1.21		

Unit Hyd Qpeak (cms)= 0.382

PEAK FLOW (cms)= 0.115 (i)
TIME TO PEAK (hrs)= 12.250
RUNOFF VOLUME (mm)= 23.945
TOTAL RAINFALL (mm)= 67.150
RUNOFF COEFFICIENT = 0.357

(i) 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 (0101):	6.44	0.386	12.25	23.95
+ ID2= 2 (0102):	5.81	0.384	12.17	23.89
=====				
ID = 3 (1000):	12.25	0.759	12.25	23.92

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):	12.25	0.759	12.25	23.92
+ ID2= 2 (0103):	1.89	0.115	12.25	23.95
=====				
ID = 1 (1000):	14.14	0.874	12.25	23.93

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

=====

=====

```
V   V   I   SSSSS   U   U   A   L           (v 6.2.2015)
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
```

Developed and Distributed by Smart City Water Inc

Copyright 2007 - 2022 Smart City Water Inc

All rights reserved.

***** 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\jangsoo.lee\AppData\Local\Civica\VH5\191a91e0-1a14-44fd-bc00-4941023c7dee\bb3cccb3-6b70-4362-9f30-3c91d46127e3\
Summary filename:
C:\Users\jangsoo.lee\AppData\Local\Civica\VH5\191a91e0-1a14-44fd-bc00-4941023c7dee\bb3cccb3-6b70-4362-9f30-3c91d46127e3\
0-4362-9f30-3c91d46127e3\

DATE: 09/25/2024

TIME: 11:26:52

USER:

COMMENTS: _____

** SIMULATION : 5yr 24hr 10min SCS Type II **

READ STORM	Filename: C:\Users\jangsoo.lee\AppData
	ata\Local\Temp\
	5d212dc0-a9a6-408a-8363-09ba1dc1c3ac\0156f81c
Ptotal= 88.91 mm	Comments: 5yr 24hr 10min SCS Type II

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.00	0.00	6.17	1.60	12.33	12.80	18.50	1.60
0.17	0.98	6.33	1.60	12.50	12.80	18.67	1.60
0.33	0.98	6.50	1.60	12.67	6.58	18.83	1.60
0.50	0.98	6.67	1.60	12.83	6.58	19.00	1.60
0.67	0.98	6.83	1.60	13.00	6.58	19.17	1.60
0.83	0.98	7.00	1.60	13.17	4.80	19.33	1.60
1.00	0.98	7.17	1.96	13.33	4.80	19.50	1.60
1.17	0.98	7.33	1.96	13.50	4.80	19.67	1.60
1.33	0.98	7.50	1.96	13.67	3.73	19.83	1.60
1.50	0.98	7.67	1.96	13.83	3.73	20.00	1.60
1.67	0.98	7.83	1.96	14.00	3.73	20.17	1.07
1.83	0.98	8.00	1.96	14.17	2.67	20.33	1.07
2.00	0.98	8.17	2.31	14.33	2.67	20.50	1.07
2.17	1.16	8.33	2.31	14.50	2.67	20.67	1.07
2.33	1.16	8.50	2.31	14.67	2.67	20.83	1.07
2.50	1.16	8.67	2.49	14.83	2.67	21.00	1.07
2.67	1.16	8.83	2.49	15.00	2.67	21.17	1.07
2.83	1.16	9.00	2.49	15.17	2.67	21.33	1.07
3.00	1.16	9.17	2.85	15.33	2.67	21.50	1.07
3.17	1.16	9.33	2.85	15.50	2.67	21.67	1.07
3.33	1.16	9.50	2.85	15.67	2.67	21.83	1.07
3.50	1.16	9.67	3.20	15.83	2.67	22.00	1.07
3.67	1.16	9.83	3.20	16.00	2.67	22.17	1.07
3.83	1.16	10.00	3.20	16.17	1.60	22.33	1.07
4.00	1.16	10.17	4.09	16.33	1.60	22.50	1.07
4.17	1.42	10.33	4.09	16.50	1.60	22.67	1.07
4.33	1.42	10.50	4.09	16.67	1.60	22.83	1.07
4.50	1.42	10.67	5.51	16.83	1.60	23.00	1.07
4.67	1.42	10.83	5.51	17.00	1.60	23.17	1.07
4.83	1.42	11.00	5.51	17.17	1.60	23.33	1.07
5.00	1.42	11.17	8.54	17.33	1.60	23.50	1.07
5.17	1.42	11.33	8.54	17.50	1.60	23.67	1.07
5.33	1.42	11.50	8.54	17.67	1.60	23.83	1.07
5.50	1.42	11.67	26.32	17.83	1.60	24.00	1.07
5.67	1.42	11.83	67.57	18.00	1.60		
5.83	1.42	12.00	108.83	18.17	1.60		
6.00	1.42	12.17	12.80	18.33	1.60		

CALIB					
NASHYD (0101)	Area (ha)=	6.44	Curve Number (CN)=	72.0	
ID= 1 DT= 5.0 min	Ia (mm)=	5.00	# of Linear Res.(N)=	3.00	
-----	U.H. Tp(hrs)=	0.20			

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	0.00	6.167	1.42	12.250	12.82	18.33	1.60	
0.167	0.00	6.250	1.60	12.333	12.80	18.42	1.60	
0.250	0.98	6.333	1.60	12.417	12.80	18.50	1.60	
0.333	0.98	6.417	1.60	12.500	12.80	18.58	1.60	
0.417	0.98	6.500	1.60	12.583	12.80	18.67	1.60	
0.500	0.98	6.583	1.60	12.667	12.80	18.75	1.60	
0.583	0.98	6.667	1.60	12.750	6.58	18.83	1.60	
0.667	0.98	6.750	1.60	12.833	6.58	18.92	1.60	
0.750	0.98	6.833	1.60	12.917	6.58	19.00	1.60	
0.833	0.98	6.917	1.60	13.000	6.58	19.08	1.60	
0.917	0.98	7.000	1.60	13.083	6.58	19.17	1.60	
1.000	0.98	7.083	1.60	13.167	6.58	19.25	1.60	
1.083	0.98	7.167	1.60	13.250	4.80	19.33	1.60	
1.167	0.98	7.250	1.96	13.333	4.80	19.42	1.60	
1.250	0.98	7.333	1.96	13.417	4.80	19.50	1.60	
1.333	0.98	7.417	1.96	13.500	4.80	19.58	1.60	
1.417	0.98	7.500	1.96	13.583	4.80	19.67	1.60	
1.500	0.98	7.583	1.96	13.667	4.80	19.75	1.60	
1.583	0.98	7.667	1.96	13.750	3.73	19.83	1.60	
1.667	0.98	7.750	1.96	13.833	3.73	19.92	1.60	
1.750	0.98	7.833	1.96	13.917	3.73	20.00	1.60	
1.833	0.98	7.917	1.96	14.000	3.73	20.08	1.60	
1.917	0.98	8.000	1.96	14.083	3.73	20.17	1.60	
2.000	0.98	8.083	1.96	14.167	3.73	20.25	1.07	
2.083	0.98	8.167	1.96	14.250	2.67	20.33	1.07	
2.167	0.98	8.250	2.31	14.333	2.67	20.42	1.07	
2.250	1.16	8.333	2.31	14.417	2.67	20.50	1.07	
2.333	1.16	8.417	2.31	14.500	2.67	20.58	1.07	
2.417	1.16	8.500	2.31	14.583	2.67	20.67	1.07	
2.500	1.16	8.583	2.31	14.667	2.67	20.75	1.07	
2.583	1.16	8.667	2.31	14.750	2.67	20.83	1.07	
2.667	1.16	8.750	2.49	14.833	2.67	20.92	1.07	
2.750	1.16	8.833	2.49	14.917	2.67	21.00	1.07	
2.833	1.16	8.917	2.49	15.000	2.67	21.08	1.07	
2.917	1.16	9.000	2.49	15.083	2.67	21.17	1.07	
3.000	1.16	9.083	2.49	15.167	2.67	21.25	1.07	
3.083	1.16	9.167	2.49	15.250	2.67	21.33	1.07	
3.167	1.16	9.250	2.85	15.333	2.67	21.42	1.07	
3.250	1.16	9.333	2.85	15.417	2.67	21.50	1.07	
3.333	1.16	9.417	2.85	15.500	2.67	21.58	1.07	
3.417	1.16	9.500	2.85	15.583	2.67	21.67	1.07	
3.500	1.16	9.583	2.85	15.667	2.67	21.75	1.07	
3.583	1.16	9.667	2.85	15.750	2.67	21.83	1.07	
3.667	1.16	9.750	3.20	15.833	2.67	21.92	1.07	
3.750	1.16	9.833	3.20	15.917	2.67	22.00	1.07	
3.833	1.16	9.917	3.20	16.000	2.67	22.08	1.07	
3.917	1.16	10.000	3.20	16.083	2.67	22.17	1.07	
4.000	1.16	10.083	3.20	16.167	2.67	22.25	1.07	
4.083	1.16	10.167	3.20	16.250	1.60	22.33	1.07	
4.167	1.16	10.250	4.09	16.333	1.60	22.42	1.07	
4.250	1.42	10.333	4.09	16.417	1.60	22.50	1.07	
4.333	1.42	10.417	4.09	16.500	1.60	22.58	1.07	

4.417	1.42	10.500	4.09	16.583	1.60	22.67	1.07
4.500	1.42	10.583	4.09	16.667	1.60	22.75	1.07
4.583	1.42	10.667	4.09	16.750	1.60	22.83	1.07
4.667	1.42	10.750	5.51	16.833	1.60	22.92	1.07
4.750	1.42	10.833	5.51	16.917	1.60	23.00	1.07
4.833	1.42	10.917	5.51	17.000	1.60	23.08	1.07
4.917	1.42	11.000	5.51	17.083	1.60	23.17	1.07
5.000	1.42	11.083	5.51	17.167	1.60	23.25	1.07
5.083	1.42	11.167	5.51	17.250	1.60	23.33	1.07
5.167	1.42	11.250	8.54	17.333	1.60	23.42	1.07
5.250	1.42	11.333	8.54	17.417	1.60	23.50	1.07
5.333	1.42	11.417	8.54	17.500	1.60	23.58	1.07
5.417	1.42	11.500	8.54	17.583	1.60	23.67	1.07
5.500	1.42	11.583	8.54	17.667	1.60	23.75	1.07
5.583	1.42	11.667	8.54	17.750	1.60	23.83	1.07
5.667	1.42	11.750	26.32	17.833	1.60	23.92	1.07
5.750	1.42	11.833	26.32	17.917	1.60	24.00	1.07
5.833	1.42	11.917	67.57	18.000	1.60	24.08	1.07
5.917	1.42	12.000	67.57	18.083	1.60	24.17	1.07
6.000	1.42	12.083	108.82	18.167	1.60		
6.083	1.42	12.167	108.83	18.250	1.60		

Unit Hyd Qpeak (cms)= 1.258

PEAK FLOW (cms)= 0.626 (i)
TIME TO PEAK (hrs)= 12.250
RUNOFF VOLUME (mm)= 38.461
TOTAL RAINFALL (mm)= 88.910
RUNOFF COEFFICIENT = 0.433

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

CALIB			
NASHYD (0102)	Area (ha)= 5.81	Curve Number (CN)= 72.0	
ID= 1 DT= 5.0 min	Ia (mm)= 5.00	# of Linear Res.(N)= 3.00	
-----	U.H. Tp(hrs)= 0.16		

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	0.00	6.167	1.42	12.250	12.82	18.33	1.60
0.167	0.00	6.250	1.60	12.333	12.80	18.42	1.60
0.250	0.98	6.333	1.60	12.417	12.80	18.50	1.60
0.333	0.98	6.417	1.60	12.500	12.80	18.58	1.60
0.417	0.98	6.500	1.60	12.583	12.80	18.67	1.60
0.500	0.98	6.583	1.60	12.667	12.80	18.75	1.60
0.583	0.98	6.667	1.60	12.750	6.58	18.83	1.60
0.667	0.98	6.750	1.60	12.833	6.58	18.92	1.60

0.750	0.98		6.833	1.60		12.917	6.58		19.00	1.60
0.833	0.98		6.917	1.60		13.000	6.58		19.08	1.60
0.917	0.98		7.000	1.60		13.083	6.58		19.17	1.60
1.000	0.98		7.083	1.60		13.167	6.58		19.25	1.60
1.083	0.98		7.167	1.60		13.250	4.80		19.33	1.60
1.167	0.98		7.250	1.96		13.333	4.80		19.42	1.60
1.250	0.98		7.333	1.96		13.417	4.80		19.50	1.60
1.333	0.98		7.417	1.96		13.500	4.80		19.58	1.60
1.417	0.98		7.500	1.96		13.583	4.80		19.67	1.60
1.500	0.98		7.583	1.96		13.667	4.80		19.75	1.60
1.583	0.98		7.667	1.96		13.750	3.73		19.83	1.60
1.667	0.98		7.750	1.96		13.833	3.73		19.92	1.60
1.750	0.98		7.833	1.96		13.917	3.73		20.00	1.60
1.833	0.98		7.917	1.96		14.000	3.73		20.08	1.60
1.917	0.98		8.000	1.96		14.083	3.73		20.17	1.60
2.000	0.98		8.083	1.96		14.167	3.73		20.25	1.07
2.083	0.98		8.167	1.96		14.250	2.67		20.33	1.07
2.167	0.98		8.250	2.31		14.333	2.67		20.42	1.07
2.250	1.16		8.333	2.31		14.417	2.67		20.50	1.07
2.333	1.16		8.417	2.31		14.500	2.67		20.58	1.07
2.417	1.16		8.500	2.31		14.583	2.67		20.67	1.07
2.500	1.16		8.583	2.31		14.667	2.67		20.75	1.07
2.583	1.16		8.667	2.31		14.750	2.67		20.83	1.07
2.667	1.16		8.750	2.49		14.833	2.67		20.92	1.07
2.750	1.16		8.833	2.49		14.917	2.67		21.00	1.07
2.833	1.16		8.917	2.49		15.000	2.67		21.08	1.07
2.917	1.16		9.000	2.49		15.083	2.67		21.17	1.07
3.000	1.16		9.083	2.49		15.167	2.67		21.25	1.07
3.083	1.16		9.167	2.49		15.250	2.67		21.33	1.07
3.167	1.16		9.250	2.85		15.333	2.67		21.42	1.07
3.250	1.16		9.333	2.85		15.417	2.67		21.50	1.07
3.333	1.16		9.417	2.85		15.500	2.67		21.58	1.07
3.417	1.16		9.500	2.85		15.583	2.67		21.67	1.07
3.500	1.16		9.583	2.85		15.667	2.67		21.75	1.07
3.583	1.16		9.667	2.85		15.750	2.67		21.83	1.07
3.667	1.16		9.750	3.20		15.833	2.67		21.92	1.07
3.750	1.16		9.833	3.20		15.917	2.67		22.00	1.07
3.833	1.16		9.917	3.20		16.000	2.67		22.08	1.07
3.917	1.16		10.000	3.20		16.083	2.67		22.17	1.07
4.000	1.16		10.083	3.20		16.167	2.67		22.25	1.07
4.083	1.16		10.167	3.20		16.250	1.60		22.33	1.07
4.167	1.16		10.250	4.09		16.333	1.60		22.42	1.07
4.250	1.42		10.333	4.09		16.417	1.60		22.50	1.07
4.333	1.42		10.417	4.09		16.500	1.60		22.58	1.07
4.417	1.42		10.500	4.09		16.583	1.60		22.67	1.07
4.500	1.42		10.583	4.09		16.667	1.60		22.75	1.07
4.583	1.42		10.667	4.09		16.750	1.60		22.83	1.07
4.667	1.42		10.750	5.51		16.833	1.60		22.92	1.07
4.750	1.42		10.833	5.51		16.917	1.60		23.00	1.07
4.833	1.42		10.917	5.51		17.000	1.60		23.08	1.07
4.917	1.42		11.000	5.51		17.083	1.60		23.17	1.07
5.000	1.42		11.083	5.51		17.167	1.60		23.25	1.07
5.083	1.42		11.167	5.51		17.250	1.60		23.33	1.07

5.167	1.42	11.250	8.54	17.333	1.60	23.42	1.07
5.250	1.42	11.333	8.54	17.417	1.60	23.50	1.07
5.333	1.42	11.417	8.54	17.500	1.60	23.58	1.07
5.417	1.42	11.500	8.54	17.583	1.60	23.67	1.07
5.500	1.42	11.583	8.54	17.667	1.60	23.75	1.07
5.583	1.42	11.667	8.54	17.750	1.60	23.83	1.07
5.667	1.42	11.750	26.32	17.833	1.60	23.92	1.07
5.750	1.42	11.833	26.32	17.917	1.60	24.00	1.07
5.833	1.42	11.917	67.57	18.000	1.60	24.08	1.07
5.917	1.42	12.000	67.57	18.083	1.60	24.17	1.07
6.000	1.42	12.083	108.82	18.167	1.60		
6.083	1.42	12.167	108.83	18.250	1.60		

Unit Hyd Qpeak (cms)= 1.390

PEAK FLOW (cms)= 0.624 (i)
TIME TO PEAK (hrs)= 12.167
RUNOFF VOLUME (mm)= 38.366
TOTAL RAINFALL (mm)= 88.910
RUNOFF COEFFICIENT = 0.432

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

CALIB				
NASHYD (0103)	Area (ha)=	1.89	Curve Number (CN)=	72.0
ID= 1 DT= 5.0 min	Ia (mm)=	5.00	# of Linear Res.(N)=	3.00
-----	U.H. Tp(hrs)=	0.19		

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	0.00	6.167	1.42	12.250	12.82	18.33	1.60
0.167	0.00	6.250	1.60	12.333	12.80	18.42	1.60
0.250	0.98	6.333	1.60	12.417	12.80	18.50	1.60
0.333	0.98	6.417	1.60	12.500	12.80	18.58	1.60
0.417	0.98	6.500	1.60	12.583	12.80	18.67	1.60
0.500	0.98	6.583	1.60	12.667	12.80	18.75	1.60
0.583	0.98	6.667	1.60	12.750	6.58	18.83	1.60
0.667	0.98	6.750	1.60	12.833	6.58	18.92	1.60
0.750	0.98	6.833	1.60	12.917	6.58	19.00	1.60
0.833	0.98	6.917	1.60	13.000	6.58	19.08	1.60
0.917	0.98	7.000	1.60	13.083	6.58	19.17	1.60
1.000	0.98	7.083	1.60	13.167	6.58	19.25	1.60
1.083	0.98	7.167	1.60	13.250	4.80	19.33	1.60
1.167	0.98	7.250	1.96	13.333	4.80	19.42	1.60
1.250	0.98	7.333	1.96	13.417	4.80	19.50	1.60
1.333	0.98	7.417	1.96	13.500	4.80	19.58	1.60
1.417	0.98	7.500	1.96	13.583	4.80	19.67	1.60

1.500	0.98		7.583	1.96		13.667	4.80		19.75	1.60
1.583	0.98		7.667	1.96		13.750	3.73		19.83	1.60
1.667	0.98		7.750	1.96		13.833	3.73		19.92	1.60
1.750	0.98		7.833	1.96		13.917	3.73		20.00	1.60
1.833	0.98		7.917	1.96		14.000	3.73		20.08	1.60
1.917	0.98		8.000	1.96		14.083	3.73		20.17	1.60
2.000	0.98		8.083	1.96		14.167	3.73		20.25	1.07
2.083	0.98		8.167	1.96		14.250	2.67		20.33	1.07
2.167	0.98		8.250	2.31		14.333	2.67		20.42	1.07
2.250	1.16		8.333	2.31		14.417	2.67		20.50	1.07
2.333	1.16		8.417	2.31		14.500	2.67		20.58	1.07
2.417	1.16		8.500	2.31		14.583	2.67		20.67	1.07
2.500	1.16		8.583	2.31		14.667	2.67		20.75	1.07
2.583	1.16		8.667	2.31		14.750	2.67		20.83	1.07
2.667	1.16		8.750	2.49		14.833	2.67		20.92	1.07
2.750	1.16		8.833	2.49		14.917	2.67		21.00	1.07
2.833	1.16		8.917	2.49		15.000	2.67		21.08	1.07
2.917	1.16		9.000	2.49		15.083	2.67		21.17	1.07
3.000	1.16		9.083	2.49		15.167	2.67		21.25	1.07
3.083	1.16		9.167	2.49		15.250	2.67		21.33	1.07
3.167	1.16		9.250	2.85		15.333	2.67		21.42	1.07
3.250	1.16		9.333	2.85		15.417	2.67		21.50	1.07
3.333	1.16		9.417	2.85		15.500	2.67		21.58	1.07
3.417	1.16		9.500	2.85		15.583	2.67		21.67	1.07
3.500	1.16		9.583	2.85		15.667	2.67		21.75	1.07
3.583	1.16		9.667	2.85		15.750	2.67		21.83	1.07
3.667	1.16		9.750	3.20		15.833	2.67		21.92	1.07
3.750	1.16		9.833	3.20		15.917	2.67		22.00	1.07
3.833	1.16		9.917	3.20		16.000	2.67		22.08	1.07
3.917	1.16		10.000	3.20		16.083	2.67		22.17	1.07
4.000	1.16		10.083	3.20		16.167	2.67		22.25	1.07
4.083	1.16		10.167	3.20		16.250	1.60		22.33	1.07
4.167	1.16		10.250	4.09		16.333	1.60		22.42	1.07
4.250	1.42		10.333	4.09		16.417	1.60		22.50	1.07
4.333	1.42		10.417	4.09		16.500	1.60		22.58	1.07
4.417	1.42		10.500	4.09		16.583	1.60		22.67	1.07
4.500	1.42		10.583	4.09		16.667	1.60		22.75	1.07
4.583	1.42		10.667	4.09		16.750	1.60		22.83	1.07
4.667	1.42		10.750	5.51		16.833	1.60		22.92	1.07
4.750	1.42		10.833	5.51		16.917	1.60		23.00	1.07
4.833	1.42		10.917	5.51		17.000	1.60		23.08	1.07
4.917	1.42		11.000	5.51		17.083	1.60		23.17	1.07
5.000	1.42		11.083	5.51		17.167	1.60		23.25	1.07
5.083	1.42		11.167	5.51		17.250	1.60		23.33	1.07
5.167	1.42		11.250	8.54		17.333	1.60		23.42	1.07
5.250	1.42		11.333	8.54		17.417	1.60		23.50	1.07
5.333	1.42		11.417	8.54		17.500	1.60		23.58	1.07
5.417	1.42		11.500	8.54		17.583	1.60		23.67	1.07
5.500	1.42		11.583	8.54		17.667	1.60		23.75	1.07
5.583	1.42		11.667	8.54		17.750	1.60		23.83	1.07
5.667	1.42		11.750	26.32		17.833	1.60		23.92	1.07
5.750	1.42		11.833	26.32		17.917	1.60		24.00	1.07
5.833	1.42		11.917	67.57		18.000	1.60		24.08	1.07

5.917	1.42	12.000	67.57	18.083	1.60		24.17	1.07
6.000	1.42	12.083	108.82	18.167	1.60			
6.083	1.42	12.167	108.83	18.250	1.60			

Unit Hyd Qpeak (cms)= 0.382

PEAK FLOW (cms)= 0.186 (i)
TIME TO PEAK (hrs)= 12.250
RUNOFF VOLUME (mm)= 38.449
TOTAL RAINFALL (mm)= 88.910
RUNOFF COEFFICIENT = 0.432

(i) 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 (0101):	6.44	0.626	12.25	38.46
+ ID2= 2 (0102):	5.81	0.624	12.17	38.37
=====				
ID = 3 (1000):	12.25	1.228	12.25	38.42

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):	12.25	1.228	12.25	38.42
+ ID2= 2 (0103):	1.89	0.186	12.25	38.45
=====				
ID = 1 (1000):	14.14	1.414	12.25	38.42

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

=====

=====

```
V   V   I   SSSSS   U   U   A   L           (v 6.2.2015)
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
```

Developed and Distributed by Smart City Water Inc

Copyright 2007 - 2022 Smart City Water Inc

All rights reserved.

***** 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\jangsoo.lee\AppData\Local\Civica\VH5\191a91e0-1a14-44fd-bc00-4941023c7dee\2ad61397-1db5-4704-b713-693656d15e6d\

Summary filename:

C:\Users\jangsoo.lee\AppData\Local\Civica\VH5\191a91e0-1a14-44fd-bc00-4941023c7dee\2ad61397-1db5-4704-b713-693656d15e6d\

DATE: 09/25/2024

TIME: 11:26:52

USER:

COMMENTS: _____

** SIMULATION : 10yr 24hr 10min SCS Type II **

READ STORM	Filename: C:\Users\jangsoo.lee\AppData
	ata\Local\Temp\
	5d212dc0-a9a6-408a-8363-09ba1dc1c3ac\4d30c99e
Ptotal=103.09 mm	Comments: 10yr 24hr 10min SCS Type II

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.00	0.00	6.17	1.86	12.33	14.84	18.50	1.86
0.17	1.13	6.33	1.86	12.50	14.84	18.67	1.86
0.33	1.13	6.50	1.86	12.67	7.63	18.83	1.86
0.50	1.13	6.67	1.86	12.83	7.63	19.00	1.86
0.67	1.13	6.83	1.86	13.00	7.63	19.17	1.86
0.83	1.13	7.00	1.86	13.17	5.57	19.33	1.86
1.00	1.13	7.17	2.27	13.33	5.57	19.50	1.86
1.17	1.13	7.33	2.27	13.50	5.57	19.67	1.86
1.33	1.13	7.50	2.27	13.67	4.33	19.83	1.86
1.50	1.13	7.67	2.27	13.83	4.33	20.00	1.86
1.67	1.13	7.83	2.27	14.00	4.33	20.17	1.24
1.83	1.13	8.00	2.27	14.17	3.09	20.33	1.24
2.00	1.13	8.17	2.68	14.33	3.09	20.50	1.24
2.17	1.34	8.33	2.68	14.50	3.09	20.67	1.24
2.33	1.34	8.50	2.68	14.67	3.09	20.83	1.24
2.50	1.34	8.67	2.89	14.83	3.09	21.00	1.24
2.67	1.34	8.83	2.89	15.00	3.09	21.17	1.24
2.83	1.34	9.00	2.89	15.17	3.09	21.33	1.24
3.00	1.34	9.17	3.30	15.33	3.09	21.50	1.24
3.17	1.34	9.33	3.30	15.50	3.09	21.67	1.24
3.33	1.34	9.50	3.30	15.67	3.09	21.83	1.24
3.50	1.34	9.67	3.71	15.83	3.09	22.00	1.24
3.67	1.34	9.83	3.71	16.00	3.09	22.17	1.24
3.83	1.34	10.00	3.71	16.17	1.86	22.33	1.24
4.00	1.34	10.17	4.74	16.33	1.86	22.50	1.24
4.17	1.65	10.33	4.74	16.50	1.86	22.67	1.24
4.33	1.65	10.50	4.74	16.67	1.86	22.83	1.24
4.50	1.65	10.67	6.39	16.83	1.86	23.00	1.24
4.67	1.65	10.83	6.39	17.00	1.86	23.17	1.24
4.83	1.65	11.00	6.39	17.17	1.86	23.33	1.24
5.00	1.65	11.17	9.90	17.33	1.86	23.50	1.24
5.17	1.65	11.33	9.90	17.50	1.86	23.67	1.24
5.33	1.65	11.50	9.90	17.67	1.86	23.83	1.24
5.50	1.65	11.67	30.51	17.83	1.86	24.00	1.24
5.67	1.65	11.83	78.35	18.00	1.86		
5.83	1.65	12.00	126.18	18.17	1.86		
6.00	1.65	12.17	14.84	18.33	1.86		

| CALIB |
| NASHYD (0101) | Area (ha)= 6.44 Curve Number (CN)= 72.0
| ID= 1 DT= 5.0 min | Ia (mm)= 5.00 # of Linear Res.(N)= 3.00

U.H. Tp(hrs)= 0.20

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	0.00	6.167	1.65	12.250	14.86	18.33	1.86
0.167	0.00	6.250	1.86	12.333	14.84	18.42	1.86
0.250	1.13	6.333	1.86	12.417	14.84	18.50	1.86
0.333	1.13	6.417	1.86	12.500	14.84	18.58	1.86
0.417	1.13	6.500	1.86	12.583	14.84	18.67	1.86
0.500	1.13	6.583	1.86	12.667	14.84	18.75	1.86
0.583	1.13	6.667	1.86	12.750	7.63	18.83	1.86
0.667	1.13	6.750	1.86	12.833	7.63	18.92	1.86
0.750	1.13	6.833	1.86	12.917	7.63	19.00	1.86
0.833	1.13	6.917	1.86	13.000	7.63	19.08	1.86
0.917	1.13	7.000	1.86	13.083	7.63	19.17	1.86
1.000	1.13	7.083	1.86	13.167	7.63	19.25	1.86
1.083	1.13	7.167	1.86	13.250	5.57	19.33	1.86
1.167	1.13	7.250	2.27	13.333	5.57	19.42	1.86
1.250	1.13	7.333	2.27	13.417	5.57	19.50	1.86
1.333	1.13	7.417	2.27	13.500	5.57	19.58	1.86
1.417	1.13	7.500	2.27	13.583	5.57	19.67	1.86
1.500	1.13	7.583	2.27	13.667	5.57	19.75	1.86
1.583	1.13	7.667	2.27	13.750	4.33	19.83	1.86
1.667	1.13	7.750	2.27	13.833	4.33	19.92	1.86
1.750	1.13	7.833	2.27	13.917	4.33	20.00	1.86
1.833	1.13	7.917	2.27	14.000	4.33	20.08	1.86
1.917	1.13	8.000	2.27	14.083	4.33	20.17	1.86
2.000	1.13	8.083	2.27	14.167	4.33	20.25	1.24
2.083	1.13	8.167	2.27	14.250	3.09	20.33	1.24
2.167	1.13	8.250	2.68	14.333	3.09	20.42	1.24
2.250	1.34	8.333	2.68	14.417	3.09	20.50	1.24
2.333	1.34	8.417	2.68	14.500	3.09	20.58	1.24
2.417	1.34	8.500	2.68	14.583	3.09	20.67	1.24
2.500	1.34	8.583	2.68	14.667	3.09	20.75	1.24
2.583	1.34	8.667	2.68	14.750	3.09	20.83	1.24
2.667	1.34	8.750	2.89	14.833	3.09	20.92	1.24
2.750	1.34	8.833	2.89	14.917	3.09	21.00	1.24
2.833	1.34	8.917	2.89	15.000	3.09	21.08	1.24
2.917	1.34	9.000	2.89	15.083	3.09	21.17	1.24
3.000	1.34	9.083	2.89	15.167	3.09	21.25	1.24
3.083	1.34	9.167	2.89	15.250	3.09	21.33	1.24
3.167	1.34	9.250	3.30	15.333	3.09	21.42	1.24
3.250	1.34	9.333	3.30	15.417	3.09	21.50	1.24
3.333	1.34	9.417	3.30	15.500	3.09	21.58	1.24
3.417	1.34	9.500	3.30	15.583	3.09	21.67	1.24
3.500	1.34	9.583	3.30	15.667	3.09	21.75	1.24
3.583	1.34	9.667	3.30	15.750	3.09	21.83	1.24
3.667	1.34	9.750	3.71	15.833	3.09	21.92	1.24
3.750	1.34	9.833	3.71	15.917	3.09	22.00	1.24
3.833	1.34	9.917	3.71	16.000	3.09	22.08	1.24
3.917	1.34	10.000	3.71	16.083	3.09	22.17	1.24
4.000	1.34	10.083	3.71	16.167	3.09	22.25	1.24
4.083	1.34	10.167	3.71	16.250	1.86	22.33	1.24
4.167	1.34	10.250	4.74	16.333	1.86	22.42	1.24
4.250	1.65	10.333	4.74	16.417	1.86	22.50	1.24
4.333	1.65	10.417	4.74	16.500	1.86	22.58	1.24

4.417	1.65		10.500	4.74		16.583	1.86		22.67	1.24
4.500	1.65		10.583	4.74		16.667	1.86		22.75	1.24
4.583	1.65		10.667	4.74		16.750	1.86		22.83	1.24
4.667	1.65		10.750	6.39		16.833	1.86		22.92	1.24
4.750	1.65		10.833	6.39		16.917	1.86		23.00	1.24
4.833	1.65		10.917	6.39		17.000	1.86		23.08	1.24
4.917	1.65		11.000	6.39		17.083	1.86		23.17	1.24
5.000	1.65		11.083	6.39		17.167	1.86		23.25	1.24
5.083	1.65		11.167	6.39		17.250	1.86		23.33	1.24
5.167	1.65		11.250	9.90		17.333	1.86		23.42	1.24
5.250	1.65		11.333	9.90		17.417	1.86		23.50	1.24
5.333	1.65		11.417	9.90		17.500	1.86		23.58	1.24
5.417	1.65		11.500	9.90		17.583	1.86		23.67	1.24
5.500	1.65		11.583	9.90		17.667	1.86		23.75	1.24
5.583	1.65		11.667	9.90		17.750	1.86		23.83	1.24
5.667	1.65		11.750	30.51		17.833	1.86		23.92	1.24
5.750	1.65		11.833	30.51		17.917	1.86		24.00	1.24
5.833	1.65		11.917	78.34		18.000	1.86		24.08	1.24
5.917	1.65		12.000	78.35		18.083	1.86		24.17	1.24
6.000	1.65		12.083	126.18		18.167	1.86			
6.083	1.65		12.167	126.18		18.250	1.86			

Unit Hyd Qpeak (cms)= 1.258

PEAK FLOW (cms)= 0.797 (i)
TIME TO PEAK (hrs)= 12.250
RUNOFF VOLUME (mm)= 48.772
TOTAL RAINFALL (mm)= 103.090
RUNOFF COEFFICIENT = 0.473

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

CALIB										
NASHYD (0102)	Area	(ha)=	5.81	Curve Number	(CN)=	72.0				
ID= 1 DT= 5.0 min	Ia	(mm)=	5.00	# of Linear Res.(N)=	3.00					
-----	U.H. Tp	(hrs)=	0.16							

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

---- TRANSFORMED HYETOGRAPH ----							
TIME	RAIN		TIME	RAIN		TIME	RAIN
hrs	mm/hr		hrs	mm/hr		hrs	mm/hr
0.083	0.00		6.167	1.65		12.250	14.86
0.167	0.00		6.250	1.86		12.333	14.84
0.250	1.13		6.333	1.86		12.417	14.84
0.333	1.13		6.417	1.86		12.500	14.84
0.417	1.13		6.500	1.86		12.583	14.84
0.500	1.13		6.583	1.86		12.667	14.84
0.583	1.13		6.667	1.86		12.750	7.63
0.667	1.13		6.750	1.86		12.833	7.63

0.750	1.13		6.833	1.86		12.917	7.63		19.00	1.86
0.833	1.13		6.917	1.86		13.000	7.63		19.08	1.86
0.917	1.13		7.000	1.86		13.083	7.63		19.17	1.86
1.000	1.13		7.083	1.86		13.167	7.63		19.25	1.86
1.083	1.13		7.167	1.86		13.250	5.57		19.33	1.86
1.167	1.13		7.250	2.27		13.333	5.57		19.42	1.86
1.250	1.13		7.333	2.27		13.417	5.57		19.50	1.86
1.333	1.13		7.417	2.27		13.500	5.57		19.58	1.86
1.417	1.13		7.500	2.27		13.583	5.57		19.67	1.86
1.500	1.13		7.583	2.27		13.667	5.57		19.75	1.86
1.583	1.13		7.667	2.27		13.750	4.33		19.83	1.86
1.667	1.13		7.750	2.27		13.833	4.33		19.92	1.86
1.750	1.13		7.833	2.27		13.917	4.33		20.00	1.86
1.833	1.13		7.917	2.27		14.000	4.33		20.08	1.86
1.917	1.13		8.000	2.27		14.083	4.33		20.17	1.86
2.000	1.13		8.083	2.27		14.167	4.33		20.25	1.24
2.083	1.13		8.167	2.27		14.250	3.09		20.33	1.24
2.167	1.13		8.250	2.68		14.333	3.09		20.42	1.24
2.250	1.34		8.333	2.68		14.417	3.09		20.50	1.24
2.333	1.34		8.417	2.68		14.500	3.09		20.58	1.24
2.417	1.34		8.500	2.68		14.583	3.09		20.67	1.24
2.500	1.34		8.583	2.68		14.667	3.09		20.75	1.24
2.583	1.34		8.667	2.68		14.750	3.09		20.83	1.24
2.667	1.34		8.750	2.89		14.833	3.09		20.92	1.24
2.750	1.34		8.833	2.89		14.917	3.09		21.00	1.24
2.833	1.34		8.917	2.89		15.000	3.09		21.08	1.24
2.917	1.34		9.000	2.89		15.083	3.09		21.17	1.24
3.000	1.34		9.083	2.89		15.167	3.09		21.25	1.24
3.083	1.34		9.167	2.89		15.250	3.09		21.33	1.24
3.167	1.34		9.250	3.30		15.333	3.09		21.42	1.24
3.250	1.34		9.333	3.30		15.417	3.09		21.50	1.24
3.333	1.34		9.417	3.30		15.500	3.09		21.58	1.24
3.417	1.34		9.500	3.30		15.583	3.09		21.67	1.24
3.500	1.34		9.583	3.30		15.667	3.09		21.75	1.24
3.583	1.34		9.667	3.30		15.750	3.09		21.83	1.24
3.667	1.34		9.750	3.71		15.833	3.09		21.92	1.24
3.750	1.34		9.833	3.71		15.917	3.09		22.00	1.24
3.833	1.34		9.917	3.71		16.000	3.09		22.08	1.24
3.917	1.34		10.000	3.71		16.083	3.09		22.17	1.24
4.000	1.34		10.083	3.71		16.167	3.09		22.25	1.24
4.083	1.34		10.167	3.71		16.250	1.86		22.33	1.24
4.167	1.34		10.250	4.74		16.333	1.86		22.42	1.24
4.250	1.65		10.333	4.74		16.417	1.86		22.50	1.24
4.333	1.65		10.417	4.74		16.500	1.86		22.58	1.24
4.417	1.65		10.500	4.74		16.583	1.86		22.67	1.24
4.500	1.65		10.583	4.74		16.667	1.86		22.75	1.24
4.583	1.65		10.667	4.74		16.750	1.86		22.83	1.24
4.667	1.65		10.750	6.39		16.833	1.86		22.92	1.24
4.750	1.65		10.833	6.39		16.917	1.86		23.00	1.24
4.833	1.65		10.917	6.39		17.000	1.86		23.08	1.24
4.917	1.65		11.000	6.39		17.083	1.86		23.17	1.24
5.000	1.65		11.083	6.39		17.167	1.86		23.25	1.24
5.083	1.65		11.167	6.39		17.250	1.86		23.33	1.24

5.167	1.65	11.250	9.90	17.333	1.86	23.42	1.24
5.250	1.65	11.333	9.90	17.417	1.86	23.50	1.24
5.333	1.65	11.417	9.90	17.500	1.86	23.58	1.24
5.417	1.65	11.500	9.90	17.583	1.86	23.67	1.24
5.500	1.65	11.583	9.90	17.667	1.86	23.75	1.24
5.583	1.65	11.667	9.90	17.750	1.86	23.83	1.24
5.667	1.65	11.750	30.51	17.833	1.86	23.92	1.24
5.750	1.65	11.833	30.51	17.917	1.86	24.00	1.24
5.833	1.65	11.917	78.34	18.000	1.86	24.08	1.24
5.917	1.65	12.000	78.35	18.083	1.86	24.17	1.24
6.000	1.65	12.083	126.18	18.167	1.86		
6.083	1.65	12.167	126.18	18.250	1.86		

Unit Hyd Qpeak (cms)= 1.390

PEAK FLOW (cms)= 0.796 (i)
TIME TO PEAK (hrs)= 12.167
RUNOFF VOLUME (mm)= 48.652
TOTAL RAINFALL (mm)= 103.090
RUNOFF COEFFICIENT = 0.472

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

CALIB							
NASHYD (0103)	Area	(ha)=	1.89	Curve Number	(CN)=	72.0	
ID= 1 DT= 5.0 min	Ia	(mm)=	5.00	# of Linear Res.(N)=	3.00		
-----	U.H. Tp	(hrs)=	0.19				

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	0.00	6.167	1.65	12.250	14.86	18.33	1.86
0.167	0.00	6.250	1.86	12.333	14.84	18.42	1.86
0.250	1.13	6.333	1.86	12.417	14.84	18.50	1.86
0.333	1.13	6.417	1.86	12.500	14.84	18.58	1.86
0.417	1.13	6.500	1.86	12.583	14.84	18.67	1.86
0.500	1.13	6.583	1.86	12.667	14.84	18.75	1.86
0.583	1.13	6.667	1.86	12.750	7.63	18.83	1.86
0.667	1.13	6.750	1.86	12.833	7.63	18.92	1.86
0.750	1.13	6.833	1.86	12.917	7.63	19.00	1.86
0.833	1.13	6.917	1.86	13.000	7.63	19.08	1.86
0.917	1.13	7.000	1.86	13.083	7.63	19.17	1.86
1.000	1.13	7.083	1.86	13.167	7.63	19.25	1.86
1.083	1.13	7.167	1.86	13.250	5.57	19.33	1.86
1.167	1.13	7.250	2.27	13.333	5.57	19.42	1.86
1.250	1.13	7.333	2.27	13.417	5.57	19.50	1.86
1.333	1.13	7.417	2.27	13.500	5.57	19.58	1.86
1.417	1.13	7.500	2.27	13.583	5.57	19.67	1.86

1.500	1.13		7.583	2.27		13.667	5.57		19.75	1.86
1.583	1.13		7.667	2.27		13.750	4.33		19.83	1.86
1.667	1.13		7.750	2.27		13.833	4.33		19.92	1.86
1.750	1.13		7.833	2.27		13.917	4.33		20.00	1.86
1.833	1.13		7.917	2.27		14.000	4.33		20.08	1.86
1.917	1.13		8.000	2.27		14.083	4.33		20.17	1.86
2.000	1.13		8.083	2.27		14.167	4.33		20.25	1.24
2.083	1.13		8.167	2.27		14.250	3.09		20.33	1.24
2.167	1.13		8.250	2.68		14.333	3.09		20.42	1.24
2.250	1.34		8.333	2.68		14.417	3.09		20.50	1.24
2.333	1.34		8.417	2.68		14.500	3.09		20.58	1.24
2.417	1.34		8.500	2.68		14.583	3.09		20.67	1.24
2.500	1.34		8.583	2.68		14.667	3.09		20.75	1.24
2.583	1.34		8.667	2.68		14.750	3.09		20.83	1.24
2.667	1.34		8.750	2.89		14.833	3.09		20.92	1.24
2.750	1.34		8.833	2.89		14.917	3.09		21.00	1.24
2.833	1.34		8.917	2.89		15.000	3.09		21.08	1.24
2.917	1.34		9.000	2.89		15.083	3.09		21.17	1.24
3.000	1.34		9.083	2.89		15.167	3.09		21.25	1.24
3.083	1.34		9.167	2.89		15.250	3.09		21.33	1.24
3.167	1.34		9.250	3.30		15.333	3.09		21.42	1.24
3.250	1.34		9.333	3.30		15.417	3.09		21.50	1.24
3.333	1.34		9.417	3.30		15.500	3.09		21.58	1.24
3.417	1.34		9.500	3.30		15.583	3.09		21.67	1.24
3.500	1.34		9.583	3.30		15.667	3.09		21.75	1.24
3.583	1.34		9.667	3.30		15.750	3.09		21.83	1.24
3.667	1.34		9.750	3.71		15.833	3.09		21.92	1.24
3.750	1.34		9.833	3.71		15.917	3.09		22.00	1.24
3.833	1.34		9.917	3.71		16.000	3.09		22.08	1.24
3.917	1.34		10.000	3.71		16.083	3.09		22.17	1.24
4.000	1.34		10.083	3.71		16.167	3.09		22.25	1.24
4.083	1.34		10.167	3.71		16.250	1.86		22.33	1.24
4.167	1.34		10.250	4.74		16.333	1.86		22.42	1.24
4.250	1.65		10.333	4.74		16.417	1.86		22.50	1.24
4.333	1.65		10.417	4.74		16.500	1.86		22.58	1.24
4.417	1.65		10.500	4.74		16.583	1.86		22.67	1.24
4.500	1.65		10.583	4.74		16.667	1.86		22.75	1.24
4.583	1.65		10.667	4.74		16.750	1.86		22.83	1.24
4.667	1.65		10.750	6.39		16.833	1.86		22.92	1.24
4.750	1.65		10.833	6.39		16.917	1.86		23.00	1.24
4.833	1.65		10.917	6.39		17.000	1.86		23.08	1.24
4.917	1.65		11.000	6.39		17.083	1.86		23.17	1.24
5.000	1.65		11.083	6.39		17.167	1.86		23.25	1.24
5.083	1.65		11.167	6.39		17.250	1.86		23.33	1.24
5.167	1.65		11.250	9.90		17.333	1.86		23.42	1.24
5.250	1.65		11.333	9.90		17.417	1.86		23.50	1.24
5.333	1.65		11.417	9.90		17.500	1.86		23.58	1.24
5.417	1.65		11.500	9.90		17.583	1.86		23.67	1.24
5.500	1.65		11.583	9.90		17.667	1.86		23.75	1.24
5.583	1.65		11.667	9.90		17.750	1.86		23.83	1.24
5.667	1.65		11.750	30.51		17.833	1.86		23.92	1.24
5.750	1.65		11.833	30.51		17.917	1.86		24.00	1.24
5.833	1.65		11.917	78.34		18.000	1.86		24.08	1.24

5.917	1.65	12.000	78.35	18.083	1.86	24.17	1.24
6.000	1.65	12.083	126.18	18.167	1.86		
6.083	1.65	12.167	126.18	18.250	1.86		

Unit Hyd Qpeak (cms)= 0.382

PEAK FLOW (cms)= 0.237 (i)
TIME TO PEAK (hrs)= 12.250
RUNOFF VOLUME (mm)= 48.758
TOTAL RAINFALL (mm)= 103.090
RUNOFF COEFFICIENT = 0.473

(i) 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 (0101):	6.44	0.797	12.25	48.77
+ ID2= 2 (0102):	5.81	0.796	12.17	48.65
=====				
ID = 3 (1000):	12.25	1.561	12.25	48.72

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):	12.25	1.561	12.25	48.72
+ ID2= 2 (0103):	1.89	0.237	12.25	48.76
=====				
ID = 1 (1000):	14.14	1.798	12.25	48.72

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

=====

=====

```
V   V   I   SSSSS   U   U   A   L           (v 6.2.2015)
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
```

Developed and Distributed by Smart City Water Inc

Copyright 2007 - 2022 Smart City Water Inc

All rights reserved.

***** 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\jangsoo.lee\AppData\Local\Civica\VH5\191a91e0-1a14-44fd-bc00-4941023c7dee\bea21063-1ef
c-4502-82dd-e32763203f82\
Summary filename:
C:\Users\jangsoo.lee\AppData\Local\Civica\VH5\191a91e0-1a14-44fd-bc00-4941023c7dee\bea21063-1ef
c-4502-82dd-e32763203f82\

DATE: 09/25/2024

TIME: 11:26:52

USER:

COMMENTS: _____

** SIMULATION : 25yr 24hr 10min SCS Type II **

READ STORM	Filename: C:\Users\jangsoo.lee\AppData
	ata\Local\Temp\
	5d212dc0-a9a6-408a-8363-09ba1dc1c3ac\a2f42d0e
Ptotal=121.70 mm	Comments: 25yr 24hr 10min SCS Type II

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.00	0.00	6.17	2.19	12.33	17.52	18.50	2.19
0.17	1.34	6.33	2.19	12.50	17.52	18.67	2.19
0.33	1.34	6.50	2.19	12.67	9.01	18.83	2.19
0.50	1.34	6.67	2.19	12.83	9.01	19.00	2.19
0.67	1.34	6.83	2.19	13.00	9.01	19.17	2.19
0.83	1.34	7.00	2.19	13.17	6.57	19.33	2.19
1.00	1.34	7.17	2.68	13.33	6.57	19.50	2.19
1.17	1.34	7.33	2.68	13.50	6.57	19.67	2.19
1.33	1.34	7.50	2.68	13.67	5.11	19.83	2.19
1.50	1.34	7.67	2.68	13.83	5.11	20.00	2.19
1.67	1.34	7.83	2.68	14.00	5.11	20.17	1.46
1.83	1.34	8.00	2.68	14.17	3.65	20.33	1.46
2.00	1.34	8.17	3.16	14.33	3.65	20.50	1.46
2.17	1.58	8.33	3.16	14.50	3.65	20.67	1.46
2.33	1.58	8.50	3.16	14.67	3.65	20.83	1.46
2.50	1.58	8.67	3.41	14.83	3.65	21.00	1.46
2.67	1.58	8.83	3.41	15.00	3.65	21.17	1.46
2.83	1.58	9.00	3.41	15.17	3.65	21.33	1.46
3.00	1.58	9.17	3.89	15.33	3.65	21.50	1.46
3.17	1.58	9.33	3.89	15.50	3.65	21.67	1.46
3.33	1.58	9.50	3.89	15.67	3.65	21.83	1.46
3.50	1.58	9.67	4.38	15.83	3.65	22.00	1.46
3.67	1.58	9.83	4.38	16.00	3.65	22.17	1.46
3.83	1.58	10.00	4.38	16.17	2.19	22.33	1.46
4.00	1.58	10.17	5.60	16.33	2.19	22.50	1.46
4.17	1.95	10.33	5.60	16.50	2.19	22.67	1.46
4.33	1.95	10.50	5.60	16.67	2.19	22.83	1.46
4.50	1.95	10.67	7.55	16.83	2.19	23.00	1.46
4.67	1.95	10.83	7.55	17.00	2.19	23.17	1.46
4.83	1.95	11.00	7.55	17.17	2.19	23.33	1.46
5.00	1.95	11.17	11.68	17.33	2.19	23.50	1.46
5.17	1.95	11.33	11.68	17.50	2.19	23.67	1.46
5.33	1.95	11.50	11.68	17.67	2.19	23.83	1.46
5.50	1.95	11.67	36.02	17.83	2.19	24.00	1.46
5.67	1.95	11.83	92.49	18.00	2.19		
5.83	1.95	12.00	148.96	18.17	2.19		
6.00	1.95	12.17	17.52	18.33	2.19		

| CALIB |

| NASHYD (0101) | Area (ha)= 6.44 Curve Number (CN)= 72.0

| ID= 1 DT= 5.0 min | Ia (mm)= 5.00 # of Linear Res.(N)= 3.00

----- U.H. Tp(hrs)= 0.20

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	0.00	6.167	1.95	12.250	17.54	18.33	2.19	
0.167	0.00	6.250	2.19	12.333	17.52	18.42	2.19	
0.250	1.34	6.333	2.19	12.417	17.52	18.50	2.19	
0.333	1.34	6.417	2.19	12.500	17.52	18.58	2.19	
0.417	1.34	6.500	2.19	12.583	17.52	18.67	2.19	
0.500	1.34	6.583	2.19	12.667	17.52	18.75	2.19	
0.583	1.34	6.667	2.19	12.750	9.01	18.83	2.19	
0.667	1.34	6.750	2.19	12.833	9.01	18.92	2.19	
0.750	1.34	6.833	2.19	12.917	9.01	19.00	2.19	
0.833	1.34	6.917	2.19	13.000	9.01	19.08	2.19	
0.917	1.34	7.000	2.19	13.083	9.01	19.17	2.19	
1.000	1.34	7.083	2.19	13.167	9.01	19.25	2.19	
1.083	1.34	7.167	2.19	13.250	6.57	19.33	2.19	
1.167	1.34	7.250	2.68	13.333	6.57	19.42	2.19	
1.250	1.34	7.333	2.68	13.417	6.57	19.50	2.19	
1.333	1.34	7.417	2.68	13.500	6.57	19.58	2.19	
1.417	1.34	7.500	2.68	13.583	6.57	19.67	2.19	
1.500	1.34	7.583	2.68	13.667	6.57	19.75	2.19	
1.583	1.34	7.667	2.68	13.750	5.11	19.83	2.19	
1.667	1.34	7.750	2.68	13.833	5.11	19.92	2.19	
1.750	1.34	7.833	2.68	13.917	5.11	20.00	2.19	
1.833	1.34	7.917	2.68	14.000	5.11	20.08	2.19	
1.917	1.34	8.000	2.68	14.083	5.11	20.17	2.19	
2.000	1.34	8.083	2.68	14.167	5.11	20.25	1.46	
2.083	1.34	8.167	2.68	14.250	3.65	20.33	1.46	
2.167	1.34	8.250	3.16	14.333	3.65	20.42	1.46	
2.250	1.58	8.333	3.16	14.417	3.65	20.50	1.46	
2.333	1.58	8.417	3.16	14.500	3.65	20.58	1.46	
2.417	1.58	8.500	3.16	14.583	3.65	20.67	1.46	
2.500	1.58	8.583	3.16	14.667	3.65	20.75	1.46	
2.583	1.58	8.667	3.16	14.750	3.65	20.83	1.46	
2.667	1.58	8.750	3.41	14.833	3.65	20.92	1.46	
2.750	1.58	8.833	3.41	14.917	3.65	21.00	1.46	
2.833	1.58	8.917	3.41	15.000	3.65	21.08	1.46	
2.917	1.58	9.000	3.41	15.083	3.65	21.17	1.46	
3.000	1.58	9.083	3.41	15.167	3.65	21.25	1.46	
3.083	1.58	9.167	3.41	15.250	3.65	21.33	1.46	
3.167	1.58	9.250	3.89	15.333	3.65	21.42	1.46	
3.250	1.58	9.333	3.89	15.417	3.65	21.50	1.46	
3.333	1.58	9.417	3.89	15.500	3.65	21.58	1.46	
3.417	1.58	9.500	3.89	15.583	3.65	21.67	1.46	
3.500	1.58	9.583	3.89	15.667	3.65	21.75	1.46	
3.583	1.58	9.667	3.89	15.750	3.65	21.83	1.46	
3.667	1.58	9.750	4.38	15.833	3.65	21.92	1.46	
3.750	1.58	9.833	4.38	15.917	3.65	22.00	1.46	
3.833	1.58	9.917	4.38	16.000	3.65	22.08	1.46	
3.917	1.58	10.000	4.38	16.083	3.65	22.17	1.46	
4.000	1.58	10.083	4.38	16.167	3.65	22.25	1.46	
4.083	1.58	10.167	4.38	16.250	2.19	22.33	1.46	
4.167	1.58	10.250	5.60	16.333	2.19	22.42	1.46	
4.250	1.95	10.333	5.60	16.417	2.19	22.50	1.46	
4.333	1.95	10.417	5.60	16.500	2.19	22.58	1.46	

4.417	1.95	10.500	5.60	16.583	2.19	22.67	1.46
4.500	1.95	10.583	5.60	16.667	2.19	22.75	1.46
4.583	1.95	10.667	5.60	16.750	2.19	22.83	1.46
4.667	1.95	10.750	7.55	16.833	2.19	22.92	1.46
4.750	1.95	10.833	7.55	16.917	2.19	23.00	1.46
4.833	1.95	10.917	7.55	17.000	2.19	23.08	1.46
4.917	1.95	11.000	7.55	17.083	2.19	23.17	1.46
5.000	1.95	11.083	7.55	17.167	2.19	23.25	1.46
5.083	1.95	11.167	7.55	17.250	2.19	23.33	1.46
5.167	1.95	11.250	11.68	17.333	2.19	23.42	1.46
5.250	1.95	11.333	11.68	17.417	2.19	23.50	1.46
5.333	1.95	11.417	11.68	17.500	2.19	23.58	1.46
5.417	1.95	11.500	11.68	17.583	2.19	23.67	1.46
5.500	1.95	11.583	11.68	17.667	2.19	23.75	1.46
5.583	1.95	11.667	11.68	17.750	2.19	23.83	1.46
5.667	1.95	11.750	36.02	17.833	2.19	23.92	1.46
5.750	1.95	11.833	36.02	17.917	2.19	24.00	1.46
5.833	1.95	11.917	92.49	18.000	2.19	24.08	1.46
5.917	1.95	12.000	92.49	18.083	2.19	24.17	1.46
6.000	1.95	12.083	148.95	18.167	2.19		
6.083	1.95	12.167	148.96	18.250	2.19		

Unit Hyd Qpeak (cms)= 1.258

PEAK FLOW (cms)= 1.033 (i)
TIME TO PEAK (hrs)= 12.250
RUNOFF VOLUME (mm)= 63.072
TOTAL RAINFALL (mm)= 121.700
RUNOFF COEFFICIENT = 0.518

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

CALIB							
NASHYD (0102)	Area	(ha)=	5.81	Curve Number	(CN)=	72.0	
ID= 1 DT= 5.0 min	Ia	(mm)=	5.00	# of Linear Res.(N)=	3.00		
-----	U.H. Tp	(hrs)=	0.16				

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

---- TRANSFORMED HYETOGRAPH ----							
TIME	RAIN		TIME	RAIN		TIME	RAIN
hrs	mm/hr		hrs	mm/hr		hrs	mm/hr
0.083	0.00		6.167	1.95		12.250	17.54
0.167	0.00		6.250	2.19		12.333	17.52
0.250	1.34		6.333	2.19		12.417	17.52
0.333	1.34		6.417	2.19		12.500	17.52
0.417	1.34		6.500	2.19		12.583	17.52
0.500	1.34		6.583	2.19		12.667	17.52
0.583	1.34		6.667	2.19		12.750	9.01
0.667	1.34		6.750	2.19		12.833	9.01

0.750	1.34		6.833	2.19		12.917	9.01		19.00	2.19
0.833	1.34		6.917	2.19		13.000	9.01		19.08	2.19
0.917	1.34		7.000	2.19		13.083	9.01		19.17	2.19
1.000	1.34		7.083	2.19		13.167	9.01		19.25	2.19
1.083	1.34		7.167	2.19		13.250	6.57		19.33	2.19
1.167	1.34		7.250	2.68		13.333	6.57		19.42	2.19
1.250	1.34		7.333	2.68		13.417	6.57		19.50	2.19
1.333	1.34		7.417	2.68		13.500	6.57		19.58	2.19
1.417	1.34		7.500	2.68		13.583	6.57		19.67	2.19
1.500	1.34		7.583	2.68		13.667	6.57		19.75	2.19
1.583	1.34		7.667	2.68		13.750	5.11		19.83	2.19
1.667	1.34		7.750	2.68		13.833	5.11		19.92	2.19
1.750	1.34		7.833	2.68		13.917	5.11		20.00	2.19
1.833	1.34		7.917	2.68		14.000	5.11		20.08	2.19
1.917	1.34		8.000	2.68		14.083	5.11		20.17	2.19
2.000	1.34		8.083	2.68		14.167	5.11		20.25	1.46
2.083	1.34		8.167	2.68		14.250	3.65		20.33	1.46
2.167	1.34		8.250	3.16		14.333	3.65		20.42	1.46
2.250	1.58		8.333	3.16		14.417	3.65		20.50	1.46
2.333	1.58		8.417	3.16		14.500	3.65		20.58	1.46
2.417	1.58		8.500	3.16		14.583	3.65		20.67	1.46
2.500	1.58		8.583	3.16		14.667	3.65		20.75	1.46
2.583	1.58		8.667	3.16		14.750	3.65		20.83	1.46
2.667	1.58		8.750	3.41		14.833	3.65		20.92	1.46
2.750	1.58		8.833	3.41		14.917	3.65		21.00	1.46
2.833	1.58		8.917	3.41		15.000	3.65		21.08	1.46
2.917	1.58		9.000	3.41		15.083	3.65		21.17	1.46
3.000	1.58		9.083	3.41		15.167	3.65		21.25	1.46
3.083	1.58		9.167	3.41		15.250	3.65		21.33	1.46
3.167	1.58		9.250	3.89		15.333	3.65		21.42	1.46
3.250	1.58		9.333	3.89		15.417	3.65		21.50	1.46
3.333	1.58		9.417	3.89		15.500	3.65		21.58	1.46
3.417	1.58		9.500	3.89		15.583	3.65		21.67	1.46
3.500	1.58		9.583	3.89		15.667	3.65		21.75	1.46
3.583	1.58		9.667	3.89		15.750	3.65		21.83	1.46
3.667	1.58		9.750	4.38		15.833	3.65		21.92	1.46
3.750	1.58		9.833	4.38		15.917	3.65		22.00	1.46
3.833	1.58		9.917	4.38		16.000	3.65		22.08	1.46
3.917	1.58		10.000	4.38		16.083	3.65		22.17	1.46
4.000	1.58		10.083	4.38		16.167	3.65		22.25	1.46
4.083	1.58		10.167	4.38		16.250	2.19		22.33	1.46
4.167	1.58		10.250	5.60		16.333	2.19		22.42	1.46
4.250	1.95		10.333	5.60		16.417	2.19		22.50	1.46
4.333	1.95		10.417	5.60		16.500	2.19		22.58	1.46
4.417	1.95		10.500	5.60		16.583	2.19		22.67	1.46
4.500	1.95		10.583	5.60		16.667	2.19		22.75	1.46
4.583	1.95		10.667	5.60		16.750	2.19		22.83	1.46
4.667	1.95		10.750	7.55		16.833	2.19		22.92	1.46
4.750	1.95		10.833	7.55		16.917	2.19		23.00	1.46
4.833	1.95		10.917	7.55		17.000	2.19		23.08	1.46
4.917	1.95		11.000	7.55		17.083	2.19		23.17	1.46
5.000	1.95		11.083	7.55		17.167	2.19		23.25	1.46
5.083	1.95		11.167	7.55		17.250	2.19		23.33	1.46

5.167	1.95	11.250	11.68	17.333	2.19		23.42	1.46
5.250	1.95	11.333	11.68	17.417	2.19		23.50	1.46
5.333	1.95	11.417	11.68	17.500	2.19		23.58	1.46
5.417	1.95	11.500	11.68	17.583	2.19		23.67	1.46
5.500	1.95	11.583	11.68	17.667	2.19		23.75	1.46
5.583	1.95	11.667	11.68	17.750	2.19		23.83	1.46
5.667	1.95	11.750	36.02	17.833	2.19		23.92	1.46
5.750	1.95	11.833	36.02	17.917	2.19		24.00	1.46
5.833	1.95	11.917	92.49	18.000	2.19		24.08	1.46
5.917	1.95	12.000	92.49	18.083	2.19		24.17	1.46
6.000	1.95	12.083	148.95	18.167	2.19			
6.083	1.95	12.167	148.96	18.250	2.19			

Unit Hyd Qpeak (cms)= 1.390

PEAK FLOW (cms)= 1.034 (i)
TIME TO PEAK (hrs)= 12.167
RUNOFF VOLUME (mm)= 62.916
TOTAL RAINFALL (mm)= 121.700
RUNOFF COEFFICIENT = 0.517

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

CALIB								
NASHYD (0103)	Area	(ha)=	1.89	Curve Number	(CN)=	72.0		
ID= 1 DT= 5.0 min	Ia	(mm)=	5.00	# of Linear Res.(N)=	3.00			
-----	U.H. Tp	(hrs)=	0.19					

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	0.00	6.167	1.95	12.250	17.54	18.33	2.19
0.167	0.00	6.250	2.19	12.333	17.52	18.42	2.19
0.250	1.34	6.333	2.19	12.417	17.52	18.50	2.19
0.333	1.34	6.417	2.19	12.500	17.52	18.58	2.19
0.417	1.34	6.500	2.19	12.583	17.52	18.67	2.19
0.500	1.34	6.583	2.19	12.667	17.52	18.75	2.19
0.583	1.34	6.667	2.19	12.750	9.01	18.83	2.19
0.667	1.34	6.750	2.19	12.833	9.01	18.92	2.19
0.750	1.34	6.833	2.19	12.917	9.01	19.00	2.19
0.833	1.34	6.917	2.19	13.000	9.01	19.08	2.19
0.917	1.34	7.000	2.19	13.083	9.01	19.17	2.19
1.000	1.34	7.083	2.19	13.167	9.01	19.25	2.19
1.083	1.34	7.167	2.19	13.250	6.57	19.33	2.19
1.167	1.34	7.250	2.68	13.333	6.57	19.42	2.19
1.250	1.34	7.333	2.68	13.417	6.57	19.50	2.19
1.333	1.34	7.417	2.68	13.500	6.57	19.58	2.19
1.417	1.34	7.500	2.68	13.583	6.57	19.67	2.19

1.500	1.34		7.583	2.68		13.667	6.57		19.75	2.19
1.583	1.34		7.667	2.68		13.750	5.11		19.83	2.19
1.667	1.34		7.750	2.68		13.833	5.11		19.92	2.19
1.750	1.34		7.833	2.68		13.917	5.11		20.00	2.19
1.833	1.34		7.917	2.68		14.000	5.11		20.08	2.19
1.917	1.34		8.000	2.68		14.083	5.11		20.17	2.19
2.000	1.34		8.083	2.68		14.167	5.11		20.25	1.46
2.083	1.34		8.167	2.68		14.250	3.65		20.33	1.46
2.167	1.34		8.250	3.16		14.333	3.65		20.42	1.46
2.250	1.58		8.333	3.16		14.417	3.65		20.50	1.46
2.333	1.58		8.417	3.16		14.500	3.65		20.58	1.46
2.417	1.58		8.500	3.16		14.583	3.65		20.67	1.46
2.500	1.58		8.583	3.16		14.667	3.65		20.75	1.46
2.583	1.58		8.667	3.16		14.750	3.65		20.83	1.46
2.667	1.58		8.750	3.41		14.833	3.65		20.92	1.46
2.750	1.58		8.833	3.41		14.917	3.65		21.00	1.46
2.833	1.58		8.917	3.41		15.000	3.65		21.08	1.46
2.917	1.58		9.000	3.41		15.083	3.65		21.17	1.46
3.000	1.58		9.083	3.41		15.167	3.65		21.25	1.46
3.083	1.58		9.167	3.41		15.250	3.65		21.33	1.46
3.167	1.58		9.250	3.89		15.333	3.65		21.42	1.46
3.250	1.58		9.333	3.89		15.417	3.65		21.50	1.46
3.333	1.58		9.417	3.89		15.500	3.65		21.58	1.46
3.417	1.58		9.500	3.89		15.583	3.65		21.67	1.46
3.500	1.58		9.583	3.89		15.667	3.65		21.75	1.46
3.583	1.58		9.667	3.89		15.750	3.65		21.83	1.46
3.667	1.58		9.750	4.38		15.833	3.65		21.92	1.46
3.750	1.58		9.833	4.38		15.917	3.65		22.00	1.46
3.833	1.58		9.917	4.38		16.000	3.65		22.08	1.46
3.917	1.58		10.000	4.38		16.083	3.65		22.17	1.46
4.000	1.58		10.083	4.38		16.167	3.65		22.25	1.46
4.083	1.58		10.167	4.38		16.250	2.19		22.33	1.46
4.167	1.58		10.250	5.60		16.333	2.19		22.42	1.46
4.250	1.95		10.333	5.60		16.417	2.19		22.50	1.46
4.333	1.95		10.417	5.60		16.500	2.19		22.58	1.46
4.417	1.95		10.500	5.60		16.583	2.19		22.67	1.46
4.500	1.95		10.583	5.60		16.667	2.19		22.75	1.46
4.583	1.95		10.667	5.60		16.750	2.19		22.83	1.46
4.667	1.95		10.750	7.55		16.833	2.19		22.92	1.46
4.750	1.95		10.833	7.55		16.917	2.19		23.00	1.46
4.833	1.95		10.917	7.55		17.000	2.19		23.08	1.46
4.917	1.95		11.000	7.55		17.083	2.19		23.17	1.46
5.000	1.95		11.083	7.55		17.167	2.19		23.25	1.46
5.083	1.95		11.167	7.55		17.250	2.19		23.33	1.46
5.167	1.95		11.250	11.68		17.333	2.19		23.42	1.46
5.250	1.95		11.333	11.68		17.417	2.19		23.50	1.46
5.333	1.95		11.417	11.68		17.500	2.19		23.58	1.46
5.417	1.95		11.500	11.68		17.583	2.19		23.67	1.46
5.500	1.95		11.583	11.68		17.667	2.19		23.75	1.46
5.583	1.95		11.667	11.68		17.750	2.19		23.83	1.46
5.667	1.95		11.750	36.02		17.833	2.19		23.92	1.46
5.750	1.95		11.833	36.02		17.917	2.19		24.00	1.46
5.833	1.95		11.917	92.49		18.000	2.19		24.08	1.46

5.917	1.95	12.000	92.49	18.083	2.19	24.17	1.46
6.000	1.95	12.083	148.95	18.167	2.19		
6.083	1.95	12.167	148.96	18.250	2.19		

Unit Hyd Qpeak (cms)= 0.382

PEAK FLOW (cms)= 0.308 (i)
TIME TO PEAK (hrs)= 12.250
RUNOFF VOLUME (mm)= 63.053
TOTAL RAINFALL (mm)= 121.700
RUNOFF COEFFICIENT = 0.518

(i) 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 (0101):	6.44	1.033	12.25	63.07
+ ID2= 2 (0102):	5.81	1.034	12.17	62.92
=====				
ID = 3 (1000):	12.25	2.022	12.25	63.00

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):	12.25	2.022	12.25	63.00
+ ID2= 2 (0103):	1.89	0.308	12.25	63.05
=====				
ID = 1 (1000):	14.14	2.329	12.25	63.01

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

=====

=====

```
V   V   I   SSSSS   U   U   A   L           (v 6.2.2015)
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
```

Developed and Distributed by Smart City Water Inc

Copyright 2007 - 2022 Smart City Water Inc

All rights reserved.

***** 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\jangsoo.lee\AppData\Local\Civica\VH5\191a91e0-1a14-44fd-bc00-4941023c7dee\ff25d9b3-446f-443e-8383-63c5d097a5b8\
Summary filename:
C:\Users\jangsoo.lee\AppData\Local\Civica\VH5\191a91e0-1a14-44fd-bc00-4941023c7dee\ff25d9b3-446f-443e-8383-63c5d097a5b8\

DATE: 09/25/2024

TIME: 11:26:53

USER:

COMMENTS: _____

** SIMULATION : 50yr 24hr 10min SCS Type II **

READ STORM	Filename: C:\Users\jangsoo.lee\AppData
	ata\Local\Temp\
	5d212dc0-a9a6-408a-8363-09ba1dc1c3ac\eb01ca32
Ptotal=134.56 mm	Comments: 50yr 24hr 10min SCS Type II

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.00	0.00	6.17	2.42	12.33	19.38	18.50	2.42
0.17	1.48	6.33	2.42	12.50	19.38	18.67	2.42
0.33	1.48	6.50	2.42	12.67	9.96	18.83	2.42
0.50	1.48	6.67	2.42	12.83	9.96	19.00	2.42
0.67	1.48	6.83	2.42	13.00	9.96	19.17	2.42
0.83	1.48	7.00	2.42	13.17	7.27	19.33	2.42
1.00	1.48	7.17	2.96	13.33	7.27	19.50	2.42
1.17	1.48	7.33	2.96	13.50	7.27	19.67	2.42
1.33	1.48	7.50	2.96	13.67	5.65	19.83	2.42
1.50	1.48	7.67	2.96	13.83	5.65	20.00	2.42
1.67	1.48	7.83	2.96	14.00	5.65	20.17	1.61
1.83	1.48	8.00	2.96	14.17	4.04	20.33	1.61
2.00	1.48	8.17	3.50	14.33	4.04	20.50	1.61
2.17	1.75	8.33	3.50	14.50	4.04	20.67	1.61
2.33	1.75	8.50	3.50	14.67	4.04	20.83	1.61
2.50	1.75	8.67	3.77	14.83	4.04	21.00	1.61
2.67	1.75	8.83	3.77	15.00	4.04	21.17	1.61
2.83	1.75	9.00	3.77	15.17	4.04	21.33	1.61
3.00	1.75	9.17	4.31	15.33	4.04	21.50	1.61
3.17	1.75	9.33	4.31	15.50	4.04	21.67	1.61
3.33	1.75	9.50	4.31	15.67	4.04	21.83	1.61
3.50	1.75	9.67	4.84	15.83	4.04	22.00	1.61
3.67	1.75	9.83	4.84	16.00	4.04	22.17	1.61
3.83	1.75	10.00	4.84	16.17	2.42	22.33	1.61
4.00	1.75	10.17	6.19	16.33	2.42	22.50	1.61
4.17	2.15	10.33	6.19	16.50	2.42	22.67	1.61
4.33	2.15	10.50	6.19	16.67	2.42	22.83	1.61
4.50	2.15	10.67	8.34	16.83	2.42	23.00	1.61
4.67	2.15	10.83	8.34	17.00	2.42	23.17	1.61
4.83	2.15	11.00	8.34	17.17	2.42	23.33	1.61
5.00	2.15	11.17	12.92	17.33	2.42	23.50	1.61
5.17	2.15	11.33	12.92	17.50	2.42	23.67	1.61
5.33	2.15	11.50	12.92	17.67	2.42	23.83	1.61
5.50	2.15	11.67	39.83	17.83	2.42	24.00	1.61
5.67	2.15	11.83	102.27	18.00	2.42		
5.83	2.15	12.00	164.70	18.17	2.42		
6.00	2.15	12.17	19.38	18.33	2.42		

CALIB					
NASHYD (0101)	Area (ha)=	6.44	Curve Number (CN)=	72.0	
ID= 1 DT= 5.0 min	Ia (mm)=	5.00	# of Linear Res.(N)=	3.00	
-----	U.H. Tp(hrs)=	0.20			

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	0.00	6.167	2.15		12.250	19.39	18.33	2.42
0.167	0.00	6.250	2.42		12.333	19.38	18.42	2.42
0.250	1.48	6.333	2.42		12.417	19.38	18.50	2.42
0.333	1.48	6.417	2.42		12.500	19.38	18.58	2.42
0.417	1.48	6.500	2.42		12.583	19.38	18.67	2.42
0.500	1.48	6.583	2.42		12.667	19.38	18.75	2.42
0.583	1.48	6.667	2.42		12.750	9.96	18.83	2.42
0.667	1.48	6.750	2.42		12.833	9.96	18.92	2.42
0.750	1.48	6.833	2.42		12.917	9.96	19.00	2.42
0.833	1.48	6.917	2.42		13.000	9.96	19.08	2.42
0.917	1.48	7.000	2.42		13.083	9.96	19.17	2.42
1.000	1.48	7.083	2.42		13.167	9.96	19.25	2.42
1.083	1.48	7.167	2.42		13.250	7.27	19.33	2.42
1.167	1.48	7.250	2.96		13.333	7.27	19.42	2.42
1.250	1.48	7.333	2.96		13.417	7.27	19.50	2.42
1.333	1.48	7.417	2.96		13.500	7.27	19.58	2.42
1.417	1.48	7.500	2.96		13.583	7.27	19.67	2.42
1.500	1.48	7.583	2.96		13.667	7.27	19.75	2.42
1.583	1.48	7.667	2.96		13.750	5.65	19.83	2.42
1.667	1.48	7.750	2.96		13.833	5.65	19.92	2.42
1.750	1.48	7.833	2.96		13.917	5.65	20.00	2.42
1.833	1.48	7.917	2.96		14.000	5.65	20.08	2.42
1.917	1.48	8.000	2.96		14.083	5.65	20.17	2.42
2.000	1.48	8.083	2.96		14.167	5.65	20.25	1.61
2.083	1.48	8.167	2.96		14.250	4.04	20.33	1.61
2.167	1.48	8.250	3.50		14.333	4.04	20.42	1.61
2.250	1.75	8.333	3.50		14.417	4.04	20.50	1.61
2.333	1.75	8.417	3.50		14.500	4.04	20.58	1.61
2.417	1.75	8.500	3.50		14.583	4.04	20.67	1.61
2.500	1.75	8.583	3.50		14.667	4.04	20.75	1.61
2.583	1.75	8.667	3.50		14.750	4.04	20.83	1.61
2.667	1.75	8.750	3.77		14.833	4.04	20.92	1.61
2.750	1.75	8.833	3.77		14.917	4.04	21.00	1.61
2.833	1.75	8.917	3.77		15.000	4.04	21.08	1.61
2.917	1.75	9.000	3.77		15.083	4.04	21.17	1.61
3.000	1.75	9.083	3.77		15.167	4.04	21.25	1.61
3.083	1.75	9.167	3.77		15.250	4.04	21.33	1.61
3.167	1.75	9.250	4.31		15.333	4.04	21.42	1.61
3.250	1.75	9.333	4.31		15.417	4.04	21.50	1.61
3.333	1.75	9.417	4.31		15.500	4.04	21.58	1.61
3.417	1.75	9.500	4.31		15.583	4.04	21.67	1.61
3.500	1.75	9.583	4.31		15.667	4.04	21.75	1.61
3.583	1.75	9.667	4.31		15.750	4.04	21.83	1.61
3.667	1.75	9.750	4.84		15.833	4.04	21.92	1.61
3.750	1.75	9.833	4.84		15.917	4.04	22.00	1.61
3.833	1.75	9.917	4.84		16.000	4.04	22.08	1.61
3.917	1.75	10.000	4.84		16.083	4.04	22.17	1.61
4.000	1.75	10.083	4.84		16.167	4.04	22.25	1.61
4.083	1.75	10.167	4.84		16.250	2.42	22.33	1.61
4.167	1.75	10.250	6.19		16.333	2.42	22.42	1.61
4.250	2.15	10.333	6.19		16.417	2.42	22.50	1.61
4.333	2.15	10.417	6.19		16.500	2.42	22.58	1.61

4.417	2.15	10.500	6.19	16.583	2.42	22.67	1.61
4.500	2.15	10.583	6.19	16.667	2.42	22.75	1.61
4.583	2.15	10.667	6.19	16.750	2.42	22.83	1.61
4.667	2.15	10.750	8.34	16.833	2.42	22.92	1.61
4.750	2.15	10.833	8.34	16.917	2.42	23.00	1.61
4.833	2.15	10.917	8.34	17.000	2.42	23.08	1.61
4.917	2.15	11.000	8.34	17.083	2.42	23.17	1.61
5.000	2.15	11.083	8.34	17.167	2.42	23.25	1.61
5.083	2.15	11.167	8.34	17.250	2.42	23.33	1.61
5.167	2.15	11.250	12.92	17.333	2.42	23.42	1.61
5.250	2.15	11.333	12.92	17.417	2.42	23.50	1.61
5.333	2.15	11.417	12.92	17.500	2.42	23.58	1.61
5.417	2.15	11.500	12.92	17.583	2.42	23.67	1.61
5.500	2.15	11.583	12.92	17.667	2.42	23.75	1.61
5.583	2.15	11.667	12.92	17.750	2.42	23.83	1.61
5.667	2.15	11.750	39.83	17.833	2.42	23.92	1.61
5.750	2.15	11.833	39.83	17.917	2.42	24.00	1.61
5.833	2.15	11.917	102.26	18.000	2.42	24.08	1.61
5.917	2.15	12.000	102.27	18.083	2.42	24.17	1.61
6.000	2.15	12.083	164.69	18.167	2.42		
6.083	2.15	12.167	164.70	18.250	2.42		

Unit Hyd Qpeak (cms)= 1.258

PEAK FLOW (cms)= 1.203 (i)
TIME TO PEAK (hrs)= 12.250
RUNOFF VOLUME (mm)= 73.361
TOTAL RAINFALL (mm)= 134.560
RUNOFF COEFFICIENT = 0.545

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

CALIB							
NASHYD (0102)		Area (ha)=	5.81	Curve Number (CN)=	72.0		
ID= 1 DT= 5.0 min		Ia (mm)=	5.00	# of Linear Res.(N)=	3.00		
-----		U.H. Tp(hrs)=	0.16				

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	0.00	6.167	2.15	12.250	19.39	18.33	2.42
0.167	0.00	6.250	2.42	12.333	19.38	18.42	2.42
0.250	1.48	6.333	2.42	12.417	19.38	18.50	2.42
0.333	1.48	6.417	2.42	12.500	19.38	18.58	2.42
0.417	1.48	6.500	2.42	12.583	19.38	18.67	2.42
0.500	1.48	6.583	2.42	12.667	19.38	18.75	2.42
0.583	1.48	6.667	2.42	12.750	9.96	18.83	2.42
0.667	1.48	6.750	2.42	12.833	9.96	18.92	2.42

0.750	1.48		6.833	2.42		12.917	9.96		19.00	2.42
0.833	1.48		6.917	2.42		13.000	9.96		19.08	2.42
0.917	1.48		7.000	2.42		13.083	9.96		19.17	2.42
1.000	1.48		7.083	2.42		13.167	9.96		19.25	2.42
1.083	1.48		7.167	2.42		13.250	7.27		19.33	2.42
1.167	1.48		7.250	2.96		13.333	7.27		19.42	2.42
1.250	1.48		7.333	2.96		13.417	7.27		19.50	2.42
1.333	1.48		7.417	2.96		13.500	7.27		19.58	2.42
1.417	1.48		7.500	2.96		13.583	7.27		19.67	2.42
1.500	1.48		7.583	2.96		13.667	7.27		19.75	2.42
1.583	1.48		7.667	2.96		13.750	5.65		19.83	2.42
1.667	1.48		7.750	2.96		13.833	5.65		19.92	2.42
1.750	1.48		7.833	2.96		13.917	5.65		20.00	2.42
1.833	1.48		7.917	2.96		14.000	5.65		20.08	2.42
1.917	1.48		8.000	2.96		14.083	5.65		20.17	2.42
2.000	1.48		8.083	2.96		14.167	5.65		20.25	1.61
2.083	1.48		8.167	2.96		14.250	4.04		20.33	1.61
2.167	1.48		8.250	3.50		14.333	4.04		20.42	1.61
2.250	1.75		8.333	3.50		14.417	4.04		20.50	1.61
2.333	1.75		8.417	3.50		14.500	4.04		20.58	1.61
2.417	1.75		8.500	3.50		14.583	4.04		20.67	1.61
2.500	1.75		8.583	3.50		14.667	4.04		20.75	1.61
2.583	1.75		8.667	3.50		14.750	4.04		20.83	1.61
2.667	1.75		8.750	3.77		14.833	4.04		20.92	1.61
2.750	1.75		8.833	3.77		14.917	4.04		21.00	1.61
2.833	1.75		8.917	3.77		15.000	4.04		21.08	1.61
2.917	1.75		9.000	3.77		15.083	4.04		21.17	1.61
3.000	1.75		9.083	3.77		15.167	4.04		21.25	1.61
3.083	1.75		9.167	3.77		15.250	4.04		21.33	1.61
3.167	1.75		9.250	4.31		15.333	4.04		21.42	1.61
3.250	1.75		9.333	4.31		15.417	4.04		21.50	1.61
3.333	1.75		9.417	4.31		15.500	4.04		21.58	1.61
3.417	1.75		9.500	4.31		15.583	4.04		21.67	1.61
3.500	1.75		9.583	4.31		15.667	4.04		21.75	1.61
3.583	1.75		9.667	4.31		15.750	4.04		21.83	1.61
3.667	1.75		9.750	4.84		15.833	4.04		21.92	1.61
3.750	1.75		9.833	4.84		15.917	4.04		22.00	1.61
3.833	1.75		9.917	4.84		16.000	4.04		22.08	1.61
3.917	1.75		10.000	4.84		16.083	4.04		22.17	1.61
4.000	1.75		10.083	4.84		16.167	4.04		22.25	1.61
4.083	1.75		10.167	4.84		16.250	2.42		22.33	1.61
4.167	1.75		10.250	6.19		16.333	2.42		22.42	1.61
4.250	2.15		10.333	6.19		16.417	2.42		22.50	1.61
4.333	2.15		10.417	6.19		16.500	2.42		22.58	1.61
4.417	2.15		10.500	6.19		16.583	2.42		22.67	1.61
4.500	2.15		10.583	6.19		16.667	2.42		22.75	1.61
4.583	2.15		10.667	6.19		16.750	2.42		22.83	1.61
4.667	2.15		10.750	8.34		16.833	2.42		22.92	1.61
4.750	2.15		10.833	8.34		16.917	2.42		23.00	1.61
4.833	2.15		10.917	8.34		17.000	2.42		23.08	1.61
4.917	2.15		11.000	8.34		17.083	2.42		23.17	1.61
5.000	2.15		11.083	8.34		17.167	2.42		23.25	1.61
5.083	2.15		11.167	8.34		17.250	2.42		23.33	1.61

5.167	2.15	11.250	12.92	17.333	2.42	23.42	1.61
5.250	2.15	11.333	12.92	17.417	2.42	23.50	1.61
5.333	2.15	11.417	12.92	17.500	2.42	23.58	1.61
5.417	2.15	11.500	12.92	17.583	2.42	23.67	1.61
5.500	2.15	11.583	12.92	17.667	2.42	23.75	1.61
5.583	2.15	11.667	12.92	17.750	2.42	23.83	1.61
5.667	2.15	11.750	39.83	17.833	2.42	23.92	1.61
5.750	2.15	11.833	39.83	17.917	2.42	24.00	1.61
5.833	2.15	11.917	102.26	18.000	2.42	24.08	1.61
5.917	2.15	12.000	102.27	18.083	2.42	24.17	1.61
6.000	2.15	12.083	164.69	18.167	2.42		
6.083	2.15	12.167	164.70	18.250	2.42		

Unit Hyd Qpeak (cms)= 1.390

PEAK FLOW (cms)= 1.206 (i)
TIME TO PEAK (hrs)= 12.167
RUNOFF VOLUME (mm)= 73.179
TOTAL RAINFALL (mm)= 134.560
RUNOFF COEFFICIENT = 0.544

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

CALIB							
NASHYD (0103)	Area	(ha)=	1.89	Curve Number	(CN)=	72.0	
ID= 1 DT= 5.0 min	Ia	(mm)=	5.00	# of Linear Res.(N)=	3.00		
-----	U.H. Tp	(hrs)=	0.19				

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	0.00	6.167	2.15	12.250	19.39	18.33	2.42
0.167	0.00	6.250	2.42	12.333	19.38	18.42	2.42
0.250	1.48	6.333	2.42	12.417	19.38	18.50	2.42
0.333	1.48	6.417	2.42	12.500	19.38	18.58	2.42
0.417	1.48	6.500	2.42	12.583	19.38	18.67	2.42
0.500	1.48	6.583	2.42	12.667	19.38	18.75	2.42
0.583	1.48	6.667	2.42	12.750	9.96	18.83	2.42
0.667	1.48	6.750	2.42	12.833	9.96	18.92	2.42
0.750	1.48	6.833	2.42	12.917	9.96	19.00	2.42
0.833	1.48	6.917	2.42	13.000	9.96	19.08	2.42
0.917	1.48	7.000	2.42	13.083	9.96	19.17	2.42
1.000	1.48	7.083	2.42	13.167	9.96	19.25	2.42
1.083	1.48	7.167	2.42	13.250	7.27	19.33	2.42
1.167	1.48	7.250	2.96	13.333	7.27	19.42	2.42
1.250	1.48	7.333	2.96	13.417	7.27	19.50	2.42
1.333	1.48	7.417	2.96	13.500	7.27	19.58	2.42
1.417	1.48	7.500	2.96	13.583	7.27	19.67	2.42

1.500	1.48		7.583	2.96		13.667	7.27		19.75	2.42
1.583	1.48		7.667	2.96		13.750	5.65		19.83	2.42
1.667	1.48		7.750	2.96		13.833	5.65		19.92	2.42
1.750	1.48		7.833	2.96		13.917	5.65		20.00	2.42
1.833	1.48		7.917	2.96		14.000	5.65		20.08	2.42
1.917	1.48		8.000	2.96		14.083	5.65		20.17	2.42
2.000	1.48		8.083	2.96		14.167	5.65		20.25	1.61
2.083	1.48		8.167	2.96		14.250	4.04		20.33	1.61
2.167	1.48		8.250	3.50		14.333	4.04		20.42	1.61
2.250	1.75		8.333	3.50		14.417	4.04		20.50	1.61
2.333	1.75		8.417	3.50		14.500	4.04		20.58	1.61
2.417	1.75		8.500	3.50		14.583	4.04		20.67	1.61
2.500	1.75		8.583	3.50		14.667	4.04		20.75	1.61
2.583	1.75		8.667	3.50		14.750	4.04		20.83	1.61
2.667	1.75		8.750	3.77		14.833	4.04		20.92	1.61
2.750	1.75		8.833	3.77		14.917	4.04		21.00	1.61
2.833	1.75		8.917	3.77		15.000	4.04		21.08	1.61
2.917	1.75		9.000	3.77		15.083	4.04		21.17	1.61
3.000	1.75		9.083	3.77		15.167	4.04		21.25	1.61
3.083	1.75		9.167	3.77		15.250	4.04		21.33	1.61
3.167	1.75		9.250	4.31		15.333	4.04		21.42	1.61
3.250	1.75		9.333	4.31		15.417	4.04		21.50	1.61
3.333	1.75		9.417	4.31		15.500	4.04		21.58	1.61
3.417	1.75		9.500	4.31		15.583	4.04		21.67	1.61
3.500	1.75		9.583	4.31		15.667	4.04		21.75	1.61
3.583	1.75		9.667	4.31		15.750	4.04		21.83	1.61
3.667	1.75		9.750	4.84		15.833	4.04		21.92	1.61
3.750	1.75		9.833	4.84		15.917	4.04		22.00	1.61
3.833	1.75		9.917	4.84		16.000	4.04		22.08	1.61
3.917	1.75		10.000	4.84		16.083	4.04		22.17	1.61
4.000	1.75		10.083	4.84		16.167	4.04		22.25	1.61
4.083	1.75		10.167	4.84		16.250	2.42		22.33	1.61
4.167	1.75		10.250	6.19		16.333	2.42		22.42	1.61
4.250	2.15		10.333	6.19		16.417	2.42		22.50	1.61
4.333	2.15		10.417	6.19		16.500	2.42		22.58	1.61
4.417	2.15		10.500	6.19		16.583	2.42		22.67	1.61
4.500	2.15		10.583	6.19		16.667	2.42		22.75	1.61
4.583	2.15		10.667	6.19		16.750	2.42		22.83	1.61
4.667	2.15		10.750	8.34		16.833	2.42		22.92	1.61
4.750	2.15		10.833	8.34		16.917	2.42		23.00	1.61
4.833	2.15		10.917	8.34		17.000	2.42		23.08	1.61
4.917	2.15		11.000	8.34		17.083	2.42		23.17	1.61
5.000	2.15		11.083	8.34		17.167	2.42		23.25	1.61
5.083	2.15		11.167	8.34		17.250	2.42		23.33	1.61
5.167	2.15		11.250	12.92		17.333	2.42		23.42	1.61
5.250	2.15		11.333	12.92		17.417	2.42		23.50	1.61
5.333	2.15		11.417	12.92		17.500	2.42		23.58	1.61
5.417	2.15		11.500	12.92		17.583	2.42		23.67	1.61
5.500	2.15		11.583	12.92		17.667	2.42		23.75	1.61
5.583	2.15		11.667	12.92		17.750	2.42		23.83	1.61
5.667	2.15		11.750	39.83		17.833	2.42		23.92	1.61
5.750	2.15		11.833	39.83		17.917	2.42		24.00	1.61
5.833	2.15		11.917	102.26		18.000	2.42		24.08	1.61

5.917	2.15	12.000	102.27	18.083	2.42	24.17	1.61
6.000	2.15	12.083	164.69	18.167	2.42		
6.083	2.15	12.167	164.70	18.250	2.42		

Unit Hyd Qpeak (cms)= 0.382

PEAK FLOW (cms)= 0.358 (i)
TIME TO PEAK (hrs)= 12.250
RUNOFF VOLUME (mm)= 73.339
TOTAL RAINFALL (mm)= 134.560
RUNOFF COEFFICIENT = 0.545

(i) 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 (0101):	6.44	1.203	12.25	73.36
+ ID2= 2 (0102):	5.81	1.206	12.17	73.18
=====				
ID = 3 (1000):	12.25	2.352	12.25	73.27

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):	12.25	2.352	12.25	73.27
+ ID2= 2 (0103):	1.89	0.358	12.25	73.34
=====				
ID = 1 (1000):	14.14	2.710	12.25	73.28

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

=====

=====

```
V      V      I      SSSSS  U      U      A      L      (v 6.2.2015)
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
```

Developed and Distributed by Smart City Water Inc

Copyright 2007 - 2022 Smart City Water Inc

All rights reserved.

***** 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\jangsoo.lee\AppData\Local\Civica\VH5\191a91e0-1a14-44fd-bc00-4941023c7dee\386b91ac-98a

f-4207-8f12-4d27fb9d2cf2\

Summary filename:

C:\Users\jangsoo.lee\AppData\Local\Civica\VH5\191a91e0-1a14-44fd-bc00-4941023c7dee\386b91ac-98a

f-4207-8f12-4d27fb9d2cf2\

DATE: 09/25/2024

TIME: 11:26:52

USER:

COMMENTS: _____

** SIMULATION : 100yr 24hr 10min SCS Type II **

	READ STORM		Filename: C:\Users\jangsoo.lee\AppData
			ata\Local\Temp\
			5d212dc0-a9a6-408a-8363-09ba1dc1c3ac\1118027b
	Ptotal=145.92 mm		Comments: 100yr 24hr 10min SCS Type II

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.00	0.00	6.17	2.63	12.33	21.01	18.50	2.63
0.17	1.61	6.33	2.63	12.50	21.01	18.67	2.63
0.33	1.61	6.50	2.63	12.67	10.80	18.83	2.63
0.50	1.61	6.67	2.63	12.83	10.80	19.00	2.63
0.67	1.61	6.83	2.63	13.00	10.80	19.17	2.63
0.83	1.61	7.00	2.63	13.17	7.88	19.33	2.63
1.00	1.61	7.17	3.21	13.33	7.88	19.50	2.63
1.17	1.61	7.33	3.21	13.50	7.88	19.67	2.63
1.33	1.61	7.50	3.21	13.67	6.13	19.83	2.63
1.50	1.61	7.67	3.21	13.83	6.13	20.00	2.63
1.67	1.61	7.83	3.21	14.00	6.13	20.17	1.75
1.83	1.61	8.00	3.21	14.17	4.38	20.33	1.75
2.00	1.61	8.17	3.79	14.33	4.38	20.50	1.75
2.17	1.90	8.33	3.79	14.50	4.38	20.67	1.75
2.33	1.90	8.50	3.79	14.67	4.38	20.83	1.75
2.50	1.90	8.67	4.09	14.83	4.38	21.00	1.75
2.67	1.90	8.83	4.09	15.00	4.38	21.17	1.75
2.83	1.90	9.00	4.09	15.17	4.38	21.33	1.75
3.00	1.90	9.17	4.67	15.33	4.38	21.50	1.75
3.17	1.90	9.33	4.67	15.50	4.38	21.67	1.75
3.33	1.90	9.50	4.67	15.67	4.38	21.83	1.75
3.50	1.90	9.67	5.25	15.83	4.38	22.00	1.75
3.67	1.90	9.83	5.25	16.00	4.38	22.17	1.75
3.83	1.90	10.00	5.25	16.17	2.63	22.33	1.75
4.00	1.90	10.17	6.71	16.33	2.63	22.50	1.75
4.17	2.33	10.33	6.71	16.50	2.63	22.67	1.75
4.33	2.33	10.50	6.71	16.67	2.63	22.83	1.75
4.50	2.33	10.67	9.05	16.83	2.63	23.00	1.75
4.67	2.33	10.83	9.05	17.00	2.63	23.17	1.75
4.83	2.33	11.00	9.05	17.17	2.63	23.33	1.75
5.00	2.33	11.17	14.01	17.33	2.63	23.50	1.75
5.17	2.33	11.33	14.01	17.50	2.63	23.67	1.75
5.33	2.33	11.50	14.01	17.67	2.63	23.83	1.75
5.50	2.33	11.67	43.19	17.83	2.63	24.00	1.75
5.67	2.33	11.83	110.90	18.00	2.63		
5.83	2.33	12.00	178.61	18.17	2.63		
6.00	2.33	12.17	21.01	18.33	2.63		

| CALIB |
| NASHYD (0101) | Area (ha)= 6.44 Curve Number (CN)= 72.0
| ID= 1 DT= 5.0 min | Ia (mm)= 5.00 # of Linear Res.(N)= 3.00

U.H. Tp(hrs)= 0.20

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	0.00	6.167	2.33	12.250	21.03	18.33	2.63	
0.167	0.00	6.250	2.63	12.333	21.01	18.42	2.63	
0.250	1.61	6.333	2.63	12.417	21.01	18.50	2.63	
0.333	1.61	6.417	2.63	12.500	21.01	18.58	2.63	
0.417	1.61	6.500	2.63	12.583	21.01	18.67	2.63	
0.500	1.61	6.583	2.63	12.667	21.01	18.75	2.63	
0.583	1.61	6.667	2.63	12.750	10.80	18.83	2.63	
0.667	1.61	6.750	2.63	12.833	10.80	18.92	2.63	
0.750	1.61	6.833	2.63	12.917	10.80	19.00	2.63	
0.833	1.61	6.917	2.63	13.000	10.80	19.08	2.63	
0.917	1.61	7.000	2.63	13.083	10.80	19.17	2.63	
1.000	1.61	7.083	2.63	13.167	10.80	19.25	2.63	
1.083	1.61	7.167	2.63	13.250	7.88	19.33	2.63	
1.167	1.61	7.250	3.21	13.333	7.88	19.42	2.63	
1.250	1.61	7.333	3.21	13.417	7.88	19.50	2.63	
1.333	1.61	7.417	3.21	13.500	7.88	19.58	2.63	
1.417	1.61	7.500	3.21	13.583	7.88	19.67	2.63	
1.500	1.61	7.583	3.21	13.667	7.88	19.75	2.63	
1.583	1.61	7.667	3.21	13.750	6.13	19.83	2.63	
1.667	1.61	7.750	3.21	13.833	6.13	19.92	2.63	
1.750	1.61	7.833	3.21	13.917	6.13	20.00	2.63	
1.833	1.61	7.917	3.21	14.000	6.13	20.08	2.63	
1.917	1.61	8.000	3.21	14.083	6.13	20.17	2.63	
2.000	1.61	8.083	3.21	14.167	6.13	20.25	1.75	
2.083	1.61	8.167	3.21	14.250	4.38	20.33	1.75	
2.167	1.61	8.250	3.79	14.333	4.38	20.42	1.75	
2.250	1.90	8.333	3.79	14.417	4.38	20.50	1.75	
2.333	1.90	8.417	3.79	14.500	4.38	20.58	1.75	
2.417	1.90	8.500	3.79	14.583	4.38	20.67	1.75	
2.500	1.90	8.583	3.79	14.667	4.38	20.75	1.75	
2.583	1.90	8.667	3.79	14.750	4.38	20.83	1.75	
2.667	1.90	8.750	4.09	14.833	4.38	20.92	1.75	
2.750	1.90	8.833	4.09	14.917	4.38	21.00	1.75	
2.833	1.90	8.917	4.09	15.000	4.38	21.08	1.75	
2.917	1.90	9.000	4.09	15.083	4.38	21.17	1.75	
3.000	1.90	9.083	4.09	15.167	4.38	21.25	1.75	
3.083	1.90	9.167	4.09	15.250	4.38	21.33	1.75	
3.167	1.90	9.250	4.67	15.333	4.38	21.42	1.75	
3.250	1.90	9.333	4.67	15.417	4.38	21.50	1.75	
3.333	1.90	9.417	4.67	15.500	4.38	21.58	1.75	
3.417	1.90	9.500	4.67	15.583	4.38	21.67	1.75	
3.500	1.90	9.583	4.67	15.667	4.38	21.75	1.75	
3.583	1.90	9.667	4.67	15.750	4.38	21.83	1.75	
3.667	1.90	9.750	5.25	15.833	4.38	21.92	1.75	
3.750	1.90	9.833	5.25	15.917	4.38	22.00	1.75	
3.833	1.90	9.917	5.25	16.000	4.38	22.08	1.75	
3.917	1.90	10.000	5.25	16.083	4.38	22.17	1.75	
4.000	1.90	10.083	5.25	16.167	4.38	22.25	1.75	
4.083	1.90	10.167	5.25	16.250	2.63	22.33	1.75	
4.167	1.90	10.250	6.71	16.333	2.63	22.42	1.75	
4.250	2.33	10.333	6.71	16.417	2.63	22.50	1.75	
4.333	2.33	10.417	6.71	16.500	2.63	22.58	1.75	

4.417	2.33	10.500	6.71	16.583	2.63	22.67	1.75
4.500	2.33	10.583	6.71	16.667	2.63	22.75	1.75
4.583	2.33	10.667	6.71	16.750	2.63	22.83	1.75
4.667	2.33	10.750	9.05	16.833	2.63	22.92	1.75
4.750	2.33	10.833	9.05	16.917	2.63	23.00	1.75
4.833	2.33	10.917	9.05	17.000	2.63	23.08	1.75
4.917	2.33	11.000	9.05	17.083	2.63	23.17	1.75
5.000	2.33	11.083	9.05	17.167	2.63	23.25	1.75
5.083	2.33	11.167	9.05	17.250	2.63	23.33	1.75
5.167	2.33	11.250	14.01	17.333	2.63	23.42	1.75
5.250	2.33	11.333	14.01	17.417	2.63	23.50	1.75
5.333	2.33	11.417	14.01	17.500	2.63	23.58	1.75
5.417	2.33	11.500	14.01	17.583	2.63	23.67	1.75
5.500	2.33	11.583	14.01	17.667	2.63	23.75	1.75
5.583	2.33	11.667	14.01	17.750	2.63	23.83	1.75
5.667	2.33	11.750	43.19	17.833	2.63	23.92	1.75
5.750	2.33	11.833	43.19	17.917	2.63	24.00	1.75
5.833	2.33	11.917	110.89	18.000	2.63	24.08	1.75
5.917	2.33	12.000	110.90	18.083	2.63	24.17	1.75
6.000	2.33	12.083	178.60	18.167	2.63		
6.083	2.33	12.167	178.61	18.250	2.63		

Unit Hyd Qpeak (cms)= 1.258

PEAK FLOW (cms)= 1.357 (i)
TIME TO PEAK (hrs)= 12.250
RUNOFF VOLUME (mm)= 82.676
TOTAL RAINFALL (mm)= 145.920
RUNOFF COEFFICIENT = 0.567

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

CALIB							
NASHYD (0102)		Area (ha)=	5.81	Curve Number (CN)=	72.0		
ID= 1 DT= 5.0 min		Ia (mm)=	5.00	# of Linear Res.(N)=	3.00		
-----		U.H. Tp(hrs)=	0.16				

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	0.00	6.167	2.33	12.250	21.03	18.33	2.63
0.167	0.00	6.250	2.63	12.333	21.01	18.42	2.63
0.250	1.61	6.333	2.63	12.417	21.01	18.50	2.63
0.333	1.61	6.417	2.63	12.500	21.01	18.58	2.63
0.417	1.61	6.500	2.63	12.583	21.01	18.67	2.63
0.500	1.61	6.583	2.63	12.667	21.01	18.75	2.63
0.583	1.61	6.667	2.63	12.750	10.80	18.83	2.63
0.667	1.61	6.750	2.63	12.833	10.80	18.92	2.63

0.750	1.61		6.833	2.63		12.917	10.80		19.00	2.63
0.833	1.61		6.917	2.63		13.000	10.80		19.08	2.63
0.917	1.61		7.000	2.63		13.083	10.80		19.17	2.63
1.000	1.61		7.083	2.63		13.167	10.80		19.25	2.63
1.083	1.61		7.167	2.63		13.250	7.88		19.33	2.63
1.167	1.61		7.250	3.21		13.333	7.88		19.42	2.63
1.250	1.61		7.333	3.21		13.417	7.88		19.50	2.63
1.333	1.61		7.417	3.21		13.500	7.88		19.58	2.63
1.417	1.61		7.500	3.21		13.583	7.88		19.67	2.63
1.500	1.61		7.583	3.21		13.667	7.88		19.75	2.63
1.583	1.61		7.667	3.21		13.750	6.13		19.83	2.63
1.667	1.61		7.750	3.21		13.833	6.13		19.92	2.63
1.750	1.61		7.833	3.21		13.917	6.13		20.00	2.63
1.833	1.61		7.917	3.21		14.000	6.13		20.08	2.63
1.917	1.61		8.000	3.21		14.083	6.13		20.17	2.63
2.000	1.61		8.083	3.21		14.167	6.13		20.25	1.75
2.083	1.61		8.167	3.21		14.250	4.38		20.33	1.75
2.167	1.61		8.250	3.79		14.333	4.38		20.42	1.75
2.250	1.90		8.333	3.79		14.417	4.38		20.50	1.75
2.333	1.90		8.417	3.79		14.500	4.38		20.58	1.75
2.417	1.90		8.500	3.79		14.583	4.38		20.67	1.75
2.500	1.90		8.583	3.79		14.667	4.38		20.75	1.75
2.583	1.90		8.667	3.79		14.750	4.38		20.83	1.75
2.667	1.90		8.750	4.09		14.833	4.38		20.92	1.75
2.750	1.90		8.833	4.09		14.917	4.38		21.00	1.75
2.833	1.90		8.917	4.09		15.000	4.38		21.08	1.75
2.917	1.90		9.000	4.09		15.083	4.38		21.17	1.75
3.000	1.90		9.083	4.09		15.167	4.38		21.25	1.75
3.083	1.90		9.167	4.09		15.250	4.38		21.33	1.75
3.167	1.90		9.250	4.67		15.333	4.38		21.42	1.75
3.250	1.90		9.333	4.67		15.417	4.38		21.50	1.75
3.333	1.90		9.417	4.67		15.500	4.38		21.58	1.75
3.417	1.90		9.500	4.67		15.583	4.38		21.67	1.75
3.500	1.90		9.583	4.67		15.667	4.38		21.75	1.75
3.583	1.90		9.667	4.67		15.750	4.38		21.83	1.75
3.667	1.90		9.750	5.25		15.833	4.38		21.92	1.75
3.750	1.90		9.833	5.25		15.917	4.38		22.00	1.75
3.833	1.90		9.917	5.25		16.000	4.38		22.08	1.75
3.917	1.90		10.000	5.25		16.083	4.38		22.17	1.75
4.000	1.90		10.083	5.25		16.167	4.38		22.25	1.75
4.083	1.90		10.167	5.25		16.250	2.63		22.33	1.75
4.167	1.90		10.250	6.71		16.333	2.63		22.42	1.75
4.250	2.33		10.333	6.71		16.417	2.63		22.50	1.75
4.333	2.33		10.417	6.71		16.500	2.63		22.58	1.75
4.417	2.33		10.500	6.71		16.583	2.63		22.67	1.75
4.500	2.33		10.583	6.71		16.667	2.63		22.75	1.75
4.583	2.33		10.667	6.71		16.750	2.63		22.83	1.75
4.667	2.33		10.750	9.05		16.833	2.63		22.92	1.75
4.750	2.33		10.833	9.05		16.917	2.63		23.00	1.75
4.833	2.33		10.917	9.05		17.000	2.63		23.08	1.75
4.917	2.33		11.000	9.05		17.083	2.63		23.17	1.75
5.000	2.33		11.083	9.05		17.167	2.63		23.25	1.75
5.083	2.33		11.167	9.05		17.250	2.63		23.33	1.75

5.167	2.33	11.250	14.01	17.333	2.63		23.42	1.75
5.250	2.33	11.333	14.01	17.417	2.63		23.50	1.75
5.333	2.33	11.417	14.01	17.500	2.63		23.58	1.75
5.417	2.33	11.500	14.01	17.583	2.63		23.67	1.75
5.500	2.33	11.583	14.01	17.667	2.63		23.75	1.75
5.583	2.33	11.667	14.01	17.750	2.63		23.83	1.75
5.667	2.33	11.750	43.19	17.833	2.63		23.92	1.75
5.750	2.33	11.833	43.19	17.917	2.63		24.00	1.75
5.833	2.33	11.917	110.89	18.000	2.63		24.08	1.75
5.917	2.33	12.000	110.90	18.083	2.63		24.17	1.75
6.000	2.33	12.083	178.60	18.167	2.63			
6.083	2.33	12.167	178.61	18.250	2.63			

Unit Hyd Qpeak (cms)= 1.390

PEAK FLOW (cms)= 1.361 (i)
TIME TO PEAK (hrs)= 12.167
RUNOFF VOLUME (mm)= 82.472
TOTAL RAINFALL (mm)= 145.920
RUNOFF COEFFICIENT = 0.565

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

CALIB								
NASHYD (0103)	Area	(ha)=	1.89	Curve Number	(CN)=	72.0		
ID= 1 DT= 5.0 min	Ia	(mm)=	5.00	# of Linear Res.(N)=	3.00			
-----	U.H. Tp	(hrs)=	0.19					

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

---- TRANSFORMED HYETOGRAPH ----							
TIME	RAIN		TIME	RAIN		TIME	RAIN
hrs	mm/hr		hrs	mm/hr		hrs	mm/hr
0.083	0.00		6.167	2.33		12.250	21.03
0.167	0.00		6.250	2.63		12.333	21.01
0.250	1.61		6.333	2.63		12.417	21.01
0.333	1.61		6.417	2.63		12.500	21.01
0.417	1.61		6.500	2.63		12.583	21.01
0.500	1.61		6.583	2.63		12.667	21.01
0.583	1.61		6.667	2.63		12.750	10.80
0.667	1.61		6.750	2.63		12.833	10.80
0.750	1.61		6.833	2.63		12.917	10.80
0.833	1.61		6.917	2.63		13.000	10.80
0.917	1.61		7.000	2.63		13.083	10.80
1.000	1.61		7.083	2.63		13.167	10.80
1.083	1.61		7.167	2.63		13.250	7.88
1.167	1.61		7.250	3.21		13.333	7.88
1.250	1.61		7.333	3.21		13.417	7.88
1.333	1.61		7.417	3.21		13.500	7.88
1.417	1.61		7.500	3.21		13.583	7.88

1.500	1.61		7.583	3.21		13.667	7.88		19.75	2.63
1.583	1.61		7.667	3.21		13.750	6.13		19.83	2.63
1.667	1.61		7.750	3.21		13.833	6.13		19.92	2.63
1.750	1.61		7.833	3.21		13.917	6.13		20.00	2.63
1.833	1.61		7.917	3.21		14.000	6.13		20.08	2.63
1.917	1.61		8.000	3.21		14.083	6.13		20.17	2.63
2.000	1.61		8.083	3.21		14.167	6.13		20.25	1.75
2.083	1.61		8.167	3.21		14.250	4.38		20.33	1.75
2.167	1.61		8.250	3.79		14.333	4.38		20.42	1.75
2.250	1.90		8.333	3.79		14.417	4.38		20.50	1.75
2.333	1.90		8.417	3.79		14.500	4.38		20.58	1.75
2.417	1.90		8.500	3.79		14.583	4.38		20.67	1.75
2.500	1.90		8.583	3.79		14.667	4.38		20.75	1.75
2.583	1.90		8.667	3.79		14.750	4.38		20.83	1.75
2.667	1.90		8.750	4.09		14.833	4.38		20.92	1.75
2.750	1.90		8.833	4.09		14.917	4.38		21.00	1.75
2.833	1.90		8.917	4.09		15.000	4.38		21.08	1.75
2.917	1.90		9.000	4.09		15.083	4.38		21.17	1.75
3.000	1.90		9.083	4.09		15.167	4.38		21.25	1.75
3.083	1.90		9.167	4.09		15.250	4.38		21.33	1.75
3.167	1.90		9.250	4.67		15.333	4.38		21.42	1.75
3.250	1.90		9.333	4.67		15.417	4.38		21.50	1.75
3.333	1.90		9.417	4.67		15.500	4.38		21.58	1.75
3.417	1.90		9.500	4.67		15.583	4.38		21.67	1.75
3.500	1.90		9.583	4.67		15.667	4.38		21.75	1.75
3.583	1.90		9.667	4.67		15.750	4.38		21.83	1.75
3.667	1.90		9.750	5.25		15.833	4.38		21.92	1.75
3.750	1.90		9.833	5.25		15.917	4.38		22.00	1.75
3.833	1.90		9.917	5.25		16.000	4.38		22.08	1.75
3.917	1.90		10.000	5.25		16.083	4.38		22.17	1.75
4.000	1.90		10.083	5.25		16.167	4.38		22.25	1.75
4.083	1.90		10.167	5.25		16.250	2.63		22.33	1.75
4.167	1.90		10.250	6.71		16.333	2.63		22.42	1.75
4.250	2.33		10.333	6.71		16.417	2.63		22.50	1.75
4.333	2.33		10.417	6.71		16.500	2.63		22.58	1.75
4.417	2.33		10.500	6.71		16.583	2.63		22.67	1.75
4.500	2.33		10.583	6.71		16.667	2.63		22.75	1.75
4.583	2.33		10.667	6.71		16.750	2.63		22.83	1.75
4.667	2.33		10.750	9.05		16.833	2.63		22.92	1.75
4.750	2.33		10.833	9.05		16.917	2.63		23.00	1.75
4.833	2.33		10.917	9.05		17.000	2.63		23.08	1.75
4.917	2.33		11.000	9.05		17.083	2.63		23.17	1.75
5.000	2.33		11.083	9.05		17.167	2.63		23.25	1.75
5.083	2.33		11.167	9.05		17.250	2.63		23.33	1.75
5.167	2.33		11.250	14.01		17.333	2.63		23.42	1.75
5.250	2.33		11.333	14.01		17.417	2.63		23.50	1.75
5.333	2.33		11.417	14.01		17.500	2.63		23.58	1.75
5.417	2.33		11.500	14.01		17.583	2.63		23.67	1.75
5.500	2.33		11.583	14.01		17.667	2.63		23.75	1.75
5.583	2.33		11.667	14.01		17.750	2.63		23.83	1.75
5.667	2.33		11.750	43.19		17.833	2.63		23.92	1.75
5.750	2.33		11.833	43.19		17.917	2.63		24.00	1.75
5.833	2.33		11.917	110.89		18.000	2.63		24.08	1.75

5.917	2.33	12.000	110.90	18.083	2.63	24.17	1.75
6.000	2.33	12.083	178.60	18.167	2.63		
6.083	2.33	12.167	178.61	18.250	2.63		

Unit Hyd Qpeak (cms)= 0.382

PEAK FLOW (cms)= 0.404 (i)
TIME TO PEAK (hrs)= 12.250
RUNOFF VOLUME (mm)= 82.652
TOTAL RAINFALL (mm)= 145.920
RUNOFF COEFFICIENT = 0.566

(i) 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 (0101):	6.44	1.357	12.25	82.68
+ ID2= 2 (0102):	5.81	1.361	12.17	82.47
=====				
ID = 3 (1000):	12.25	2.651	12.25	82.58

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):	12.25	2.651	12.25	82.58	
+ ID2= 2 (0103):	1.89	0.404	12.25	82.65	
=====					
ID = 1 (1000):	14.14	3.054	12.25	82.59	

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

=====

=====

```
V      V      I      SSSSS  U      U      A      L      (v 6.2.2015)
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
```

Developed and Distributed by Smart City Water Inc

Copyright 2007 - 2022 Smart City Water Inc

All rights reserved.

***** 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\jangsoo.lee\AppData\Local\Civica\VH5\191a91e0-1a14-44fd-bc00-4941023c7dee\al25566c-c078-4bf9-bef2-32df891eb395\

Summary filename:

C:\Users\jangsoo.lee\AppData\Local\Civica\VH5\191a91e0-1a14-44fd-bc00-4941023c7dee\al25566c-c078-4bf9-bef2-32df891eb395\

DATE: 09/25/2024

TIME: 11:26:52

USER:

COMMENTS: _____

** SIMULATION : Regional Storm - 48 hr **

READ STORM	Filename: C:\Users\jangsoo.lee\AppData
	ata\Local\Temp\
	5d212dc0-a9a6-408a-8363-09ba1dc1c3ac\8f8698b4
Ptotal=284.00 mm	Comments: Regional Storm - 48 hr

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.00	0.00	13.00	2.00	26.00	2.00	39.00	6.00
1.00	2.00	14.00	2.00	27.00	2.00	40.00	13.00
2.00	2.00	15.00	2.00	28.00	2.00	41.00	17.00
3.00	2.00	16.00	2.00	29.00	2.00	42.00	13.00
4.00	2.00	17.00	2.00	30.00	2.00	43.00	23.00
5.00	2.00	18.00	2.00	31.00	2.00	44.00	13.00
6.00	2.00	19.00	2.00	32.00	2.00	45.00	13.00
7.00	2.00	20.00	2.00	33.00	2.00	46.00	53.00
8.00	2.00	21.00	2.00	34.00	2.00	47.00	38.00
9.00	2.00	22.00	2.00	35.00	2.00	48.00	13.00
10.00	2.00	23.00	2.00	36.00	2.00		
11.00	2.00	24.00	2.00	37.00	6.00		
12.00	2.00	25.00	2.00	38.00	4.00		

CALIB							
NASHYD (0101)		Area (ha)=	6.44	Curve Number (CN)=	72.0		
ID= 1 DT= 5.0 min		Ia (mm)=	5.00	# of Linear Res.(N)=	3.00		
-----		U.H. Tp(hrs)=	0.20				

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	0.00	12.333	2.00	24.583	2.00	36.83	2.00
0.167	0.00	12.417	2.00	24.667	2.00	36.92	2.00
0.250	0.00	12.500	2.00	24.750	2.00	37.00	2.00
0.333	0.00	12.583	2.00	24.833	2.00	37.08	6.00
0.417	0.00	12.667	2.00	24.917	2.00	37.17	6.00
0.500	0.00	12.750	2.00	25.000	2.00	37.25	6.00
0.583	0.00	12.833	2.00	25.083	2.00	37.33	6.00
0.667	0.00	12.917	2.00	25.167	2.00	37.42	6.00
0.750	0.00	13.000	2.00	25.250	2.00	37.50	6.00
0.833	0.00	13.083	2.00	25.333	2.00	37.58	6.00
0.917	0.00	13.167	2.00	25.417	2.00	37.67	6.00
1.000	0.00	13.250	2.00	25.500	2.00	37.75	6.00
1.083	2.00	13.333	2.00	25.583	2.00	37.83	6.00
1.167	2.00	13.417	2.00	25.667	2.00	37.92	6.00
1.250	2.00	13.500	2.00	25.750	2.00	38.00	6.00
1.333	2.00	13.583	2.00	25.833	2.00	38.08	4.00
1.417	2.00	13.667	2.00	25.917	2.00	38.17	4.00
1.500	2.00	13.750	2.00	26.000	2.00	38.25	4.00
1.583	2.00	13.833	2.00	26.083	2.00	38.33	4.00
1.667	2.00	13.917	2.00	26.167	2.00	38.42	4.00
1.750	2.00	14.000	2.00	26.250	2.00	38.50	4.00
1.833	2.00	14.083	2.00	26.333	2.00	38.58	4.00
1.917	2.00	14.167	2.00	26.417	2.00	38.67	4.00

2.000	2.00	14.250	2.00	26.500	2.00	38.75	4.00
2.083	2.00	14.333	2.00	26.583	2.00	38.83	4.00
2.167	2.00	14.417	2.00	26.667	2.00	38.92	4.00
2.250	2.00	14.500	2.00	26.750	2.00	39.00	4.00
2.333	2.00	14.583	2.00	26.833	2.00	39.08	6.00
2.417	2.00	14.667	2.00	26.917	2.00	39.17	6.00
2.500	2.00	14.750	2.00	27.000	2.00	39.25	6.00
2.583	2.00	14.833	2.00	27.083	2.00	39.33	6.00
2.667	2.00	14.917	2.00	27.167	2.00	39.42	6.00
2.750	2.00	15.000	2.00	27.250	2.00	39.50	6.00
2.833	2.00	15.083	2.00	27.333	2.00	39.58	6.00
2.917	2.00	15.167	2.00	27.417	2.00	39.67	6.00
3.000	2.00	15.250	2.00	27.500	2.00	39.75	6.00
3.083	2.00	15.333	2.00	27.583	2.00	39.83	6.00
3.167	2.00	15.417	2.00	27.667	2.00	39.92	6.00
3.250	2.00	15.500	2.00	27.750	2.00	40.00	6.00
3.333	2.00	15.583	2.00	27.833	2.00	40.08	13.00
3.417	2.00	15.667	2.00	27.917	2.00	40.17	13.00
3.500	2.00	15.750	2.00	28.000	2.00	40.25	13.00
3.583	2.00	15.833	2.00	28.083	2.00	40.33	13.00
3.667	2.00	15.917	2.00	28.167	2.00	40.42	13.00
3.750	2.00	16.000	2.00	28.250	2.00	40.50	13.00
3.833	2.00	16.083	2.00	28.333	2.00	40.58	13.00
3.917	2.00	16.167	2.00	28.417	2.00	40.67	13.00
4.000	2.00	16.250	2.00	28.500	2.00	40.75	13.00
4.083	2.00	16.333	2.00	28.583	2.00	40.83	13.00
4.167	2.00	16.417	2.00	28.667	2.00	40.92	13.00
4.250	2.00	16.500	2.00	28.750	2.00	41.00	13.00
4.333	2.00	16.583	2.00	28.833	2.00	41.08	17.00
4.417	2.00	16.667	2.00	28.917	2.00	41.17	17.00
4.500	2.00	16.750	2.00	29.000	2.00	41.25	17.00
4.583	2.00	16.833	2.00	29.083	2.00	41.33	17.00
4.667	2.00	16.917	2.00	29.167	2.00	41.42	17.00
4.750	2.00	17.000	2.00	29.250	2.00	41.50	17.00
4.833	2.00	17.083	2.00	29.333	2.00	41.58	17.00
4.917	2.00	17.167	2.00	29.417	2.00	41.67	17.00
5.000	2.00	17.250	2.00	29.500	2.00	41.75	17.00
5.083	2.00	17.333	2.00	29.583	2.00	41.83	17.00
5.167	2.00	17.417	2.00	29.667	2.00	41.92	17.00
5.250	2.00	17.500	2.00	29.750	2.00	42.00	17.00
5.333	2.00	17.583	2.00	29.833	2.00	42.08	13.00
5.417	2.00	17.667	2.00	29.917	2.00	42.17	13.00
5.500	2.00	17.750	2.00	30.000	2.00	42.25	13.00
5.583	2.00	17.833	2.00	30.083	2.00	42.33	13.00
5.667	2.00	17.917	2.00	30.167	2.00	42.42	13.00
5.750	2.00	18.000	2.00	30.250	2.00	42.50	13.00
5.833	2.00	18.083	2.00	30.333	2.00	42.58	13.00
5.917	2.00	18.167	2.00	30.417	2.00	42.67	13.00
6.000	2.00	18.250	2.00	30.500	2.00	42.75	13.00
6.083	2.00	18.333	2.00	30.583	2.00	42.83	13.00
6.167	2.00	18.417	2.00	30.667	2.00	42.92	13.00
6.250	2.00	18.500	2.00	30.750	2.00	43.00	13.00
6.333	2.00	18.583	2.00	30.833	2.00	43.08	22.99

6.417	2.00	18.667	2.00	30.917	2.00	43.17	23.00
6.500	2.00	18.750	2.00	31.000	2.00	43.25	23.00
6.583	2.00	18.833	2.00	31.083	2.00	43.33	23.00
6.667	2.00	18.917	2.00	31.167	2.00	43.42	23.00
6.750	2.00	19.000	2.00	31.250	2.00	43.50	23.00
6.833	2.00	19.083	2.00	31.333	2.00	43.58	23.00
6.917	2.00	19.167	2.00	31.417	2.00	43.67	23.00
7.000	2.00	19.250	2.00	31.500	2.00	43.75	23.00
7.083	2.00	19.333	2.00	31.583	2.00	43.83	23.00
7.167	2.00	19.417	2.00	31.667	2.00	43.92	23.00
7.250	2.00	19.500	2.00	31.750	2.00	44.00	23.00
7.333	2.00	19.583	2.00	31.833	2.00	44.08	13.01
7.417	2.00	19.667	2.00	31.917	2.00	44.17	13.00
7.500	2.00	19.750	2.00	32.000	2.00	44.25	13.00
7.583	2.00	19.833	2.00	32.083	2.00	44.33	13.00
7.667	2.00	19.917	2.00	32.167	2.00	44.42	13.00
7.750	2.00	20.000	2.00	32.250	2.00	44.50	13.00
7.833	2.00	20.083	2.00	32.333	2.00	44.58	13.00
7.917	2.00	20.167	2.00	32.417	2.00	44.67	13.00
8.000	2.00	20.250	2.00	32.500	2.00	44.75	13.00
8.083	2.00	20.333	2.00	32.583	2.00	44.83	13.00
8.167	2.00	20.417	2.00	32.667	2.00	44.92	13.00
8.250	2.00	20.500	2.00	32.750	2.00	45.00	13.00
8.333	2.00	20.583	2.00	32.833	2.00	45.08	13.00
8.417	2.00	20.667	2.00	32.917	2.00	45.17	13.00
8.500	2.00	20.750	2.00	33.000	2.00	45.25	13.00
8.583	2.00	20.833	2.00	33.083	2.00	45.33	13.00
8.667	2.00	20.917	2.00	33.167	2.00	45.42	13.00
8.750	2.00	21.000	2.00	33.250	2.00	45.50	13.00
8.833	2.00	21.083	2.00	33.333	2.00	45.58	13.00
8.917	2.00	21.167	2.00	33.417	2.00	45.67	13.00
9.000	2.00	21.250	2.00	33.500	2.00	45.75	13.00
9.083	2.00	21.333	2.00	33.583	2.00	45.83	13.00
9.167	2.00	21.417	2.00	33.667	2.00	45.92	13.00
9.250	2.00	21.500	2.00	33.750	2.00	46.00	13.00
9.333	2.00	21.583	2.00	33.833	2.00	46.08	52.94
9.417	2.00	21.667	2.00	33.917	2.00	46.17	53.00
9.500	2.00	21.750	2.00	34.000	2.00	46.25	53.00
9.583	2.00	21.833	2.00	34.083	2.00	46.33	53.00
9.667	2.00	21.917	2.00	34.167	2.00	46.42	53.00
9.750	2.00	22.000	2.00	34.250	2.00	46.50	53.00
9.833	2.00	22.083	2.00	34.333	2.00	46.58	53.00
9.917	2.00	22.167	2.00	34.417	2.00	46.67	53.00
10.000	2.00	22.250	2.00	34.500	2.00	46.75	53.00
10.083	2.00	22.333	2.00	34.583	2.00	46.83	53.00
10.167	2.00	22.417	2.00	34.667	2.00	46.92	53.00
10.250	2.00	22.500	2.00	34.750	2.00	47.00	53.00
10.333	2.00	22.583	2.00	34.833	2.00	47.08	38.02
10.417	2.00	22.667	2.00	34.917	2.00	47.17	38.00
10.500	2.00	22.750	2.00	35.000	2.00	47.25	38.00
10.583	2.00	22.833	2.00	35.083	2.00	47.33	38.00
10.667	2.00	22.917	2.00	35.167	2.00	47.42	38.00
10.750	2.00	23.000	2.00	35.250	2.00	47.50	38.00

10.833	2.00	23.083	2.00	35.333	2.00	47.58	38.00
10.917	2.00	23.167	2.00	35.417	2.00	47.67	38.00
11.000	2.00	23.250	2.00	35.500	2.00	47.75	38.00
11.083	2.00	23.333	2.00	35.583	2.00	47.83	38.00
11.167	2.00	23.417	2.00	35.667	2.00	47.92	38.00
11.250	2.00	23.500	2.00	35.750	2.00	48.00	38.00
11.333	2.00	23.583	2.00	35.833	2.00	48.08	13.04
11.417	2.00	23.667	2.00	35.917	2.00	48.17	13.00
11.500	2.00	23.750	2.00	36.000	2.00	48.25	13.00
11.583	2.00	23.833	2.00	36.083	2.00	48.33	13.00
11.667	2.00	23.917	2.00	36.167	2.00	48.42	13.00
11.750	2.00	24.000	2.00	36.250	2.00	48.50	13.00
11.833	2.00	24.083	2.00	36.333	2.00	48.58	13.00
11.917	2.00	24.167	2.00	36.417	2.00	48.67	13.00
12.000	2.00	24.250	2.00	36.500	2.00	48.75	13.00
12.083	2.00	24.333	2.00	36.583	2.00	48.83	13.00
12.167	2.00	24.417	2.00	36.667	2.00	48.92	13.00
12.250	2.00	24.500	2.00	36.750	2.00	49.00	13.00

Unit Hyd Qpeak (cms)= 1.258

PEAK FLOW (cms)= 0.851 (i)
TIME TO PEAK (hrs)= 47.000
RUNOFF VOLUME (mm)= 205.623
TOTAL RAINFALL (mm)= 284.001
RUNOFF COEFFICIENT = 0.724

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

CALIB							
NASHYD (0102)	Area	(ha)=	5.81	Curve Number	(CN)=	72.0	
ID= 1 DT= 5.0 min	Ia	(mm)=	5.00	# of Linear Res.(N)=	3.00		
-----	U.H. Tp	(hrs)=	0.16				

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	0.00	12.333	2.00	24.583	2.00	36.83	2.00
0.167	0.00	12.417	2.00	24.667	2.00	36.92	2.00
0.250	0.00	12.500	2.00	24.750	2.00	37.00	2.00
0.333	0.00	12.583	2.00	24.833	2.00	37.08	6.00
0.417	0.00	12.667	2.00	24.917	2.00	37.17	6.00
0.500	0.00	12.750	2.00	25.000	2.00	37.25	6.00
0.583	0.00	12.833	2.00	25.083	2.00	37.33	6.00
0.667	0.00	12.917	2.00	25.167	2.00	37.42	6.00
0.750	0.00	13.000	2.00	25.250	2.00	37.50	6.00
0.833	0.00	13.083	2.00	25.333	2.00	37.58	6.00
0.917	0.00	13.167	2.00	25.417	2.00	37.67	6.00

1.000	0.00	13.250	2.00	25.500	2.00	37.75	6.00
1.083	2.00	13.333	2.00	25.583	2.00	37.83	6.00
1.167	2.00	13.417	2.00	25.667	2.00	37.92	6.00
1.250	2.00	13.500	2.00	25.750	2.00	38.00	6.00
1.333	2.00	13.583	2.00	25.833	2.00	38.08	4.00
1.417	2.00	13.667	2.00	25.917	2.00	38.17	4.00
1.500	2.00	13.750	2.00	26.000	2.00	38.25	4.00
1.583	2.00	13.833	2.00	26.083	2.00	38.33	4.00
1.667	2.00	13.917	2.00	26.167	2.00	38.42	4.00
1.750	2.00	14.000	2.00	26.250	2.00	38.50	4.00
1.833	2.00	14.083	2.00	26.333	2.00	38.58	4.00
1.917	2.00	14.167	2.00	26.417	2.00	38.67	4.00
2.000	2.00	14.250	2.00	26.500	2.00	38.75	4.00
2.083	2.00	14.333	2.00	26.583	2.00	38.83	4.00
2.167	2.00	14.417	2.00	26.667	2.00	38.92	4.00
2.250	2.00	14.500	2.00	26.750	2.00	39.00	4.00
2.333	2.00	14.583	2.00	26.833	2.00	39.08	6.00
2.417	2.00	14.667	2.00	26.917	2.00	39.17	6.00
2.500	2.00	14.750	2.00	27.000	2.00	39.25	6.00
2.583	2.00	14.833	2.00	27.083	2.00	39.33	6.00
2.667	2.00	14.917	2.00	27.167	2.00	39.42	6.00
2.750	2.00	15.000	2.00	27.250	2.00	39.50	6.00
2.833	2.00	15.083	2.00	27.333	2.00	39.58	6.00
2.917	2.00	15.167	2.00	27.417	2.00	39.67	6.00
3.000	2.00	15.250	2.00	27.500	2.00	39.75	6.00
3.083	2.00	15.333	2.00	27.583	2.00	39.83	6.00
3.167	2.00	15.417	2.00	27.667	2.00	39.92	6.00
3.250	2.00	15.500	2.00	27.750	2.00	40.00	6.00
3.333	2.00	15.583	2.00	27.833	2.00	40.08	13.00
3.417	2.00	15.667	2.00	27.917	2.00	40.17	13.00
3.500	2.00	15.750	2.00	28.000	2.00	40.25	13.00
3.583	2.00	15.833	2.00	28.083	2.00	40.33	13.00
3.667	2.00	15.917	2.00	28.167	2.00	40.42	13.00
3.750	2.00	16.000	2.00	28.250	2.00	40.50	13.00
3.833	2.00	16.083	2.00	28.333	2.00	40.58	13.00
3.917	2.00	16.167	2.00	28.417	2.00	40.67	13.00
4.000	2.00	16.250	2.00	28.500	2.00	40.75	13.00
4.083	2.00	16.333	2.00	28.583	2.00	40.83	13.00
4.167	2.00	16.417	2.00	28.667	2.00	40.92	13.00
4.250	2.00	16.500	2.00	28.750	2.00	41.00	13.00
4.333	2.00	16.583	2.00	28.833	2.00	41.08	17.00
4.417	2.00	16.667	2.00	28.917	2.00	41.17	17.00
4.500	2.00	16.750	2.00	29.000	2.00	41.25	17.00
4.583	2.00	16.833	2.00	29.083	2.00	41.33	17.00
4.667	2.00	16.917	2.00	29.167	2.00	41.42	17.00
4.750	2.00	17.000	2.00	29.250	2.00	41.50	17.00
4.833	2.00	17.083	2.00	29.333	2.00	41.58	17.00
4.917	2.00	17.167	2.00	29.417	2.00	41.67	17.00
5.000	2.00	17.250	2.00	29.500	2.00	41.75	17.00
5.083	2.00	17.333	2.00	29.583	2.00	41.83	17.00
5.167	2.00	17.417	2.00	29.667	2.00	41.92	17.00
5.250	2.00	17.500	2.00	29.750	2.00	42.00	17.00
5.333	2.00	17.583	2.00	29.833	2.00	42.08	13.00

5.417	2.00	17.667	2.00	29.917	2.00	42.17	13.00
5.500	2.00	17.750	2.00	30.000	2.00	42.25	13.00
5.583	2.00	17.833	2.00	30.083	2.00	42.33	13.00
5.667	2.00	17.917	2.00	30.167	2.00	42.42	13.00
5.750	2.00	18.000	2.00	30.250	2.00	42.50	13.00
5.833	2.00	18.083	2.00	30.333	2.00	42.58	13.00
5.917	2.00	18.167	2.00	30.417	2.00	42.67	13.00
6.000	2.00	18.250	2.00	30.500	2.00	42.75	13.00
6.083	2.00	18.333	2.00	30.583	2.00	42.83	13.00
6.167	2.00	18.417	2.00	30.667	2.00	42.92	13.00
6.250	2.00	18.500	2.00	30.750	2.00	43.00	13.00
6.333	2.00	18.583	2.00	30.833	2.00	43.08	22.99
6.417	2.00	18.667	2.00	30.917	2.00	43.17	23.00
6.500	2.00	18.750	2.00	31.000	2.00	43.25	23.00
6.583	2.00	18.833	2.00	31.083	2.00	43.33	23.00
6.667	2.00	18.917	2.00	31.167	2.00	43.42	23.00
6.750	2.00	19.000	2.00	31.250	2.00	43.50	23.00
6.833	2.00	19.083	2.00	31.333	2.00	43.58	23.00
6.917	2.00	19.167	2.00	31.417	2.00	43.67	23.00
7.000	2.00	19.250	2.00	31.500	2.00	43.75	23.00
7.083	2.00	19.333	2.00	31.583	2.00	43.83	23.00
7.167	2.00	19.417	2.00	31.667	2.00	43.92	23.00
7.250	2.00	19.500	2.00	31.750	2.00	44.00	23.00
7.333	2.00	19.583	2.00	31.833	2.00	44.08	13.01
7.417	2.00	19.667	2.00	31.917	2.00	44.17	13.00
7.500	2.00	19.750	2.00	32.000	2.00	44.25	13.00
7.583	2.00	19.833	2.00	32.083	2.00	44.33	13.00
7.667	2.00	19.917	2.00	32.167	2.00	44.42	13.00
7.750	2.00	20.000	2.00	32.250	2.00	44.50	13.00
7.833	2.00	20.083	2.00	32.333	2.00	44.58	13.00
7.917	2.00	20.167	2.00	32.417	2.00	44.67	13.00
8.000	2.00	20.250	2.00	32.500	2.00	44.75	13.00
8.083	2.00	20.333	2.00	32.583	2.00	44.83	13.00
8.167	2.00	20.417	2.00	32.667	2.00	44.92	13.00
8.250	2.00	20.500	2.00	32.750	2.00	45.00	13.00
8.333	2.00	20.583	2.00	32.833	2.00	45.08	13.00
8.417	2.00	20.667	2.00	32.917	2.00	45.17	13.00
8.500	2.00	20.750	2.00	33.000	2.00	45.25	13.00
8.583	2.00	20.833	2.00	33.083	2.00	45.33	13.00
8.667	2.00	20.917	2.00	33.167	2.00	45.42	13.00
8.750	2.00	21.000	2.00	33.250	2.00	45.50	13.00
8.833	2.00	21.083	2.00	33.333	2.00	45.58	13.00
8.917	2.00	21.167	2.00	33.417	2.00	45.67	13.00
9.000	2.00	21.250	2.00	33.500	2.00	45.75	13.00
9.083	2.00	21.333	2.00	33.583	2.00	45.83	13.00
9.167	2.00	21.417	2.00	33.667	2.00	45.92	13.00
9.250	2.00	21.500	2.00	33.750	2.00	46.00	13.00
9.333	2.00	21.583	2.00	33.833	2.00	46.08	52.94
9.417	2.00	21.667	2.00	33.917	2.00	46.17	53.00
9.500	2.00	21.750	2.00	34.000	2.00	46.25	53.00
9.583	2.00	21.833	2.00	34.083	2.00	46.33	53.00
9.667	2.00	21.917	2.00	34.167	2.00	46.42	53.00
9.750	2.00	22.000	2.00	34.250	2.00	46.50	53.00

9.833	2.00	22.083	2.00	34.333	2.00	46.58	53.00
9.917	2.00	22.167	2.00	34.417	2.00	46.67	53.00
10.000	2.00	22.250	2.00	34.500	2.00	46.75	53.00
10.083	2.00	22.333	2.00	34.583	2.00	46.83	53.00
10.167	2.00	22.417	2.00	34.667	2.00	46.92	53.00
10.250	2.00	22.500	2.00	34.750	2.00	47.00	53.00
10.333	2.00	22.583	2.00	34.833	2.00	47.08	38.02
10.417	2.00	22.667	2.00	34.917	2.00	47.17	38.00
10.500	2.00	22.750	2.00	35.000	2.00	47.25	38.00
10.583	2.00	22.833	2.00	35.083	2.00	47.33	38.00
10.667	2.00	22.917	2.00	35.167	2.00	47.42	38.00
10.750	2.00	23.000	2.00	35.250	2.00	47.50	38.00
10.833	2.00	23.083	2.00	35.333	2.00	47.58	38.00
10.917	2.00	23.167	2.00	35.417	2.00	47.67	38.00
11.000	2.00	23.250	2.00	35.500	2.00	47.75	38.00
11.083	2.00	23.333	2.00	35.583	2.00	47.83	38.00
11.167	2.00	23.417	2.00	35.667	2.00	47.92	38.00
11.250	2.00	23.500	2.00	35.750	2.00	48.00	38.00
11.333	2.00	23.583	2.00	35.833	2.00	48.08	13.04
11.417	2.00	23.667	2.00	35.917	2.00	48.17	13.00
11.500	2.00	23.750	2.00	36.000	2.00	48.25	13.00
11.583	2.00	23.833	2.00	36.083	2.00	48.33	13.00
11.667	2.00	23.917	2.00	36.167	2.00	48.42	13.00
11.750	2.00	24.000	2.00	36.250	2.00	48.50	13.00
11.833	2.00	24.083	2.00	36.333	2.00	48.58	13.00
11.917	2.00	24.167	2.00	36.417	2.00	48.67	13.00
12.000	2.00	24.250	2.00	36.500	2.00	48.75	13.00
12.083	2.00	24.333	2.00	36.583	2.00	48.83	13.00
12.167	2.00	24.417	2.00	36.667	2.00	48.92	13.00
12.250	2.00	24.500	2.00	36.750	2.00	49.00	13.00

Unit Hyd Qpeak (cms)= 1.390

PEAK FLOW (cms)= 0.768 (i)
TIME TO PEAK (hrs)= 47.000
RUNOFF VOLUME (mm)= 205.115
TOTAL RAINFALL (mm)= 284.001
RUNOFF COEFFICIENT = 0.722

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

CALIB							
NASHYD (0103)	Area	(ha)=	1.89	Curve Number	(CN)=	72.0	
ID= 1 DT= 5.0 min	Ia	(mm)=	5.00	# of Linear Res.(N)=	3.00		
-----	U.H. Tp	(hrs)=	0.19				

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	0.00	12.333	2.00	24.583	2.00	36.83	2.00
0.167	0.00	12.417	2.00	24.667	2.00	36.92	2.00
0.250	0.00	12.500	2.00	24.750	2.00	37.00	2.00
0.333	0.00	12.583	2.00	24.833	2.00	37.08	6.00
0.417	0.00	12.667	2.00	24.917	2.00	37.17	6.00
0.500	0.00	12.750	2.00	25.000	2.00	37.25	6.00
0.583	0.00	12.833	2.00	25.083	2.00	37.33	6.00
0.667	0.00	12.917	2.00	25.167	2.00	37.42	6.00
0.750	0.00	13.000	2.00	25.250	2.00	37.50	6.00
0.833	0.00	13.083	2.00	25.333	2.00	37.58	6.00
0.917	0.00	13.167	2.00	25.417	2.00	37.67	6.00
1.000	0.00	13.250	2.00	25.500	2.00	37.75	6.00
1.083	2.00	13.333	2.00	25.583	2.00	37.83	6.00
1.167	2.00	13.417	2.00	25.667	2.00	37.92	6.00
1.250	2.00	13.500	2.00	25.750	2.00	38.00	6.00
1.333	2.00	13.583	2.00	25.833	2.00	38.08	4.00
1.417	2.00	13.667	2.00	25.917	2.00	38.17	4.00
1.500	2.00	13.750	2.00	26.000	2.00	38.25	4.00
1.583	2.00	13.833	2.00	26.083	2.00	38.33	4.00
1.667	2.00	13.917	2.00	26.167	2.00	38.42	4.00
1.750	2.00	14.000	2.00	26.250	2.00	38.50	4.00
1.833	2.00	14.083	2.00	26.333	2.00	38.58	4.00
1.917	2.00	14.167	2.00	26.417	2.00	38.67	4.00
2.000	2.00	14.250	2.00	26.500	2.00	38.75	4.00
2.083	2.00	14.333	2.00	26.583	2.00	38.83	4.00
2.167	2.00	14.417	2.00	26.667	2.00	38.92	4.00
2.250	2.00	14.500	2.00	26.750	2.00	39.00	4.00
2.333	2.00	14.583	2.00	26.833	2.00	39.08	6.00
2.417	2.00	14.667	2.00	26.917	2.00	39.17	6.00
2.500	2.00	14.750	2.00	27.000	2.00	39.25	6.00
2.583	2.00	14.833	2.00	27.083	2.00	39.33	6.00
2.667	2.00	14.917	2.00	27.167	2.00	39.42	6.00
2.750	2.00	15.000	2.00	27.250	2.00	39.50	6.00
2.833	2.00	15.083	2.00	27.333	2.00	39.58	6.00
2.917	2.00	15.167	2.00	27.417	2.00	39.67	6.00
3.000	2.00	15.250	2.00	27.500	2.00	39.75	6.00
3.083	2.00	15.333	2.00	27.583	2.00	39.83	6.00
3.167	2.00	15.417	2.00	27.667	2.00	39.92	6.00
3.250	2.00	15.500	2.00	27.750	2.00	40.00	6.00
3.333	2.00	15.583	2.00	27.833	2.00	40.08	13.00
3.417	2.00	15.667	2.00	27.917	2.00	40.17	13.00
3.500	2.00	15.750	2.00	28.000	2.00	40.25	13.00
3.583	2.00	15.833	2.00	28.083	2.00	40.33	13.00
3.667	2.00	15.917	2.00	28.167	2.00	40.42	13.00
3.750	2.00	16.000	2.00	28.250	2.00	40.50	13.00
3.833	2.00	16.083	2.00	28.333	2.00	40.58	13.00
3.917	2.00	16.167	2.00	28.417	2.00	40.67	13.00
4.000	2.00	16.250	2.00	28.500	2.00	40.75	13.00
4.083	2.00	16.333	2.00	28.583	2.00	40.83	13.00
4.167	2.00	16.417	2.00	28.667	2.00	40.92	13.00
4.250	2.00	16.500	2.00	28.750	2.00	41.00	13.00
4.333	2.00	16.583	2.00	28.833	2.00	41.08	17.00

4.417	2.00	16.667	2.00	28.917	2.00	41.17	17.00
4.500	2.00	16.750	2.00	29.000	2.00	41.25	17.00
4.583	2.00	16.833	2.00	29.083	2.00	41.33	17.00
4.667	2.00	16.917	2.00	29.167	2.00	41.42	17.00
4.750	2.00	17.000	2.00	29.250	2.00	41.50	17.00
4.833	2.00	17.083	2.00	29.333	2.00	41.58	17.00
4.917	2.00	17.167	2.00	29.417	2.00	41.67	17.00
5.000	2.00	17.250	2.00	29.500	2.00	41.75	17.00
5.083	2.00	17.333	2.00	29.583	2.00	41.83	17.00
5.167	2.00	17.417	2.00	29.667	2.00	41.92	17.00
5.250	2.00	17.500	2.00	29.750	2.00	42.00	17.00
5.333	2.00	17.583	2.00	29.833	2.00	42.08	13.00
5.417	2.00	17.667	2.00	29.917	2.00	42.17	13.00
5.500	2.00	17.750	2.00	30.000	2.00	42.25	13.00
5.583	2.00	17.833	2.00	30.083	2.00	42.33	13.00
5.667	2.00	17.917	2.00	30.167	2.00	42.42	13.00
5.750	2.00	18.000	2.00	30.250	2.00	42.50	13.00
5.833	2.00	18.083	2.00	30.333	2.00	42.58	13.00
5.917	2.00	18.167	2.00	30.417	2.00	42.67	13.00
6.000	2.00	18.250	2.00	30.500	2.00	42.75	13.00
6.083	2.00	18.333	2.00	30.583	2.00	42.83	13.00
6.167	2.00	18.417	2.00	30.667	2.00	42.92	13.00
6.250	2.00	18.500	2.00	30.750	2.00	43.00	13.00
6.333	2.00	18.583	2.00	30.833	2.00	43.08	22.99
6.417	2.00	18.667	2.00	30.917	2.00	43.17	23.00
6.500	2.00	18.750	2.00	31.000	2.00	43.25	23.00
6.583	2.00	18.833	2.00	31.083	2.00	43.33	23.00
6.667	2.00	18.917	2.00	31.167	2.00	43.42	23.00
6.750	2.00	19.000	2.00	31.250	2.00	43.50	23.00
6.833	2.00	19.083	2.00	31.333	2.00	43.58	23.00
6.917	2.00	19.167	2.00	31.417	2.00	43.67	23.00
7.000	2.00	19.250	2.00	31.500	2.00	43.75	23.00
7.083	2.00	19.333	2.00	31.583	2.00	43.83	23.00
7.167	2.00	19.417	2.00	31.667	2.00	43.92	23.00
7.250	2.00	19.500	2.00	31.750	2.00	44.00	23.00
7.333	2.00	19.583	2.00	31.833	2.00	44.08	13.01
7.417	2.00	19.667	2.00	31.917	2.00	44.17	13.00
7.500	2.00	19.750	2.00	32.000	2.00	44.25	13.00
7.583	2.00	19.833	2.00	32.083	2.00	44.33	13.00
7.667	2.00	19.917	2.00	32.167	2.00	44.42	13.00
7.750	2.00	20.000	2.00	32.250	2.00	44.50	13.00
7.833	2.00	20.083	2.00	32.333	2.00	44.58	13.00
7.917	2.00	20.167	2.00	32.417	2.00	44.67	13.00
8.000	2.00	20.250	2.00	32.500	2.00	44.75	13.00
8.083	2.00	20.333	2.00	32.583	2.00	44.83	13.00
8.167	2.00	20.417	2.00	32.667	2.00	44.92	13.00
8.250	2.00	20.500	2.00	32.750	2.00	45.00	13.00
8.333	2.00	20.583	2.00	32.833	2.00	45.08	13.00
8.417	2.00	20.667	2.00	32.917	2.00	45.17	13.00
8.500	2.00	20.750	2.00	33.000	2.00	45.25	13.00
8.583	2.00	20.833	2.00	33.083	2.00	45.33	13.00
8.667	2.00	20.917	2.00	33.167	2.00	45.42	13.00
8.750	2.00	21.000	2.00	33.250	2.00	45.50	13.00

8.833	2.00	21.083	2.00	33.333	2.00	45.58	13.00
8.917	2.00	21.167	2.00	33.417	2.00	45.67	13.00
9.000	2.00	21.250	2.00	33.500	2.00	45.75	13.00
9.083	2.00	21.333	2.00	33.583	2.00	45.83	13.00
9.167	2.00	21.417	2.00	33.667	2.00	45.92	13.00
9.250	2.00	21.500	2.00	33.750	2.00	46.00	13.00
9.333	2.00	21.583	2.00	33.833	2.00	46.08	52.94
9.417	2.00	21.667	2.00	33.917	2.00	46.17	53.00
9.500	2.00	21.750	2.00	34.000	2.00	46.25	53.00
9.583	2.00	21.833	2.00	34.083	2.00	46.33	53.00
9.667	2.00	21.917	2.00	34.167	2.00	46.42	53.00
9.750	2.00	22.000	2.00	34.250	2.00	46.50	53.00
9.833	2.00	22.083	2.00	34.333	2.00	46.58	53.00
9.917	2.00	22.167	2.00	34.417	2.00	46.67	53.00
10.000	2.00	22.250	2.00	34.500	2.00	46.75	53.00
10.083	2.00	22.333	2.00	34.583	2.00	46.83	53.00
10.167	2.00	22.417	2.00	34.667	2.00	46.92	53.00
10.250	2.00	22.500	2.00	34.750	2.00	47.00	53.00
10.333	2.00	22.583	2.00	34.833	2.00	47.08	38.02
10.417	2.00	22.667	2.00	34.917	2.00	47.17	38.00
10.500	2.00	22.750	2.00	35.000	2.00	47.25	38.00
10.583	2.00	22.833	2.00	35.083	2.00	47.33	38.00
10.667	2.00	22.917	2.00	35.167	2.00	47.42	38.00
10.750	2.00	23.000	2.00	35.250	2.00	47.50	38.00
10.833	2.00	23.083	2.00	35.333	2.00	47.58	38.00
10.917	2.00	23.167	2.00	35.417	2.00	47.67	38.00
11.000	2.00	23.250	2.00	35.500	2.00	47.75	38.00
11.083	2.00	23.333	2.00	35.583	2.00	47.83	38.00
11.167	2.00	23.417	2.00	35.667	2.00	47.92	38.00
11.250	2.00	23.500	2.00	35.750	2.00	48.00	38.00
11.333	2.00	23.583	2.00	35.833	2.00	48.08	13.04
11.417	2.00	23.667	2.00	35.917	2.00	48.17	13.00
11.500	2.00	23.750	2.00	36.000	2.00	48.25	13.00
11.583	2.00	23.833	2.00	36.083	2.00	48.33	13.00
11.667	2.00	23.917	2.00	36.167	2.00	48.42	13.00
11.750	2.00	24.000	2.00	36.250	2.00	48.50	13.00
11.833	2.00	24.083	2.00	36.333	2.00	48.58	13.00
11.917	2.00	24.167	2.00	36.417	2.00	48.67	13.00
12.000	2.00	24.250	2.00	36.500	2.00	48.75	13.00
12.083	2.00	24.333	2.00	36.583	2.00	48.83	13.00
12.167	2.00	24.417	2.00	36.667	2.00	48.92	13.00
12.250	2.00	24.500	2.00	36.750	2.00	49.00	13.00

Unit Hyd Qpeak (cms)= 0.382

PEAK FLOW (cms)= 0.250 (i)

TIME TO PEAK (hrs)= 47.000

RUNOFF VOLUME (mm)= 205.563

TOTAL RAINFALL (mm)= 284.001

RUNOFF COEFFICIENT = 0.724

(i) 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 (0101):	6.44	0.851	47.00	205.62
+ ID2= 2 (0102):	5.81	0.768	47.00	205.12
=====				
ID = 3 (1000):	12.25	1.619	47.00	205.38

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):	12.25	1.619	47.00	205.38
+ ID2= 2 (0103):	1.89	0.250	47.00	205.56
=====				
ID = 1 (1000):	14.14	1.869	47.00	205.41

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

APPENDIX E
POST-DEVELOPMENT CONDITIONS STORMWATER MANAGEMENT
ANALYSIS

STANDHYD Input Parameters

Catchment # 200
Area (ha) 10.86
% Impervious 60%
Soil: Hillsburgh Fine Sandy Loam
Hydrologic Soil Group: A

Land Uses broken down by types:

Area (ha)	Type	Curve Number	A*CN	Runoff Coefficient	A*RC
6.516	Imperviousness	98	638.568	0.7	4.5612
4.344	Pervious Lawn	74	321.456	0.13	0.56472
0	Pervious Cultivated	72	0	0.35	0

Total Pervious Area (ha)	4.344
Composite Pervious Curve Number	74
Total Impervious Area (ha)	6.516
% XIMP	50%
% TIMP	60%

Initial Abstraction

Land Use	IA (mm)	Area (ha)	A*IA
Lawn	5	4.344	21.72
Cultivated	5	0	0
Woodland	10	0	0

Land Use	IA (mm)	Slope (%)	Travel Length (r	Manning's N
Pervious	5	2	30	0.25
Impervious	1.5	2	VO Default	0.013

Visual Otthymo Inputs:

SLPP 2
LGP 30.00
MNP 0.25
SCP 0 Typically set to 0

STANDHYD Input Parameters

Catchment # 201
Area (ha) 1.43
% Impervious 50%
Soil: Hillsburgh Fine Sandy Loam
Hydrologic Soil Group: A

Land Uses broken down by types:

Area (ha)	Type	Curve Number	A*CN	Runoff Coefficient	A*RC
0.715	Imperviousness	98	70.07	0.7	0.5005
0.715	Pervious Lawn	74	52.91	0.13	0.09295
0	Pervious Cultivated	72	0	0.35	0

Total Pervious Area (ha)	0.715
Composite Pervious Curve Number	74
Total Impervious Area (ha)	0.715
% XIMP	50%
% TIMP	50%

Initial Abstraction

Land Use	IA (mm)	Area (ha)	A*IA
Lawn	5	0.715	3.575
Cultivated	5	0	0
Woodland	10	0	0

Land Use	IA (mm)	Slope (%)	Travel Length (r	Manning's N
Pervious	5	2	30	0.25
Impervious	1.5	2	VO Default	0.013

Visual Otthymo Inputs:

SLPP 2
LGP 30.00
MNP 0.25
SCP 0 Typically set to 0

STANDHYD Input Parameters

Catchment # 202
Area (ha) 1.26
% Impervious 55%
Soil: Hillsburgh Fine Sandy Loam
Hydrologic Soil Group: A

Land Uses broken down by types:

Area (ha)	Type	Curve Number	A*CN	Runoff Coefficient	A*RC
0.693	Imperviousness	98	67.914	0.7	0.4851
0.567	Pervious Lawn	74	41.958	0.13	0.07371
0	Pervious Cultivated	72	0	0.35	0

Total Pervious Area (ha)	0.567
Composite Pervious Curve Number	74
Total Impervious Area (ha)	0.693
% XIMP	35%
% TIMP	55%

Intial Abstraction

Land Use	IA (mm)	Area (ha)	A*IA
Lawn	5	0.567	2.835
Cultivated	5	0	0
Woodland	10	0	0

Land Use	IA (mm)	Slope (%)	Travel Length (r	Manning's N
Pervious	5	2	30	0.25
Impervious	1.5	2	VO Default	0.013

Visual Otthymo Inputs:

SLPP 2
LGP 30.00
MNP 0.25
SCP 0 Typically set to 0

STANDHYD Input Parameters

Catchment # 203
Area (ha) 0.29
% Impervious 7%
Soil: Hillsburgh Fine Sandy Loam
Hydrologic Soil Group: A

Land Uses broken down by types:

Area (ha)	Type	Curve Number	A*CN	Runoff Coefficient	A*RC
0.0203	Imperviousness	98	1.9894	0.7	0.01421
0.2697	Pervious Lawn	74	19.9578	0.13	0.035061
0	Pervious Cultivated	72	0	0.35	0

Total Pervious Area (ha)	0.2697
Composite Pervious Curve Number	74
Total Impervious Area (ha)	0.0203
% XIMP	7%
% TIMP	7%

Initial Abstraction

Land Use	IA (mm)	Area (ha)	A*IA
Lawn	5	0.2697	1.3485
Cultivated	5	0	0
Woodland	10	0	0

Land Use	IA (mm)	Slope (%)	Travel Length (r	Manning's N
Pervious	5	2	30	0.25
Impervious	1.5	2	VO Default	0.013

Visual Otthymo Inputs:

SLPP 2
LGP 15.00
MNP 0.25
SCP 0 Typically set to 0

STANDHYD Input Parameters

Catchment # 204
Area (ha) 0.3
% Impervious 60%
Soil: Hillsburgh Fine Sandy Loam
Hydrologic Soil Group: A

Land Uses broken down by types:

Area (ha)	Type	Curve Number	A*CN	Runoff Coefficient	A*RC
0.18	Imperviousness	98	17.64	0.7	0.126
0.12	Pervious Lawn	74	8.88	0.13	0.0156
0	Pervious Cultivated	72	0	0.35	0

Total Pervious Area (ha)	0.12
Composite Pervious Curve Number	74
Total Impervious Area (ha)	0.18
% XIMP	50%
% TIMP	60%

Initial Abstraction

Land Use	IA (mm)	Area (ha)	A*IA
Lawn	5	0.12	0.6
Cultivated	5	0	0
Woodland	10	0	0

Land Use	IA (mm)	Slope (%)	Travel Length (r	Manning's N
Pervious	5	5	30	0.25
Impervious	1.5	5	VO Default	0.013

Visual Otthymo Inputs:

SLPP 5
LGP 30.00
MNP 0.25
SCP 0 Typically set to 0

**Hillsburgh Trails Subdivision
Town of Erin
File No: 121132
Proposed Stormwater Management Pond**

**Active Storage Volume Calculations
Wetland SWM Facility**

Elevation (m)	Depth (m)	Pond Surface Area (m ²)	Perm. Pool (P.P) Volume (m ³)	Accum. P.P. Volume (m ³)	Pond Active Volume (m ³)	Accum. Active Volume (m ³)	
437.30	0.00	5,125.7	0.0	0.0			
437.40	0.10	5,361.2	524.3	524.3			
437.50	0.20	5,599.8	548.1	1,072.4			
437.60	0.00	5,780.0	569.0	1,641.4	0.0	0.0	Orifice No. 1
437.70	0.10	6,025.3			590.3	590.3	
437.80	0.20	6,274.0			615.0	1,205.2	
437.85	0.25	6,399.2			316.8	1,522.1	Orifice No. 2
437.90	0.30	6,524.5			323.1	1,845.2	
438.00	0.40	6,776.9			665.1	2,510.2	
438.10	0.50	7,031.2			690.4	3,200.6	
438.20	0.60	7,287.4			715.9	3,916.6	
438.25	0.65	7,416.4			367.6	4,284.2	
438.30	0.70	7,545.5			374.0	4,658.2	
438.40	0.80	7,805.4			767.5	5,425.7	Orifice No. 3
438.45	0.85	7,936.3			393.5	5,819.3	
438.50	0.90	8,067.2			400.1	6,219.4	Weir
438.60	1.00	8,330.9			819.9	7,039.3	
438.70	1.10	8,596.5			846.4	7,885.7	
438.80	1.20	8,864.0			873.0	8,758.7	
438.90	1.30	9,133.3			899.9	9,658.6	
439.00	1.40	9,403.9			926.9	10,585.4	Top of Pond
439.10	1.50	10,475.1			994.0	11,579.4	Overflow

Orifice No. 1

INV	437.60	m
Q =	0.033	m ³ /s
Cd =	0.600	
H =	1.4425	m
2g =	19.620	
A =	0.010	m ²
D =	0.115	m

Orifice No. 2

INV	437.85	m
Q =	0.155	m ³ /s
Cd =	0.600	
H =	1.1175	m
2g =	19.620	
A =	0.055	m ²
D =	0.265	m

Orifice No. 3 (Outlet No. 2)

INV	438.40	m
Q =	0.139	m ³ /s
Cd =	0.600	
H =	0.55	m
2g =	19.620	
A =	0.071	m ²
D =	0.300	m

Note: Orifice No. 1 and 2 are part of Outlet Structure No. 1

Note: Orifice No. 3 is part of Outlet Structure No. 2

Overflow Weir - To Wetland

Elev m	d1 m	h m	H m	2g	L m	Q m ³ /s
438.50	0.90	0.90	0.00	19.62	10.00	0.00
438.60	1.00	0.90	0.10	19.62	10.00	0.44
438.70	1.10	0.90	0.20	19.62	10.00	1.27
438.80	1.20	0.90	0.30	19.62	10.00	2.38
438.90	1.30	0.90	0.40	19.62	10.00	3.73
439.00	1.40	0.90	0.50	19.62	10.00	5.29
439.10	1.50	0.90	0.60	19.62	10.00	7.05

**Hillsburgh Trails Subdivision
Town of Erin
File No: 121132
Proposed Stormwater Management Pond
Stage-Storage-Discharge Table**

Elevation (m)	Stage (m)	Storage (m ³)	Orifice No. 1 Control (m ³ /s)	Orifice No. 2 Control (m ³ /s)	Orifice No. 3 Control (m ³ /s)	Overflow Weir (m ³ /s)	Actual Discharge (m ³ /s)	
437.60	0.00	0.0	0.000	0.000	0.000	0.000	0.000	Orifice No. 1
437.70	0.10	590.3	0.006	0.000	0.000	0.000	0.006	
437.80	0.20	1,205.2	0.010	0.000	0.000	0.000	0.010	
437.85	0.25	1,522.1	0.012	0.000	0.000	0.000	0.012	Orifice No. 2
437.90	0.30	1,845.2	0.014	0.013	0.000	0.000	0.026	
438.00	0.40	2,510.2	0.016	0.025	0.000	0.000	0.041	
438.10	0.50	3,200.6	0.018	0.050	0.000	0.000	0.069	
438.20	0.60	3,916.6	0.020	0.068	0.000	0.000	0.089	
438.25	0.65	4,284.2	0.021	0.076	0.000	0.000	0.097	
438.30	0.70	4,658.2	0.022	0.083	0.000	0.000	0.105	
438.40	0.80	5,425.7	0.024	0.095	0.000	0.000	0.118	Orifice No. 3
438.45	0.85	5,819.3	0.025	0.100	0.011	0.000	0.135	
438.50	0.90	6,219.4	0.025	0.105	0.021	0.000	0.152	Weir
438.60	1.00	7,039.3	0.027	0.115	0.042	0.440	0.624	
438.70	1.10	7,885.7	0.028	0.124	0.073	1.272	1.497	
438.80	1.20	8,758.7	0.030	0.133	0.094	2.382	2.638	
438.90	1.30	9,658.6	0.031	0.140	0.111	3.730	4.012	
439.00	1.40	10,585.4	0.032	0.148	0.126	5.290	5.596	Top of Pond
439.10	1.50	11,579.4	0.033	0.155	0.139	7.047	7.374	Overflow

Note: Orifice No. 1 and 2 are part of Outlet Structure No. 1. Orifice No. 3 is part of Outlet Structure No. 2

Flow Diversion to Woodlot and Wellington Road 22 (RD 22) used in OTTHYMO

Storm	Total Flow from Pond (m ³ /s)	Storage Elevation (m)	Orifice 1 To RD 22 (m ³ /s)	Orifice 2 To RD 22 (m ³ /s)	Total To RD 22 (m ³ /s)	Orifice 3 To Woodlot (m ³ /s)	Overflow Weir to Woodlot (m ³ /s)	Total To Woodlot (m ³ /s)
2-year	0.086	438.19	0.020	0.066	0.086	0.000	0.000	0.000
5-year	0.117	438.39	0.024	0.093	0.117	0.000	0.000	0.000
10-year	0.186	438.51	0.025	0.106	0.132	0.023	0.032	0.054
25-year	0.547	438.58	0.027	0.114	0.140	0.039	0.368	0.407
50-year	0.917	438.63	0.027	0.118	0.145	0.052	0.719	0.772
100-year	1.321	438.68	0.028	0.122	0.150	0.067	1.104	1.171
Regional	1.669	438.72	0.028	0.125	0.154	0.076	1.439	1.515

Determine flow depth over the overflow weir to the woodlot.

Storm	Storage Elevation (m)	Overflow Weir to Woodlot (m ³ /s)	Weir Flow Depth (m)
2-year	438.19	0.000	0.000
5-year	438.39	0.000	0.000
10-year	438.51	0.032	0.007
25-year	438.58	0.368	0.084
50-year	438.63	0.719	0.134
100-year	438.68	1.104	0.180
Regional	438.72	1.439	0.215

**Hillsburgh Trails Subdivision
Town of Erin
File No: 121132
September 25, 2024**

**Stormwater Management Facility
Riprap Outlet Protection Design Calculations**

Flow Rate

Pipe Diameter (D_o) =	0.300 m
Maximum Flow =	0.154 m ³ /s

The rip rap will be sized to stay in place at a flow rate of 0.154 m³/s, the maximum flow rate at a ponding elevation of pond's top of bank, as per SWM Facility's Stage-Storage-Discharge Table.

Rip Rap Required Dimensions

Dimensions for the rip rap were taken from Figure 7.45 (Erosion and Sediment Control Handbook, 1986) which is appended to this summary.

Rip Rap Depth (d) =	0.69 m	
Apron Length (L_a) =	7.00 m	
Median Stone Size (d_{50}) =	0.30 m	
Upstream Apron Width (W_u) =	1.8 m	(3 x D_o)
Downstream Apron Width (W_d) =	7.3 m	($D_o + L_a$)

The above represents the minimum parameters of the rip rap to prevent wash out.

Conclusions

Therefore, the proposed 300 mm diameter rip rap with a depth of 0.7m will stay in place at the maximum design flow rate.

The required apron length (L_a) of 7 m is equal to the specified length of 7 m.

The required upstream and downstream apron widths of 1.8 m and 7.3 m are less than the specified widths of 2 m and 7.5 m.

References:

Goldman, Steven J., Jackson, Katharine, and Bursztynsky, Taras A., 1986 Erosion and Sediment Control Handbook. New York: McGraw-Hill Incorporated.

Hillsburgh Trails Subdivision
Town of Erin
File No: 121132

Outlet Erosion Control

Trench Flow

100-Year 0.076 m³/s

Weir Flow

100-Year 1.439 m³/s

300mm dia. Pipe Flow to County Road 22

100-Year 0.154 m³/s

**Hillsburgh Trails Subdivision
Town of Erin
File No: 121132
Proposed Linear Energy Dispersion and Dissipation Trench**

STORAGE VOLUME TABLE

Depth (m)	Surface Area Storage (m ²)	Surface Area - Pipe (m ²)	Increm. Storage (m ³)	Total Storage (m ³)	
0.00	10.00	0.00	0.00	0.00	Bottom of Stone
0.10	10.00	0.00	1.00	1.00	
0.15	10.00	0.00	0.50	1.50	Bottom of Dispersion Pipe
0.25	9.98	0.02	1.35	2.85	
0.35	9.98	0.02	1.35	4.20	
0.45	9.98	0.02	1.35	5.55	Top of Dispersion Pipe
0.55	10.00	0.00	1.00	6.55	
0.60	10.00	0.00	0.50	7.05	
0.70	10.00	0.00	1.00	8.05	
0.80	10.00	0.00	1.00	9.05	
0.90	10.00	0.00	1.00	10.05	
1.00	10.00	0.00	1.00	11.05	Top of Stone/Overflow
1.01	0.01	0.00	0.05	11.10	
1.10	0.01	0.00	0.00	11.10	
1.20	0.01	0.00	0.00	11.11	

BOTTOM

L(dw) = 15.00 m
W(dw) = 2.00 m
D(dw) = 1.00 m

A(c) = 30.0 m²

K = 0.00E+00 cm/s

SIDES

L(dw) = 15.00 m

D(dw) = 1.00 m

A(c) = 30.0 sq m (both sides)

Hillsburgh Trails Subdivision
Town of Erin
File No: 121132
Proposed Linear Energy Dispersion and Dissipation Trench
Overflow Weir

Elev m	d1 m	h m	H m	2g	L m	Q m ³ /s
1.00	1.00	1.00	0.00	19.62	15.00	0.000
1.01	1.01	1.00	0.01	19.62	15.00	0.020
1.10	1.10	1.00	0.10	19.62	15.00	0.658
1.20	1.20	1.00	0.20	19.62	15.00	1.900

STORAGE VOLUME TABLE

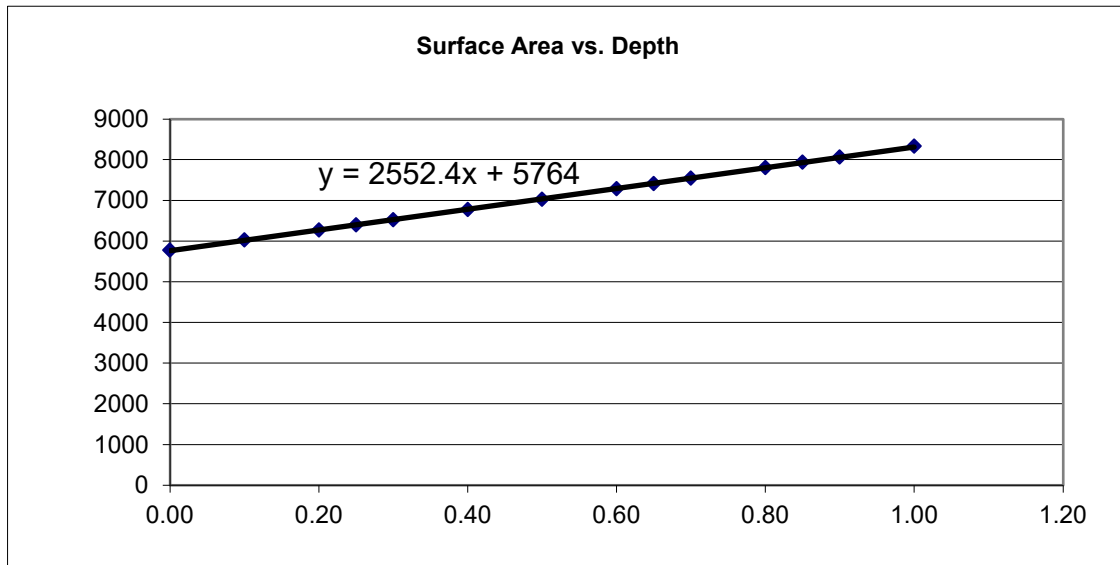
Stage (m)	Storage (m ³)	Infiltration Discharge (m ³ /s)	Overflow Weir Discharge (m ³ /s)	Total Discharge (m ³ /s)	
0.00	0.0	0.00000	0.000	0.00000	Bottom of Stone
0.10	1.0	0.00000	0.000	0.00000	
0.15	1.5	0.00000	0.000	0.00000	Bottom of Dispersion Pipe
0.25	2.9	0.00000	0.000	0.00000	
0.35	4.2	0.00000	0.000	0.00000	
0.45	5.6	0.00000	0.000	0.00000	Top of Dispersion Pipe
0.55	6.6	0.00000	0.000	0.00000	
0.60	7.1	0.00000	0.000	0.00000	
0.70	8.1	0.00000	0.000	0.00000	Top of Stone/Overflow
0.80	9.1	0.00000	0.000	0.00000	
0.90	10.1	0.00000	0.000	0.00000	
1.00	11.1	0.00000	0.000	0.00000	
1.01	11.1	0.00000	0.020	0.02039	
1.10	11.1	0.00000	0.658	0.65844	
1.20	11.1	0.00000	1.900	1.90043	

Interpolate to determine flow depth from the linear energy dissipation and dispersion trench to the woodlot

Storm	Orifice 3 To Woodlot (m ³ /s)	Flow Depth (m)
2-year	0.000	0.000
5-year	0.000	0.000
10-year	0.023	0.010
25-year	0.039	0.013
50-year	0.052	0.015
100-year	0.067	0.017
Regional	0.076	0.018

Orifice 3 to Woodlot flow from pond Outlet Structure No.2 obtained from flow diversion to woodlot and Wellington Road 22 calculation.

**Hillsburgh Subdivision
Town of Erin
File No: 121132
Stormwater Management Facility Extended Detention Drawdown**



Drain Down Calculations

$$t = \frac{0.66C_2h^{1.5} + 2C_3h^{0.5}}{2.75A_o}$$

Modelled extended detention volume :	1,613
Required extended detention volume ponding depth:	0.264

Extended Detention Orifice Sizing

Given: d = 0.115 m

A_o = 0.010 m

C_2 = 2552.4

C_3 = 5764

h = 0.269 - (0.120/2)
= 0.207 m

Solve for t

$$t = \frac{0.66C_2h^{1.5} + 2C_3h^{0.5}}{2.75A_o}$$

t = 189103

t = 3152

t = 52.5

**Hillsburgh Trails Subdivision
Town of Erin
File No: 121132**

**Stormwater Management Facility
Forebay**

Forebay Length =	45.0 m	(Dist)
Forebay Top Width =	16.0 m	
Active Forebay Depth =	1.0 m	(d)
Active Forebay Bottom Width =	10.0 m	
Approximate Forebay Volume =	585 m ³	
Length Width Ratio =	2.8 :1	(r)
25 mm Storm Peak Flowrate =	0.016 m ³ /s	(Q25mm)
5 Year Storm Inflow Rate =	2.592 m ³ /s	(Q5)
Desired Forebay Velocity =	0.500 m/s	(Vf)
Desired Settling Velocity (recommended) =	0.0003 m/s	(Vs)

Settling Length

$$\text{Dist} = ((r \times Q25\text{mm})/V_s)^{.5} = 12.2 \text{ m} \quad 25\text{mm}$$

Forebay length (45 m) exceeds the settling length (12.2 m).

Dispersion Length

$$\text{Dist} = (8 \times Q5)/(d \times V_f) = 41.5 \text{ m} \quad 5 \text{ Year}$$

Forebay length (45 m) exceeds dispersion length (41.5 m).

Flow Velocity in Forebay

Cross-sectional Area =	13 m ²	
Cross-sectional Area (With Permanent Pool) =	18.25 m ²	A
Q5 =	2.592 m ³ /s	
Velocity = Q5/A =	0.14 m/s	5 Year

The average flow velocity through the forebay meets the allowable velocity of 0.15 m/s.

**Hillsburgh Subdivision
Town of Erin
File No: 121132**

Superpipe Storage

Storage Volume Calculations

Elevation	Depth	Surface Area	Increase Storage Volume	Accum. Storage Volume	
(m)	(m)	(m²)	(m³)	(m³)	
0.000	0.00	0.00	0.00	0.00	Pipe Invert
0.068	0.07	20.25	0.68	0.68	
0.135	0.14	27.00	1.59	2.28	
0.203	0.20	30.93	1.96	4.23	
0.270	0.27	33.07	2.16	6.39	
0.338	0.34	33.75	2.26	8.65	Springline
0.405	0.41	33.07	2.26	10.90	
0.473	0.47	30.93	2.16	13.06	
0.540	0.54	27.00	1.96	15.02	
0.608	0.61	20.25	1.59	16.61	
0.675	0.68	0.00	0.68	17.30	Pipe Obvert
1.025	1.03	0.36	0.06	17.36	
1.375	1.38	0.36	0.13	17.48	Top of Grate / Weir
1.475	1.48	5.00	0.27	17.75	

Orifice Calculations

Q = 0.164 m³/s
Cd = 0.60
H = 1.35 m
2g = 19.62
A = 0.053 m²
D = 0.260 m

Weir Calculations

d1 = 1.48 m
h = 1.38 m
H = 0.10 m
2g = 19.62
L = 8.50 m
Q = 0.37 m³/s

**Hillsburgh Subdivision
Town of Erin
File No: 121132**

Stage/Storage/Discharge Table

Stage (m)	Storage (m³)	Discharge (m³/s)	
0.000	0.00	0.0000	Pipe Invert
0.068	0.68	0.0095	
0.135	2.28	0.0190	
0.203	4.23	0.0380	
0.270	6.39	0.0528	
0.338	8.65	0.0643	
0.405	10.90	0.0740	
0.473	13.06	0.0826	
0.540	15.02	0.0904	
0.608	16.61	0.0975	
0.675	17.30	0.1042	Pipe Obvert
1.025	17.36	0.1335	
1.375	17.48	0.1574	Top of Grate / Weir
1.475	17.75	0.5345	

Determine storage elevation from OTTHYMO by interpolation

Storm	Total Flow from Pond (m³/s)	Storage Elevation (m)
2-year	0.046	0.24
5-year	0.064	0.34
10-year	0.075	0.41
25-year	0.089	0.53
50-year	0.119	0.85
100-year	0.146	1.21
Regional	0.043	0.23

=====

=====

```
V   V   I   SSSSS   U   U   A   L           (v 6.2.2015)
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
```

Developed and Distributed by Smart City Water Inc

Copyright 2007 - 2022 Smart City Water Inc

All rights reserved.

***** 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\jangsoo.lee\AppData\Local\Civica\XH5\191a91e0-1a14-44fd-bc00-4941023c7dee\6ac3560c-0258-4592-84d9-9b2f986b3685\

Summary filename:

C:\Users\jangsoo.lee\AppData\Local\Civica\XH5\191a91e0-1a14-44fd-bc00-4941023c7dee\6ac3560c-0258-4592-84d9-9b2f986b3685\

DATE: 09/25/2024

TIME: 11:26:59

USER:

COMMENTS: _____

** SIMULATION : 25mm Storm **

CHICAGO STORM	IDF curve parameters: A=1581.200
Ptotal= 25.00 mm	B= 13.000
-----	C= 1.000

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

Duration of storm = 4.00 hrs

Storm time step = 10.00 min
 Time to peak ratio = 0.40

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.00	0.37	1.00	2.87	2.00	5.00	3.00	0.76
0.17	0.47	1.17	5.87	2.17	3.14	3.17	0.63
0.33	0.60	1.33	18.62	2.33	2.16	3.33	0.53
0.50	0.80	1.50	68.75	2.50	1.57	3.50	0.45
0.67	1.13	1.67	22.53	2.67	1.20	3.67	0.38
0.83	1.71	1.83	9.20	2.83	0.94	3.83	0.33

 | CALIB |
 | STANDHYD (0200) | Area (ha)= 10.86
 | ID= 1 DT= 5.0 min | Total Imp(%)= 60.00 Dir. Conn.(%)= 50.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	6.52	4.34
Dep. Storage	(mm)=	1.50	5.00
Average Slope	(%)=	2.00	2.00
Length	(m)=	269.07	30.00
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	0.37	1.083	2.87	2.083	5.00	3.08	0.76
0.167	0.37	1.167	2.87	2.167	5.00	3.17	0.76
0.250	0.47	1.250	5.87	2.250	3.14	3.25	0.63
0.333	0.47	1.333	5.87	2.333	3.14	3.33	0.63
0.417	0.60	1.417	18.62	2.417	2.16	3.42	0.53
0.500	0.60	1.500	18.62	2.500	2.16	3.50	0.53
0.583	0.80	1.583	68.75	2.583	1.57	3.58	0.45
0.667	0.80	1.667	68.75	2.667	1.57	3.67	0.45
0.750	1.13	1.750	22.53	2.750	1.20	3.75	0.38
0.833	1.13	1.833	22.53	2.833	1.20	3.83	0.38
0.917	1.71	1.917	9.20	2.917	0.94	3.92	0.33
1.000	1.71	2.000	9.20	3.000	0.94	4.00	0.33

Max.Eff.Inten. (mm/hr)=	68.75	12.48
over (min)	5.00	20.00
Storage Coeff. (min)=	4.37 (ii)	18.02 (ii)
Unit Hyd. Tpeak (min)=	5.00	20.00
Unit Hyd. peak (cms)=	0.23	0.06

TOTALS

PEAK FLOW (cms)=	0.96	0.08	0.980 (iii)
TIME TO PEAK (hrs)=	1.67	1.92	1.67

RUNOFF VOLUME	(mm)=	23.50	4.77	14.13
TOTAL RAINFALL	(mm)=	25.00	25.00	25.00
RUNOFF COEFFICIENT	=	0.94	0.19	0.57

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 74.0 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)=	1.26	
ID= 1 DT= 5.0 min	Total Imp(%)=	55.00	Dir. Conn.(%)=	35.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.69	0.57
Dep. Storage	(mm)=	1.50	5.00
Average Slope	(%)=	2.00	2.00
Length	(m)=	91.65	30.00
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	0.37	1.083	2.87	2.083	5.00	3.08	0.76
0.167	0.37	1.167	2.87	2.167	5.00	3.17	0.76
0.250	0.47	1.250	5.87	2.250	3.14	3.25	0.63
0.333	0.47	1.333	5.87	2.333	3.14	3.33	0.63
0.417	0.60	1.417	18.62	2.417	2.16	3.42	0.53
0.500	0.60	1.500	18.62	2.500	2.16	3.50	0.53
0.583	0.80	1.583	68.75	2.583	1.57	3.58	0.45
0.667	0.80	1.667	68.75	2.667	1.57	3.67	0.45
0.750	1.13	1.750	22.53	2.750	1.20	3.75	0.38
0.833	1.13	1.833	22.53	2.833	1.20	3.83	0.38
0.917	1.71	1.917	9.20	2.917	0.94	3.92	0.33
1.000	1.71	2.000	9.20	3.000	0.94	4.00	0.33

Max.Eff.Inten. (mm/hr)=	68.75	17.16
over (min)	5.00	15.00
Storage Coeff. (min)=	2.29 (ii)	14.31 (ii)
Unit Hyd. Tpeak (min)=	5.00	15.00
Unit Hyd. peak (cms)=	0.30	0.08

TOTALS

PEAK FLOW	(cms)=	0.08	0.02	0.090 (iii)
TIME TO PEAK	(hrs)=	1.67	1.83	1.67
RUNOFF VOLUME	(mm)=	23.50	5.57	11.84

TOTAL RAINFALL	(mm)=	25.00	25.00	25.00
RUNOFF COEFFICIENT	=	0.94	0.22	0.47

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 74.0 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)= 1.43
ID= 1 DT= 5.0 min	Total Imp(%)= 50.00 Dir. Conn.(%)= 50.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.71	0.71
Dep. Storage	(mm)=	1.50	5.00
Average Slope	(%)=	2.00	2.00
Length	(m)=	97.64	30.00
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	0.37	1.083	2.87	2.083	5.00	3.08	0.76
0.167	0.37	1.167	2.87	2.167	5.00	3.17	0.76
0.250	0.47	1.250	5.87	2.250	3.14	3.25	0.63
0.333	0.47	1.333	5.87	2.333	3.14	3.33	0.63
0.417	0.60	1.417	18.62	2.417	2.16	3.42	0.53
0.500	0.60	1.500	18.62	2.500	2.16	3.50	0.53
0.583	0.80	1.583	68.75	2.583	1.57	3.58	0.45
0.667	0.80	1.667	68.75	2.667	1.57	3.67	0.45
0.750	1.13	1.750	22.53	2.750	1.20	3.75	0.38
0.833	1.13	1.833	22.53	2.833	1.20	3.83	0.38
0.917	1.71	1.917	9.20	2.917	0.94	3.92	0.33
1.000	1.71	2.000	9.20	3.000	0.94	4.00	0.33

Max.Eff.Inten. (mm/hr)=	68.75	6.97
over (min)	5.00	20.00
Storage Coeff. (min)=	2.38 (ii)	19.61 (ii)
Unit Hyd. Tpeak (min)=	5.00	20.00
Unit Hyd. peak (cms)=	0.30	0.06

TOTALS			
PEAK FLOW	(cms)=	0.14	0.01 0.137 (iii)
TIME TO PEAK	(hrs)=	1.67	2.00 1.67
RUNOFF VOLUME	(mm)=	23.50	3.66 13.57
TOTAL RAINFALL	(mm)=	25.00	25.00 25.00

RUNOFF COEFFICIENT = 0.94 0.15 0.54

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 74.0 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 (0203)		Area	(ha)=	0.29	
ID= 1 DT= 5.0 min		Total Imp(%)=	7.00	Dir. Conn.(%)=	7.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.02	0.27
Dep. Storage	(mm)=	1.50	5.00
Average Slope	(%)=	2.00	2.00
Length	(m)=	43.97	15.00
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	0.37	1.083	2.87	2.083	5.00	3.08	0.76
0.167	0.37	1.167	2.87	2.167	5.00	3.17	0.76
0.250	0.47	1.250	5.87	2.250	3.14	3.25	0.63
0.333	0.47	1.333	5.87	2.333	3.14	3.33	0.63
0.417	0.60	1.417	18.62	2.417	2.16	3.42	0.53
0.500	0.60	1.500	18.62	2.500	2.16	3.50	0.53
0.583	0.80	1.583	68.75	2.583	1.57	3.58	0.45
0.667	0.80	1.667	68.75	2.667	1.57	3.67	0.45
0.750	1.13	1.750	22.53	2.750	1.20	3.75	0.38
0.833	1.13	1.833	22.53	2.833	1.20	3.83	0.38
0.917	1.71	1.917	9.20	2.917	0.94	3.92	0.33
1.000	1.71	2.000	9.20	3.000	0.94	4.00	0.33

Max.Eff.Inten.(mm/hr)=	68.75	7.73
over (min)	5.00	15.00
Storage Coeff. (min)=	1.47 (ii)	12.38 (ii)
Unit Hyd. Tpeak (min)=	5.00	15.00
Unit Hyd. peak (cms)=	0.33	0.08

TOTALS			
PEAK FLOW (cms)=	0.00	0.00	0.005 (iii)
TIME TO PEAK (hrs)=	1.67	1.83	1.67
RUNOFF VOLUME (mm)=	23.50	3.66	5.02
TOTAL RAINFALL (mm)=	25.00	25.00	25.00
RUNOFF COEFFICIENT =	0.94	0.15	0.20

***** 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* = 74.0 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 ( 0204) | Area      (ha)=   0.30
| ID= 1 DT= 5.0 min | Total Imp(%)= 60.00 Dir. Conn.(%)= 50.00
-----
```

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.18	0.12
Dep. Storage	(mm)=	1.50	5.00
Average Slope	(%)=	5.00	5.00
Length	(m)=	44.72	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	0.37	1.083	2.87	2.083	5.00	3.08	0.76
0.167	0.37	1.167	2.87	2.167	5.00	3.17	0.76
0.250	0.47	1.250	5.87	2.250	3.14	3.25	0.63
0.333	0.47	1.333	5.87	2.333	3.14	3.33	0.63
0.417	0.60	1.417	18.62	2.417	2.16	3.42	0.53
0.500	0.60	1.500	18.62	2.500	2.16	3.50	0.53
0.583	0.80	1.583	68.75	2.583	1.57	3.58	0.45
0.667	0.80	1.667	68.75	2.667	1.57	3.67	0.45
0.750	1.13	1.750	22.53	2.750	1.20	3.75	0.38
0.833	1.13	1.833	22.53	2.833	1.20	3.83	0.38
0.917	1.71	1.917	9.20	2.917	0.94	3.92	0.33
1.000	1.71	2.000	9.20	3.000	0.94	4.00	0.33

Max.Eff.Inten. (mm/hr)=	68.75	13.03
over (min)	5.00	15.00
Storage Coeff. (min)=	1.13 (ii)	13.24 (ii)
Unit Hyd. Tpeak (min)=	5.00	15.00
Unit Hyd. peak (cms)=	0.34	0.08

TOTALS

PEAK FLOW (cms)=	0.03	0.00	0.030 (iii)
TIME TO PEAK (hrs)=	1.67	1.83	1.67
RUNOFF VOLUME (mm)=	23.50	4.97	14.21
TOTAL RAINFALL (mm)=	25.00	25.00	25.00

RUNOFF COEFFICIENT = 0.94 0.20 0.57

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 75.0 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 (0200):	10.86	0.980	1.67	14.13
+ ID2= 2 (0201):	1.43	0.137	1.67	13.57
=====				
ID = 3 (1000):	12.29	1.116	1.67	14.07

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):	12.29	1.116	1.67	14.07
+ ID2= 2 (0202):	1.26	0.090	1.67	11.84
=====				
ID = 1 (1000):	13.55	1.207	1.67	13.86

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):	13.55	1.207	1.67	13.86
+ ID2= 2 (0203):	0.29	0.005	1.67	5.02
=====				
ID = 3 (1000):	13.84	1.212	1.67	13.68

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):	13.84	1.212	1.67	13.68

+ ID2= 2 (0204):	0.30	0.030	1.67	14.21
=====				
ID = 1 (1000):	14.14	1.242	1.67	13.69

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

=====

=====

```
V      V      I      SSSSS  U      U      A      L      (v 6.2.2015)
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
```

Developed and Distributed by Smart City Water Inc

Copyright 2007 - 2022 Smart City Water Inc

All rights reserved.

***** 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\jangsoo.lee\AppData\Local\Civica\VH5\191a91e0-1a14-44fd-bc00-4941023c7dee\798105f4-564a-49ff-a496-103add11e645\

Summary filename:

C:\Users\jangsoo.lee\AppData\Local\Civica\VH5\191a91e0-1a14-44fd-bc00-4941023c7dee\798105f4-564a-49ff-a496-103add11e645\

DATE: 09/25/2024

TIME: 11:26:59

USER:

COMMENTS: _____

** SIMULATION : 2yr 24hr 10min SCS Type II **

READ STORM	Filename: C:\Users\jangsoo.lee\AppData
	ata\Local\Temp\
	c043b895-d4c4-42b1-9a94-e27dedc1a594\6dcf778f
Ptotal= 67.15 mm	Comments: 2yr 24hr 10min SCS Type II

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.00	0.00	6.17	1.21	12.33	9.67	18.50	1.21
0.17	0.74	6.33	1.21	12.50	9.67	18.67	1.21
0.33	0.74	6.50	1.21	12.67	4.97	18.83	1.21
0.50	0.74	6.67	1.21	12.83	4.97	19.00	1.21
0.67	0.74	6.83	1.21	13.00	4.97	19.17	1.21
0.83	0.74	7.00	1.21	13.17	3.63	19.33	1.21
1.00	0.74	7.17	1.48	13.33	3.63	19.50	1.21
1.17	0.74	7.33	1.48	13.50	3.63	19.67	1.21
1.33	0.74	7.50	1.48	13.67	2.82	19.83	1.21
1.50	0.74	7.67	1.48	13.83	2.82	20.00	1.21
1.67	0.74	7.83	1.48	14.00	2.82	20.17	0.81
1.83	0.74	8.00	1.48	14.17	2.01	20.33	0.81
2.00	0.74	8.17	1.75	14.33	2.01	20.50	0.81
2.17	0.87	8.33	1.75	14.50	2.01	20.67	0.81
2.33	0.87	8.50	1.75	14.67	2.01	20.83	0.81
2.50	0.87	8.67	1.88	14.83	2.01	21.00	0.81
2.67	0.87	8.83	1.88	15.00	2.01	21.17	0.81
2.83	0.87	9.00	1.88	15.17	2.01	21.33	0.81
3.00	0.87	9.17	2.15	15.33	2.01	21.50	0.81
3.17	0.87	9.33	2.15	15.50	2.01	21.67	0.81
3.33	0.87	9.50	2.15	15.67	2.01	21.83	0.81
3.50	0.87	9.67	2.42	15.83	2.01	22.00	0.81
3.67	0.87	9.83	2.42	16.00	2.01	22.17	0.81
3.83	0.87	10.00	2.42	16.17	1.21	22.33	0.81
4.00	0.87	10.17	3.09	16.33	1.21	22.50	0.81
4.17	1.07	10.33	3.09	16.50	1.21	22.67	0.81
4.33	1.07	10.50	3.09	16.67	1.21	22.83	0.81
4.50	1.07	10.67	4.16	16.83	1.21	23.00	0.81
4.67	1.07	10.83	4.16	17.00	1.21	23.17	0.81
4.83	1.07	11.00	4.16	17.17	1.21	23.33	0.81
5.00	1.07	11.17	6.45	17.33	1.21	23.50	0.81
5.17	1.07	11.33	6.45	17.50	1.21	23.67	0.81
5.33	1.07	11.50	6.45	17.67	1.21	23.83	0.81
5.50	1.07	11.67	19.88	17.83	1.21	24.00	0.81
5.67	1.07	11.83	51.03	18.00	1.21		
5.83	1.07	12.00	82.19	18.17	1.21		
6.00	1.07	12.17	9.67	18.33	1.21		

| CALIB |
| STANDHYD (0200) |
ID= 1 DT= 5.0 min

Area (ha)= 10.86
Total Imp(%)= 60.00 Dir. Conn.(%)= 50.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	6.52	4.34
Dep. Storage	(mm)=	1.50	5.00
Average Slope	(%)=	2.00	2.00
Length	(m)=	269.07	30.00
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	0.00	6.167	1.07	12.250	9.68	18.33	1.21
0.167	0.00	6.250	1.21	12.333	9.67	18.42	1.21
0.250	0.74	6.333	1.21	12.417	9.67	18.50	1.21
0.333	0.74	6.417	1.21	12.500	9.67	18.58	1.21
0.417	0.74	6.500	1.21	12.583	9.67	18.67	1.21
0.500	0.74	6.583	1.21	12.667	9.67	18.75	1.21
0.583	0.74	6.667	1.21	12.750	4.97	18.83	1.21
0.667	0.74	6.750	1.21	12.833	4.97	18.92	1.21
0.750	0.74	6.833	1.21	12.917	4.97	19.00	1.21
0.833	0.74	6.917	1.21	13.000	4.97	19.08	1.21
0.917	0.74	7.000	1.21	13.083	4.97	19.17	1.21
1.000	0.74	7.083	1.21	13.167	4.97	19.25	1.21
1.083	0.74	7.167	1.21	13.250	3.63	19.33	1.21
1.167	0.74	7.250	1.48	13.333	3.63	19.42	1.21
1.250	0.74	7.333	1.48	13.417	3.63	19.50	1.21
1.333	0.74	7.417	1.48	13.500	3.63	19.58	1.21
1.417	0.74	7.500	1.48	13.583	3.63	19.67	1.21
1.500	0.74	7.583	1.48	13.667	3.63	19.75	1.21
1.583	0.74	7.667	1.48	13.750	2.82	19.83	1.21
1.667	0.74	7.750	1.48	13.833	2.82	19.92	1.21
1.750	0.74	7.833	1.48	13.917	2.82	20.00	1.21
1.833	0.74	7.917	1.48	14.000	2.82	20.08	1.21
1.917	0.74	8.000	1.48	14.083	2.82	20.17	1.21
2.000	0.74	8.083	1.48	14.167	2.82	20.25	0.81
2.083	0.74	8.167	1.48	14.250	2.01	20.33	0.81
2.167	0.74	8.250	1.75	14.333	2.01	20.42	0.81
2.250	0.87	8.333	1.75	14.417	2.01	20.50	0.81
2.333	0.87	8.417	1.75	14.500	2.01	20.58	0.81
2.417	0.87	8.500	1.75	14.583	2.01	20.67	0.81
2.500	0.87	8.583	1.75	14.667	2.01	20.75	0.81
2.583	0.87	8.667	1.75	14.750	2.01	20.83	0.81
2.667	0.87	8.750	1.88	14.833	2.01	20.92	0.81
2.750	0.87	8.833	1.88	14.917	2.01	21.00	0.81
2.833	0.87	8.917	1.88	15.000	2.01	21.08	0.81
2.917	0.87	9.000	1.88	15.083	2.01	21.17	0.81
3.000	0.87	9.083	1.88	15.167	2.01	21.25	0.81
3.083	0.87	9.167	1.88	15.250	2.01	21.33	0.81
3.167	0.87	9.250	2.15	15.333	2.01	21.42	0.81
3.250	0.87	9.333	2.15	15.417	2.01	21.50	0.81
3.333	0.87	9.417	2.15	15.500	2.01	21.58	0.81
3.417	0.87	9.500	2.15	15.583	2.01	21.67	0.81
3.500	0.87	9.583	2.15	15.667	2.01	21.75	0.81
3.583	0.87	9.667	2.15	15.750	2.01	21.83	0.81
3.667	0.87	9.750	2.42	15.833	2.01	21.92	0.81
3.750	0.87	9.833	2.42	15.917	2.01	22.00	0.81
3.833	0.87	9.917	2.42	16.000	2.01	22.08	0.81

3.917	0.87	10.000	2.42	16.083	2.01	22.17	0.81
4.000	0.87	10.083	2.42	16.167	2.01	22.25	0.81
4.083	0.87	10.167	2.42	16.250	1.21	22.33	0.81
4.167	0.87	10.250	3.09	16.333	1.21	22.42	0.81
4.250	1.07	10.333	3.09	16.417	1.21	22.50	0.81
4.333	1.07	10.417	3.09	16.500	1.21	22.58	0.81
4.417	1.07	10.500	3.09	16.583	1.21	22.67	0.81
4.500	1.07	10.583	3.09	16.667	1.21	22.75	0.81
4.583	1.07	10.667	3.09	16.750	1.21	22.83	0.81
4.667	1.07	10.750	4.16	16.833	1.21	22.92	0.81
4.750	1.07	10.833	4.16	16.917	1.21	23.00	0.81
4.833	1.07	10.917	4.16	17.000	1.21	23.08	0.81
4.917	1.07	11.000	4.16	17.083	1.21	23.17	0.81
5.000	1.07	11.083	4.16	17.167	1.21	23.25	0.81
5.083	1.07	11.167	4.16	17.250	1.21	23.33	0.81
5.167	1.07	11.250	6.45	17.333	1.21	23.42	0.81
5.250	1.07	11.333	6.45	17.417	1.21	23.50	0.81
5.333	1.07	11.417	6.45	17.500	1.21	23.58	0.81
5.417	1.07	11.500	6.45	17.583	1.21	23.67	0.81
5.500	1.07	11.583	6.45	17.667	1.21	23.75	0.81
5.583	1.07	11.667	6.45	17.750	1.21	23.83	0.81
5.667	1.07	11.750	19.87	17.833	1.21	23.92	0.81
5.750	1.07	11.833	19.88	17.917	1.21	24.00	0.81
5.833	1.07	11.917	51.03	18.000	1.21	24.08	0.81
5.917	1.07	12.000	51.03	18.083	1.21	24.17	0.81
6.000	1.07	12.083	82.19	18.167	1.21		
6.083	1.07	12.167	82.19	18.250	1.21		

Max.Eff.Inten. (mm/hr)= 82.19 55.10
over (min) 5.00 15.00
Storage Coeff. (min)= 4.06 (ii) 11.60 (ii)
Unit Hyd. Tpeak (min)= 5.00 15.00
Unit Hyd. peak (cms)= 0.24 0.09

TOTALS
PEAK FLOW (cms)= 1.20 0.40 1.528 (iii)
TIME TO PEAK (hrs)= 12.17 12.25 12.17
RUNOFF VOLUME (mm)= 65.65 29.64 47.64
TOTAL RAINFALL (mm)= 67.15 67.15 67.15
RUNOFF COEFFICIENT = 0.98 0.44 0.71

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 74.0 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)= 1.26
| ID= 1 DT= 5.0 min | Total Imp(%)= 55.00 Dir. Conn.(%)= 35.00

```

-----
                IMPERVIOUS      PERVIOUS (i)
Surface Area    (ha)=          0.69      0.57
Dep. Storage    (mm)=          1.50      5.00
Average Slope    (%)=          2.00      2.00
Length          (m)=          91.65     30.00
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	0.00	6.167	1.07	12.250	9.68	18.33	1.21
0.167	0.00	6.250	1.21	12.333	9.67	18.42	1.21
0.250	0.74	6.333	1.21	12.417	9.67	18.50	1.21
0.333	0.74	6.417	1.21	12.500	9.67	18.58	1.21
0.417	0.74	6.500	1.21	12.583	9.67	18.67	1.21
0.500	0.74	6.583	1.21	12.667	9.67	18.75	1.21
0.583	0.74	6.667	1.21	12.750	4.97	18.83	1.21
0.667	0.74	6.750	1.21	12.833	4.97	18.92	1.21
0.750	0.74	6.833	1.21	12.917	4.97	19.00	1.21
0.833	0.74	6.917	1.21	13.000	4.97	19.08	1.21
0.917	0.74	7.000	1.21	13.083	4.97	19.17	1.21
1.000	0.74	7.083	1.21	13.167	4.97	19.25	1.21
1.083	0.74	7.167	1.21	13.250	3.63	19.33	1.21
1.167	0.74	7.250	1.48	13.333	3.63	19.42	1.21
1.250	0.74	7.333	1.48	13.417	3.63	19.50	1.21
1.333	0.74	7.417	1.48	13.500	3.63	19.58	1.21
1.417	0.74	7.500	1.48	13.583	3.63	19.67	1.21
1.500	0.74	7.583	1.48	13.667	3.63	19.75	1.21
1.583	0.74	7.667	1.48	13.750	2.82	19.83	1.21
1.667	0.74	7.750	1.48	13.833	2.82	19.92	1.21
1.750	0.74	7.833	1.48	13.917	2.82	20.00	1.21
1.833	0.74	7.917	1.48	14.000	2.82	20.08	1.21
1.917	0.74	8.000	1.48	14.083	2.82	20.17	1.21
2.000	0.74	8.083	1.48	14.167	2.82	20.25	0.81
2.083	0.74	8.167	1.48	14.250	2.01	20.33	0.81
2.167	0.74	8.250	1.75	14.333	2.01	20.42	0.81
2.250	0.87	8.333	1.75	14.417	2.01	20.50	0.81
2.333	0.87	8.417	1.75	14.500	2.01	20.58	0.81
2.417	0.87	8.500	1.75	14.583	2.01	20.67	0.81
2.500	0.87	8.583	1.75	14.667	2.01	20.75	0.81
2.583	0.87	8.667	1.75	14.750	2.01	20.83	0.81
2.667	0.87	8.750	1.88	14.833	2.01	20.92	0.81
2.750	0.87	8.833	1.88	14.917	2.01	21.00	0.81
2.833	0.87	8.917	1.88	15.000	2.01	21.08	0.81
2.917	0.87	9.000	1.88	15.083	2.01	21.17	0.81
3.000	0.87	9.083	1.88	15.167	2.01	21.25	0.81
3.083	0.87	9.167	1.88	15.250	2.01	21.33	0.81
3.167	0.87	9.250	2.15	15.333	2.01	21.42	0.81
3.250	0.87	9.333	2.15	15.417	2.01	21.50	0.81

3.333	0.87		9.417	2.15		15.500	2.01		21.58	0.81
3.417	0.87		9.500	2.15		15.583	2.01		21.67	0.81
3.500	0.87		9.583	2.15		15.667	2.01		21.75	0.81
3.583	0.87		9.667	2.15		15.750	2.01		21.83	0.81
3.667	0.87		9.750	2.42		15.833	2.01		21.92	0.81
3.750	0.87		9.833	2.42		15.917	2.01		22.00	0.81
3.833	0.87		9.917	2.42		16.000	2.01		22.08	0.81
3.917	0.87		10.000	2.42		16.083	2.01		22.17	0.81
4.000	0.87		10.083	2.42		16.167	2.01		22.25	0.81
4.083	0.87		10.167	2.42		16.250	1.21		22.33	0.81
4.167	0.87		10.250	3.09		16.333	1.21		22.42	0.81
4.250	1.07		10.333	3.09		16.417	1.21		22.50	0.81
4.333	1.07		10.417	3.09		16.500	1.21		22.58	0.81
4.417	1.07		10.500	3.09		16.583	1.21		22.67	0.81
4.500	1.07		10.583	3.09		16.667	1.21		22.75	0.81
4.583	1.07		10.667	3.09		16.750	1.21		22.83	0.81
4.667	1.07		10.750	4.16		16.833	1.21		22.92	0.81
4.750	1.07		10.833	4.16		16.917	1.21		23.00	0.81
4.833	1.07		10.917	4.16		17.000	1.21		23.08	0.81
4.917	1.07		11.000	4.16		17.083	1.21		23.17	0.81
5.000	1.07		11.083	4.16		17.167	1.21		23.25	0.81
5.083	1.07		11.167	4.16		17.250	1.21		23.33	0.81
5.167	1.07		11.250	6.45		17.333	1.21		23.42	0.81
5.250	1.07		11.333	6.45		17.417	1.21		23.50	0.81
5.333	1.07		11.417	6.45		17.500	1.21		23.58	0.81
5.417	1.07		11.500	6.45		17.583	1.21		23.67	0.81
5.500	1.07		11.583	6.45		17.667	1.21		23.75	0.81
5.583	1.07		11.667	6.45		17.750	1.21		23.83	0.81
5.667	1.07		11.750	19.87		17.833	1.21		23.92	0.81
5.750	1.07		11.833	19.88		17.917	1.21		24.00	0.81
5.833	1.07		11.917	51.03		18.000	1.21		24.08	0.81
5.917	1.07		12.000	51.03		18.083	1.21		24.17	0.81
6.000	1.07		12.083	82.19		18.167	1.21			
6.083	1.07		12.167	82.19		18.250	1.21			

Max.Eff.Inten. (mm/hr)=	82.19	69.29
over (min)	5.00	10.00
Storage Coeff. (min)=	2.13 (ii)	9.01 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.31	0.12

TOTALS

PEAK FLOW (cms)=	0.10	0.08	0.176 (iii)
TIME TO PEAK (hrs)=	12.17	12.17	12.17
RUNOFF VOLUME (mm)=	65.65	32.33	43.99
TOTAL RAINFALL (mm)=	67.15	67.15	67.15
RUNOFF COEFFICIENT =	0.98	0.48	0.66

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:

CN* = 74.0 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)= 1.43
| ID= 1 DT= 5.0 min | Total Imp(%)= 50.00 Dir. Conn.(%)= 50.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.71	0.71
Dep. Storage	(mm)=	1.50	5.00
Average Slope	(%)=	2.00	2.00
Length	(m)=	97.64	30.00
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	0.00	6.167	1.07	12.250	9.68	18.33	1.21
0.167	0.00	6.250	1.21	12.333	9.67	18.42	1.21
0.250	0.74	6.333	1.21	12.417	9.67	18.50	1.21
0.333	0.74	6.417	1.21	12.500	9.67	18.58	1.21
0.417	0.74	6.500	1.21	12.583	9.67	18.67	1.21
0.500	0.74	6.583	1.21	12.667	9.67	18.75	1.21
0.583	0.74	6.667	1.21	12.750	4.97	18.83	1.21
0.667	0.74	6.750	1.21	12.833	4.97	18.92	1.21
0.750	0.74	6.833	1.21	12.917	4.97	19.00	1.21
0.833	0.74	6.917	1.21	13.000	4.97	19.08	1.21
0.917	0.74	7.000	1.21	13.083	4.97	19.17	1.21
1.000	0.74	7.083	1.21	13.167	4.97	19.25	1.21
1.083	0.74	7.167	1.21	13.250	3.63	19.33	1.21
1.167	0.74	7.250	1.48	13.333	3.63	19.42	1.21
1.250	0.74	7.333	1.48	13.417	3.63	19.50	1.21
1.333	0.74	7.417	1.48	13.500	3.63	19.58	1.21
1.417	0.74	7.500	1.48	13.583	3.63	19.67	1.21
1.500	0.74	7.583	1.48	13.667	3.63	19.75	1.21
1.583	0.74	7.667	1.48	13.750	2.82	19.83	1.21
1.667	0.74	7.750	1.48	13.833	2.82	19.92	1.21
1.750	0.74	7.833	1.48	13.917	2.82	20.00	1.21
1.833	0.74	7.917	1.48	14.000	2.82	20.08	1.21
1.917	0.74	8.000	1.48	14.083	2.82	20.17	1.21
2.000	0.74	8.083	1.48	14.167	2.82	20.25	0.81
2.083	0.74	8.167	1.48	14.250	2.01	20.33	0.81
2.167	0.74	8.250	1.75	14.333	2.01	20.42	0.81
2.250	0.87	8.333	1.75	14.417	2.01	20.50	0.81
2.333	0.87	8.417	1.75	14.500	2.01	20.58	0.81
2.417	0.87	8.500	1.75	14.583	2.01	20.67	0.81
2.500	0.87	8.583	1.75	14.667	2.01	20.75	0.81
2.583	0.87	8.667	1.75	14.750	2.01	20.83	0.81
2.667	0.87	8.750	1.88	14.833	2.01	20.92	0.81

2.750	0.87		8.833	1.88		14.917	2.01		21.00	0.81
2.833	0.87		8.917	1.88		15.000	2.01		21.08	0.81
2.917	0.87		9.000	1.88		15.083	2.01		21.17	0.81
3.000	0.87		9.083	1.88		15.167	2.01		21.25	0.81
3.083	0.87		9.167	1.88		15.250	2.01		21.33	0.81
3.167	0.87		9.250	2.15		15.333	2.01		21.42	0.81
3.250	0.87		9.333	2.15		15.417	2.01		21.50	0.81
3.333	0.87		9.417	2.15		15.500	2.01		21.58	0.81
3.417	0.87		9.500	2.15		15.583	2.01		21.67	0.81
3.500	0.87		9.583	2.15		15.667	2.01		21.75	0.81
3.583	0.87		9.667	2.15		15.750	2.01		21.83	0.81
3.667	0.87		9.750	2.42		15.833	2.01		21.92	0.81
3.750	0.87		9.833	2.42		15.917	2.01		22.00	0.81
3.833	0.87		9.917	2.42		16.000	2.01		22.08	0.81
3.917	0.87		10.000	2.42		16.083	2.01		22.17	0.81
4.000	0.87		10.083	2.42		16.167	2.01		22.25	0.81
4.083	0.87		10.167	2.42		16.250	1.21		22.33	0.81
4.167	0.87		10.250	3.09		16.333	1.21		22.42	0.81
4.250	1.07		10.333	3.09		16.417	1.21		22.50	0.81
4.333	1.07		10.417	3.09		16.500	1.21		22.58	0.81
4.417	1.07		10.500	3.09		16.583	1.21		22.67	0.81
4.500	1.07		10.583	3.09		16.667	1.21		22.75	0.81
4.583	1.07		10.667	3.09		16.750	1.21		22.83	0.81
4.667	1.07		10.750	4.16		16.833	1.21		22.92	0.81
4.750	1.07		10.833	4.16		16.917	1.21		23.00	0.81
4.833	1.07		10.917	4.16		17.000	1.21		23.08	0.81
4.917	1.07		11.000	4.16		17.083	1.21		23.17	0.81
5.000	1.07		11.083	4.16		17.167	1.21		23.25	0.81
5.083	1.07		11.167	4.16		17.250	1.21		23.33	0.81
5.167	1.07		11.250	6.45		17.333	1.21		23.42	0.81
5.250	1.07		11.333	6.45		17.417	1.21		23.50	0.81
5.333	1.07		11.417	6.45		17.500	1.21		23.58	0.81
5.417	1.07		11.500	6.45		17.583	1.21		23.67	0.81
5.500	1.07		11.583	6.45		17.667	1.21		23.75	0.81
5.583	1.07		11.667	6.45		17.750	1.21		23.83	0.81
5.667	1.07		11.750	19.87		17.833	1.21		23.92	0.81
5.750	1.07		11.833	19.88		17.917	1.21		24.00	0.81
5.833	1.07		11.917	51.03		18.000	1.21		24.08	0.81
5.917	1.07		12.000	51.03		18.083	1.21		24.17	0.81
6.000	1.07		12.083	82.19		18.167	1.21			
6.083	1.07		12.167	82.19		18.250	1.21			

Max.Eff.Inten. (mm/hr)=	82.19	38.01
over (min)	5.00	15.00
Storage Coeff. (min)=	2.21 (ii)	10.96 (ii)
Unit Hyd. Tpeak (min)=	5.00	15.00
Unit Hyd. peak (cms)=	0.30	0.09

TOTALS

PEAK FLOW (cms)=	0.16	0.05	0.200 (iii)
TIME TO PEAK (hrs)=	12.17	12.25	12.17
RUNOFF VOLUME (mm)=	65.65	25.51	45.58
TOTAL RAINFALL (mm)=	67.15	67.15	67.15
RUNOFF COEFFICIENT =	0.98	0.38	0.68

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 74.0 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 (0203) | Area (ha)= 0.29
| ID= 1 DT= 5.0 min | Total Imp(%)= 7.00 Dir. Conn.(%)= 7.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.02	0.27
Dep. Storage	(mm)=	1.50	5.00
Average Slope	(%)=	2.00	2.00
Length	(m)=	43.97	15.00
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	0.00	6.167	1.07	12.250	9.68	18.33	1.21
0.167	0.00	6.250	1.21	12.333	9.67	18.42	1.21
0.250	0.74	6.333	1.21	12.417	9.67	18.50	1.21
0.333	0.74	6.417	1.21	12.500	9.67	18.58	1.21
0.417	0.74	6.500	1.21	12.583	9.67	18.67	1.21
0.500	0.74	6.583	1.21	12.667	9.67	18.75	1.21
0.583	0.74	6.667	1.21	12.750	4.97	18.83	1.21
0.667	0.74	6.750	1.21	12.833	4.97	18.92	1.21
0.750	0.74	6.833	1.21	12.917	4.97	19.00	1.21
0.833	0.74	6.917	1.21	13.000	4.97	19.08	1.21
0.917	0.74	7.000	1.21	13.083	4.97	19.17	1.21
1.000	0.74	7.083	1.21	13.167	4.97	19.25	1.21
1.083	0.74	7.167	1.21	13.250	3.63	19.33	1.21
1.167	0.74	7.250	1.48	13.333	3.63	19.42	1.21
1.250	0.74	7.333	1.48	13.417	3.63	19.50	1.21
1.333	0.74	7.417	1.48	13.500	3.63	19.58	1.21
1.417	0.74	7.500	1.48	13.583	3.63	19.67	1.21
1.500	0.74	7.583	1.48	13.667	3.63	19.75	1.21
1.583	0.74	7.667	1.48	13.750	2.82	19.83	1.21
1.667	0.74	7.750	1.48	13.833	2.82	19.92	1.21
1.750	0.74	7.833	1.48	13.917	2.82	20.00	1.21
1.833	0.74	7.917	1.48	14.000	2.82	20.08	1.21
1.917	0.74	8.000	1.48	14.083	2.82	20.17	1.21
2.000	0.74	8.083	1.48	14.167	2.82	20.25	0.81
2.083	0.74	8.167	1.48	14.250	2.01	20.33	0.81

2.167	0.74		8.250	1.75		14.333	2.01		20.42	0.81
2.250	0.87		8.333	1.75		14.417	2.01		20.50	0.81
2.333	0.87		8.417	1.75		14.500	2.01		20.58	0.81
2.417	0.87		8.500	1.75		14.583	2.01		20.67	0.81
2.500	0.87		8.583	1.75		14.667	2.01		20.75	0.81
2.583	0.87		8.667	1.75		14.750	2.01		20.83	0.81
2.667	0.87		8.750	1.88		14.833	2.01		20.92	0.81
2.750	0.87		8.833	1.88		14.917	2.01		21.00	0.81
2.833	0.87		8.917	1.88		15.000	2.01		21.08	0.81
2.917	0.87		9.000	1.88		15.083	2.01		21.17	0.81
3.000	0.87		9.083	1.88		15.167	2.01		21.25	0.81
3.083	0.87		9.167	1.88		15.250	2.01		21.33	0.81
3.167	0.87		9.250	2.15		15.333	2.01		21.42	0.81
3.250	0.87		9.333	2.15		15.417	2.01		21.50	0.81
3.333	0.87		9.417	2.15		15.500	2.01		21.58	0.81
3.417	0.87		9.500	2.15		15.583	2.01		21.67	0.81
3.500	0.87		9.583	2.15		15.667	2.01		21.75	0.81
3.583	0.87		9.667	2.15		15.750	2.01		21.83	0.81
3.667	0.87		9.750	2.42		15.833	2.01		21.92	0.81
3.750	0.87		9.833	2.42		15.917	2.01		22.00	0.81
3.833	0.87		9.917	2.42		16.000	2.01		22.08	0.81
3.917	0.87		10.000	2.42		16.083	2.01		22.17	0.81
4.000	0.87		10.083	2.42		16.167	2.01		22.25	0.81
4.083	0.87		10.167	2.42		16.250	1.21		22.33	0.81
4.167	0.87		10.250	3.09		16.333	1.21		22.42	0.81
4.250	1.07		10.333	3.09		16.417	1.21		22.50	0.81
4.333	1.07		10.417	3.09		16.500	1.21		22.58	0.81
4.417	1.07		10.500	3.09		16.583	1.21		22.67	0.81
4.500	1.07		10.583	3.09		16.667	1.21		22.75	0.81
4.583	1.07		10.667	3.09		16.750	1.21		22.83	0.81
4.667	1.07		10.750	4.16		16.833	1.21		22.92	0.81
4.750	1.07		10.833	4.16		16.917	1.21		23.00	0.81
4.833	1.07		10.917	4.16		17.000	1.21		23.08	0.81
4.917	1.07		11.000	4.16		17.083	1.21		23.17	0.81
5.000	1.07		11.083	4.16		17.167	1.21		23.25	0.81
5.083	1.07		11.167	4.16		17.250	1.21		23.33	0.81
5.167	1.07		11.250	6.45		17.333	1.21		23.42	0.81
5.250	1.07		11.333	6.45		17.417	1.21		23.50	0.81
5.333	1.07		11.417	6.45		17.500	1.21		23.58	0.81
5.417	1.07		11.500	6.45		17.583	1.21		23.67	0.81
5.500	1.07		11.583	6.45		17.667	1.21		23.75	0.81
5.583	1.07		11.667	6.45		17.750	1.21		23.83	0.81
5.667	1.07		11.750	19.87		17.833	1.21		23.92	0.81
5.750	1.07		11.833	19.88		17.917	1.21		24.00	0.81
5.833	1.07		11.917	51.03		18.000	1.21		24.08	0.81
5.917	1.07		12.000	51.03		18.083	1.21		24.17	0.81
6.000	1.07		12.083	82.19		18.167	1.21			
6.083	1.07		12.167	82.19		18.250	1.21			

Max.Eff.Inten. (mm/hr)=	82.19	38.01
over (min)	5.00	10.00
Storage Coeff. (min)=	1.37 (ii)	7.14 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00

Unit Hyd. peak	(cms)=	0.33	0.14	
				TOTALS
PEAK FLOW	(cms)=	0.00	0.02	0.026 (iii)
TIME TO PEAK	(hrs)=	12.17	12.17	12.17
RUNOFF VOLUME	(mm)=	65.65	25.51	28.31
TOTAL RAINFALL	(mm)=	67.15	67.15	67.15
RUNOFF COEFFICIENT	=	0.98	0.38	0.42

***** 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* = 74.0 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 (0204)	Area	(ha)=	0.30	
ID= 1 DT= 5.0 min	Total Imp(%)=	60.00	Dir. Conn.(%)=	50.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.18	0.12
Dep. Storage	(mm)=	1.50	5.00
Average Slope	(%)=	5.00	5.00
Length	(m)=	44.72	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	0.00	6.167	1.07	12.250	9.68	18.33	1.21
0.167	0.00	6.250	1.21	12.333	9.67	18.42	1.21
0.250	0.74	6.333	1.21	12.417	9.67	18.50	1.21
0.333	0.74	6.417	1.21	12.500	9.67	18.58	1.21
0.417	0.74	6.500	1.21	12.583	9.67	18.67	1.21
0.500	0.74	6.583	1.21	12.667	9.67	18.75	1.21
0.583	0.74	6.667	1.21	12.750	4.97	18.83	1.21
0.667	0.74	6.750	1.21	12.833	4.97	18.92	1.21
0.750	0.74	6.833	1.21	12.917	4.97	19.00	1.21
0.833	0.74	6.917	1.21	13.000	4.97	19.08	1.21
0.917	0.74	7.000	1.21	13.083	4.97	19.17	1.21
1.000	0.74	7.083	1.21	13.167	4.97	19.25	1.21
1.083	0.74	7.167	1.21	13.250	3.63	19.33	1.21
1.167	0.74	7.250	1.48	13.333	3.63	19.42	1.21
1.250	0.74	7.333	1.48	13.417	3.63	19.50	1.21
1.333	0.74	7.417	1.48	13.500	3.63	19.58	1.21

1.417	0.74		7.500	1.48		13.583	3.63		19.67	1.21
1.500	0.74		7.583	1.48		13.667	3.63		19.75	1.21
1.583	0.74		7.667	1.48		13.750	2.82		19.83	1.21
1.667	0.74		7.750	1.48		13.833	2.82		19.92	1.21
1.750	0.74		7.833	1.48		13.917	2.82		20.00	1.21
1.833	0.74		7.917	1.48		14.000	2.82		20.08	1.21
1.917	0.74		8.000	1.48		14.083	2.82		20.17	1.21
2.000	0.74		8.083	1.48		14.167	2.82		20.25	0.81
2.083	0.74		8.167	1.48		14.250	2.01		20.33	0.81
2.167	0.74		8.250	1.75		14.333	2.01		20.42	0.81
2.250	0.87		8.333	1.75		14.417	2.01		20.50	0.81
2.333	0.87		8.417	1.75		14.500	2.01		20.58	0.81
2.417	0.87		8.500	1.75		14.583	2.01		20.67	0.81
2.500	0.87		8.583	1.75		14.667	2.01		20.75	0.81
2.583	0.87		8.667	1.75		14.750	2.01		20.83	0.81
2.667	0.87		8.750	1.88		14.833	2.01		20.92	0.81
2.750	0.87		8.833	1.88		14.917	2.01		21.00	0.81
2.833	0.87		8.917	1.88		15.000	2.01		21.08	0.81
2.917	0.87		9.000	1.88		15.083	2.01		21.17	0.81
3.000	0.87		9.083	1.88		15.167	2.01		21.25	0.81
3.083	0.87		9.167	1.88		15.250	2.01		21.33	0.81
3.167	0.87		9.250	2.15		15.333	2.01		21.42	0.81
3.250	0.87		9.333	2.15		15.417	2.01		21.50	0.81
3.333	0.87		9.417	2.15		15.500	2.01		21.58	0.81
3.417	0.87		9.500	2.15		15.583	2.01		21.67	0.81
3.500	0.87		9.583	2.15		15.667	2.01		21.75	0.81
3.583	0.87		9.667	2.15		15.750	2.01		21.83	0.81
3.667	0.87		9.750	2.42		15.833	2.01		21.92	0.81
3.750	0.87		9.833	2.42		15.917	2.01		22.00	0.81
3.833	0.87		9.917	2.42		16.000	2.01		22.08	0.81
3.917	0.87		10.000	2.42		16.083	2.01		22.17	0.81
4.000	0.87		10.083	2.42		16.167	2.01		22.25	0.81
4.083	0.87		10.167	2.42		16.250	1.21		22.33	0.81
4.167	0.87		10.250	3.09		16.333	1.21		22.42	0.81
4.250	1.07		10.333	3.09		16.417	1.21		22.50	0.81
4.333	1.07		10.417	3.09		16.500	1.21		22.58	0.81
4.417	1.07		10.500	3.09		16.583	1.21		22.67	0.81
4.500	1.07		10.583	3.09		16.667	1.21		22.75	0.81
4.583	1.07		10.667	3.09		16.750	1.21		22.83	0.81
4.667	1.07		10.750	4.16		16.833	1.21		22.92	0.81
4.750	1.07		10.833	4.16		16.917	1.21		23.00	0.81
4.833	1.07		10.917	4.16		17.000	1.21		23.08	0.81
4.917	1.07		11.000	4.16		17.083	1.21		23.17	0.81
5.000	1.07		11.083	4.16		17.167	1.21		23.25	0.81
5.083	1.07		11.167	4.16		17.250	1.21		23.33	0.81
5.167	1.07		11.250	6.45		17.333	1.21		23.42	0.81
5.250	1.07		11.333	6.45		17.417	1.21		23.50	0.81
5.333	1.07		11.417	6.45		17.500	1.21		23.58	0.81
5.417	1.07		11.500	6.45		17.583	1.21		23.67	0.81
5.500	1.07		11.583	6.45		17.667	1.21		23.75	0.81
5.583	1.07		11.667	6.45		17.750	1.21		23.83	0.81
5.667	1.07		11.750	19.87		17.833	1.21		23.92	0.81
5.750	1.07		11.833	19.88		17.917	1.21		24.00	0.81

5.833	1.07	11.917	51.03	18.000	1.21	24.08	0.81
5.917	1.07	12.000	51.03	18.083	1.21	24.17	0.81
6.000	1.07	12.083	82.19	18.167	1.21		
6.083	1.07	12.167	82.19	18.250	1.21		

Max.Eff.Inten. (mm/hr)= 82.19 56.69
over (min) 5.00 10.00
Storage Coeff. (min)= 1.05 (ii) 7.78 (ii)
Unit Hyd. Tpeak (min)= 5.00 10.00
Unit Hyd. peak (cms)= 0.34 0.13

TOTALS
PEAK FLOW (cms)= 0.03 0.01 0.048 (iii)
TIME TO PEAK (hrs)= 12.17 12.17 12.17
RUNOFF VOLUME (mm)= 65.65 30.47 48.05
TOTAL RAINFALL (mm)= 67.15 67.15 67.15
RUNOFF COEFFICIENT = 0.98 0.45 0.72

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 75.0 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 (0200):	10.86	1.528	12.17	47.64
+ ID2= 2 (0201):	1.43	0.200	12.17	45.58
=====				
ID = 3 (1000):	12.29	1.729	12.17	47.40

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):	12.29	1.729	12.17	47.40
+ ID2= 2 (0202):	1.26	0.176	12.17	43.99
=====				
ID = 1 (1000):	13.55	1.905	12.17	47.09

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):	13.55	1.905	12.17	47.09
+ ID2= 2 (0203):	0.29	0.026	12.17	28.31
=====				
ID = 3 (1000):	13.84	1.931	12.17	46.69

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (1000)	AREA	QPEAK	TPEAK	R.V.
-----	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (1000):	13.84	1.931	12.17	46.69
+ ID2= 2 (0204):	0.30	0.048	12.17	48.05
=====				
ID = 1 (1000):	14.14	1.979	12.17	46.72

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

=====

=====

```
V      V      I      SSSSS  U      U      A      L      (v 6.2.2015)
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
```

Developed and Distributed by Smart City Water Inc

Copyright 2007 - 2022 Smart City Water Inc

All rights reserved.

***** 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\jangsoo.lee\AppData\Local\Civica\VH5\191a91e0-1a14-44fd-bc00-4941023c7dee\laf4fd10-5ce

c-457d-bfc7-59796c16fab9\

Summary filename:

C:\Users\jangsoo.lee\AppData\Local\Civica\VH5\191a91e0-1a14-44fd-bc00-4941023c7dee\laf4fd10-5ce

c-457d-bfc7-59796c16fab9\

DATE: 09/25/2024

TIME: 11:26:59

USER:

COMMENTS: _____

** SIMULATION : 5yr 24hr 10min SCS Type II **

READ STORM	Filename: C:\Users\jangsoo.lee\AppData
	ata\Local\Temp\
	c043b895-d4c4-42b1-9a94-e27dedc1a594\0156f81c
Ptotal= 88.91 mm	Comments: 5yr 24hr 10min SCS Type II

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.00	0.00	6.17	1.60	12.33	12.80	18.50	1.60
0.17	0.98	6.33	1.60	12.50	12.80	18.67	1.60
0.33	0.98	6.50	1.60	12.67	6.58	18.83	1.60
0.50	0.98	6.67	1.60	12.83	6.58	19.00	1.60
0.67	0.98	6.83	1.60	13.00	6.58	19.17	1.60
0.83	0.98	7.00	1.60	13.17	4.80	19.33	1.60
1.00	0.98	7.17	1.96	13.33	4.80	19.50	1.60
1.17	0.98	7.33	1.96	13.50	4.80	19.67	1.60
1.33	0.98	7.50	1.96	13.67	3.73	19.83	1.60
1.50	0.98	7.67	1.96	13.83	3.73	20.00	1.60
1.67	0.98	7.83	1.96	14.00	3.73	20.17	1.07
1.83	0.98	8.00	1.96	14.17	2.67	20.33	1.07
2.00	0.98	8.17	2.31	14.33	2.67	20.50	1.07
2.17	1.16	8.33	2.31	14.50	2.67	20.67	1.07
2.33	1.16	8.50	2.31	14.67	2.67	20.83	1.07
2.50	1.16	8.67	2.49	14.83	2.67	21.00	1.07
2.67	1.16	8.83	2.49	15.00	2.67	21.17	1.07
2.83	1.16	9.00	2.49	15.17	2.67	21.33	1.07
3.00	1.16	9.17	2.85	15.33	2.67	21.50	1.07
3.17	1.16	9.33	2.85	15.50	2.67	21.67	1.07
3.33	1.16	9.50	2.85	15.67	2.67	21.83	1.07
3.50	1.16	9.67	3.20	15.83	2.67	22.00	1.07
3.67	1.16	9.83	3.20	16.00	2.67	22.17	1.07
3.83	1.16	10.00	3.20	16.17	1.60	22.33	1.07
4.00	1.16	10.17	4.09	16.33	1.60	22.50	1.07
4.17	1.42	10.33	4.09	16.50	1.60	22.67	1.07
4.33	1.42	10.50	4.09	16.67	1.60	22.83	1.07
4.50	1.42	10.67	5.51	16.83	1.60	23.00	1.07
4.67	1.42	10.83	5.51	17.00	1.60	23.17	1.07
4.83	1.42	11.00	5.51	17.17	1.60	23.33	1.07
5.00	1.42	11.17	8.54	17.33	1.60	23.50	1.07
5.17	1.42	11.33	8.54	17.50	1.60	23.67	1.07
5.33	1.42	11.50	8.54	17.67	1.60	23.83	1.07
5.50	1.42	11.67	26.32	17.83	1.60	24.00	1.07
5.67	1.42	11.83	67.57	18.00	1.60		
5.83	1.42	12.00	108.83	18.17	1.60		
6.00	1.42	12.17	12.80	18.33	1.60		

CALIB					
STANDHYD (0200)	Area	(ha)=	10.86		
ID= 1 DT= 5.0 min	Total Imp(%)=	60.00	Dir. Conn.(%)=	50.00	

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	6.52	4.34
Dep. Storage	(mm)=	1.50	5.00
Average Slope	(%)=	2.00	2.00
Length	(m)=	269.07	30.00
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	0.00	6.167	1.42	12.250	12.82	18.33	1.60
0.167	0.00	6.250	1.60	12.333	12.80	18.42	1.60
0.250	0.98	6.333	1.60	12.417	12.80	18.50	1.60
0.333	0.98	6.417	1.60	12.500	12.80	18.58	1.60
0.417	0.98	6.500	1.60	12.583	12.80	18.67	1.60
0.500	0.98	6.583	1.60	12.667	12.80	18.75	1.60
0.583	0.98	6.667	1.60	12.750	6.58	18.83	1.60
0.667	0.98	6.750	1.60	12.833	6.58	18.92	1.60
0.750	0.98	6.833	1.60	12.917	6.58	19.00	1.60
0.833	0.98	6.917	1.60	13.000	6.58	19.08	1.60
0.917	0.98	7.000	1.60	13.083	6.58	19.17	1.60
1.000	0.98	7.083	1.60	13.167	6.58	19.25	1.60
1.083	0.98	7.167	1.60	13.250	4.80	19.33	1.60
1.167	0.98	7.250	1.96	13.333	4.80	19.42	1.60
1.250	0.98	7.333	1.96	13.417	4.80	19.50	1.60
1.333	0.98	7.417	1.96	13.500	4.80	19.58	1.60
1.417	0.98	7.500	1.96	13.583	4.80	19.67	1.60
1.500	0.98	7.583	1.96	13.667	4.80	19.75	1.60
1.583	0.98	7.667	1.96	13.750	3.73	19.83	1.60
1.667	0.98	7.750	1.96	13.833	3.73	19.92	1.60
1.750	0.98	7.833	1.96	13.917	3.73	20.00	1.60
1.833	0.98	7.917	1.96	14.000	3.73	20.08	1.60
1.917	0.98	8.000	1.96	14.083	3.73	20.17	1.60
2.000	0.98	8.083	1.96	14.167	3.73	20.25	1.07
2.083	0.98	8.167	1.96	14.250	2.67	20.33	1.07
2.167	0.98	8.250	2.31	14.333	2.67	20.42	1.07
2.250	1.16	8.333	2.31	14.417	2.67	20.50	1.07
2.333	1.16	8.417	2.31	14.500	2.67	20.58	1.07
2.417	1.16	8.500	2.31	14.583	2.67	20.67	1.07
2.500	1.16	8.583	2.31	14.667	2.67	20.75	1.07
2.583	1.16	8.667	2.31	14.750	2.67	20.83	1.07
2.667	1.16	8.750	2.49	14.833	2.67	20.92	1.07
2.750	1.16	8.833	2.49	14.917	2.67	21.00	1.07
2.833	1.16	8.917	2.49	15.000	2.67	21.08	1.07
2.917	1.16	9.000	2.49	15.083	2.67	21.17	1.07
3.000	1.16	9.083	2.49	15.167	2.67	21.25	1.07
3.083	1.16	9.167	2.49	15.250	2.67	21.33	1.07
3.167	1.16	9.250	2.85	15.333	2.67	21.42	1.07
3.250	1.16	9.333	2.85	15.417	2.67	21.50	1.07
3.333	1.16	9.417	2.85	15.500	2.67	21.58	1.07
3.417	1.16	9.500	2.85	15.583	2.67	21.67	1.07
3.500	1.16	9.583	2.85	15.667	2.67	21.75	1.07
3.583	1.16	9.667	2.85	15.750	2.67	21.83	1.07
3.667	1.16	9.750	3.20	15.833	2.67	21.92	1.07
3.750	1.16	9.833	3.20	15.917	2.67	22.00	1.07
3.833	1.16	9.917	3.20	16.000	2.67	22.08	1.07

3.917	1.16	10.000	3.20	16.083	2.67	22.17	1.07
4.000	1.16	10.083	3.20	16.167	2.67	22.25	1.07
4.083	1.16	10.167	3.20	16.250	1.60	22.33	1.07
4.167	1.16	10.250	4.09	16.333	1.60	22.42	1.07
4.250	1.42	10.333	4.09	16.417	1.60	22.50	1.07
4.333	1.42	10.417	4.09	16.500	1.60	22.58	1.07
4.417	1.42	10.500	4.09	16.583	1.60	22.67	1.07
4.500	1.42	10.583	4.09	16.667	1.60	22.75	1.07
4.583	1.42	10.667	4.09	16.750	1.60	22.83	1.07
4.667	1.42	10.750	5.51	16.833	1.60	22.92	1.07
4.750	1.42	10.833	5.51	16.917	1.60	23.00	1.07
4.833	1.42	10.917	5.51	17.000	1.60	23.08	1.07
4.917	1.42	11.000	5.51	17.083	1.60	23.17	1.07
5.000	1.42	11.083	5.51	17.167	1.60	23.25	1.07
5.083	1.42	11.167	5.51	17.250	1.60	23.33	1.07
5.167	1.42	11.250	8.54	17.333	1.60	23.42	1.07
5.250	1.42	11.333	8.54	17.417	1.60	23.50	1.07
5.333	1.42	11.417	8.54	17.500	1.60	23.58	1.07
5.417	1.42	11.500	8.54	17.583	1.60	23.67	1.07
5.500	1.42	11.583	8.54	17.667	1.60	23.75	1.07
5.583	1.42	11.667	8.54	17.750	1.60	23.83	1.07
5.667	1.42	11.750	26.32	17.833	1.60	23.92	1.07
5.750	1.42	11.833	26.32	17.917	1.60	24.00	1.07
5.833	1.42	11.917	67.57	18.000	1.60	24.08	1.07
5.917	1.42	12.000	67.57	18.083	1.60	24.17	1.07
6.000	1.42	12.083	108.82	18.167	1.60		
6.083	1.42	12.167	108.83	18.250	1.60		

Max.Eff.Inten. (mm/hr)=108.8385.31

over (min)5.0010.00

Storage Coeff. (min)=3.63 (ii)9.96 (ii)

Unit Hyd. Tpeak (min)=5.0010.00

Unit Hyd. peak (cms)=0.250.11

TOTALS

PEAK FLOW (cms)=1.600.692.294 (iii)

TIME TO PEAK (hrs)=12.1712.1712.17

RUNOFF VOLUME (mm)=87.4146.1366.77

TOTAL RAINFALL (mm)=88.9188.9188.91

RUNOFF COEFFICIENT =0.980.520.75

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 74.0Ia = 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)= 1.26

| ID= 1 DT= 5.0 min | Total Imp(%)= 55.00 Dir. Conn.(%)= 35.00

```

-----
                IMPERVIOUS      PERVIOUS (i)
Surface Area    (ha)=          0.69      0.57
Dep. Storage    (mm)=          1.50      5.00
Average Slope   (%)=          2.00      2.00
Length          (m)=          91.65     30.00
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	0.00	6.167	1.42	12.250	12.82	18.33	1.60
0.167	0.00	6.250	1.60	12.333	12.80	18.42	1.60
0.250	0.98	6.333	1.60	12.417	12.80	18.50	1.60
0.333	0.98	6.417	1.60	12.500	12.80	18.58	1.60
0.417	0.98	6.500	1.60	12.583	12.80	18.67	1.60
0.500	0.98	6.583	1.60	12.667	12.80	18.75	1.60
0.583	0.98	6.667	1.60	12.750	6.58	18.83	1.60
0.667	0.98	6.750	1.60	12.833	6.58	18.92	1.60
0.750	0.98	6.833	1.60	12.917	6.58	19.00	1.60
0.833	0.98	6.917	1.60	13.000	6.58	19.08	1.60
0.917	0.98	7.000	1.60	13.083	6.58	19.17	1.60
1.000	0.98	7.083	1.60	13.167	6.58	19.25	1.60
1.083	0.98	7.167	1.60	13.250	4.80	19.33	1.60
1.167	0.98	7.250	1.96	13.333	4.80	19.42	1.60
1.250	0.98	7.333	1.96	13.417	4.80	19.50	1.60
1.333	0.98	7.417	1.96	13.500	4.80	19.58	1.60
1.417	0.98	7.500	1.96	13.583	4.80	19.67	1.60
1.500	0.98	7.583	1.96	13.667	4.80	19.75	1.60
1.583	0.98	7.667	1.96	13.750	3.73	19.83	1.60
1.667	0.98	7.750	1.96	13.833	3.73	19.92	1.60
1.750	0.98	7.833	1.96	13.917	3.73	20.00	1.60
1.833	0.98	7.917	1.96	14.000	3.73	20.08	1.60
1.917	0.98	8.000	1.96	14.083	3.73	20.17	1.60
2.000	0.98	8.083	1.96	14.167	3.73	20.25	1.07
2.083	0.98	8.167	1.96	14.250	2.67	20.33	1.07
2.167	0.98	8.250	2.31	14.333	2.67	20.42	1.07
2.250	1.16	8.333	2.31	14.417	2.67	20.50	1.07
2.333	1.16	8.417	2.31	14.500	2.67	20.58	1.07
2.417	1.16	8.500	2.31	14.583	2.67	20.67	1.07
2.500	1.16	8.583	2.31	14.667	2.67	20.75	1.07
2.583	1.16	8.667	2.31	14.750	2.67	20.83	1.07
2.667	1.16	8.750	2.49	14.833	2.67	20.92	1.07
2.750	1.16	8.833	2.49	14.917	2.67	21.00	1.07
2.833	1.16	8.917	2.49	15.000	2.67	21.08	1.07
2.917	1.16	9.000	2.49	15.083	2.67	21.17	1.07
3.000	1.16	9.083	2.49	15.167	2.67	21.25	1.07
3.083	1.16	9.167	2.49	15.250	2.67	21.33	1.07
3.167	1.16	9.250	2.85	15.333	2.67	21.42	1.07
3.250	1.16	9.333	2.85	15.417	2.67	21.50	1.07

3.333	1.16		9.417	2.85		15.500	2.67		21.58	1.07
3.417	1.16		9.500	2.85		15.583	2.67		21.67	1.07
3.500	1.16		9.583	2.85		15.667	2.67		21.75	1.07
3.583	1.16		9.667	2.85		15.750	2.67		21.83	1.07
3.667	1.16		9.750	3.20		15.833	2.67		21.92	1.07
3.750	1.16		9.833	3.20		15.917	2.67		22.00	1.07
3.833	1.16		9.917	3.20		16.000	2.67		22.08	1.07
3.917	1.16		10.000	3.20		16.083	2.67		22.17	1.07
4.000	1.16		10.083	3.20		16.167	2.67		22.25	1.07
4.083	1.16		10.167	3.20		16.250	1.60		22.33	1.07
4.167	1.16		10.250	4.09		16.333	1.60		22.42	1.07
4.250	1.42		10.333	4.09		16.417	1.60		22.50	1.07
4.333	1.42		10.417	4.09		16.500	1.60		22.58	1.07
4.417	1.42		10.500	4.09		16.583	1.60		22.67	1.07
4.500	1.42		10.583	4.09		16.667	1.60		22.75	1.07
4.583	1.42		10.667	4.09		16.750	1.60		22.83	1.07
4.667	1.42		10.750	5.51		16.833	1.60		22.92	1.07
4.750	1.42		10.833	5.51		16.917	1.60		23.00	1.07
4.833	1.42		10.917	5.51		17.000	1.60		23.08	1.07
4.917	1.42		11.000	5.51		17.083	1.60		23.17	1.07
5.000	1.42		11.083	5.51		17.167	1.60		23.25	1.07
5.083	1.42		11.167	5.51		17.250	1.60		23.33	1.07
5.167	1.42		11.250	8.54		17.333	1.60		23.42	1.07
5.250	1.42		11.333	8.54		17.417	1.60		23.50	1.07
5.333	1.42		11.417	8.54		17.500	1.60		23.58	1.07
5.417	1.42		11.500	8.54		17.583	1.60		23.67	1.07
5.500	1.42		11.583	8.54		17.667	1.60		23.75	1.07
5.583	1.42		11.667	8.54		17.750	1.60		23.83	1.07
5.667	1.42		11.750	26.32		17.833	1.60		23.92	1.07
5.750	1.42		11.833	26.32		17.917	1.60		24.00	1.07
5.833	1.42		11.917	67.57		18.000	1.60		24.08	1.07
5.917	1.42		12.000	67.57		18.083	1.60		24.17	1.07
6.000	1.42		12.083	108.82		18.167	1.60			
6.083	1.42		12.167	108.83		18.250	1.60			

Max.Eff.Inten. (mm/hr)=	108.83	105.57
over (min)	5.00	10.00
Storage Coeff. (min)=	1.90 (ii)	7.72 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.32	0.13

TOTALS

PEAK FLOW (cms)=	0.13	0.12	0.257 (iii)
TIME TO PEAK (hrs)=	12.17	12.17	12.17
RUNOFF VOLUME (mm)=	87.41	49.59	62.82
TOTAL RAINFALL (mm)=	88.91	88.91	88.91
RUNOFF COEFFICIENT =	0.98	0.56	0.71

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:

CN* = 74.0 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)= 1.43
| ID= 1 DT= 5.0 min | Total Imp(%)= 50.00 Dir. Conn.(%)= 50.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.71	0.71
Dep. Storage	(mm)=	1.50	5.00
Average Slope	(%)=	2.00	2.00
Length	(m)=	97.64	30.00
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	0.00	6.167	1.42	12.250	12.82	18.33	1.60
0.167	0.00	6.250	1.60	12.333	12.80	18.42	1.60
0.250	0.98	6.333	1.60	12.417	12.80	18.50	1.60
0.333	0.98	6.417	1.60	12.500	12.80	18.58	1.60
0.417	0.98	6.500	1.60	12.583	12.80	18.67	1.60
0.500	0.98	6.583	1.60	12.667	12.80	18.75	1.60
0.583	0.98	6.667	1.60	12.750	6.58	18.83	1.60
0.667	0.98	6.750	1.60	12.833	6.58	18.92	1.60
0.750	0.98	6.833	1.60	12.917	6.58	19.00	1.60
0.833	0.98	6.917	1.60	13.000	6.58	19.08	1.60
0.917	0.98	7.000	1.60	13.083	6.58	19.17	1.60
1.000	0.98	7.083	1.60	13.167	6.58	19.25	1.60
1.083	0.98	7.167	1.60	13.250	4.80	19.33	1.60
1.167	0.98	7.250	1.96	13.333	4.80	19.42	1.60
1.250	0.98	7.333	1.96	13.417	4.80	19.50	1.60
1.333	0.98	7.417	1.96	13.500	4.80	19.58	1.60
1.417	0.98	7.500	1.96	13.583	4.80	19.67	1.60
1.500	0.98	7.583	1.96	13.667	4.80	19.75	1.60
1.583	0.98	7.667	1.96	13.750	3.73	19.83	1.60
1.667	0.98	7.750	1.96	13.833	3.73	19.92	1.60
1.750	0.98	7.833	1.96	13.917	3.73	20.00	1.60
1.833	0.98	7.917	1.96	14.000	3.73	20.08	1.60
1.917	0.98	8.000	1.96	14.083	3.73	20.17	1.60
2.000	0.98	8.083	1.96	14.167	3.73	20.25	1.07
2.083	0.98	8.167	1.96	14.250	2.67	20.33	1.07
2.167	0.98	8.250	2.31	14.333	2.67	20.42	1.07
2.250	1.16	8.333	2.31	14.417	2.67	20.50	1.07
2.333	1.16	8.417	2.31	14.500	2.67	20.58	1.07
2.417	1.16	8.500	2.31	14.583	2.67	20.67	1.07
2.500	1.16	8.583	2.31	14.667	2.67	20.75	1.07
2.583	1.16	8.667	2.31	14.750	2.67	20.83	1.07
2.667	1.16	8.750	2.49	14.833	2.67	20.92	1.07

2.750	1.16		8.833	2.49		14.917	2.67		21.00	1.07
2.833	1.16		8.917	2.49		15.000	2.67		21.08	1.07
2.917	1.16		9.000	2.49		15.083	2.67		21.17	1.07
3.000	1.16		9.083	2.49		15.167	2.67		21.25	1.07
3.083	1.16		9.167	2.49		15.250	2.67		21.33	1.07
3.167	1.16		9.250	2.85		15.333	2.67		21.42	1.07
3.250	1.16		9.333	2.85		15.417	2.67		21.50	1.07
3.333	1.16		9.417	2.85		15.500	2.67		21.58	1.07
3.417	1.16		9.500	2.85		15.583	2.67		21.67	1.07
3.500	1.16		9.583	2.85		15.667	2.67		21.75	1.07
3.583	1.16		9.667	2.85		15.750	2.67		21.83	1.07
3.667	1.16		9.750	3.20		15.833	2.67		21.92	1.07
3.750	1.16		9.833	3.20		15.917	2.67		22.00	1.07
3.833	1.16		9.917	3.20		16.000	2.67		22.08	1.07
3.917	1.16		10.000	3.20		16.083	2.67		22.17	1.07
4.000	1.16		10.083	3.20		16.167	2.67		22.25	1.07
4.083	1.16		10.167	3.20		16.250	1.60		22.33	1.07
4.167	1.16		10.250	4.09		16.333	1.60		22.42	1.07
4.250	1.42		10.333	4.09		16.417	1.60		22.50	1.07
4.333	1.42		10.417	4.09		16.500	1.60		22.58	1.07
4.417	1.42		10.500	4.09		16.583	1.60		22.67	1.07
4.500	1.42		10.583	4.09		16.667	1.60		22.75	1.07
4.583	1.42		10.667	4.09		16.750	1.60		22.83	1.07
4.667	1.42		10.750	5.51		16.833	1.60		22.92	1.07
4.750	1.42		10.833	5.51		16.917	1.60		23.00	1.07
4.833	1.42		10.917	5.51		17.000	1.60		23.08	1.07
4.917	1.42		11.000	5.51		17.083	1.60		23.17	1.07
5.000	1.42		11.083	5.51		17.167	1.60		23.25	1.07
5.083	1.42		11.167	5.51		17.250	1.60		23.33	1.07
5.167	1.42		11.250	8.54		17.333	1.60		23.42	1.07
5.250	1.42		11.333	8.54		17.417	1.60		23.50	1.07
5.333	1.42		11.417	8.54		17.500	1.60		23.58	1.07
5.417	1.42		11.500	8.54		17.583	1.60		23.67	1.07
5.500	1.42		11.583	8.54		17.667	1.60		23.75	1.07
5.583	1.42		11.667	8.54		17.750	1.60		23.83	1.07
5.667	1.42		11.750	26.32		17.833	1.60		23.92	1.07
5.750	1.42		11.833	26.32		17.917	1.60		24.00	1.07
5.833	1.42		11.917	67.57		18.000	1.60		24.08	1.07
5.917	1.42		12.000	67.57		18.083	1.60		24.17	1.07
6.000	1.42		12.083	108.82		18.167	1.60			
6.083	1.42		12.167	108.83		18.250	1.60			

Max.Eff.Inten. (mm/hr)=	108.83	60.42
over (min)	5.00	10.00
Storage Coeff. (min)=	1.98 (ii)	9.24 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.31	0.12

TOTALS

PEAK FLOW (cms)=	0.22	0.08	0.298 (iii)
TIME TO PEAK (hrs)=	12.17	12.17	12.17
RUNOFF VOLUME (mm)=	87.41	40.66	64.03
TOTAL RAINFALL (mm)=	88.91	88.91	88.91
RUNOFF COEFFICIENT =	0.98	0.46	0.72

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 74.0 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 (0203) | Area (ha)= 0.29
| ID= 1 DT= 5.0 min | Total Imp(%)= 7.00 Dir. Conn.(%)= 7.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.02	0.27
Dep. Storage	(mm)=	1.50	5.00
Average Slope	(%)=	2.00	2.00
Length	(m)=	43.97	15.00
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	0.00	6.167	1.42	12.250	12.82	18.33	1.60
0.167	0.00	6.250	1.60	12.333	12.80	18.42	1.60
0.250	0.98	6.333	1.60	12.417	12.80	18.50	1.60
0.333	0.98	6.417	1.60	12.500	12.80	18.58	1.60
0.417	0.98	6.500	1.60	12.583	12.80	18.67	1.60
0.500	0.98	6.583	1.60	12.667	12.80	18.75	1.60
0.583	0.98	6.667	1.60	12.750	6.58	18.83	1.60
0.667	0.98	6.750	1.60	12.833	6.58	18.92	1.60
0.750	0.98	6.833	1.60	12.917	6.58	19.00	1.60
0.833	0.98	6.917	1.60	13.000	6.58	19.08	1.60
0.917	0.98	7.000	1.60	13.083	6.58	19.17	1.60
1.000	0.98	7.083	1.60	13.167	6.58	19.25	1.60
1.083	0.98	7.167	1.60	13.250	4.80	19.33	1.60
1.167	0.98	7.250	1.96	13.333	4.80	19.42	1.60
1.250	0.98	7.333	1.96	13.417	4.80	19.50	1.60
1.333	0.98	7.417	1.96	13.500	4.80	19.58	1.60
1.417	0.98	7.500	1.96	13.583	4.80	19.67	1.60
1.500	0.98	7.583	1.96	13.667	4.80	19.75	1.60
1.583	0.98	7.667	1.96	13.750	3.73	19.83	1.60
1.667	0.98	7.750	1.96	13.833	3.73	19.92	1.60
1.750	0.98	7.833	1.96	13.917	3.73	20.00	1.60
1.833	0.98	7.917	1.96	14.000	3.73	20.08	1.60
1.917	0.98	8.000	1.96	14.083	3.73	20.17	1.60
2.000	0.98	8.083	1.96	14.167	3.73	20.25	1.07
2.083	0.98	8.167	1.96	14.250	2.67	20.33	1.07

2.167	0.98		8.250	2.31		14.333	2.67		20.42	1.07
2.250	1.16		8.333	2.31		14.417	2.67		20.50	1.07
2.333	1.16		8.417	2.31		14.500	2.67		20.58	1.07
2.417	1.16		8.500	2.31		14.583	2.67		20.67	1.07
2.500	1.16		8.583	2.31		14.667	2.67		20.75	1.07
2.583	1.16		8.667	2.31		14.750	2.67		20.83	1.07
2.667	1.16		8.750	2.49		14.833	2.67		20.92	1.07
2.750	1.16		8.833	2.49		14.917	2.67		21.00	1.07
2.833	1.16		8.917	2.49		15.000	2.67		21.08	1.07
2.917	1.16		9.000	2.49		15.083	2.67		21.17	1.07
3.000	1.16		9.083	2.49		15.167	2.67		21.25	1.07
3.083	1.16		9.167	2.49		15.250	2.67		21.33	1.07
3.167	1.16		9.250	2.85		15.333	2.67		21.42	1.07
3.250	1.16		9.333	2.85		15.417	2.67		21.50	1.07
3.333	1.16		9.417	2.85		15.500	2.67		21.58	1.07
3.417	1.16		9.500	2.85		15.583	2.67		21.67	1.07
3.500	1.16		9.583	2.85		15.667	2.67		21.75	1.07
3.583	1.16		9.667	2.85		15.750	2.67		21.83	1.07
3.667	1.16		9.750	3.20		15.833	2.67		21.92	1.07
3.750	1.16		9.833	3.20		15.917	2.67		22.00	1.07
3.833	1.16		9.917	3.20		16.000	2.67		22.08	1.07
3.917	1.16		10.000	3.20		16.083	2.67		22.17	1.07
4.000	1.16		10.083	3.20		16.167	2.67		22.25	1.07
4.083	1.16		10.167	3.20		16.250	1.60		22.33	1.07
4.167	1.16		10.250	4.09		16.333	1.60		22.42	1.07
4.250	1.42		10.333	4.09		16.417	1.60		22.50	1.07
4.333	1.42		10.417	4.09		16.500	1.60		22.58	1.07
4.417	1.42		10.500	4.09		16.583	1.60		22.67	1.07
4.500	1.42		10.583	4.09		16.667	1.60		22.75	1.07
4.583	1.42		10.667	4.09		16.750	1.60		22.83	1.07
4.667	1.42		10.750	5.51		16.833	1.60		22.92	1.07
4.750	1.42		10.833	5.51		16.917	1.60		23.00	1.07
4.833	1.42		10.917	5.51		17.000	1.60		23.08	1.07
4.917	1.42		11.000	5.51		17.083	1.60		23.17	1.07
5.000	1.42		11.083	5.51		17.167	1.60		23.25	1.07
5.083	1.42		11.167	5.51		17.250	1.60		23.33	1.07
5.167	1.42		11.250	8.54		17.333	1.60		23.42	1.07
5.250	1.42		11.333	8.54		17.417	1.60		23.50	1.07
5.333	1.42		11.417	8.54		17.500	1.60		23.58	1.07
5.417	1.42		11.500	8.54		17.583	1.60		23.67	1.07
5.500	1.42		11.583	8.54		17.667	1.60		23.75	1.07
5.583	1.42		11.667	8.54		17.750	1.60		23.83	1.07
5.667	1.42		11.750	26.32		17.833	1.60		23.92	1.07
5.750	1.42		11.833	26.32		17.917	1.60		24.00	1.07
5.833	1.42		11.917	67.57		18.000	1.60		24.08	1.07
5.917	1.42		12.000	67.57		18.083	1.60		24.17	1.07
6.000	1.42		12.083	108.82		18.167	1.60			
6.083	1.42		12.167	108.83		18.250	1.60			

Max.Eff.Inten. (mm/hr)=	108.83	60.42
over (min)	5.00	10.00
Storage Coeff. (min)=	1.23 (ii)	6.02 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00

Unit Hyd. peak	(cms)=	0.33	0.15	
				TOTALS
PEAK FLOW	(cms)=	0.01	0.04	0.042 (iii)
TIME TO PEAK	(hrs)=	12.17	12.17	12.17
RUNOFF VOLUME	(mm)=	87.41	40.66	43.92
TOTAL RAINFALL	(mm)=	88.91	88.91	88.91
RUNOFF COEFFICIENT	=	0.98	0.46	0.49

***** 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* = 74.0 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 (0204)	Area	(ha)=	0.30	
ID= 1 DT= 5.0 min	Total Imp(%)=	60.00	Dir. Conn.(%)=	50.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.18	0.12
Dep. Storage	(mm)=	1.50	5.00
Average Slope	(%)=	5.00	5.00
Length	(m)=	44.72	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	0.00	6.167	1.42	12.250	12.82	18.33	1.60
0.167	0.00	6.250	1.60	12.333	12.80	18.42	1.60
0.250	0.98	6.333	1.60	12.417	12.80	18.50	1.60
0.333	0.98	6.417	1.60	12.500	12.80	18.58	1.60
0.417	0.98	6.500	1.60	12.583	12.80	18.67	1.60
0.500	0.98	6.583	1.60	12.667	12.80	18.75	1.60
0.583	0.98	6.667	1.60	12.750	6.58	18.83	1.60
0.667	0.98	6.750	1.60	12.833	6.58	18.92	1.60
0.750	0.98	6.833	1.60	12.917	6.58	19.00	1.60
0.833	0.98	6.917	1.60	13.000	6.58	19.08	1.60
0.917	0.98	7.000	1.60	13.083	6.58	19.17	1.60
1.000	0.98	7.083	1.60	13.167	6.58	19.25	1.60
1.083	0.98	7.167	1.60	13.250	4.80	19.33	1.60
1.167	0.98	7.250	1.96	13.333	4.80	19.42	1.60
1.250	0.98	7.333	1.96	13.417	4.80	19.50	1.60
1.333	0.98	7.417	1.96	13.500	4.80	19.58	1.60

1.417	0.98		7.500	1.96		13.583	4.80		19.67	1.60
1.500	0.98		7.583	1.96		13.667	4.80		19.75	1.60
1.583	0.98		7.667	1.96		13.750	3.73		19.83	1.60
1.667	0.98		7.750	1.96		13.833	3.73		19.92	1.60
1.750	0.98		7.833	1.96		13.917	3.73		20.00	1.60
1.833	0.98		7.917	1.96		14.000	3.73		20.08	1.60
1.917	0.98		8.000	1.96		14.083	3.73		20.17	1.60
2.000	0.98		8.083	1.96		14.167	3.73		20.25	1.07
2.083	0.98		8.167	1.96		14.250	2.67		20.33	1.07
2.167	0.98		8.250	2.31		14.333	2.67		20.42	1.07
2.250	1.16		8.333	2.31		14.417	2.67		20.50	1.07
2.333	1.16		8.417	2.31		14.500	2.67		20.58	1.07
2.417	1.16		8.500	2.31		14.583	2.67		20.67	1.07
2.500	1.16		8.583	2.31		14.667	2.67		20.75	1.07
2.583	1.16		8.667	2.31		14.750	2.67		20.83	1.07
2.667	1.16		8.750	2.49		14.833	2.67		20.92	1.07
2.750	1.16		8.833	2.49		14.917	2.67		21.00	1.07
2.833	1.16		8.917	2.49		15.000	2.67		21.08	1.07
2.917	1.16		9.000	2.49		15.083	2.67		21.17	1.07
3.000	1.16		9.083	2.49		15.167	2.67		21.25	1.07
3.083	1.16		9.167	2.49		15.250	2.67		21.33	1.07
3.167	1.16		9.250	2.85		15.333	2.67		21.42	1.07
3.250	1.16		9.333	2.85		15.417	2.67		21.50	1.07
3.333	1.16		9.417	2.85		15.500	2.67		21.58	1.07
3.417	1.16		9.500	2.85		15.583	2.67		21.67	1.07
3.500	1.16		9.583	2.85		15.667	2.67		21.75	1.07
3.583	1.16		9.667	2.85		15.750	2.67		21.83	1.07
3.667	1.16		9.750	3.20		15.833	2.67		21.92	1.07
3.750	1.16		9.833	3.20		15.917	2.67		22.00	1.07
3.833	1.16		9.917	3.20		16.000	2.67		22.08	1.07
3.917	1.16		10.000	3.20		16.083	2.67		22.17	1.07
4.000	1.16		10.083	3.20		16.167	2.67		22.25	1.07
4.083	1.16		10.167	3.20		16.250	1.60		22.33	1.07
4.167	1.16		10.250	4.09		16.333	1.60		22.42	1.07
4.250	1.42		10.333	4.09		16.417	1.60		22.50	1.07
4.333	1.42		10.417	4.09		16.500	1.60		22.58	1.07
4.417	1.42		10.500	4.09		16.583	1.60		22.67	1.07
4.500	1.42		10.583	4.09		16.667	1.60		22.75	1.07
4.583	1.42		10.667	4.09		16.750	1.60		22.83	1.07
4.667	1.42		10.750	5.51		16.833	1.60		22.92	1.07
4.750	1.42		10.833	5.51		16.917	1.60		23.00	1.07
4.833	1.42		10.917	5.51		17.000	1.60		23.08	1.07
4.917	1.42		11.000	5.51		17.083	1.60		23.17	1.07
5.000	1.42		11.083	5.51		17.167	1.60		23.25	1.07
5.083	1.42		11.167	5.51		17.250	1.60		23.33	1.07
5.167	1.42		11.250	8.54		17.333	1.60		23.42	1.07
5.250	1.42		11.333	8.54		17.417	1.60		23.50	1.07
5.333	1.42		11.417	8.54		17.500	1.60		23.58	1.07
5.417	1.42		11.500	8.54		17.583	1.60		23.67	1.07
5.500	1.42		11.583	8.54		17.667	1.60		23.75	1.07
5.583	1.42		11.667	8.54		17.750	1.60		23.83	1.07
5.667	1.42		11.750	26.32		17.833	1.60		23.92	1.07
5.750	1.42		11.833	26.32		17.917	1.60		24.00	1.07

5.833	1.42	11.917	67.57	18.000	1.60		24.08	1.07
5.917	1.42	12.000	67.57	18.083	1.60		24.17	1.07
6.000	1.42	12.083	108.82	18.167	1.60			
6.083	1.42	12.167	108.83	18.250	1.60			

Max.Eff.Inten. (mm/hr)= 108.83 87.37
over (min) 5.00 10.00
Storage Coeff. (min)= 0.94 (ii) 5.68 (ii)
Unit Hyd. Tpeak (min)= 5.00 10.00
Unit Hyd. peak (cms)= 0.34 0.15

TOTALS
PEAK FLOW (cms)= 0.05 0.02 0.069 (iii)
TIME TO PEAK (hrs)= 12.17 12.17 12.17
RUNOFF VOLUME (mm)= 87.41 47.23 67.31
TOTAL RAINFALL (mm)= 88.91 88.91 88.91
RUNOFF COEFFICIENT = 0.98 0.53 0.76

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 75.0 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 (0200):	10.86	2.294	12.17	66.77
+ ID2= 2 (0201):	1.43	0.298	12.17	64.03
=====				
ID = 3 (1000):	12.29	2.592	12.17	66.45

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):	12.29	2.592	12.17	66.45
+ ID2= 2 (0202):	1.26	0.257	12.17	62.82
=====				
ID = 1 (1000):	13.55	2.849	12.17	66.11

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):	13.55	2.849	12.17	66.11
+ ID2= 2 (0203):	0.29	0.042	12.17	43.92
=====				
ID = 3 (1000):	13.84	2.892	12.17	65.65

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (1000)	AREA	QPEAK	TPEAK	R.V.
-----	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (1000):	13.84	2.892	12.17	65.65
+ ID2= 2 (0204):	0.30	0.069	12.17	67.31
=====				
ID = 1 (1000):	14.14	2.961	12.17	65.68

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

=====

=====

```
V   V   I   SSSSS   U   U   A   L           (v 6.2.2015)
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
```

Developed and Distributed by Smart City Water Inc

Copyright 2007 - 2022 Smart City Water Inc

All rights reserved.

***** 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\jangsoo.lee\AppData\Local\Civica\VH5\191a91e0-1a14-44fd-bc00-4941023c7dee\40150ab-b47e-4be5-86d1-06f20f6d16c7\

Summary filename:
C:\Users\jangsoo.lee\AppData\Local\Civica\VH5\191a91e0-1a14-44fd-bc00-4941023c7dee\40150ab-b47e-4be5-86d1-06f20f6d16c7\

DATE: 09/25/2024

TIME: 11:26:59

USER:

COMMENTS: _____

** SIMULATION : 10yr 24hr 10min SCS Type II **

READ STORM	Filename: C:\Users\jangsoo.lee\AppData
	ata\Local\Temp\
	c043b895-d4c4-42b1-9a94-e27dedc1a594\4d30c99e
Ptotal=103.09 mm	Comments: 10yr 24hr 10min SCS Type II

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.00	0.00	6.17	1.86	12.33	14.84	18.50	1.86
0.17	1.13	6.33	1.86	12.50	14.84	18.67	1.86
0.33	1.13	6.50	1.86	12.67	7.63	18.83	1.86
0.50	1.13	6.67	1.86	12.83	7.63	19.00	1.86
0.67	1.13	6.83	1.86	13.00	7.63	19.17	1.86
0.83	1.13	7.00	1.86	13.17	5.57	19.33	1.86
1.00	1.13	7.17	2.27	13.33	5.57	19.50	1.86
1.17	1.13	7.33	2.27	13.50	5.57	19.67	1.86
1.33	1.13	7.50	2.27	13.67	4.33	19.83	1.86
1.50	1.13	7.67	2.27	13.83	4.33	20.00	1.86
1.67	1.13	7.83	2.27	14.00	4.33	20.17	1.24
1.83	1.13	8.00	2.27	14.17	3.09	20.33	1.24
2.00	1.13	8.17	2.68	14.33	3.09	20.50	1.24
2.17	1.34	8.33	2.68	14.50	3.09	20.67	1.24
2.33	1.34	8.50	2.68	14.67	3.09	20.83	1.24
2.50	1.34	8.67	2.89	14.83	3.09	21.00	1.24
2.67	1.34	8.83	2.89	15.00	3.09	21.17	1.24
2.83	1.34	9.00	2.89	15.17	3.09	21.33	1.24
3.00	1.34	9.17	3.30	15.33	3.09	21.50	1.24
3.17	1.34	9.33	3.30	15.50	3.09	21.67	1.24
3.33	1.34	9.50	3.30	15.67	3.09	21.83	1.24
3.50	1.34	9.67	3.71	15.83	3.09	22.00	1.24
3.67	1.34	9.83	3.71	16.00	3.09	22.17	1.24
3.83	1.34	10.00	3.71	16.17	1.86	22.33	1.24
4.00	1.34	10.17	4.74	16.33	1.86	22.50	1.24
4.17	1.65	10.33	4.74	16.50	1.86	22.67	1.24
4.33	1.65	10.50	4.74	16.67	1.86	22.83	1.24
4.50	1.65	10.67	6.39	16.83	1.86	23.00	1.24
4.67	1.65	10.83	6.39	17.00	1.86	23.17	1.24
4.83	1.65	11.00	6.39	17.17	1.86	23.33	1.24
5.00	1.65	11.17	9.90	17.33	1.86	23.50	1.24
5.17	1.65	11.33	9.90	17.50	1.86	23.67	1.24
5.33	1.65	11.50	9.90	17.67	1.86	23.83	1.24
5.50	1.65	11.67	30.51	17.83	1.86	24.00	1.24
5.67	1.65	11.83	78.35	18.00	1.86		
5.83	1.65	12.00	126.18	18.17	1.86		
6.00	1.65	12.17	14.84	18.33	1.86		

| CALIB |
| STANDHYD (0200) |
ID= 1 DT= 5.0 min

Area (ha)= 10.86
Total Imp(%)= 60.00 Dir. Conn.(%)= 50.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	6.52	4.34
Dep. Storage	(mm)=	1.50	5.00
Average Slope	(%)=	2.00	2.00
Length	(m)=	269.07	30.00
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	0.00	6.167	1.65	12.250	14.86	18.33	1.86
0.167	0.00	6.250	1.86	12.333	14.84	18.42	1.86
0.250	1.13	6.333	1.86	12.417	14.84	18.50	1.86
0.333	1.13	6.417	1.86	12.500	14.84	18.58	1.86
0.417	1.13	6.500	1.86	12.583	14.84	18.67	1.86
0.500	1.13	6.583	1.86	12.667	14.84	18.75	1.86
0.583	1.13	6.667	1.86	12.750	7.63	18.83	1.86
0.667	1.13	6.750	1.86	12.833	7.63	18.92	1.86
0.750	1.13	6.833	1.86	12.917	7.63	19.00	1.86
0.833	1.13	6.917	1.86	13.000	7.63	19.08	1.86
0.917	1.13	7.000	1.86	13.083	7.63	19.17	1.86
1.000	1.13	7.083	1.86	13.167	7.63	19.25	1.86
1.083	1.13	7.167	1.86	13.250	5.57	19.33	1.86
1.167	1.13	7.250	2.27	13.333	5.57	19.42	1.86
1.250	1.13	7.333	2.27	13.417	5.57	19.50	1.86
1.333	1.13	7.417	2.27	13.500	5.57	19.58	1.86
1.417	1.13	7.500	2.27	13.583	5.57	19.67	1.86
1.500	1.13	7.583	2.27	13.667	5.57	19.75	1.86
1.583	1.13	7.667	2.27	13.750	4.33	19.83	1.86
1.667	1.13	7.750	2.27	13.833	4.33	19.92	1.86
1.750	1.13	7.833	2.27	13.917	4.33	20.00	1.86
1.833	1.13	7.917	2.27	14.000	4.33	20.08	1.86
1.917	1.13	8.000	2.27	14.083	4.33	20.17	1.86
2.000	1.13	8.083	2.27	14.167	4.33	20.25	1.24
2.083	1.13	8.167	2.27	14.250	3.09	20.33	1.24
2.167	1.13	8.250	2.68	14.333	3.09	20.42	1.24
2.250	1.34	8.333	2.68	14.417	3.09	20.50	1.24
2.333	1.34	8.417	2.68	14.500	3.09	20.58	1.24
2.417	1.34	8.500	2.68	14.583	3.09	20.67	1.24
2.500	1.34	8.583	2.68	14.667	3.09	20.75	1.24
2.583	1.34	8.667	2.68	14.750	3.09	20.83	1.24
2.667	1.34	8.750	2.89	14.833	3.09	20.92	1.24
2.750	1.34	8.833	2.89	14.917	3.09	21.00	1.24
2.833	1.34	8.917	2.89	15.000	3.09	21.08	1.24
2.917	1.34	9.000	2.89	15.083	3.09	21.17	1.24
3.000	1.34	9.083	2.89	15.167	3.09	21.25	1.24
3.083	1.34	9.167	2.89	15.250	3.09	21.33	1.24
3.167	1.34	9.250	3.30	15.333	3.09	21.42	1.24
3.250	1.34	9.333	3.30	15.417	3.09	21.50	1.24
3.333	1.34	9.417	3.30	15.500	3.09	21.58	1.24
3.417	1.34	9.500	3.30	15.583	3.09	21.67	1.24
3.500	1.34	9.583	3.30	15.667	3.09	21.75	1.24
3.583	1.34	9.667	3.30	15.750	3.09	21.83	1.24
3.667	1.34	9.750	3.71	15.833	3.09	21.92	1.24
3.750	1.34	9.833	3.71	15.917	3.09	22.00	1.24
3.833	1.34	9.917	3.71	16.000	3.09	22.08	1.24

3.917	1.34	10.000	3.71	16.083	3.09	22.17	1.24
4.000	1.34	10.083	3.71	16.167	3.09	22.25	1.24
4.083	1.34	10.167	3.71	16.250	1.86	22.33	1.24
4.167	1.34	10.250	4.74	16.333	1.86	22.42	1.24
4.250	1.65	10.333	4.74	16.417	1.86	22.50	1.24
4.333	1.65	10.417	4.74	16.500	1.86	22.58	1.24
4.417	1.65	10.500	4.74	16.583	1.86	22.67	1.24
4.500	1.65	10.583	4.74	16.667	1.86	22.75	1.24
4.583	1.65	10.667	4.74	16.750	1.86	22.83	1.24
4.667	1.65	10.750	6.39	16.833	1.86	22.92	1.24
4.750	1.65	10.833	6.39	16.917	1.86	23.00	1.24
4.833	1.65	10.917	6.39	17.000	1.86	23.08	1.24
4.917	1.65	11.000	6.39	17.083	1.86	23.17	1.24
5.000	1.65	11.083	6.39	17.167	1.86	23.25	1.24
5.083	1.65	11.167	6.39	17.250	1.86	23.33	1.24
5.167	1.65	11.250	9.90	17.333	1.86	23.42	1.24
5.250	1.65	11.333	9.90	17.417	1.86	23.50	1.24
5.333	1.65	11.417	9.90	17.500	1.86	23.58	1.24
5.417	1.65	11.500	9.90	17.583	1.86	23.67	1.24
5.500	1.65	11.583	9.90	17.667	1.86	23.75	1.24
5.583	1.65	11.667	9.90	17.750	1.86	23.83	1.24
5.667	1.65	11.750	30.51	17.833	1.86	23.92	1.24
5.750	1.65	11.833	30.51	17.917	1.86	24.00	1.24
5.833	1.65	11.917	78.34	18.000	1.86	24.08	1.24
5.917	1.65	12.000	78.35	18.083	1.86	24.17	1.24
6.000	1.65	12.083	126.18	18.167	1.86		
6.083	1.65	12.167	126.18	18.250	1.86		

Max.Eff.Inten. (mm/hr)=126.18106.09

over (min)5.0010.00

Storage Coeff. (min)=3.42 (ii)8.37 (ii)

Unit Hyd. Tpeak (min)=5.0010.00

Unit Hyd. peak (cms)=0.260.12

TOTALS

PEAK FLOW (cms)=1.860.932.793 (iii)

TIME TO PEAK (hrs)=12.1712.1712.17

RUNOFF VOLUME (mm)=101.5957.5979.59

TOTAL RAINFALL (mm)=103.09103.09103.09

RUNOFF COEFFICIENT =0.990.560.77

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 74.0 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)= 1.26

| ID= 1 DT= 5.0 min | Total Imp(%)= 55.00 Dir. Conn.(%)= 35.00

```

-----
                IMPERVIOUS      PERVIOUS (i)
Surface Area    (ha)=          0.69      0.57
Dep. Storage    (mm)=          1.50      5.00
Average Slope   (%)=          2.00      2.00
Length          (m)=          91.65     30.00
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	0.00	6.167	1.65	12.250	14.86	18.33	1.86
0.167	0.00	6.250	1.86	12.333	14.84	18.42	1.86
0.250	1.13	6.333	1.86	12.417	14.84	18.50	1.86
0.333	1.13	6.417	1.86	12.500	14.84	18.58	1.86
0.417	1.13	6.500	1.86	12.583	14.84	18.67	1.86
0.500	1.13	6.583	1.86	12.667	14.84	18.75	1.86
0.583	1.13	6.667	1.86	12.750	7.63	18.83	1.86
0.667	1.13	6.750	1.86	12.833	7.63	18.92	1.86
0.750	1.13	6.833	1.86	12.917	7.63	19.00	1.86
0.833	1.13	6.917	1.86	13.000	7.63	19.08	1.86
0.917	1.13	7.000	1.86	13.083	7.63	19.17	1.86
1.000	1.13	7.083	1.86	13.167	7.63	19.25	1.86
1.083	1.13	7.167	1.86	13.250	5.57	19.33	1.86
1.167	1.13	7.250	2.27	13.333	5.57	19.42	1.86
1.250	1.13	7.333	2.27	13.417	5.57	19.50	1.86
1.333	1.13	7.417	2.27	13.500	5.57	19.58	1.86
1.417	1.13	7.500	2.27	13.583	5.57	19.67	1.86
1.500	1.13	7.583	2.27	13.667	5.57	19.75	1.86
1.583	1.13	7.667	2.27	13.750	4.33	19.83	1.86
1.667	1.13	7.750	2.27	13.833	4.33	19.92	1.86
1.750	1.13	7.833	2.27	13.917	4.33	20.00	1.86
1.833	1.13	7.917	2.27	14.000	4.33	20.08	1.86
1.917	1.13	8.000	2.27	14.083	4.33	20.17	1.86
2.000	1.13	8.083	2.27	14.167	4.33	20.25	1.24
2.083	1.13	8.167	2.27	14.250	3.09	20.33	1.24
2.167	1.13	8.250	2.68	14.333	3.09	20.42	1.24
2.250	1.34	8.333	2.68	14.417	3.09	20.50	1.24
2.333	1.34	8.417	2.68	14.500	3.09	20.58	1.24
2.417	1.34	8.500	2.68	14.583	3.09	20.67	1.24
2.500	1.34	8.583	2.68	14.667	3.09	20.75	1.24
2.583	1.34	8.667	2.68	14.750	3.09	20.83	1.24
2.667	1.34	8.750	2.89	14.833	3.09	20.92	1.24
2.750	1.34	8.833	2.89	14.917	3.09	21.00	1.24
2.833	1.34	8.917	2.89	15.000	3.09	21.08	1.24
2.917	1.34	9.000	2.89	15.083	3.09	21.17	1.24
3.000	1.34	9.083	2.89	15.167	3.09	21.25	1.24
3.083	1.34	9.167	2.89	15.250	3.09	21.33	1.24
3.167	1.34	9.250	3.30	15.333	3.09	21.42	1.24
3.250	1.34	9.333	3.30	15.417	3.09	21.50	1.24

3.333	1.34		9.417	3.30		15.500	3.09		21.58	1.24
3.417	1.34		9.500	3.30		15.583	3.09		21.67	1.24
3.500	1.34		9.583	3.30		15.667	3.09		21.75	1.24
3.583	1.34		9.667	3.30		15.750	3.09		21.83	1.24
3.667	1.34		9.750	3.71		15.833	3.09		21.92	1.24
3.750	1.34		9.833	3.71		15.917	3.09		22.00	1.24
3.833	1.34		9.917	3.71		16.000	3.09		22.08	1.24
3.917	1.34		10.000	3.71		16.083	3.09		22.17	1.24
4.000	1.34		10.083	3.71		16.167	3.09		22.25	1.24
4.083	1.34		10.167	3.71		16.250	1.86		22.33	1.24
4.167	1.34		10.250	4.74		16.333	1.86		22.42	1.24
4.250	1.65		10.333	4.74		16.417	1.86		22.50	1.24
4.333	1.65		10.417	4.74		16.500	1.86		22.58	1.24
4.417	1.65		10.500	4.74		16.583	1.86		22.67	1.24
4.500	1.65		10.583	4.74		16.667	1.86		22.75	1.24
4.583	1.65		10.667	4.74		16.750	1.86		22.83	1.24
4.667	1.65		10.750	6.39		16.833	1.86		22.92	1.24
4.750	1.65		10.833	6.39		16.917	1.86		23.00	1.24
4.833	1.65		10.917	6.39		17.000	1.86		23.08	1.24
4.917	1.65		11.000	6.39		17.083	1.86		23.17	1.24
5.000	1.65		11.083	6.39		17.167	1.86		23.25	1.24
5.083	1.65		11.167	6.39		17.250	1.86		23.33	1.24
5.167	1.65		11.250	9.90		17.333	1.86		23.42	1.24
5.250	1.65		11.333	9.90		17.417	1.86		23.50	1.24
5.333	1.65		11.417	9.90		17.500	1.86		23.58	1.24
5.417	1.65		11.500	9.90		17.583	1.86		23.67	1.24
5.500	1.65		11.583	9.90		17.667	1.86		23.75	1.24
5.583	1.65		11.667	9.90		17.750	1.86		23.83	1.24
5.667	1.65		11.750	30.51		17.833	1.86		23.92	1.24
5.750	1.65		11.833	30.51		17.917	1.86		24.00	1.24
5.833	1.65		11.917	78.34		18.000	1.86		24.08	1.24
5.917	1.65		12.000	78.35		18.083	1.86		24.17	1.24
6.000	1.65		12.083	126.18		18.167	1.86			
6.083	1.65		12.167	126.18		18.250	1.86			

Max.Eff.Inten. (mm/hr)=	126.18	130.27
over (min)	5.00	10.00
Storage Coeff. (min)=	1.79 (ii)	7.14 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.32	0.14

TOTALS

PEAK FLOW (cms)=	0.15	0.16	0.313 (iii)
TIME TO PEAK (hrs)=	12.17	12.17	12.17
RUNOFF VOLUME (mm)=	101.59	61.49	75.52
TOTAL RAINFALL (mm)=	103.09	103.09	103.09
RUNOFF COEFFICIENT =	0.99	0.60	0.73

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:

CN* = 74.0 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)= 1.43
| ID= 1 DT= 5.0 min | Total Imp(%)= 50.00 Dir. Conn.(%)= 50.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.71	0.71
Dep. Storage	(mm)=	1.50	5.00
Average Slope	(%)=	2.00	2.00
Length	(m)=	97.64	30.00
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	0.00	6.167	1.65	12.250	14.86	18.33	1.86
0.167	0.00	6.250	1.86	12.333	14.84	18.42	1.86
0.250	1.13	6.333	1.86	12.417	14.84	18.50	1.86
0.333	1.13	6.417	1.86	12.500	14.84	18.58	1.86
0.417	1.13	6.500	1.86	12.583	14.84	18.67	1.86
0.500	1.13	6.583	1.86	12.667	14.84	18.75	1.86
0.583	1.13	6.667	1.86	12.750	7.63	18.83	1.86
0.667	1.13	6.750	1.86	12.833	7.63	18.92	1.86
0.750	1.13	6.833	1.86	12.917	7.63	19.00	1.86
0.833	1.13	6.917	1.86	13.000	7.63	19.08	1.86
0.917	1.13	7.000	1.86	13.083	7.63	19.17	1.86
1.000	1.13	7.083	1.86	13.167	7.63	19.25	1.86
1.083	1.13	7.167	1.86	13.250	5.57	19.33	1.86
1.167	1.13	7.250	2.27	13.333	5.57	19.42	1.86
1.250	1.13	7.333	2.27	13.417	5.57	19.50	1.86
1.333	1.13	7.417	2.27	13.500	5.57	19.58	1.86
1.417	1.13	7.500	2.27	13.583	5.57	19.67	1.86
1.500	1.13	7.583	2.27	13.667	5.57	19.75	1.86
1.583	1.13	7.667	2.27	13.750	4.33	19.83	1.86
1.667	1.13	7.750	2.27	13.833	4.33	19.92	1.86
1.750	1.13	7.833	2.27	13.917	4.33	20.00	1.86
1.833	1.13	7.917	2.27	14.000	4.33	20.08	1.86
1.917	1.13	8.000	2.27	14.083	4.33	20.17	1.86
2.000	1.13	8.083	2.27	14.167	4.33	20.25	1.24
2.083	1.13	8.167	2.27	14.250	3.09	20.33	1.24
2.167	1.13	8.250	2.68	14.333	3.09	20.42	1.24
2.250	1.34	8.333	2.68	14.417	3.09	20.50	1.24
2.333	1.34	8.417	2.68	14.500	3.09	20.58	1.24
2.417	1.34	8.500	2.68	14.583	3.09	20.67	1.24
2.500	1.34	8.583	2.68	14.667	3.09	20.75	1.24
2.583	1.34	8.667	2.68	14.750	3.09	20.83	1.24
2.667	1.34	8.750	2.89	14.833	3.09	20.92	1.24

2.750	1.34		8.833	2.89		14.917	3.09		21.00	1.24
2.833	1.34		8.917	2.89		15.000	3.09		21.08	1.24
2.917	1.34		9.000	2.89		15.083	3.09		21.17	1.24
3.000	1.34		9.083	2.89		15.167	3.09		21.25	1.24
3.083	1.34		9.167	2.89		15.250	3.09		21.33	1.24
3.167	1.34		9.250	3.30		15.333	3.09		21.42	1.24
3.250	1.34		9.333	3.30		15.417	3.09		21.50	1.24
3.333	1.34		9.417	3.30		15.500	3.09		21.58	1.24
3.417	1.34		9.500	3.30		15.583	3.09		21.67	1.24
3.500	1.34		9.583	3.30		15.667	3.09		21.75	1.24
3.583	1.34		9.667	3.30		15.750	3.09		21.83	1.24
3.667	1.34		9.750	3.71		15.833	3.09		21.92	1.24
3.750	1.34		9.833	3.71		15.917	3.09		22.00	1.24
3.833	1.34		9.917	3.71		16.000	3.09		22.08	1.24
3.917	1.34		10.000	3.71		16.083	3.09		22.17	1.24
4.000	1.34		10.083	3.71		16.167	3.09		22.25	1.24
4.083	1.34		10.167	3.71		16.250	1.86		22.33	1.24
4.167	1.34		10.250	4.74		16.333	1.86		22.42	1.24
4.250	1.65		10.333	4.74		16.417	1.86		22.50	1.24
4.333	1.65		10.417	4.74		16.500	1.86		22.58	1.24
4.417	1.65		10.500	4.74		16.583	1.86		22.67	1.24
4.500	1.65		10.583	4.74		16.667	1.86		22.75	1.24
4.583	1.65		10.667	4.74		16.750	1.86		22.83	1.24
4.667	1.65		10.750	6.39		16.833	1.86		22.92	1.24
4.750	1.65		10.833	6.39		16.917	1.86		23.00	1.24
4.833	1.65		10.917	6.39		17.000	1.86		23.08	1.24
4.917	1.65		11.000	6.39		17.083	1.86		23.17	1.24
5.000	1.65		11.083	6.39		17.167	1.86		23.25	1.24
5.083	1.65		11.167	6.39		17.250	1.86		23.33	1.24
5.167	1.65		11.250	9.90		17.333	1.86		23.42	1.24
5.250	1.65		11.333	9.90		17.417	1.86		23.50	1.24
5.333	1.65		11.417	9.90		17.500	1.86		23.58	1.24
5.417	1.65		11.500	9.90		17.583	1.86		23.67	1.24
5.500	1.65		11.583	9.90		17.667	1.86		23.75	1.24
5.583	1.65		11.667	9.90		17.750	1.86		23.83	1.24
5.667	1.65		11.750	30.51		17.833	1.86		23.92	1.24
5.750	1.65		11.833	30.51		17.917	1.86		24.00	1.24
5.833	1.65		11.917	78.34		18.000	1.86		24.08	1.24
5.917	1.65		12.000	78.35		18.083	1.86		24.17	1.24
6.000	1.65		12.083	126.18		18.167	1.86			
6.083	1.65		12.167	126.18		18.250	1.86			

Max.Eff.Inten. (mm/hr)=	126.18	76.12
over (min)	5.00	10.00
Storage Coeff. (min)=	1.86 (ii)	8.49 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.32	0.12

TOTALS

PEAK FLOW (cms)=	0.25	0.11	0.358 (iii)
TIME TO PEAK (hrs)=	12.17	12.17	12.17
RUNOFF VOLUME (mm)=	101.59	51.36	76.47
TOTAL RAINFALL (mm)=	103.09	103.09	103.09
RUNOFF COEFFICIENT =	0.99	0.50	0.74

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 74.0 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 (0203) | Area (ha)= 0.29
| ID= 1 DT= 5.0 min | Total Imp(%)= 7.00 Dir. Conn.(%)= 7.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.02	0.27
Dep. Storage	(mm)=	1.50	5.00
Average Slope	(%)=	2.00	2.00
Length	(m)=	43.97	15.00
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	0.00	6.167	1.65	12.250	14.86	18.33	1.86
0.167	0.00	6.250	1.86	12.333	14.84	18.42	1.86
0.250	1.13	6.333	1.86	12.417	14.84	18.50	1.86
0.333	1.13	6.417	1.86	12.500	14.84	18.58	1.86
0.417	1.13	6.500	1.86	12.583	14.84	18.67	1.86
0.500	1.13	6.583	1.86	12.667	14.84	18.75	1.86
0.583	1.13	6.667	1.86	12.750	7.63	18.83	1.86
0.667	1.13	6.750	1.86	12.833	7.63	18.92	1.86
0.750	1.13	6.833	1.86	12.917	7.63	19.00	1.86
0.833	1.13	6.917	1.86	13.000	7.63	19.08	1.86
0.917	1.13	7.000	1.86	13.083	7.63	19.17	1.86
1.000	1.13	7.083	1.86	13.167	7.63	19.25	1.86
1.083	1.13	7.167	1.86	13.250	5.57	19.33	1.86
1.167	1.13	7.250	2.27	13.333	5.57	19.42	1.86
1.250	1.13	7.333	2.27	13.417	5.57	19.50	1.86
1.333	1.13	7.417	2.27	13.500	5.57	19.58	1.86
1.417	1.13	7.500	2.27	13.583	5.57	19.67	1.86
1.500	1.13	7.583	2.27	13.667	5.57	19.75	1.86
1.583	1.13	7.667	2.27	13.750	4.33	19.83	1.86
1.667	1.13	7.750	2.27	13.833	4.33	19.92	1.86
1.750	1.13	7.833	2.27	13.917	4.33	20.00	1.86
1.833	1.13	7.917	2.27	14.000	4.33	20.08	1.86
1.917	1.13	8.000	2.27	14.083	4.33	20.17	1.86
2.000	1.13	8.083	2.27	14.167	4.33	20.25	1.24
2.083	1.13	8.167	2.27	14.250	3.09	20.33	1.24

2.167	1.13		8.250	2.68		14.333	3.09		20.42	1.24
2.250	1.34		8.333	2.68		14.417	3.09		20.50	1.24
2.333	1.34		8.417	2.68		14.500	3.09		20.58	1.24
2.417	1.34		8.500	2.68		14.583	3.09		20.67	1.24
2.500	1.34		8.583	2.68		14.667	3.09		20.75	1.24
2.583	1.34		8.667	2.68		14.750	3.09		20.83	1.24
2.667	1.34		8.750	2.89		14.833	3.09		20.92	1.24
2.750	1.34		8.833	2.89		14.917	3.09		21.00	1.24
2.833	1.34		8.917	2.89		15.000	3.09		21.08	1.24
2.917	1.34		9.000	2.89		15.083	3.09		21.17	1.24
3.000	1.34		9.083	2.89		15.167	3.09		21.25	1.24
3.083	1.34		9.167	2.89		15.250	3.09		21.33	1.24
3.167	1.34		9.250	3.30		15.333	3.09		21.42	1.24
3.250	1.34		9.333	3.30		15.417	3.09		21.50	1.24
3.333	1.34		9.417	3.30		15.500	3.09		21.58	1.24
3.417	1.34		9.500	3.30		15.583	3.09		21.67	1.24
3.500	1.34		9.583	3.30		15.667	3.09		21.75	1.24
3.583	1.34		9.667	3.30		15.750	3.09		21.83	1.24
3.667	1.34		9.750	3.71		15.833	3.09		21.92	1.24
3.750	1.34		9.833	3.71		15.917	3.09		22.00	1.24
3.833	1.34		9.917	3.71		16.000	3.09		22.08	1.24
3.917	1.34		10.000	3.71		16.083	3.09		22.17	1.24
4.000	1.34		10.083	3.71		16.167	3.09		22.25	1.24
4.083	1.34		10.167	3.71		16.250	1.86		22.33	1.24
4.167	1.34		10.250	4.74		16.333	1.86		22.42	1.24
4.250	1.65		10.333	4.74		16.417	1.86		22.50	1.24
4.333	1.65		10.417	4.74		16.500	1.86		22.58	1.24
4.417	1.65		10.500	4.74		16.583	1.86		22.67	1.24
4.500	1.65		10.583	4.74		16.667	1.86		22.75	1.24
4.583	1.65		10.667	4.74		16.750	1.86		22.83	1.24
4.667	1.65		10.750	6.39		16.833	1.86		22.92	1.24
4.750	1.65		10.833	6.39		16.917	1.86		23.00	1.24
4.833	1.65		10.917	6.39		17.000	1.86		23.08	1.24
4.917	1.65		11.000	6.39		17.083	1.86		23.17	1.24
5.000	1.65		11.083	6.39		17.167	1.86		23.25	1.24
5.083	1.65		11.167	6.39		17.250	1.86		23.33	1.24
5.167	1.65		11.250	9.90		17.333	1.86		23.42	1.24
5.250	1.65		11.333	9.90		17.417	1.86		23.50	1.24
5.333	1.65		11.417	9.90		17.500	1.86		23.58	1.24
5.417	1.65		11.500	9.90		17.583	1.86		23.67	1.24
5.500	1.65		11.583	9.90		17.667	1.86		23.75	1.24
5.583	1.65		11.667	9.90		17.750	1.86		23.83	1.24
5.667	1.65		11.750	30.51		17.833	1.86		23.92	1.24
5.750	1.65		11.833	30.51		17.917	1.86		24.00	1.24
5.833	1.65		11.917	78.34		18.000	1.86		24.08	1.24
5.917	1.65		12.000	78.35		18.083	1.86		24.17	1.24
6.000	1.65		12.083	126.18		18.167	1.86			
6.083	1.65		12.167	126.18		18.250	1.86			

Max.Eff.Inten. (mm/hr)=	126.18	76.12
over (min)	5.00	10.00
Storage Coeff. (min)=	1.15 (ii)	5.52 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00

Unit Hyd. peak	(cms)=	0.34	0.16	
				TOTALS
PEAK FLOW	(cms)=	0.01	0.05	0.054 (iii)
TIME TO PEAK	(hrs)=	12.17	12.17	12.17
RUNOFF VOLUME	(mm)=	101.59	51.36	54.86
TOTAL RAINFALL	(mm)=	103.09	103.09	103.09
RUNOFF COEFFICIENT	=	0.99	0.50	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* = 74.0 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 (0204)	Area	(ha)=	0.30	
ID= 1 DT= 5.0 min	Total Imp(%)=	60.00	Dir. Conn.(%)=	50.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.18	0.12
Dep. Storage	(mm)=	1.50	5.00
Average Slope	(%)=	5.00	5.00
Length	(m)=	44.72	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	0.00	6.167	1.65	12.250	14.86	18.33	1.86
0.167	0.00	6.250	1.86	12.333	14.84	18.42	1.86
0.250	1.13	6.333	1.86	12.417	14.84	18.50	1.86
0.333	1.13	6.417	1.86	12.500	14.84	18.58	1.86
0.417	1.13	6.500	1.86	12.583	14.84	18.67	1.86
0.500	1.13	6.583	1.86	12.667	14.84	18.75	1.86
0.583	1.13	6.667	1.86	12.750	7.63	18.83	1.86
0.667	1.13	6.750	1.86	12.833	7.63	18.92	1.86
0.750	1.13	6.833	1.86	12.917	7.63	19.00	1.86
0.833	1.13	6.917	1.86	13.000	7.63	19.08	1.86
0.917	1.13	7.000	1.86	13.083	7.63	19.17	1.86
1.000	1.13	7.083	1.86	13.167	7.63	19.25	1.86
1.083	1.13	7.167	1.86	13.250	5.57	19.33	1.86
1.167	1.13	7.250	2.27	13.333	5.57	19.42	1.86
1.250	1.13	7.333	2.27	13.417	5.57	19.50	1.86
1.333	1.13	7.417	2.27	13.500	5.57	19.58	1.86

1.417	1.13		7.500	2.27		13.583	5.57		19.67	1.86
1.500	1.13		7.583	2.27		13.667	5.57		19.75	1.86
1.583	1.13		7.667	2.27		13.750	4.33		19.83	1.86
1.667	1.13		7.750	2.27		13.833	4.33		19.92	1.86
1.750	1.13		7.833	2.27		13.917	4.33		20.00	1.86
1.833	1.13		7.917	2.27		14.000	4.33		20.08	1.86
1.917	1.13		8.000	2.27		14.083	4.33		20.17	1.86
2.000	1.13		8.083	2.27		14.167	4.33		20.25	1.24
2.083	1.13		8.167	2.27		14.250	3.09		20.33	1.24
2.167	1.13		8.250	2.68		14.333	3.09		20.42	1.24
2.250	1.34		8.333	2.68		14.417	3.09		20.50	1.24
2.333	1.34		8.417	2.68		14.500	3.09		20.58	1.24
2.417	1.34		8.500	2.68		14.583	3.09		20.67	1.24
2.500	1.34		8.583	2.68		14.667	3.09		20.75	1.24
2.583	1.34		8.667	2.68		14.750	3.09		20.83	1.24
2.667	1.34		8.750	2.89		14.833	3.09		20.92	1.24
2.750	1.34		8.833	2.89		14.917	3.09		21.00	1.24
2.833	1.34		8.917	2.89		15.000	3.09		21.08	1.24
2.917	1.34		9.000	2.89		15.083	3.09		21.17	1.24
3.000	1.34		9.083	2.89		15.167	3.09		21.25	1.24
3.083	1.34		9.167	2.89		15.250	3.09		21.33	1.24
3.167	1.34		9.250	3.30		15.333	3.09		21.42	1.24
3.250	1.34		9.333	3.30		15.417	3.09		21.50	1.24
3.333	1.34		9.417	3.30		15.500	3.09		21.58	1.24
3.417	1.34		9.500	3.30		15.583	3.09		21.67	1.24
3.500	1.34		9.583	3.30		15.667	3.09		21.75	1.24
3.583	1.34		9.667	3.30		15.750	3.09		21.83	1.24
3.667	1.34		9.750	3.71		15.833	3.09		21.92	1.24
3.750	1.34		9.833	3.71		15.917	3.09		22.00	1.24
3.833	1.34		9.917	3.71		16.000	3.09		22.08	1.24
3.917	1.34		10.000	3.71		16.083	3.09		22.17	1.24
4.000	1.34		10.083	3.71		16.167	3.09		22.25	1.24
4.083	1.34		10.167	3.71		16.250	1.86		22.33	1.24
4.167	1.34		10.250	4.74		16.333	1.86		22.42	1.24
4.250	1.65		10.333	4.74		16.417	1.86		22.50	1.24
4.333	1.65		10.417	4.74		16.500	1.86		22.58	1.24
4.417	1.65		10.500	4.74		16.583	1.86		22.67	1.24
4.500	1.65		10.583	4.74		16.667	1.86		22.75	1.24
4.583	1.65		10.667	4.74		16.750	1.86		22.83	1.24
4.667	1.65		10.750	6.39		16.833	1.86		22.92	1.24
4.750	1.65		10.833	6.39		16.917	1.86		23.00	1.24
4.833	1.65		10.917	6.39		17.000	1.86		23.08	1.24
4.917	1.65		11.000	6.39		17.083	1.86		23.17	1.24
5.000	1.65		11.083	6.39		17.167	1.86		23.25	1.24
5.083	1.65		11.167	6.39		17.250	1.86		23.33	1.24
5.167	1.65		11.250	9.90		17.333	1.86		23.42	1.24
5.250	1.65		11.333	9.90		17.417	1.86		23.50	1.24
5.333	1.65		11.417	9.90		17.500	1.86		23.58	1.24
5.417	1.65		11.500	9.90		17.583	1.86		23.67	1.24
5.500	1.65		11.583	9.90		17.667	1.86		23.75	1.24
5.583	1.65		11.667	9.90		17.750	1.86		23.83	1.24
5.667	1.65		11.750	30.51		17.833	1.86		23.92	1.24
5.750	1.65		11.833	30.51		17.917	1.86		24.00	1.24

	5.833	1.65	11.917	78.34	18.000	1.86	24.08	1.24
	5.917	1.65	12.000	78.35	18.083	1.86	24.17	1.24
	6.000	1.65	12.083	126.18	18.167	1.86		
	6.083	1.65	12.167	126.18	18.250	1.86		
Max.Eff.Inten. (mm/hr)=			126.18		108.39			
over (min)			5.00		10.00			
Storage Coeff. (min)=			0.89 (ii)		5.35 (ii)			
Unit Hyd. Tpeak (min)=			5.00		10.00			
Unit Hyd. peak (cms)=			0.34		0.16			
						TOTALS		
PEAK FLOW (cms)=			0.05		0.03		0.083 (iii)	
TIME TO PEAK (hrs)=			12.17		12.17		12.17	
RUNOFF VOLUME (mm)=			101.59		58.86		80.22	
TOTAL RAINFALL (mm)=			103.09		103.09		103.09	
RUNOFF COEFFICIENT =			0.99		0.57		0.78	

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 75.0 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 (0200):	10.86	2.793	12.17	79.59	
+ ID2= 2 (0201):	1.43	0.358	12.17	76.47	
=====					
ID = 3 (1000):	12.29	3.151	12.17	79.23	

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):	12.29	3.151	12.17	79.23	
+ ID2= 2 (0202):	1.26	0.313	12.17	75.52	
=====					
ID = 1 (1000):	13.55	3.464	12.17	78.88	

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):	13.55	3.464	12.17	78.88
+ ID2= 2 (0203):	0.29	0.054	12.17	54.86
=====				
ID = 3 (1000):	13.84	3.517	12.17	78.38

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (1000)	AREA	QPEAK	TPEAK	R.V.
-----	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (1000):	13.84	3.517	12.17	78.38
+ ID2= 2 (0204):	0.30	0.083	12.17	80.22
=====				
ID = 1 (1000):	14.14	3.600	12.17	78.42

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

=====

=====

```
V   V   I   SSSSS   U   U   A   L           (v 6.2.2015)
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
```

Developed and Distributed by Smart City Water Inc

Copyright 2007 - 2022 Smart City Water Inc

All rights reserved.

***** 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\jangsoo.lee\AppData\Local\Civica\VH5\191a91e0-1a14-44fd-bc00-4941023c7dee\429715b6-4803-438e-a8a2-b8b22796e93c\

Summary filename:

C:\Users\jangsoo.lee\AppData\Local\Civica\VH5\191a91e0-1a14-44fd-bc00-4941023c7dee\429715b6-4803-438e-a8a2-b8b22796e93c\

DATE: 09/25/2024

TIME: 11:26:59

USER:

COMMENTS: _____

** SIMULATION : 25yr 24 hr 10min SCS Type II **

READ STORM	Filename: C:\Users\jangsoo.lee\AppData
	ata\Local\Temp\
	c043b895-d4c4-42b1-9a94-e27dedc1a594\
Ptotal=121.70 mm	Comments: 25yr 24hr 10min SCS Type II

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.00	0.00	6.17	2.19	12.33	17.52	18.50	2.19
0.17	1.34	6.33	2.19	12.50	17.52	18.67	2.19
0.33	1.34	6.50	2.19	12.67	9.01	18.83	2.19
0.50	1.34	6.67	2.19	12.83	9.01	19.00	2.19
0.67	1.34	6.83	2.19	13.00	9.01	19.17	2.19
0.83	1.34	7.00	2.19	13.17	6.57	19.33	2.19
1.00	1.34	7.17	2.68	13.33	6.57	19.50	2.19
1.17	1.34	7.33	2.68	13.50	6.57	19.67	2.19
1.33	1.34	7.50	2.68	13.67	5.11	19.83	2.19
1.50	1.34	7.67	2.68	13.83	5.11	20.00	2.19
1.67	1.34	7.83	2.68	14.00	5.11	20.17	1.46
1.83	1.34	8.00	2.68	14.17	3.65	20.33	1.46
2.00	1.34	8.17	3.16	14.33	3.65	20.50	1.46
2.17	1.58	8.33	3.16	14.50	3.65	20.67	1.46
2.33	1.58	8.50	3.16	14.67	3.65	20.83	1.46
2.50	1.58	8.67	3.41	14.83	3.65	21.00	1.46
2.67	1.58	8.83	3.41	15.00	3.65	21.17	1.46
2.83	1.58	9.00	3.41	15.17	3.65	21.33	1.46
3.00	1.58	9.17	3.89	15.33	3.65	21.50	1.46
3.17	1.58	9.33	3.89	15.50	3.65	21.67	1.46
3.33	1.58	9.50	3.89	15.67	3.65	21.83	1.46
3.50	1.58	9.67	4.38	15.83	3.65	22.00	1.46
3.67	1.58	9.83	4.38	16.00	3.65	22.17	1.46
3.83	1.58	10.00	4.38	16.17	2.19	22.33	1.46
4.00	1.58	10.17	5.60	16.33	2.19	22.50	1.46
4.17	1.95	10.33	5.60	16.50	2.19	22.67	1.46
4.33	1.95	10.50	5.60	16.67	2.19	22.83	1.46
4.50	1.95	10.67	7.55	16.83	2.19	23.00	1.46
4.67	1.95	10.83	7.55	17.00	2.19	23.17	1.46
4.83	1.95	11.00	7.55	17.17	2.19	23.33	1.46
5.00	1.95	11.17	11.68	17.33	2.19	23.50	1.46
5.17	1.95	11.33	11.68	17.50	2.19	23.67	1.46
5.33	1.95	11.50	11.68	17.67	2.19	23.83	1.46
5.50	1.95	11.67	36.02	17.83	2.19	24.00	1.46
5.67	1.95	11.83	92.49	18.00	2.19		
5.83	1.95	12.00	148.96	18.17	2.19		
6.00	1.95	12.17	17.52	18.33	2.19		

| CALIB |
| STANDHYD (0200) |
ID= 1 DT= 5.0 min

Area (ha)= 10.86
Total Imp(%)= 60.00 Dir. Conn.(%)= 50.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	6.52	4.34
Dep. Storage	(mm)=	1.50	5.00
Average Slope	(%)=	2.00	2.00
Length	(m)=	269.07	30.00
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	0.00	6.167	1.95	12.250	17.54	18.33	2.19
0.167	0.00	6.250	2.19	12.333	17.52	18.42	2.19
0.250	1.34	6.333	2.19	12.417	17.52	18.50	2.19
0.333	1.34	6.417	2.19	12.500	17.52	18.58	2.19
0.417	1.34	6.500	2.19	12.583	17.52	18.67	2.19
0.500	1.34	6.583	2.19	12.667	17.52	18.75	2.19
0.583	1.34	6.667	2.19	12.750	9.01	18.83	2.19
0.667	1.34	6.750	2.19	12.833	9.01	18.92	2.19
0.750	1.34	6.833	2.19	12.917	9.01	19.00	2.19
0.833	1.34	6.917	2.19	13.000	9.01	19.08	2.19
0.917	1.34	7.000	2.19	13.083	9.01	19.17	2.19
1.000	1.34	7.083	2.19	13.167	9.01	19.25	2.19
1.083	1.34	7.167	2.19	13.250	6.57	19.33	2.19
1.167	1.34	7.250	2.68	13.333	6.57	19.42	2.19
1.250	1.34	7.333	2.68	13.417	6.57	19.50	2.19
1.333	1.34	7.417	2.68	13.500	6.57	19.58	2.19
1.417	1.34	7.500	2.68	13.583	6.57	19.67	2.19
1.500	1.34	7.583	2.68	13.667	6.57	19.75	2.19
1.583	1.34	7.667	2.68	13.750	5.11	19.83	2.19
1.667	1.34	7.750	2.68	13.833	5.11	19.92	2.19
1.750	1.34	7.833	2.68	13.917	5.11	20.00	2.19
1.833	1.34	7.917	2.68	14.000	5.11	20.08	2.19
1.917	1.34	8.000	2.68	14.083	5.11	20.17	2.19
2.000	1.34	8.083	2.68	14.167	5.11	20.25	1.46
2.083	1.34	8.167	2.68	14.250	3.65	20.33	1.46
2.167	1.34	8.250	3.16	14.333	3.65	20.42	1.46
2.250	1.58	8.333	3.16	14.417	3.65	20.50	1.46
2.333	1.58	8.417	3.16	14.500	3.65	20.58	1.46
2.417	1.58	8.500	3.16	14.583	3.65	20.67	1.46
2.500	1.58	8.583	3.16	14.667	3.65	20.75	1.46
2.583	1.58	8.667	3.16	14.750	3.65	20.83	1.46
2.667	1.58	8.750	3.41	14.833	3.65	20.92	1.46
2.750	1.58	8.833	3.41	14.917	3.65	21.00	1.46
2.833	1.58	8.917	3.41	15.000	3.65	21.08	1.46
2.917	1.58	9.000	3.41	15.083	3.65	21.17	1.46
3.000	1.58	9.083	3.41	15.167	3.65	21.25	1.46
3.083	1.58	9.167	3.41	15.250	3.65	21.33	1.46
3.167	1.58	9.250	3.89	15.333	3.65	21.42	1.46
3.250	1.58	9.333	3.89	15.417	3.65	21.50	1.46
3.333	1.58	9.417	3.89	15.500	3.65	21.58	1.46
3.417	1.58	9.500	3.89	15.583	3.65	21.67	1.46
3.500	1.58	9.583	3.89	15.667	3.65	21.75	1.46
3.583	1.58	9.667	3.89	15.750	3.65	21.83	1.46
3.667	1.58	9.750	4.38	15.833	3.65	21.92	1.46
3.750	1.58	9.833	4.38	15.917	3.65	22.00	1.46
3.833	1.58	9.917	4.38	16.000	3.65	22.08	1.46

3.917	1.58	10.000	4.38	16.083	3.65	22.17	1.46
4.000	1.58	10.083	4.38	16.167	3.65	22.25	1.46
4.083	1.58	10.167	4.38	16.250	2.19	22.33	1.46
4.167	1.58	10.250	5.60	16.333	2.19	22.42	1.46
4.250	1.95	10.333	5.60	16.417	2.19	22.50	1.46
4.333	1.95	10.417	5.60	16.500	2.19	22.58	1.46
4.417	1.95	10.500	5.60	16.583	2.19	22.67	1.46
4.500	1.95	10.583	5.60	16.667	2.19	22.75	1.46
4.583	1.95	10.667	5.60	16.750	2.19	22.83	1.46
4.667	1.95	10.750	7.55	16.833	2.19	22.92	1.46
4.750	1.95	10.833	7.55	16.917	2.19	23.00	1.46
4.833	1.95	10.917	7.55	17.000	2.19	23.08	1.46
4.917	1.95	11.000	7.55	17.083	2.19	23.17	1.46
5.000	1.95	11.083	7.55	17.167	2.19	23.25	1.46
5.083	1.95	11.167	7.55	17.250	2.19	23.33	1.46
5.167	1.95	11.250	11.68	17.333	2.19	23.42	1.46
5.250	1.95	11.333	11.68	17.417	2.19	23.50	1.46
5.333	1.95	11.417	11.68	17.500	2.19	23.58	1.46
5.417	1.95	11.500	11.68	17.583	2.19	23.67	1.46
5.500	1.95	11.583	11.68	17.667	2.19	23.75	1.46
5.583	1.95	11.667	11.68	17.750	2.19	23.83	1.46
5.667	1.95	11.750	36.02	17.833	2.19	23.92	1.46
5.750	1.95	11.833	36.02	17.917	2.19	24.00	1.46
5.833	1.95	11.917	92.49	18.000	2.19	24.08	1.46
5.917	1.95	12.000	92.49	18.083	2.19	24.17	1.46
6.000	1.95	12.083	148.95	18.167	2.19		
6.083	1.95	12.167	148.96	18.250	2.19		

Max.Eff.Inten. (mm/hr)=	148.96	134.20	
over (min)	5.00	10.00	
Storage Coeff. (min)=	3.20 (ii)	7.84 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.27	0.13	
			TOTALS
PEAK FLOW (cms)=	2.21	1.21	3.420 (iii)
TIME TO PEAK (hrs)=	12.17	12.17	12.17
RUNOFF VOLUME (mm)=	120.20	73.26	96.73
TOTAL RAINFALL (mm)=	121.70	121.70	121.70
RUNOFF COEFFICIENT =	0.99	0.60	0.79

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 74.0 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)=	1.26		
ID= 1 DT= 5.0 min	Total Imp(%)=	55.00	Dir. Conn.(%)=	35.00	

```

-----
                IMPERVIOUS      PERVIOUS (i)
Surface Area    (ha)=          0.69      0.57
Dep. Storage    (mm)=          1.50      5.00
Average Slope    (%)=          2.00      2.00
Length          (m)=          91.65     30.00
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	0.00	6.167	1.95	12.250	17.54	18.33	2.19
0.167	0.00	6.250	2.19	12.333	17.52	18.42	2.19
0.250	1.34	6.333	2.19	12.417	17.52	18.50	2.19
0.333	1.34	6.417	2.19	12.500	17.52	18.58	2.19
0.417	1.34	6.500	2.19	12.583	17.52	18.67	2.19
0.500	1.34	6.583	2.19	12.667	17.52	18.75	2.19
0.583	1.34	6.667	2.19	12.750	9.01	18.83	2.19
0.667	1.34	6.750	2.19	12.833	9.01	18.92	2.19
0.750	1.34	6.833	2.19	12.917	9.01	19.00	2.19
0.833	1.34	6.917	2.19	13.000	9.01	19.08	2.19
0.917	1.34	7.000	2.19	13.083	9.01	19.17	2.19
1.000	1.34	7.083	2.19	13.167	9.01	19.25	2.19
1.083	1.34	7.167	2.19	13.250	6.57	19.33	2.19
1.167	1.34	7.250	2.68	13.333	6.57	19.42	2.19
1.250	1.34	7.333	2.68	13.417	6.57	19.50	2.19
1.333	1.34	7.417	2.68	13.500	6.57	19.58	2.19
1.417	1.34	7.500	2.68	13.583	6.57	19.67	2.19
1.500	1.34	7.583	2.68	13.667	6.57	19.75	2.19
1.583	1.34	7.667	2.68	13.750	5.11	19.83	2.19
1.667	1.34	7.750	2.68	13.833	5.11	19.92	2.19
1.750	1.34	7.833	2.68	13.917	5.11	20.00	2.19
1.833	1.34	7.917	2.68	14.000	5.11	20.08	2.19
1.917	1.34	8.000	2.68	14.083	5.11	20.17	2.19
2.000	1.34	8.083	2.68	14.167	5.11	20.25	1.46
2.083	1.34	8.167	2.68	14.250	3.65	20.33	1.46
2.167	1.34	8.250	3.16	14.333	3.65	20.42	1.46
2.250	1.58	8.333	3.16	14.417	3.65	20.50	1.46
2.333	1.58	8.417	3.16	14.500	3.65	20.58	1.46
2.417	1.58	8.500	3.16	14.583	3.65	20.67	1.46
2.500	1.58	8.583	3.16	14.667	3.65	20.75	1.46
2.583	1.58	8.667	3.16	14.750	3.65	20.83	1.46
2.667	1.58	8.750	3.41	14.833	3.65	20.92	1.46
2.750	1.58	8.833	3.41	14.917	3.65	21.00	1.46
2.833	1.58	8.917	3.41	15.000	3.65	21.08	1.46
2.917	1.58	9.000	3.41	15.083	3.65	21.17	1.46
3.000	1.58	9.083	3.41	15.167	3.65	21.25	1.46
3.083	1.58	9.167	3.41	15.250	3.65	21.33	1.46
3.167	1.58	9.250	3.89	15.333	3.65	21.42	1.46
3.250	1.58	9.333	3.89	15.417	3.65	21.50	1.46

3.333	1.58	9.417	3.89	15.500	3.65	21.58	1.46
3.417	1.58	9.500	3.89	15.583	3.65	21.67	1.46
3.500	1.58	9.583	3.89	15.667	3.65	21.75	1.46
3.583	1.58	9.667	3.89	15.750	3.65	21.83	1.46
3.667	1.58	9.750	4.38	15.833	3.65	21.92	1.46
3.750	1.58	9.833	4.38	15.917	3.65	22.00	1.46
3.833	1.58	9.917	4.38	16.000	3.65	22.08	1.46
3.917	1.58	10.000	4.38	16.083	3.65	22.17	1.46
4.000	1.58	10.083	4.38	16.167	3.65	22.25	1.46
4.083	1.58	10.167	4.38	16.250	2.19	22.33	1.46
4.167	1.58	10.250	5.60	16.333	2.19	22.42	1.46
4.250	1.95	10.333	5.60	16.417	2.19	22.50	1.46
4.333	1.95	10.417	5.60	16.500	2.19	22.58	1.46
4.417	1.95	10.500	5.60	16.583	2.19	22.67	1.46
4.500	1.95	10.583	5.60	16.667	2.19	22.75	1.46
4.583	1.95	10.667	5.60	16.750	2.19	22.83	1.46
4.667	1.95	10.750	7.55	16.833	2.19	22.92	1.46
4.750	1.95	10.833	7.55	16.917	2.19	23.00	1.46
4.833	1.95	10.917	7.55	17.000	2.19	23.08	1.46
4.917	1.95	11.000	7.55	17.083	2.19	23.17	1.46
5.000	1.95	11.083	7.55	17.167	2.19	23.25	1.46
5.083	1.95	11.167	7.55	17.250	2.19	23.33	1.46
5.167	1.95	11.250	11.68	17.333	2.19	23.42	1.46
5.250	1.95	11.333	11.68	17.417	2.19	23.50	1.46
5.333	1.95	11.417	11.68	17.500	2.19	23.58	1.46
5.417	1.95	11.500	11.68	17.583	2.19	23.67	1.46
5.500	1.95	11.583	11.68	17.667	2.19	23.75	1.46
5.583	1.95	11.667	11.68	17.750	2.19	23.83	1.46
5.667	1.95	11.750	36.02	17.833	2.19	23.92	1.46
5.750	1.95	11.833	36.02	17.917	2.19	24.00	1.46
5.833	1.95	11.917	92.49	18.000	2.19	24.08	1.46
5.917	1.95	12.000	92.49	18.083	2.19	24.17	1.46
6.000	1.95	12.083	148.95	18.167	2.19		
6.083	1.95	12.167	148.96	18.250	2.19		

Max.Eff.Inten. (mm/hr)=	148.96	163.41
over (min)	5.00	10.00
Storage Coeff. (min)=	1.68 (ii)	6.56 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.32	0.14

TOTALS

PEAK FLOW (cms)=	0.18	0.20	0.387 (iii)
TIME TO PEAK (hrs)=	12.17	12.17	12.17
RUNOFF VOLUME (mm)=	120.20	77.66	92.55
TOTAL RAINFALL (mm)=	121.70	121.70	121.70
RUNOFF COEFFICIENT =	0.99	0.64	0.76

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:

CN* = 74.0 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)= 1.43
| ID= 1 DT= 5.0 min | Total Imp(%)= 50.00 Dir. Conn.(%)= 50.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.71	0.71
Dep. Storage	(mm)=	1.50	5.00
Average Slope	(%)=	2.00	2.00
Length	(m)=	97.64	30.00
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	0.00	6.167	1.95	12.250	17.54	18.33	2.19
0.167	0.00	6.250	2.19	12.333	17.52	18.42	2.19
0.250	1.34	6.333	2.19	12.417	17.52	18.50	2.19
0.333	1.34	6.417	2.19	12.500	17.52	18.58	2.19
0.417	1.34	6.500	2.19	12.583	17.52	18.67	2.19
0.500	1.34	6.583	2.19	12.667	17.52	18.75	2.19
0.583	1.34	6.667	2.19	12.750	9.01	18.83	2.19
0.667	1.34	6.750	2.19	12.833	9.01	18.92	2.19
0.750	1.34	6.833	2.19	12.917	9.01	19.00	2.19
0.833	1.34	6.917	2.19	13.000	9.01	19.08	2.19
0.917	1.34	7.000	2.19	13.083	9.01	19.17	2.19
1.000	1.34	7.083	2.19	13.167	9.01	19.25	2.19
1.083	1.34	7.167	2.19	13.250	6.57	19.33	2.19
1.167	1.34	7.250	2.68	13.333	6.57	19.42	2.19
1.250	1.34	7.333	2.68	13.417	6.57	19.50	2.19
1.333	1.34	7.417	2.68	13.500	6.57	19.58	2.19
1.417	1.34	7.500	2.68	13.583	6.57	19.67	2.19
1.500	1.34	7.583	2.68	13.667	6.57	19.75	2.19
1.583	1.34	7.667	2.68	13.750	5.11	19.83	2.19
1.667	1.34	7.750	2.68	13.833	5.11	19.92	2.19
1.750	1.34	7.833	2.68	13.917	5.11	20.00	2.19
1.833	1.34	7.917	2.68	14.000	5.11	20.08	2.19
1.917	1.34	8.000	2.68	14.083	5.11	20.17	2.19
2.000	1.34	8.083	2.68	14.167	5.11	20.25	1.46
2.083	1.34	8.167	2.68	14.250	3.65	20.33	1.46
2.167	1.34	8.250	3.16	14.333	3.65	20.42	1.46
2.250	1.58	8.333	3.16	14.417	3.65	20.50	1.46
2.333	1.58	8.417	3.16	14.500	3.65	20.58	1.46
2.417	1.58	8.500	3.16	14.583	3.65	20.67	1.46
2.500	1.58	8.583	3.16	14.667	3.65	20.75	1.46
2.583	1.58	8.667	3.16	14.750	3.65	20.83	1.46
2.667	1.58	8.750	3.41	14.833	3.65	20.92	1.46

2.750	1.58		8.833	3.41		14.917	3.65		21.00	1.46
2.833	1.58		8.917	3.41		15.000	3.65		21.08	1.46
2.917	1.58		9.000	3.41		15.083	3.65		21.17	1.46
3.000	1.58		9.083	3.41		15.167	3.65		21.25	1.46
3.083	1.58		9.167	3.41		15.250	3.65		21.33	1.46
3.167	1.58		9.250	3.89		15.333	3.65		21.42	1.46
3.250	1.58		9.333	3.89		15.417	3.65		21.50	1.46
3.333	1.58		9.417	3.89		15.500	3.65		21.58	1.46
3.417	1.58		9.500	3.89		15.583	3.65		21.67	1.46
3.500	1.58		9.583	3.89		15.667	3.65		21.75	1.46
3.583	1.58		9.667	3.89		15.750	3.65		21.83	1.46
3.667	1.58		9.750	4.38		15.833	3.65		21.92	1.46
3.750	1.58		9.833	4.38		15.917	3.65		22.00	1.46
3.833	1.58		9.917	4.38		16.000	3.65		22.08	1.46
3.917	1.58		10.000	4.38		16.083	3.65		22.17	1.46
4.000	1.58		10.083	4.38		16.167	3.65		22.25	1.46
4.083	1.58		10.167	4.38		16.250	2.19		22.33	1.46
4.167	1.58		10.250	5.60		16.333	2.19		22.42	1.46
4.250	1.95		10.333	5.60		16.417	2.19		22.50	1.46
4.333	1.95		10.417	5.60		16.500	2.19		22.58	1.46
4.417	1.95		10.500	5.60		16.583	2.19		22.67	1.46
4.500	1.95		10.583	5.60		16.667	2.19		22.75	1.46
4.583	1.95		10.667	5.60		16.750	2.19		22.83	1.46
4.667	1.95		10.750	7.55		16.833	2.19		22.92	1.46
4.750	1.95		10.833	7.55		16.917	2.19		23.00	1.46
4.833	1.95		10.917	7.55		17.000	2.19		23.08	1.46
4.917	1.95		11.000	7.55		17.083	2.19		23.17	1.46
5.000	1.95		11.083	7.55		17.167	2.19		23.25	1.46
5.083	1.95		11.167	7.55		17.250	2.19		23.33	1.46
5.167	1.95		11.250	11.68		17.333	2.19		23.42	1.46
5.250	1.95		11.333	11.68		17.417	2.19		23.50	1.46
5.333	1.95		11.417	11.68		17.500	2.19		23.58	1.46
5.417	1.95		11.500	11.68		17.583	2.19		23.67	1.46
5.500	1.95		11.583	11.68		17.667	2.19		23.75	1.46
5.583	1.95		11.667	11.68		17.750	2.19		23.83	1.46
5.667	1.95		11.750	36.02		17.833	2.19		23.92	1.46
5.750	1.95		11.833	36.02		17.917	2.19		24.00	1.46
5.833	1.95		11.917	92.49		18.000	2.19		24.08	1.46
5.917	1.95		12.000	92.49		18.083	2.19		24.17	1.46
6.000	1.95		12.083	148.95		18.167	2.19			
6.083	1.95		12.167	148.96		18.250	2.19			

Max.Eff.Inten. (mm/hr)=	148.96	97.62
over (min)	5.00	10.00
Storage Coeff. (min)=	1.74 (ii)	7.74 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.32	0.13

TOTALS

PEAK FLOW (cms)=	0.30	0.14	0.440 (iii)
TIME TO PEAK (hrs)=	12.17	12.17	12.17
RUNOFF VOLUME (mm)=	120.20	66.13	93.16
TOTAL RAINFALL (mm)=	121.70	121.70	121.70
RUNOFF COEFFICIENT =	0.99	0.54	0.77

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 74.0 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 (0203) | Area (ha)= 0.29
| ID= 1 DT= 5.0 min | Total Imp(%)= 7.00 Dir. Conn.(%)= 7.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.02	0.27
Dep. Storage	(mm)=	1.50	5.00
Average Slope	(%)=	2.00	2.00
Length	(m)=	43.97	15.00
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	0.00	6.167	1.95	12.250	17.54	18.33	2.19
0.167	0.00	6.250	2.19	12.333	17.52	18.42	2.19
0.250	1.34	6.333	2.19	12.417	17.52	18.50	2.19
0.333	1.34	6.417	2.19	12.500	17.52	18.58	2.19
0.417	1.34	6.500	2.19	12.583	17.52	18.67	2.19
0.500	1.34	6.583	2.19	12.667	17.52	18.75	2.19
0.583	1.34	6.667	2.19	12.750	9.01	18.83	2.19
0.667	1.34	6.750	2.19	12.833	9.01	18.92	2.19
0.750	1.34	6.833	2.19	12.917	9.01	19.00	2.19
0.833	1.34	6.917	2.19	13.000	9.01	19.08	2.19
0.917	1.34	7.000	2.19	13.083	9.01	19.17	2.19
1.000	1.34	7.083	2.19	13.167	9.01	19.25	2.19
1.083	1.34	7.167	2.19	13.250	6.57	19.33	2.19
1.167	1.34	7.250	2.68	13.333	6.57	19.42	2.19
1.250	1.34	7.333	2.68	13.417	6.57	19.50	2.19
1.333	1.34	7.417	2.68	13.500	6.57	19.58	2.19
1.417	1.34	7.500	2.68	13.583	6.57	19.67	2.19
1.500	1.34	7.583	2.68	13.667	6.57	19.75	2.19
1.583	1.34	7.667	2.68	13.750	5.11	19.83	2.19
1.667	1.34	7.750	2.68	13.833	5.11	19.92	2.19
1.750	1.34	7.833	2.68	13.917	5.11	20.00	2.19
1.833	1.34	7.917	2.68	14.000	5.11	20.08	2.19
1.917	1.34	8.000	2.68	14.083	5.11	20.17	2.19
2.000	1.34	8.083	2.68	14.167	5.11	20.25	1.46
2.083	1.34	8.167	2.68	14.250	3.65	20.33	1.46

2.167	1.34		8.250	3.16		14.333	3.65		20.42	1.46
2.250	1.58		8.333	3.16		14.417	3.65		20.50	1.46
2.333	1.58		8.417	3.16		14.500	3.65		20.58	1.46
2.417	1.58		8.500	3.16		14.583	3.65		20.67	1.46
2.500	1.58		8.583	3.16		14.667	3.65		20.75	1.46
2.583	1.58		8.667	3.16		14.750	3.65		20.83	1.46
2.667	1.58		8.750	3.41		14.833	3.65		20.92	1.46
2.750	1.58		8.833	3.41		14.917	3.65		21.00	1.46
2.833	1.58		8.917	3.41		15.000	3.65		21.08	1.46
2.917	1.58		9.000	3.41		15.083	3.65		21.17	1.46
3.000	1.58		9.083	3.41		15.167	3.65		21.25	1.46
3.083	1.58		9.167	3.41		15.250	3.65		21.33	1.46
3.167	1.58		9.250	3.89		15.333	3.65		21.42	1.46
3.250	1.58		9.333	3.89		15.417	3.65		21.50	1.46
3.333	1.58		9.417	3.89		15.500	3.65		21.58	1.46
3.417	1.58		9.500	3.89		15.583	3.65		21.67	1.46
3.500	1.58		9.583	3.89		15.667	3.65		21.75	1.46
3.583	1.58		9.667	3.89		15.750	3.65		21.83	1.46
3.667	1.58		9.750	4.38		15.833	3.65		21.92	1.46
3.750	1.58		9.833	4.38		15.917	3.65		22.00	1.46
3.833	1.58		9.917	4.38		16.000	3.65		22.08	1.46
3.917	1.58		10.000	4.38		16.083	3.65		22.17	1.46
4.000	1.58		10.083	4.38		16.167	3.65		22.25	1.46
4.083	1.58		10.167	4.38		16.250	2.19		22.33	1.46
4.167	1.58		10.250	5.60		16.333	2.19		22.42	1.46
4.250	1.95		10.333	5.60		16.417	2.19		22.50	1.46
4.333	1.95		10.417	5.60		16.500	2.19		22.58	1.46
4.417	1.95		10.500	5.60		16.583	2.19		22.67	1.46
4.500	1.95		10.583	5.60		16.667	2.19		22.75	1.46
4.583	1.95		10.667	5.60		16.750	2.19		22.83	1.46
4.667	1.95		10.750	7.55		16.833	2.19		22.92	1.46
4.750	1.95		10.833	7.55		16.917	2.19		23.00	1.46
4.833	1.95		10.917	7.55		17.000	2.19		23.08	1.46
4.917	1.95		11.000	7.55		17.083	2.19		23.17	1.46
5.000	1.95		11.083	7.55		17.167	2.19		23.25	1.46
5.083	1.95		11.167	7.55		17.250	2.19		23.33	1.46
5.167	1.95		11.250	11.68		17.333	2.19		23.42	1.46
5.250	1.95		11.333	11.68		17.417	2.19		23.50	1.46
5.333	1.95		11.417	11.68		17.500	2.19		23.58	1.46
5.417	1.95		11.500	11.68		17.583	2.19		23.67	1.46
5.500	1.95		11.583	11.68		17.667	2.19		23.75	1.46
5.583	1.95		11.667	11.68		17.750	2.19		23.83	1.46
5.667	1.95		11.750	36.02		17.833	2.19		23.92	1.46
5.750	1.95		11.833	36.02		17.917	2.19		24.00	1.46
5.833	1.95		11.917	92.49		18.000	2.19		24.08	1.46
5.917	1.95		12.000	92.49		18.083	2.19		24.17	1.46
6.000	1.95		12.083	148.95		18.167	2.19			
6.083	1.95		12.167	148.96		18.250	2.19			

Max.Eff.Inten. (mm/hr)=	148.96	97.62
over (min)	5.00	10.00
Storage Coeff. (min)=	1.08 (ii)	5.04 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00

Unit Hyd. peak	(cms)=	0.34	0.16	
				TOTALS
PEAK FLOW	(cms)=	0.01	0.06	0.070 (iii)
TIME TO PEAK	(hrs)=	12.17	12.17	12.17
RUNOFF VOLUME	(mm)=	120.20	66.13	69.90
TOTAL RAINFALL	(mm)=	121.70	121.70	121.70
RUNOFF COEFFICIENT	=	0.99	0.54	0.57

***** 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* = 74.0 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 (0204)	Area (ha)=	0.30	
ID= 1 DT= 5.0 min	Total Imp(%)=	60.00	Dir. Conn.(%)= 50.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.18	0.12
Dep. Storage	(mm)=	1.50	5.00
Average Slope	(%)=	5.00	5.00
Length	(m)=	44.72	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
hrs	mm/hr		hrs	mm/hr		hrs	mm/hr
0.083	0.00		6.167	1.95		12.250	17.54
0.167	0.00		6.250	2.19		12.333	17.52
0.250	1.34		6.333	2.19		12.417	17.52
0.333	1.34		6.417	2.19		12.500	17.52
0.417	1.34		6.500	2.19		12.583	17.52
0.500	1.34		6.583	2.19		12.667	17.52
0.583	1.34		6.667	2.19		12.750	9.01
0.667	1.34		6.750	2.19		12.833	9.01
0.750	1.34		6.833	2.19		12.917	9.01
0.833	1.34		6.917	2.19		13.000	9.01
0.917	1.34		7.000	2.19		13.083	9.01
1.000	1.34		7.083	2.19		13.167	9.01
1.083	1.34		7.167	2.19		13.250	6.57
1.167	1.34		7.250	2.68		13.333	6.57
1.250	1.34		7.333	2.68		13.417	6.57
1.333	1.34		7.417	2.68		13.500	6.57

1.417	1.34		7.500	2.68		13.583	6.57		19.67	2.19
1.500	1.34		7.583	2.68		13.667	6.57		19.75	2.19
1.583	1.34		7.667	2.68		13.750	5.11		19.83	2.19
1.667	1.34		7.750	2.68		13.833	5.11		19.92	2.19
1.750	1.34		7.833	2.68		13.917	5.11		20.00	2.19
1.833	1.34		7.917	2.68		14.000	5.11		20.08	2.19
1.917	1.34		8.000	2.68		14.083	5.11		20.17	2.19
2.000	1.34		8.083	2.68		14.167	5.11		20.25	1.46
2.083	1.34		8.167	2.68		14.250	3.65		20.33	1.46
2.167	1.34		8.250	3.16		14.333	3.65		20.42	1.46
2.250	1.58		8.333	3.16		14.417	3.65		20.50	1.46
2.333	1.58		8.417	3.16		14.500	3.65		20.58	1.46
2.417	1.58		8.500	3.16		14.583	3.65		20.67	1.46
2.500	1.58		8.583	3.16		14.667	3.65		20.75	1.46
2.583	1.58		8.667	3.16		14.750	3.65		20.83	1.46
2.667	1.58		8.750	3.41		14.833	3.65		20.92	1.46
2.750	1.58		8.833	3.41		14.917	3.65		21.00	1.46
2.833	1.58		8.917	3.41		15.000	3.65		21.08	1.46
2.917	1.58		9.000	3.41		15.083	3.65		21.17	1.46
3.000	1.58		9.083	3.41		15.167	3.65		21.25	1.46
3.083	1.58		9.167	3.41		15.250	3.65		21.33	1.46
3.167	1.58		9.250	3.89		15.333	3.65		21.42	1.46
3.250	1.58		9.333	3.89		15.417	3.65		21.50	1.46
3.333	1.58		9.417	3.89		15.500	3.65		21.58	1.46
3.417	1.58		9.500	3.89		15.583	3.65		21.67	1.46
3.500	1.58		9.583	3.89		15.667	3.65		21.75	1.46
3.583	1.58		9.667	3.89		15.750	3.65		21.83	1.46
3.667	1.58		9.750	4.38		15.833	3.65		21.92	1.46
3.750	1.58		9.833	4.38		15.917	3.65		22.00	1.46
3.833	1.58		9.917	4.38		16.000	3.65		22.08	1.46
3.917	1.58		10.000	4.38		16.083	3.65		22.17	1.46
4.000	1.58		10.083	4.38		16.167	3.65		22.25	1.46
4.083	1.58		10.167	4.38		16.250	2.19		22.33	1.46
4.167	1.58		10.250	5.60		16.333	2.19		22.42	1.46
4.250	1.95		10.333	5.60		16.417	2.19		22.50	1.46
4.333	1.95		10.417	5.60		16.500	2.19		22.58	1.46
4.417	1.95		10.500	5.60		16.583	2.19		22.67	1.46
4.500	1.95		10.583	5.60		16.667	2.19		22.75	1.46
4.583	1.95		10.667	5.60		16.750	2.19		22.83	1.46
4.667	1.95		10.750	7.55		16.833	2.19		22.92	1.46
4.750	1.95		10.833	7.55		16.917	2.19		23.00	1.46
4.833	1.95		10.917	7.55		17.000	2.19		23.08	1.46
4.917	1.95		11.000	7.55		17.083	2.19		23.17	1.46
5.000	1.95		11.083	7.55		17.167	2.19		23.25	1.46
5.083	1.95		11.167	7.55		17.250	2.19		23.33	1.46
5.167	1.95		11.250	11.68		17.333	2.19		23.42	1.46
5.250	1.95		11.333	11.68		17.417	2.19		23.50	1.46
5.333	1.95		11.417	11.68		17.500	2.19		23.58	1.46
5.417	1.95		11.500	11.68		17.583	2.19		23.67	1.46
5.500	1.95		11.583	11.68		17.667	2.19		23.75	1.46
5.583	1.95		11.667	11.68		17.750	2.19		23.83	1.46
5.667	1.95		11.750	36.02		17.833	2.19		23.92	1.46
5.750	1.95		11.833	36.02		17.917	2.19		24.00	1.46

5.833	1.95	11.917	92.49	18.000	2.19	24.08	1.46
5.917	1.95	12.000	92.49	18.083	2.19	24.17	1.46
6.000	1.95	12.083	148.95	18.167	2.19		
6.083	1.95	12.167	148.96	18.250	2.19		

Max.Eff.Inten. (mm/hr)=	148.96	136.74
over (min)	5.00	10.00
Storage Coeff. (min)=	0.83 (ii)	5.01 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.34	0.16

TOTALS			
PEAK FLOW (cms)=	0.06	0.04	0.101 (iii)
TIME TO PEAK (hrs)=	12.17	12.17	12.17
RUNOFF VOLUME (mm)=	120.20	74.71	97.45
TOTAL RAINFALL (mm)=	121.70	121.70	121.70
RUNOFF COEFFICIENT =	0.99	0.61	0.80

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 75.0 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 (0200):	10.86	3.420	12.17	96.73
+ ID2= 2 (0201):	1.43	0.440	12.17	93.16
=====				
ID = 3 (1000):	12.29	3.860	12.17	96.31

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):	12.29	3.860	12.17	96.31
+ ID2= 2 (0202):	1.26	0.387	12.17	92.55
=====				
ID = 1 (1000):	13.55	4.247	12.17	95.96

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):	13.55	4.247	12.17	95.96
+ ID2= 2 (0203):	0.29	0.070	12.17	69.90
=====				
ID = 3 (1000):	13.84	4.317	12.17	95.42

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (1000)	AREA	QPEAK	TPEAK	R.V.
-----	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (1000):	13.84	4.317	12.17	95.42
+ ID2= 2 (0204):	0.30	0.101	12.17	97.45
=====				
ID = 1 (1000):	14.14	4.418	12.17	95.46

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

=====

=====

```
V   V   I   SSSSS   U   U   A   L           (v 6.2.2015)
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
```

Developed and Distributed by Smart City Water Inc

Copyright 2007 - 2022 Smart City Water Inc

All rights reserved.

***** 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\jangsoo.lee\AppData\Local\Civica\VH5\191a91e0-1a14-44fd-bc00-4941023c7dee\3ed87a38-295
6-4547-a731-d8775a8d2b48\
Summary filename:
C:\Users\jangsoo.lee\AppData\Local\Civica\VH5\191a91e0-1a14-44fd-bc00-4941023c7dee\3ed87a38-295
6-4547-a731-d8775a8d2b48\

DATE: 09/25/2024

TIME: 11:26:59

USER:

COMMENTS: _____

** SIMULATION : 50yr 24hr 10min SCS Type II **

READ STORM	Filename: C:\Users\jangsoo.lee\AppData
	ata\Local\Temp\
	c043b895-d4c4-42b1-9a94-e27dedc1a594\eb01ca32
Ptotal=134.56 mm	Comments: 50yr 24hr 10min SCS Type II

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.00	0.00	6.17	2.42	12.33	19.38	18.50	2.42
0.17	1.48	6.33	2.42	12.50	19.38	18.67	2.42
0.33	1.48	6.50	2.42	12.67	9.96	18.83	2.42
0.50	1.48	6.67	2.42	12.83	9.96	19.00	2.42
0.67	1.48	6.83	2.42	13.00	9.96	19.17	2.42
0.83	1.48	7.00	2.42	13.17	7.27	19.33	2.42
1.00	1.48	7.17	2.96	13.33	7.27	19.50	2.42
1.17	1.48	7.33	2.96	13.50	7.27	19.67	2.42
1.33	1.48	7.50	2.96	13.67	5.65	19.83	2.42
1.50	1.48	7.67	2.96	13.83	5.65	20.00	2.42
1.67	1.48	7.83	2.96	14.00	5.65	20.17	1.61
1.83	1.48	8.00	2.96	14.17	4.04	20.33	1.61
2.00	1.48	8.17	3.50	14.33	4.04	20.50	1.61
2.17	1.75	8.33	3.50	14.50	4.04	20.67	1.61
2.33	1.75	8.50	3.50	14.67	4.04	20.83	1.61
2.50	1.75	8.67	3.77	14.83	4.04	21.00	1.61
2.67	1.75	8.83	3.77	15.00	4.04	21.17	1.61
2.83	1.75	9.00	3.77	15.17	4.04	21.33	1.61
3.00	1.75	9.17	4.31	15.33	4.04	21.50	1.61
3.17	1.75	9.33	4.31	15.50	4.04	21.67	1.61
3.33	1.75	9.50	4.31	15.67	4.04	21.83	1.61
3.50	1.75	9.67	4.84	15.83	4.04	22.00	1.61
3.67	1.75	9.83	4.84	16.00	4.04	22.17	1.61
3.83	1.75	10.00	4.84	16.17	2.42	22.33	1.61
4.00	1.75	10.17	6.19	16.33	2.42	22.50	1.61
4.17	2.15	10.33	6.19	16.50	2.42	22.67	1.61
4.33	2.15	10.50	6.19	16.67	2.42	22.83	1.61
4.50	2.15	10.67	8.34	16.83	2.42	23.00	1.61
4.67	2.15	10.83	8.34	17.00	2.42	23.17	1.61
4.83	2.15	11.00	8.34	17.17	2.42	23.33	1.61
5.00	2.15	11.17	12.92	17.33	2.42	23.50	1.61
5.17	2.15	11.33	12.92	17.50	2.42	23.67	1.61
5.33	2.15	11.50	12.92	17.67	2.42	23.83	1.61
5.50	2.15	11.67	39.83	17.83	2.42	24.00	1.61
5.67	2.15	11.83	102.27	18.00	2.42		
5.83	2.15	12.00	164.70	18.17	2.42		
6.00	2.15	12.17	19.38	18.33	2.42		

| CALIB |
| STANDHYD (0200) |
ID= 1 DT= 5.0 min

Area (ha)= 10.86
Total Imp(%)= 60.00 Dir. Conn.(%)= 50.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	6.52	4.34
Dep. Storage	(mm)=	1.50	5.00
Average Slope	(%)=	2.00	2.00
Length	(m)=	269.07	30.00
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	0.00	6.167	2.15	12.250	19.39	18.33	2.42
0.167	0.00	6.250	2.42	12.333	19.38	18.42	2.42
0.250	1.48	6.333	2.42	12.417	19.38	18.50	2.42
0.333	1.48	6.417	2.42	12.500	19.38	18.58	2.42
0.417	1.48	6.500	2.42	12.583	19.38	18.67	2.42
0.500	1.48	6.583	2.42	12.667	19.38	18.75	2.42
0.583	1.48	6.667	2.42	12.750	9.96	18.83	2.42
0.667	1.48	6.750	2.42	12.833	9.96	18.92	2.42
0.750	1.48	6.833	2.42	12.917	9.96	19.00	2.42
0.833	1.48	6.917	2.42	13.000	9.96	19.08	2.42
0.917	1.48	7.000	2.42	13.083	9.96	19.17	2.42
1.000	1.48	7.083	2.42	13.167	9.96	19.25	2.42
1.083	1.48	7.167	2.42	13.250	7.27	19.33	2.42
1.167	1.48	7.250	2.96	13.333	7.27	19.42	2.42
1.250	1.48	7.333	2.96	13.417	7.27	19.50	2.42
1.333	1.48	7.417	2.96	13.500	7.27	19.58	2.42
1.417	1.48	7.500	2.96	13.583	7.27	19.67	2.42
1.500	1.48	7.583	2.96	13.667	7.27	19.75	2.42
1.583	1.48	7.667	2.96	13.750	5.65	19.83	2.42
1.667	1.48	7.750	2.96	13.833	5.65	19.92	2.42
1.750	1.48	7.833	2.96	13.917	5.65	20.00	2.42
1.833	1.48	7.917	2.96	14.000	5.65	20.08	2.42
1.917	1.48	8.000	2.96	14.083	5.65	20.17	2.42
2.000	1.48	8.083	2.96	14.167	5.65	20.25	1.61
2.083	1.48	8.167	2.96	14.250	4.04	20.33	1.61
2.167	1.48	8.250	3.50	14.333	4.04	20.42	1.61
2.250	1.75	8.333	3.50	14.417	4.04	20.50	1.61
2.333	1.75	8.417	3.50	14.500	4.04	20.58	1.61
2.417	1.75	8.500	3.50	14.583	4.04	20.67	1.61
2.500	1.75	8.583	3.50	14.667	4.04	20.75	1.61
2.583	1.75	8.667	3.50	14.750	4.04	20.83	1.61
2.667	1.75	8.750	3.77	14.833	4.04	20.92	1.61
2.750	1.75	8.833	3.77	14.917	4.04	21.00	1.61
2.833	1.75	8.917	3.77	15.000	4.04	21.08	1.61
2.917	1.75	9.000	3.77	15.083	4.04	21.17	1.61
3.000	1.75	9.083	3.77	15.167	4.04	21.25	1.61
3.083	1.75	9.167	3.77	15.250	4.04	21.33	1.61
3.167	1.75	9.250	4.31	15.333	4.04	21.42	1.61
3.250	1.75	9.333	4.31	15.417	4.04	21.50	1.61
3.333	1.75	9.417	4.31	15.500	4.04	21.58	1.61
3.417	1.75	9.500	4.31	15.583	4.04	21.67	1.61
3.500	1.75	9.583	4.31	15.667	4.04	21.75	1.61
3.583	1.75	9.667	4.31	15.750	4.04	21.83	1.61
3.667	1.75	9.750	4.84	15.833	4.04	21.92	1.61
3.750	1.75	9.833	4.84	15.917	4.04	22.00	1.61
3.833	1.75	9.917	4.84	16.000	4.04	22.08	1.61

3.917	1.75	10.000	4.84	16.083	4.04	22.17	1.61
4.000	1.75	10.083	4.84	16.167	4.04	22.25	1.61
4.083	1.75	10.167	4.84	16.250	2.42	22.33	1.61
4.167	1.75	10.250	6.19	16.333	2.42	22.42	1.61
4.250	2.15	10.333	6.19	16.417	2.42	22.50	1.61
4.333	2.15	10.417	6.19	16.500	2.42	22.58	1.61
4.417	2.15	10.500	6.19	16.583	2.42	22.67	1.61
4.500	2.15	10.583	6.19	16.667	2.42	22.75	1.61
4.583	2.15	10.667	6.19	16.750	2.42	22.83	1.61
4.667	2.15	10.750	8.34	16.833	2.42	22.92	1.61
4.750	2.15	10.833	8.34	16.917	2.42	23.00	1.61
4.833	2.15	10.917	8.34	17.000	2.42	23.08	1.61
4.917	2.15	11.000	8.34	17.083	2.42	23.17	1.61
5.000	2.15	11.083	8.34	17.167	2.42	23.25	1.61
5.083	2.15	11.167	8.34	17.250	2.42	23.33	1.61
5.167	2.15	11.250	12.92	17.333	2.42	23.42	1.61
5.250	2.15	11.333	12.92	17.417	2.42	23.50	1.61
5.333	2.15	11.417	12.92	17.500	2.42	23.58	1.61
5.417	2.15	11.500	12.92	17.583	2.42	23.67	1.61
5.500	2.15	11.583	12.92	17.667	2.42	23.75	1.61
5.583	2.15	11.667	12.92	17.750	2.42	23.83	1.61
5.667	2.15	11.750	39.83	17.833	2.42	23.92	1.61
5.750	2.15	11.833	39.83	17.917	2.42	24.00	1.61
5.833	2.15	11.917	102.26	18.000	2.42	24.08	1.61
5.917	2.15	12.000	102.27	18.083	2.42	24.17	1.61
6.000	2.15	12.083	164.69	18.167	2.42		
6.083	2.15	12.167	164.70	18.250	2.42		

Max.Eff.Inten. (mm/hr)=	164.70	153.99	
over (min)	5.00	10.00	
Storage Coeff. (min)=	3.08 (ii)	7.53 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.27	0.13	
			TOTALS
PEAK FLOW (cms)=	2.45	1.42	3.862 (iii)
TIME TO PEAK (hrs)=	12.17	12.17	12.17
RUNOFF VOLUME (mm)=	133.06	84.40	108.73
TOTAL RAINFALL (mm)=	134.56	134.56	134.56
RUNOFF COEFFICIENT =	0.99	0.63	0.81

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 74.0 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)=	1.26		
ID= 1 DT= 5.0 min	Total Imp(%)=	55.00	Dir. Conn.(%)=	35.00	

```

-----
                IMPERVIOUS      PERVIOUS (i)
Surface Area    (ha)=          0.69      0.57
Dep. Storage    (mm)=          1.50      5.00
Average Slope    (%)=          2.00      2.00
Length          (m)=          91.65     30.00
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	0.00	6.167	2.15	12.250	19.39	18.33	2.42
0.167	0.00	6.250	2.42	12.333	19.38	18.42	2.42
0.250	1.48	6.333	2.42	12.417	19.38	18.50	2.42
0.333	1.48	6.417	2.42	12.500	19.38	18.58	2.42
0.417	1.48	6.500	2.42	12.583	19.38	18.67	2.42
0.500	1.48	6.583	2.42	12.667	19.38	18.75	2.42
0.583	1.48	6.667	2.42	12.750	9.96	18.83	2.42
0.667	1.48	6.750	2.42	12.833	9.96	18.92	2.42
0.750	1.48	6.833	2.42	12.917	9.96	19.00	2.42
0.833	1.48	6.917	2.42	13.000	9.96	19.08	2.42
0.917	1.48	7.000	2.42	13.083	9.96	19.17	2.42
1.000	1.48	7.083	2.42	13.167	9.96	19.25	2.42
1.083	1.48	7.167	2.42	13.250	7.27	19.33	2.42
1.167	1.48	7.250	2.96	13.333	7.27	19.42	2.42
1.250	1.48	7.333	2.96	13.417	7.27	19.50	2.42
1.333	1.48	7.417	2.96	13.500	7.27	19.58	2.42
1.417	1.48	7.500	2.96	13.583	7.27	19.67	2.42
1.500	1.48	7.583	2.96	13.667	7.27	19.75	2.42
1.583	1.48	7.667	2.96	13.750	5.65	19.83	2.42
1.667	1.48	7.750	2.96	13.833	5.65	19.92	2.42
1.750	1.48	7.833	2.96	13.917	5.65	20.00	2.42
1.833	1.48	7.917	2.96	14.000	5.65	20.08	2.42
1.917	1.48	8.000	2.96	14.083	5.65	20.17	2.42
2.000	1.48	8.083	2.96	14.167	5.65	20.25	1.61
2.083	1.48	8.167	2.96	14.250	4.04	20.33	1.61
2.167	1.48	8.250	3.50	14.333	4.04	20.42	1.61
2.250	1.75	8.333	3.50	14.417	4.04	20.50	1.61
2.333	1.75	8.417	3.50	14.500	4.04	20.58	1.61
2.417	1.75	8.500	3.50	14.583	4.04	20.67	1.61
2.500	1.75	8.583	3.50	14.667	4.04	20.75	1.61
2.583	1.75	8.667	3.50	14.750	4.04	20.83	1.61
2.667	1.75	8.750	3.77	14.833	4.04	20.92	1.61
2.750	1.75	8.833	3.77	14.917	4.04	21.00	1.61
2.833	1.75	8.917	3.77	15.000	4.04	21.08	1.61
2.917	1.75	9.000	3.77	15.083	4.04	21.17	1.61
3.000	1.75	9.083	3.77	15.167	4.04	21.25	1.61
3.083	1.75	9.167	3.77	15.250	4.04	21.33	1.61
3.167	1.75	9.250	4.31	15.333	4.04	21.42	1.61
3.250	1.75	9.333	4.31	15.417	4.04	21.50	1.61

3.333	1.75	9.417	4.31	15.500	4.04	21.58	1.61
3.417	1.75	9.500	4.31	15.583	4.04	21.67	1.61
3.500	1.75	9.583	4.31	15.667	4.04	21.75	1.61
3.583	1.75	9.667	4.31	15.750	4.04	21.83	1.61
3.667	1.75	9.750	4.84	15.833	4.04	21.92	1.61
3.750	1.75	9.833	4.84	15.917	4.04	22.00	1.61
3.833	1.75	9.917	4.84	16.000	4.04	22.08	1.61
3.917	1.75	10.000	4.84	16.083	4.04	22.17	1.61
4.000	1.75	10.083	4.84	16.167	4.04	22.25	1.61
4.083	1.75	10.167	4.84	16.250	2.42	22.33	1.61
4.167	1.75	10.250	6.19	16.333	2.42	22.42	1.61
4.250	2.15	10.333	6.19	16.417	2.42	22.50	1.61
4.333	2.15	10.417	6.19	16.500	2.42	22.58	1.61
4.417	2.15	10.500	6.19	16.583	2.42	22.67	1.61
4.500	2.15	10.583	6.19	16.667	2.42	22.75	1.61
4.583	2.15	10.667	6.19	16.750	2.42	22.83	1.61
4.667	2.15	10.750	8.34	16.833	2.42	22.92	1.61
4.750	2.15	10.833	8.34	16.917	2.42	23.00	1.61
4.833	2.15	10.917	8.34	17.000	2.42	23.08	1.61
4.917	2.15	11.000	8.34	17.083	2.42	23.17	1.61
5.000	2.15	11.083	8.34	17.167	2.42	23.25	1.61
5.083	2.15	11.167	8.34	17.250	2.42	23.33	1.61
5.167	2.15	11.250	12.92	17.333	2.42	23.42	1.61
5.250	2.15	11.333	12.92	17.417	2.42	23.50	1.61
5.333	2.15	11.417	12.92	17.500	2.42	23.58	1.61
5.417	2.15	11.500	12.92	17.583	2.42	23.67	1.61
5.500	2.15	11.583	12.92	17.667	2.42	23.75	1.61
5.583	2.15	11.667	12.92	17.750	2.42	23.83	1.61
5.667	2.15	11.750	39.83	17.833	2.42	23.92	1.61
5.750	2.15	11.833	39.83	17.917	2.42	24.00	1.61
5.833	2.15	11.917	102.26	18.000	2.42	24.08	1.61
5.917	2.15	12.000	102.27	18.083	2.42	24.17	1.61
6.000	2.15	12.083	164.69	18.167	2.42		
6.083	2.15	12.167	164.70	18.250	2.42		

Max.Eff.Inten. (mm/hr)=	164.70	186.64
over (min)	5.00	10.00
Storage Coeff. (min)=	1.61 (ii)	6.24 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.32	0.15

TOTALS

PEAK FLOW (cms)=	0.20	0.24	0.440 (iii)
TIME TO PEAK (hrs)=	12.17	12.17	12.17
RUNOFF VOLUME (mm)=	133.06	89.10	104.49
TOTAL RAINFALL (mm)=	134.56	134.56	134.56
RUNOFF COEFFICIENT =	0.99	0.66	0.78

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:

CN* = 74.0 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)= 1.43
| ID= 1 DT= 5.0 min | Total Imp(%)= 50.00 Dir. Conn.(%)= 50.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.71	0.71
Dep. Storage	(mm)=	1.50	5.00
Average Slope	(%)=	2.00	2.00
Length	(m)=	97.64	30.00
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	0.00	6.167	2.15	12.250	19.39	18.33	2.42
0.167	0.00	6.250	2.42	12.333	19.38	18.42	2.42
0.250	1.48	6.333	2.42	12.417	19.38	18.50	2.42
0.333	1.48	6.417	2.42	12.500	19.38	18.58	2.42
0.417	1.48	6.500	2.42	12.583	19.38	18.67	2.42
0.500	1.48	6.583	2.42	12.667	19.38	18.75	2.42
0.583	1.48	6.667	2.42	12.750	9.96	18.83	2.42
0.667	1.48	6.750	2.42	12.833	9.96	18.92	2.42
0.750	1.48	6.833	2.42	12.917	9.96	19.00	2.42
0.833	1.48	6.917	2.42	13.000	9.96	19.08	2.42
0.917	1.48	7.000	2.42	13.083	9.96	19.17	2.42
1.000	1.48	7.083	2.42	13.167	9.96	19.25	2.42
1.083	1.48	7.167	2.42	13.250	7.27	19.33	2.42
1.167	1.48	7.250	2.96	13.333	7.27	19.42	2.42
1.250	1.48	7.333	2.96	13.417	7.27	19.50	2.42
1.333	1.48	7.417	2.96	13.500	7.27	19.58	2.42
1.417	1.48	7.500	2.96	13.583	7.27	19.67	2.42
1.500	1.48	7.583	2.96	13.667	7.27	19.75	2.42
1.583	1.48	7.667	2.96	13.750	5.65	19.83	2.42
1.667	1.48	7.750	2.96	13.833	5.65	19.92	2.42
1.750	1.48	7.833	2.96	13.917	5.65	20.00	2.42
1.833	1.48	7.917	2.96	14.000	5.65	20.08	2.42
1.917	1.48	8.000	2.96	14.083	5.65	20.17	2.42
2.000	1.48	8.083	2.96	14.167	5.65	20.25	1.61
2.083	1.48	8.167	2.96	14.250	4.04	20.33	1.61
2.167	1.48	8.250	3.50	14.333	4.04	20.42	1.61
2.250	1.75	8.333	3.50	14.417	4.04	20.50	1.61
2.333	1.75	8.417	3.50	14.500	4.04	20.58	1.61
2.417	1.75	8.500	3.50	14.583	4.04	20.67	1.61
2.500	1.75	8.583	3.50	14.667	4.04	20.75	1.61
2.583	1.75	8.667	3.50	14.750	4.04	20.83	1.61
2.667	1.75	8.750	3.77	14.833	4.04	20.92	1.61

2.750	1.75		8.833	3.77		14.917	4.04		21.00	1.61
2.833	1.75		8.917	3.77		15.000	4.04		21.08	1.61
2.917	1.75		9.000	3.77		15.083	4.04		21.17	1.61
3.000	1.75		9.083	3.77		15.167	4.04		21.25	1.61
3.083	1.75		9.167	3.77		15.250	4.04		21.33	1.61
3.167	1.75		9.250	4.31		15.333	4.04		21.42	1.61
3.250	1.75		9.333	4.31		15.417	4.04		21.50	1.61
3.333	1.75		9.417	4.31		15.500	4.04		21.58	1.61
3.417	1.75		9.500	4.31		15.583	4.04		21.67	1.61
3.500	1.75		9.583	4.31		15.667	4.04		21.75	1.61
3.583	1.75		9.667	4.31		15.750	4.04		21.83	1.61
3.667	1.75		9.750	4.84		15.833	4.04		21.92	1.61
3.750	1.75		9.833	4.84		15.917	4.04		22.00	1.61
3.833	1.75		9.917	4.84		16.000	4.04		22.08	1.61
3.917	1.75		10.000	4.84		16.083	4.04		22.17	1.61
4.000	1.75		10.083	4.84		16.167	4.04		22.25	1.61
4.083	1.75		10.167	4.84		16.250	2.42		22.33	1.61
4.167	1.75		10.250	6.19		16.333	2.42		22.42	1.61
4.250	2.15		10.333	6.19		16.417	2.42		22.50	1.61
4.333	2.15		10.417	6.19		16.500	2.42		22.58	1.61
4.417	2.15		10.500	6.19		16.583	2.42		22.67	1.61
4.500	2.15		10.583	6.19		16.667	2.42		22.75	1.61
4.583	2.15		10.667	6.19		16.750	2.42		22.83	1.61
4.667	2.15		10.750	8.34		16.833	2.42		22.92	1.61
4.750	2.15		10.833	8.34		16.917	2.42		23.00	1.61
4.833	2.15		10.917	8.34		17.000	2.42		23.08	1.61
4.917	2.15		11.000	8.34		17.083	2.42		23.17	1.61
5.000	2.15		11.083	8.34		17.167	2.42		23.25	1.61
5.083	2.15		11.167	8.34		17.250	2.42		23.33	1.61
5.167	2.15		11.250	12.92		17.333	2.42		23.42	1.61
5.250	2.15		11.333	12.92		17.417	2.42		23.50	1.61
5.333	2.15		11.417	12.92		17.500	2.42		23.58	1.61
5.417	2.15		11.500	12.92		17.583	2.42		23.67	1.61
5.500	2.15		11.583	12.92		17.667	2.42		23.75	1.61
5.583	2.15		11.667	12.92		17.750	2.42		23.83	1.61
5.667	2.15		11.750	39.83		17.833	2.42		23.92	1.61
5.750	2.15		11.833	39.83		17.917	2.42		24.00	1.61
5.833	2.15		11.917	102.26		18.000	2.42		24.08	1.61
5.917	2.15		12.000	102.27		18.083	2.42		24.17	1.61
6.000	2.15		12.083	164.69		18.167	2.42			
6.083	2.15		12.167	164.70		18.250	2.42			

Max.Eff.Inten. (mm/hr)=	164.70	112.90
over (min)	5.00	10.00
Storage Coeff. (min)=	1.68 (ii)	6.54 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.32	0.14

TOTALS

PEAK FLOW (cms)=	0.33	0.18	0.504 (iii)
TIME TO PEAK (hrs)=	12.17	12.17	12.17
RUNOFF VOLUME (mm)=	133.06	76.72	104.88
TOTAL RAINFALL (mm)=	134.56	134.56	134.56
RUNOFF COEFFICIENT =	0.99	0.57	0.78

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 74.0 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 (0203) | Area (ha)= 0.29
| ID= 1 DT= 5.0 min | Total Imp(%)= 7.00 Dir. Conn.(%)= 7.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.02	0.27
Dep. Storage	(mm)=	1.50	5.00
Average Slope	(%)=	2.00	2.00
Length	(m)=	43.97	15.00
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	0.00	6.167	2.15	12.250	19.39	18.33	2.42
0.167	0.00	6.250	2.42	12.333	19.38	18.42	2.42
0.250	1.48	6.333	2.42	12.417	19.38	18.50	2.42
0.333	1.48	6.417	2.42	12.500	19.38	18.58	2.42
0.417	1.48	6.500	2.42	12.583	19.38	18.67	2.42
0.500	1.48	6.583	2.42	12.667	19.38	18.75	2.42
0.583	1.48	6.667	2.42	12.750	9.96	18.83	2.42
0.667	1.48	6.750	2.42	12.833	9.96	18.92	2.42
0.750	1.48	6.833	2.42	12.917	9.96	19.00	2.42
0.833	1.48	6.917	2.42	13.000	9.96	19.08	2.42
0.917	1.48	7.000	2.42	13.083	9.96	19.17	2.42
1.000	1.48	7.083	2.42	13.167	9.96	19.25	2.42
1.083	1.48	7.167	2.42	13.250	7.27	19.33	2.42
1.167	1.48	7.250	2.96	13.333	7.27	19.42	2.42
1.250	1.48	7.333	2.96	13.417	7.27	19.50	2.42
1.333	1.48	7.417	2.96	13.500	7.27	19.58	2.42
1.417	1.48	7.500	2.96	13.583	7.27	19.67	2.42
1.500	1.48	7.583	2.96	13.667	7.27	19.75	2.42
1.583	1.48	7.667	2.96	13.750	5.65	19.83	2.42
1.667	1.48	7.750	2.96	13.833	5.65	19.92	2.42
1.750	1.48	7.833	2.96	13.917	5.65	20.00	2.42
1.833	1.48	7.917	2.96	14.000	5.65	20.08	2.42
1.917	1.48	8.000	2.96	14.083	5.65	20.17	2.42
2.000	1.48	8.083	2.96	14.167	5.65	20.25	1.61
2.083	1.48	8.167	2.96	14.250	4.04	20.33	1.61

2.167	1.48		8.250	3.50		14.333	4.04		20.42	1.61
2.250	1.75		8.333	3.50		14.417	4.04		20.50	1.61
2.333	1.75		8.417	3.50		14.500	4.04		20.58	1.61
2.417	1.75		8.500	3.50		14.583	4.04		20.67	1.61
2.500	1.75		8.583	3.50		14.667	4.04		20.75	1.61
2.583	1.75		8.667	3.50		14.750	4.04		20.83	1.61
2.667	1.75		8.750	3.77		14.833	4.04		20.92	1.61
2.750	1.75		8.833	3.77		14.917	4.04		21.00	1.61
2.833	1.75		8.917	3.77		15.000	4.04		21.08	1.61
2.917	1.75		9.000	3.77		15.083	4.04		21.17	1.61
3.000	1.75		9.083	3.77		15.167	4.04		21.25	1.61
3.083	1.75		9.167	3.77		15.250	4.04		21.33	1.61
3.167	1.75		9.250	4.31		15.333	4.04		21.42	1.61
3.250	1.75		9.333	4.31		15.417	4.04		21.50	1.61
3.333	1.75		9.417	4.31		15.500	4.04		21.58	1.61
3.417	1.75		9.500	4.31		15.583	4.04		21.67	1.61
3.500	1.75		9.583	4.31		15.667	4.04		21.75	1.61
3.583	1.75		9.667	4.31		15.750	4.04		21.83	1.61
3.667	1.75		9.750	4.84		15.833	4.04		21.92	1.61
3.750	1.75		9.833	4.84		15.917	4.04		22.00	1.61
3.833	1.75		9.917	4.84		16.000	4.04		22.08	1.61
3.917	1.75		10.000	4.84		16.083	4.04		22.17	1.61
4.000	1.75		10.083	4.84		16.167	4.04		22.25	1.61
4.083	1.75		10.167	4.84		16.250	2.42		22.33	1.61
4.167	1.75		10.250	6.19		16.333	2.42		22.42	1.61
4.250	2.15		10.333	6.19		16.417	2.42		22.50	1.61
4.333	2.15		10.417	6.19		16.500	2.42		22.58	1.61
4.417	2.15		10.500	6.19		16.583	2.42		22.67	1.61
4.500	2.15		10.583	6.19		16.667	2.42		22.75	1.61
4.583	2.15		10.667	6.19		16.750	2.42		22.83	1.61
4.667	2.15		10.750	8.34		16.833	2.42		22.92	1.61
4.750	2.15		10.833	8.34		16.917	2.42		23.00	1.61
4.833	2.15		10.917	8.34		17.000	2.42		23.08	1.61
4.917	2.15		11.000	8.34		17.083	2.42		23.17	1.61
5.000	2.15		11.083	8.34		17.167	2.42		23.25	1.61
5.083	2.15		11.167	8.34		17.250	2.42		23.33	1.61
5.167	2.15		11.250	12.92		17.333	2.42		23.42	1.61
5.250	2.15		11.333	12.92		17.417	2.42		23.50	1.61
5.333	2.15		11.417	12.92		17.500	2.42		23.58	1.61
5.417	2.15		11.500	12.92		17.583	2.42		23.67	1.61
5.500	2.15		11.583	12.92		17.667	2.42		23.75	1.61
5.583	2.15		11.667	12.92		17.750	2.42		23.83	1.61
5.667	2.15		11.750	39.83		17.833	2.42		23.92	1.61
5.750	2.15		11.833	39.83		17.917	2.42		24.00	1.61
5.833	2.15		11.917	102.26		18.000	2.42		24.08	1.61
5.917	2.15		12.000	102.27		18.083	2.42		24.17	1.61
6.000	2.15		12.083	164.69		18.167	2.42			
6.083	2.15		12.167	164.70		18.250	2.42			

Max.Eff.Inten. (mm/hr)=	164.70	112.90
over (min)	5.00	5.00
Storage Coeff. (min)=	1.04 (ii)	4.77 (ii)
Unit Hyd. Tpeak (min)=	5.00	5.00

Unit Hyd. peak	(cms)=	0.34	0.22	
				TOTALS
PEAK FLOW	(cms)=	0.01	0.08	0.090 (iii)
TIME TO PEAK	(hrs)=	12.17	12.17	12.17
RUNOFF VOLUME	(mm)=	133.06	76.72	80.65
TOTAL RAINFALL	(mm)=	134.56	134.56	134.56
RUNOFF COEFFICIENT	=	0.99	0.57	0.60

***** 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* = 74.0 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 (0204)	Area	(ha)=	0.30	
ID= 1 DT= 5.0 min	Total Imp(%)=	60.00	Dir. Conn.(%)=	50.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.18	0.12
Dep. Storage	(mm)=	1.50	5.00
Average Slope	(%)=	5.00	5.00
Length	(m)=	44.72	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	0.00	6.167	2.15	12.250	19.39	18.33	2.42
0.167	0.00	6.250	2.42	12.333	19.38	18.42	2.42
0.250	1.48	6.333	2.42	12.417	19.38	18.50	2.42
0.333	1.48	6.417	2.42	12.500	19.38	18.58	2.42
0.417	1.48	6.500	2.42	12.583	19.38	18.67	2.42
0.500	1.48	6.583	2.42	12.667	19.38	18.75	2.42
0.583	1.48	6.667	2.42	12.750	9.96	18.83	2.42
0.667	1.48	6.750	2.42	12.833	9.96	18.92	2.42
0.750	1.48	6.833	2.42	12.917	9.96	19.00	2.42
0.833	1.48	6.917	2.42	13.000	9.96	19.08	2.42
0.917	1.48	7.000	2.42	13.083	9.96	19.17	2.42
1.000	1.48	7.083	2.42	13.167	9.96	19.25	2.42
1.083	1.48	7.167	2.42	13.250	7.27	19.33	2.42
1.167	1.48	7.250	2.96	13.333	7.27	19.42	2.42
1.250	1.48	7.333	2.96	13.417	7.27	19.50	2.42
1.333	1.48	7.417	2.96	13.500	7.27	19.58	2.42

1.417	1.48		7.500	2.96		13.583	7.27		19.67	2.42
1.500	1.48		7.583	2.96		13.667	7.27		19.75	2.42
1.583	1.48		7.667	2.96		13.750	5.65		19.83	2.42
1.667	1.48		7.750	2.96		13.833	5.65		19.92	2.42
1.750	1.48		7.833	2.96		13.917	5.65		20.00	2.42
1.833	1.48		7.917	2.96		14.000	5.65		20.08	2.42
1.917	1.48		8.000	2.96		14.083	5.65		20.17	2.42
2.000	1.48		8.083	2.96		14.167	5.65		20.25	1.61
2.083	1.48		8.167	2.96		14.250	4.04		20.33	1.61
2.167	1.48		8.250	3.50		14.333	4.04		20.42	1.61
2.250	1.75		8.333	3.50		14.417	4.04		20.50	1.61
2.333	1.75		8.417	3.50		14.500	4.04		20.58	1.61
2.417	1.75		8.500	3.50		14.583	4.04		20.67	1.61
2.500	1.75		8.583	3.50		14.667	4.04		20.75	1.61
2.583	1.75		8.667	3.50		14.750	4.04		20.83	1.61
2.667	1.75		8.750	3.77		14.833	4.04		20.92	1.61
2.750	1.75		8.833	3.77		14.917	4.04		21.00	1.61
2.833	1.75		8.917	3.77		15.000	4.04		21.08	1.61
2.917	1.75		9.000	3.77		15.083	4.04		21.17	1.61
3.000	1.75		9.083	3.77		15.167	4.04		21.25	1.61
3.083	1.75		9.167	3.77		15.250	4.04		21.33	1.61
3.167	1.75		9.250	4.31		15.333	4.04		21.42	1.61
3.250	1.75		9.333	4.31		15.417	4.04		21.50	1.61
3.333	1.75		9.417	4.31		15.500	4.04		21.58	1.61
3.417	1.75		9.500	4.31		15.583	4.04		21.67	1.61
3.500	1.75		9.583	4.31		15.667	4.04		21.75	1.61
3.583	1.75		9.667	4.31		15.750	4.04		21.83	1.61
3.667	1.75		9.750	4.84		15.833	4.04		21.92	1.61
3.750	1.75		9.833	4.84		15.917	4.04		22.00	1.61
3.833	1.75		9.917	4.84		16.000	4.04		22.08	1.61
3.917	1.75		10.000	4.84		16.083	4.04		22.17	1.61
4.000	1.75		10.083	4.84		16.167	4.04		22.25	1.61
4.083	1.75		10.167	4.84		16.250	2.42		22.33	1.61
4.167	1.75		10.250	6.19		16.333	2.42		22.42	1.61
4.250	2.15		10.333	6.19		16.417	2.42		22.50	1.61
4.333	2.15		10.417	6.19		16.500	2.42		22.58	1.61
4.417	2.15		10.500	6.19		16.583	2.42		22.67	1.61
4.500	2.15		10.583	6.19		16.667	2.42		22.75	1.61
4.583	2.15		10.667	6.19		16.750	2.42		22.83	1.61
4.667	2.15		10.750	8.34		16.833	2.42		22.92	1.61
4.750	2.15		10.833	8.34		16.917	2.42		23.00	1.61
4.833	2.15		10.917	8.34		17.000	2.42		23.08	1.61
4.917	2.15		11.000	8.34		17.083	2.42		23.17	1.61
5.000	2.15		11.083	8.34		17.167	2.42		23.25	1.61
5.083	2.15		11.167	8.34		17.250	2.42		23.33	1.61
5.167	2.15		11.250	12.92		17.333	2.42		23.42	1.61
5.250	2.15		11.333	12.92		17.417	2.42		23.50	1.61
5.333	2.15		11.417	12.92		17.500	2.42		23.58	1.61
5.417	2.15		11.500	12.92		17.583	2.42		23.67	1.61
5.500	2.15		11.583	12.92		17.667	2.42		23.75	1.61
5.583	2.15		11.667	12.92		17.750	2.42		23.83	1.61
5.667	2.15		11.750	39.83		17.833	2.42		23.92	1.61
5.750	2.15		11.833	39.83		17.917	2.42		24.00	1.61

5.833	2.15	11.917	102.26	18.000	2.42	24.08	1.61
5.917	2.15	12.000	102.27	18.083	2.42	24.17	1.61
6.000	2.15	12.083	164.69	18.167	2.42		
6.083	2.15	12.167	164.70	18.250	2.42		

Max.Eff.Inten. (mm/hr)=164.70156.66

over (min)5.005.00

Storage Coeff. (min)=0.80 (ii)4.81 (ii)

Unit Hyd. Tpeak (min)=5.005.00

Unit Hyd. peak (cms)=0.340.22

TOTALS

PEAK FLOW (cms)=0.070.050.118 (iii)

TIME TO PEAK (hrs)=12.1712.1712.17

RUNOFF VOLUME (mm)=133.0685.96109.50

TOTAL RAINFALL (mm)=134.56134.56134.56

RUNOFF COEFFICIENT =0.990.640.81

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
- CN* = 75.0Ia = 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 (0200):	10.86	3.862	12.17	108.73
+ ID2= 2 (0201):	1.43	0.504	12.17	104.88
=====				
ID = 3 (1000):	12.29	4.366	12.17	108.28

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):	12.29	4.366	12.17	108.28
+ ID2= 2 (0202):	1.26	0.440	12.17	104.49
=====				
ID = 1 (1000):	13.55	4.805	12.17	107.93

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):	13.55	4.805	12.17	107.93
+ ID2= 2 (0203):	0.29	0.090	12.17	80.65
=====				
ID = 3 (1000):	13.84	4.895	12.17	107.36

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):	13.84	4.895	12.17	107.36
+ ID2= 2 (0204):	0.30	0.118	12.17	109.50
=====				
ID = 1 (1000):	14.14	5.013	12.17	107.41

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

=====

=====

```
V      V      I      SSSSS  U      U      A      L      (v 6.2.2015)
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
```

Developed and Distributed by Smart City Water Inc

Copyright 2007 - 2022 Smart City Water Inc

All rights reserved.

***** 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\jangsoo.lee\AppData\Local\Civica\VH5\191a91e0-1a14-44fd-bc00-4941023c7dee\c541e671-351d-416a-b915-8077296f1168\

Summary filename:

C:\Users\jangsoo.lee\AppData\Local\Civica\VH5\191a91e0-1a14-44fd-bc00-4941023c7dee\c541e671-351d-416a-b915-8077296f1168\

DATE: 09/25/2024

TIME: 11:26:59

USER:

COMMENTS: _____

** SIMULATION : 100yr 24hr 10min SCS Type II **

READ STORM	Filename: C:\Users\jangsoo.lee\AppData
	ata\Local\Temp\
	c043b895-d4c4-42b1-9a94-e27dedc1a594\1118027b
Ptotal=145.92 mm	Comments: 100yr 24hr 10min SCS Type II

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.00	0.00	6.17	2.63	12.33	21.01	18.50	2.63
0.17	1.61	6.33	2.63	12.50	21.01	18.67	2.63
0.33	1.61	6.50	2.63	12.67	10.80	18.83	2.63
0.50	1.61	6.67	2.63	12.83	10.80	19.00	2.63
0.67	1.61	6.83	2.63	13.00	10.80	19.17	2.63
0.83	1.61	7.00	2.63	13.17	7.88	19.33	2.63
1.00	1.61	7.17	3.21	13.33	7.88	19.50	2.63
1.17	1.61	7.33	3.21	13.50	7.88	19.67	2.63
1.33	1.61	7.50	3.21	13.67	6.13	19.83	2.63
1.50	1.61	7.67	3.21	13.83	6.13	20.00	2.63
1.67	1.61	7.83	3.21	14.00	6.13	20.17	1.75
1.83	1.61	8.00	3.21	14.17	4.38	20.33	1.75
2.00	1.61	8.17	3.79	14.33	4.38	20.50	1.75
2.17	1.90	8.33	3.79	14.50	4.38	20.67	1.75
2.33	1.90	8.50	3.79	14.67	4.38	20.83	1.75
2.50	1.90	8.67	4.09	14.83	4.38	21.00	1.75
2.67	1.90	8.83	4.09	15.00	4.38	21.17	1.75
2.83	1.90	9.00	4.09	15.17	4.38	21.33	1.75
3.00	1.90	9.17	4.67	15.33	4.38	21.50	1.75
3.17	1.90	9.33	4.67	15.50	4.38	21.67	1.75
3.33	1.90	9.50	4.67	15.67	4.38	21.83	1.75
3.50	1.90	9.67	5.25	15.83	4.38	22.00	1.75
3.67	1.90	9.83	5.25	16.00	4.38	22.17	1.75
3.83	1.90	10.00	5.25	16.17	2.63	22.33	1.75
4.00	1.90	10.17	6.71	16.33	2.63	22.50	1.75
4.17	2.33	10.33	6.71	16.50	2.63	22.67	1.75
4.33	2.33	10.50	6.71	16.67	2.63	22.83	1.75
4.50	2.33	10.67	9.05	16.83	2.63	23.00	1.75
4.67	2.33	10.83	9.05	17.00	2.63	23.17	1.75
4.83	2.33	11.00	9.05	17.17	2.63	23.33	1.75
5.00	2.33	11.17	14.01	17.33	2.63	23.50	1.75
5.17	2.33	11.33	14.01	17.50	2.63	23.67	1.75
5.33	2.33	11.50	14.01	17.67	2.63	23.83	1.75
5.50	2.33	11.67	43.19	17.83	2.63	24.00	1.75
5.67	2.33	11.83	110.90	18.00	2.63		
5.83	2.33	12.00	178.61	18.17	2.63		
6.00	2.33	12.17	21.01	18.33	2.63		

CALIB			
STANDHYD (0200)	Area	(ha)=	10.86
ID= 1 DT= 5.0 min	Total Imp(%)=	60.00	Dir. Conn.(%)= 50.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	6.52	4.34
Dep. Storage	(mm)=	1.50	5.00
Average Slope	(%)=	2.00	2.00
Length	(m)=	269.07	30.00
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	0.00	6.167	2.33	12.250	21.03	18.33	2.63
0.167	0.00	6.250	2.63	12.333	21.01	18.42	2.63
0.250	1.61	6.333	2.63	12.417	21.01	18.50	2.63
0.333	1.61	6.417	2.63	12.500	21.01	18.58	2.63
0.417	1.61	6.500	2.63	12.583	21.01	18.67	2.63
0.500	1.61	6.583	2.63	12.667	21.01	18.75	2.63
0.583	1.61	6.667	2.63	12.750	10.80	18.83	2.63
0.667	1.61	6.750	2.63	12.833	10.80	18.92	2.63
0.750	1.61	6.833	2.63	12.917	10.80	19.00	2.63
0.833	1.61	6.917	2.63	13.000	10.80	19.08	2.63
0.917	1.61	7.000	2.63	13.083	10.80	19.17	2.63
1.000	1.61	7.083	2.63	13.167	10.80	19.25	2.63
1.083	1.61	7.167	2.63	13.250	7.88	19.33	2.63
1.167	1.61	7.250	3.21	13.333	7.88	19.42	2.63
1.250	1.61	7.333	3.21	13.417	7.88	19.50	2.63
1.333	1.61	7.417	3.21	13.500	7.88	19.58	2.63
1.417	1.61	7.500	3.21	13.583	7.88	19.67	2.63
1.500	1.61	7.583	3.21	13.667	7.88	19.75	2.63
1.583	1.61	7.667	3.21	13.750	6.13	19.83	2.63
1.667	1.61	7.750	3.21	13.833	6.13	19.92	2.63
1.750	1.61	7.833	3.21	13.917	6.13	20.00	2.63
1.833	1.61	7.917	3.21	14.000	6.13	20.08	2.63
1.917	1.61	8.000	3.21	14.083	6.13	20.17	2.63
2.000	1.61	8.083	3.21	14.167	6.13	20.25	1.75
2.083	1.61	8.167	3.21	14.250	4.38	20.33	1.75
2.167	1.61	8.250	3.79	14.333	4.38	20.42	1.75
2.250	1.90	8.333	3.79	14.417	4.38	20.50	1.75
2.333	1.90	8.417	3.79	14.500	4.38	20.58	1.75
2.417	1.90	8.500	3.79	14.583	4.38	20.67	1.75
2.500	1.90	8.583	3.79	14.667	4.38	20.75	1.75
2.583	1.90	8.667	3.79	14.750	4.38	20.83	1.75
2.667	1.90	8.750	4.09	14.833	4.38	20.92	1.75
2.750	1.90	8.833	4.09	14.917	4.38	21.00	1.75
2.833	1.90	8.917	4.09	15.000	4.38	21.08	1.75
2.917	1.90	9.000	4.09	15.083	4.38	21.17	1.75
3.000	1.90	9.083	4.09	15.167	4.38	21.25	1.75
3.083	1.90	9.167	4.09	15.250	4.38	21.33	1.75
3.167	1.90	9.250	4.67	15.333	4.38	21.42	1.75
3.250	1.90	9.333	4.67	15.417	4.38	21.50	1.75
3.333	1.90	9.417	4.67	15.500	4.38	21.58	1.75
3.417	1.90	9.500	4.67	15.583	4.38	21.67	1.75
3.500	1.90	9.583	4.67	15.667	4.38	21.75	1.75
3.583	1.90	9.667	4.67	15.750	4.38	21.83	1.75
3.667	1.90	9.750	5.25	15.833	4.38	21.92	1.75
3.750	1.90	9.833	5.25	15.917	4.38	22.00	1.75
3.833	1.90	9.917	5.25	16.000	4.38	22.08	1.75

3.917	1.90	10.000	5.25	16.083	4.38	22.17	1.75
4.000	1.90	10.083	5.25	16.167	4.38	22.25	1.75
4.083	1.90	10.167	5.25	16.250	2.63	22.33	1.75
4.167	1.90	10.250	6.71	16.333	2.63	22.42	1.75
4.250	2.33	10.333	6.71	16.417	2.63	22.50	1.75
4.333	2.33	10.417	6.71	16.500	2.63	22.58	1.75
4.417	2.33	10.500	6.71	16.583	2.63	22.67	1.75
4.500	2.33	10.583	6.71	16.667	2.63	22.75	1.75
4.583	2.33	10.667	6.71	16.750	2.63	22.83	1.75
4.667	2.33	10.750	9.05	16.833	2.63	22.92	1.75
4.750	2.33	10.833	9.05	16.917	2.63	23.00	1.75
4.833	2.33	10.917	9.05	17.000	2.63	23.08	1.75
4.917	2.33	11.000	9.05	17.083	2.63	23.17	1.75
5.000	2.33	11.083	9.05	17.167	2.63	23.25	1.75
5.083	2.33	11.167	9.05	17.250	2.63	23.33	1.75
5.167	2.33	11.250	14.01	17.333	2.63	23.42	1.75
5.250	2.33	11.333	14.01	17.417	2.63	23.50	1.75
5.333	2.33	11.417	14.01	17.500	2.63	23.58	1.75
5.417	2.33	11.500	14.01	17.583	2.63	23.67	1.75
5.500	2.33	11.583	14.01	17.667	2.63	23.75	1.75
5.583	2.33	11.667	14.01	17.750	2.63	23.83	1.75
5.667	2.33	11.750	43.19	17.833	2.63	23.92	1.75
5.750	2.33	11.833	43.19	17.917	2.63	24.00	1.75
5.833	2.33	11.917	110.89	18.000	2.63	24.08	1.75
5.917	2.33	12.000	110.90	18.083	2.63	24.17	1.75
6.000	2.33	12.083	178.60	18.167	2.63		
6.083	2.33	12.167	178.61	18.250	2.63		

Max.Eff.Inten. (mm/hr)=	178.61	171.66	
over (min)	5.00	10.00	
Storage Coeff. (min)=	2.98 (ii)	7.29 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.28	0.14	
			TOTALS
PEAK FLOW (cms)=	2.66	1.60	4.256 (iii)
TIME TO PEAK (hrs)=	12.17	12.17	12.17
RUNOFF VOLUME (mm)=	144.42	94.42	119.42
TOTAL RAINFALL (mm)=	145.92	145.92	145.92
RUNOFF COEFFICIENT =	0.99	0.65	0.82

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 74.0 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)=	1.26		
ID= 1 DT= 5.0 min	Total Imp(%)=	55.00	Dir. Conn.(%)=	35.00	

```

-----
                IMPERVIOUS      PERVIOUS (i)
Surface Area    (ha)=          0.69      0.57
Dep. Storage    (mm)=          1.50      5.00
Average Slope    (%)=          2.00      2.00
Length          (m)=          91.65     30.00
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	0.00	6.167	2.33	12.250	21.03	18.33	2.63
0.167	0.00	6.250	2.63	12.333	21.01	18.42	2.63
0.250	1.61	6.333	2.63	12.417	21.01	18.50	2.63
0.333	1.61	6.417	2.63	12.500	21.01	18.58	2.63
0.417	1.61	6.500	2.63	12.583	21.01	18.67	2.63
0.500	1.61	6.583	2.63	12.667	21.01	18.75	2.63
0.583	1.61	6.667	2.63	12.750	10.80	18.83	2.63
0.667	1.61	6.750	2.63	12.833	10.80	18.92	2.63
0.750	1.61	6.833	2.63	12.917	10.80	19.00	2.63
0.833	1.61	6.917	2.63	13.000	10.80	19.08	2.63
0.917	1.61	7.000	2.63	13.083	10.80	19.17	2.63
1.000	1.61	7.083	2.63	13.167	10.80	19.25	2.63
1.083	1.61	7.167	2.63	13.250	7.88	19.33	2.63
1.167	1.61	7.250	3.21	13.333	7.88	19.42	2.63
1.250	1.61	7.333	3.21	13.417	7.88	19.50	2.63
1.333	1.61	7.417	3.21	13.500	7.88	19.58	2.63
1.417	1.61	7.500	3.21	13.583	7.88	19.67	2.63
1.500	1.61	7.583	3.21	13.667	7.88	19.75	2.63
1.583	1.61	7.667	3.21	13.750	6.13	19.83	2.63
1.667	1.61	7.750	3.21	13.833	6.13	19.92	2.63
1.750	1.61	7.833	3.21	13.917	6.13	20.00	2.63
1.833	1.61	7.917	3.21	14.000	6.13	20.08	2.63
1.917	1.61	8.000	3.21	14.083	6.13	20.17	2.63
2.000	1.61	8.083	3.21	14.167	6.13	20.25	1.75
2.083	1.61	8.167	3.21	14.250	4.38	20.33	1.75
2.167	1.61	8.250	3.79	14.333	4.38	20.42	1.75
2.250	1.90	8.333	3.79	14.417	4.38	20.50	1.75
2.333	1.90	8.417	3.79	14.500	4.38	20.58	1.75
2.417	1.90	8.500	3.79	14.583	4.38	20.67	1.75
2.500	1.90	8.583	3.79	14.667	4.38	20.75	1.75
2.583	1.90	8.667	3.79	14.750	4.38	20.83	1.75
2.667	1.90	8.750	4.09	14.833	4.38	20.92	1.75
2.750	1.90	8.833	4.09	14.917	4.38	21.00	1.75
2.833	1.90	8.917	4.09	15.000	4.38	21.08	1.75
2.917	1.90	9.000	4.09	15.083	4.38	21.17	1.75
3.000	1.90	9.083	4.09	15.167	4.38	21.25	1.75
3.083	1.90	9.167	4.09	15.250	4.38	21.33	1.75
3.167	1.90	9.250	4.67	15.333	4.38	21.42	1.75
3.250	1.90	9.333	4.67	15.417	4.38	21.50	1.75

3.333	1.90		9.417	4.67		15.500	4.38		21.58	1.75
3.417	1.90		9.500	4.67		15.583	4.38		21.67	1.75
3.500	1.90		9.583	4.67		15.667	4.38		21.75	1.75
3.583	1.90		9.667	4.67		15.750	4.38		21.83	1.75
3.667	1.90		9.750	5.25		15.833	4.38		21.92	1.75
3.750	1.90		9.833	5.25		15.917	4.38		22.00	1.75
3.833	1.90		9.917	5.25		16.000	4.38		22.08	1.75
3.917	1.90		10.000	5.25		16.083	4.38		22.17	1.75
4.000	1.90		10.083	5.25		16.167	4.38		22.25	1.75
4.083	1.90		10.167	5.25		16.250	2.63		22.33	1.75
4.167	1.90		10.250	6.71		16.333	2.63		22.42	1.75
4.250	2.33		10.333	6.71		16.417	2.63		22.50	1.75
4.333	2.33		10.417	6.71		16.500	2.63		22.58	1.75
4.417	2.33		10.500	6.71		16.583	2.63		22.67	1.75
4.500	2.33		10.583	6.71		16.667	2.63		22.75	1.75
4.583	2.33		10.667	6.71		16.750	2.63		22.83	1.75
4.667	2.33		10.750	9.05		16.833	2.63		22.92	1.75
4.750	2.33		10.833	9.05		16.917	2.63		23.00	1.75
4.833	2.33		10.917	9.05		17.000	2.63		23.08	1.75
4.917	2.33		11.000	9.05		17.083	2.63		23.17	1.75
5.000	2.33		11.083	9.05		17.167	2.63		23.25	1.75
5.083	2.33		11.167	9.05		17.250	2.63		23.33	1.75
5.167	2.33		11.250	14.01		17.333	2.63		23.42	1.75
5.250	2.33		11.333	14.01		17.417	2.63		23.50	1.75
5.333	2.33		11.417	14.01		17.500	2.63		23.58	1.75
5.417	2.33		11.500	14.01		17.583	2.63		23.67	1.75
5.500	2.33		11.583	14.01		17.667	2.63		23.75	1.75
5.583	2.33		11.667	14.01		17.750	2.63		23.83	1.75
5.667	2.33		11.750	43.19		17.833	2.63		23.92	1.75
5.750	2.33		11.833	43.19		17.917	2.63		24.00	1.75
5.833	2.33		11.917	110.89		18.000	2.63		24.08	1.75
5.917	2.33		12.000	110.90		18.083	2.63		24.17	1.75
6.000	2.33		12.083	178.60		18.167	2.63			
6.083	2.33		12.167	178.61		18.250	2.63			

Max.Eff.Inten. (mm/hr)=	178.61	207.30
over (min)	5.00	10.00
Storage Coeff. (min)=	1.56 (ii)	6.00 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.33	0.15

TOTALS

PEAK FLOW (cms)=	0.22	0.27	0.486 (iii)
TIME TO PEAK (hrs)=	12.17	12.17	12.17
RUNOFF VOLUME (mm)=	144.42	99.36	115.13
TOTAL RAINFALL (mm)=	145.92	145.92	145.92
RUNOFF COEFFICIENT =	0.99	0.68	0.79

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:

CN* = 74.0 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)= 1.43
| ID= 1 DT= 5.0 min | Total Imp(%)= 50.00 Dir. Conn.(%)= 50.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.71	0.71
Dep. Storage	(mm)=	1.50	5.00
Average Slope	(%)=	2.00	2.00
Length	(m)=	97.64	30.00
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	0.00	6.167	2.33	12.250	21.03	18.33	2.63
0.167	0.00	6.250	2.63	12.333	21.01	18.42	2.63
0.250	1.61	6.333	2.63	12.417	21.01	18.50	2.63
0.333	1.61	6.417	2.63	12.500	21.01	18.58	2.63
0.417	1.61	6.500	2.63	12.583	21.01	18.67	2.63
0.500	1.61	6.583	2.63	12.667	21.01	18.75	2.63
0.583	1.61	6.667	2.63	12.750	10.80	18.83	2.63
0.667	1.61	6.750	2.63	12.833	10.80	18.92	2.63
0.750	1.61	6.833	2.63	12.917	10.80	19.00	2.63
0.833	1.61	6.917	2.63	13.000	10.80	19.08	2.63
0.917	1.61	7.000	2.63	13.083	10.80	19.17	2.63
1.000	1.61	7.083	2.63	13.167	10.80	19.25	2.63
1.083	1.61	7.167	2.63	13.250	7.88	19.33	2.63
1.167	1.61	7.250	3.21	13.333	7.88	19.42	2.63
1.250	1.61	7.333	3.21	13.417	7.88	19.50	2.63
1.333	1.61	7.417	3.21	13.500	7.88	19.58	2.63
1.417	1.61	7.500	3.21	13.583	7.88	19.67	2.63
1.500	1.61	7.583	3.21	13.667	7.88	19.75	2.63
1.583	1.61	7.667	3.21	13.750	6.13	19.83	2.63
1.667	1.61	7.750	3.21	13.833	6.13	19.92	2.63
1.750	1.61	7.833	3.21	13.917	6.13	20.00	2.63
1.833	1.61	7.917	3.21	14.000	6.13	20.08	2.63
1.917	1.61	8.000	3.21	14.083	6.13	20.17	2.63
2.000	1.61	8.083	3.21	14.167	6.13	20.25	1.75
2.083	1.61	8.167	3.21	14.250	4.38	20.33	1.75
2.167	1.61	8.250	3.79	14.333	4.38	20.42	1.75
2.250	1.90	8.333	3.79	14.417	4.38	20.50	1.75
2.333	1.90	8.417	3.79	14.500	4.38	20.58	1.75
2.417	1.90	8.500	3.79	14.583	4.38	20.67	1.75
2.500	1.90	8.583	3.79	14.667	4.38	20.75	1.75
2.583	1.90	8.667	3.79	14.750	4.38	20.83	1.75
2.667	1.90	8.750	4.09	14.833	4.38	20.92	1.75

2.750	1.90		8.833	4.09		14.917	4.38		21.00	1.75
2.833	1.90		8.917	4.09		15.000	4.38		21.08	1.75
2.917	1.90		9.000	4.09		15.083	4.38		21.17	1.75
3.000	1.90		9.083	4.09		15.167	4.38		21.25	1.75
3.083	1.90		9.167	4.09		15.250	4.38		21.33	1.75
3.167	1.90		9.250	4.67		15.333	4.38		21.42	1.75
3.250	1.90		9.333	4.67		15.417	4.38		21.50	1.75
3.333	1.90		9.417	4.67		15.500	4.38		21.58	1.75
3.417	1.90		9.500	4.67		15.583	4.38		21.67	1.75
3.500	1.90		9.583	4.67		15.667	4.38		21.75	1.75
3.583	1.90		9.667	4.67		15.750	4.38		21.83	1.75
3.667	1.90		9.750	5.25		15.833	4.38		21.92	1.75
3.750	1.90		9.833	5.25		15.917	4.38		22.00	1.75
3.833	1.90		9.917	5.25		16.000	4.38		22.08	1.75
3.917	1.90		10.000	5.25		16.083	4.38		22.17	1.75
4.000	1.90		10.083	5.25		16.167	4.38		22.25	1.75
4.083	1.90		10.167	5.25		16.250	2.63		22.33	1.75
4.167	1.90		10.250	6.71		16.333	2.63		22.42	1.75
4.250	2.33		10.333	6.71		16.417	2.63		22.50	1.75
4.333	2.33		10.417	6.71		16.500	2.63		22.58	1.75
4.417	2.33		10.500	6.71		16.583	2.63		22.67	1.75
4.500	2.33		10.583	6.71		16.667	2.63		22.75	1.75
4.583	2.33		10.667	6.71		16.750	2.63		22.83	1.75
4.667	2.33		10.750	9.05		16.833	2.63		22.92	1.75
4.750	2.33		10.833	9.05		16.917	2.63		23.00	1.75
4.833	2.33		10.917	9.05		17.000	2.63		23.08	1.75
4.917	2.33		11.000	9.05		17.083	2.63		23.17	1.75
5.000	2.33		11.083	9.05		17.167	2.63		23.25	1.75
5.083	2.33		11.167	9.05		17.250	2.63		23.33	1.75
5.167	2.33		11.250	14.01		17.333	2.63		23.42	1.75
5.250	2.33		11.333	14.01		17.417	2.63		23.50	1.75
5.333	2.33		11.417	14.01		17.500	2.63		23.58	1.75
5.417	2.33		11.500	14.01		17.583	2.63		23.67	1.75
5.500	2.33		11.583	14.01		17.667	2.63		23.75	1.75
5.583	2.33		11.667	14.01		17.750	2.63		23.83	1.75
5.667	2.33		11.750	43.19		17.833	2.63		23.92	1.75
5.750	2.33		11.833	43.19		17.917	2.63		24.00	1.75
5.833	2.33		11.917	110.89		18.000	2.63		24.08	1.75
5.917	2.33		12.000	110.90		18.083	2.63		24.17	1.75
6.000	2.33		12.083	178.60		18.167	2.63			
6.083	2.33		12.167	178.61		18.250	2.63			

Max.Eff.Inten. (mm/hr)=	178.61	126.63
over (min)	5.00	10.00
Storage Coeff. (min)=	1.62 (ii)	6.33 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.32	0.15

TOTALS

PEAK FLOW (cms)=	0.35	0.20	0.555 (iii)
TIME TO PEAK (hrs)=	12.17	12.17	12.17
RUNOFF VOLUME (mm)=	144.42	86.28	115.35
TOTAL RAINFALL (mm)=	145.92	145.92	145.92
RUNOFF COEFFICIENT =	0.99	0.59	0.79

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 74.0 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 (0203) | Area (ha)= 0.29
| ID= 1 DT= 5.0 min | Total Imp(%)= 7.00 Dir. Conn.(%)= 7.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.02	0.27
Dep. Storage	(mm)=	1.50	5.00
Average Slope	(%)=	2.00	2.00
Length	(m)=	43.97	15.00
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	0.00	6.167	2.33	12.250	21.03	18.33	2.63
0.167	0.00	6.250	2.63	12.333	21.01	18.42	2.63
0.250	1.61	6.333	2.63	12.417	21.01	18.50	2.63
0.333	1.61	6.417	2.63	12.500	21.01	18.58	2.63
0.417	1.61	6.500	2.63	12.583	21.01	18.67	2.63
0.500	1.61	6.583	2.63	12.667	21.01	18.75	2.63
0.583	1.61	6.667	2.63	12.750	10.80	18.83	2.63
0.667	1.61	6.750	2.63	12.833	10.80	18.92	2.63
0.750	1.61	6.833	2.63	12.917	10.80	19.00	2.63
0.833	1.61	6.917	2.63	13.000	10.80	19.08	2.63
0.917	1.61	7.000	2.63	13.083	10.80	19.17	2.63
1.000	1.61	7.083	2.63	13.167	10.80	19.25	2.63
1.083	1.61	7.167	2.63	13.250	7.88	19.33	2.63
1.167	1.61	7.250	3.21	13.333	7.88	19.42	2.63
1.250	1.61	7.333	3.21	13.417	7.88	19.50	2.63
1.333	1.61	7.417	3.21	13.500	7.88	19.58	2.63
1.417	1.61	7.500	3.21	13.583	7.88	19.67	2.63
1.500	1.61	7.583	3.21	13.667	7.88	19.75	2.63
1.583	1.61	7.667	3.21	13.750	6.13	19.83	2.63
1.667	1.61	7.750	3.21	13.833	6.13	19.92	2.63
1.750	1.61	7.833	3.21	13.917	6.13	20.00	2.63
1.833	1.61	7.917	3.21	14.000	6.13	20.08	2.63
1.917	1.61	8.000	3.21	14.083	6.13	20.17	2.63
2.000	1.61	8.083	3.21	14.167	6.13	20.25	1.75
2.083	1.61	8.167	3.21	14.250	4.38	20.33	1.75

2.167	1.61		8.250	3.79		14.333	4.38		20.42	1.75
2.250	1.90		8.333	3.79		14.417	4.38		20.50	1.75
2.333	1.90		8.417	3.79		14.500	4.38		20.58	1.75
2.417	1.90		8.500	3.79		14.583	4.38		20.67	1.75
2.500	1.90		8.583	3.79		14.667	4.38		20.75	1.75
2.583	1.90		8.667	3.79		14.750	4.38		20.83	1.75
2.667	1.90		8.750	4.09		14.833	4.38		20.92	1.75
2.750	1.90		8.833	4.09		14.917	4.38		21.00	1.75
2.833	1.90		8.917	4.09		15.000	4.38		21.08	1.75
2.917	1.90		9.000	4.09		15.083	4.38		21.17	1.75
3.000	1.90		9.083	4.09		15.167	4.38		21.25	1.75
3.083	1.90		9.167	4.09		15.250	4.38		21.33	1.75
3.167	1.90		9.250	4.67		15.333	4.38		21.42	1.75
3.250	1.90		9.333	4.67		15.417	4.38		21.50	1.75
3.333	1.90		9.417	4.67		15.500	4.38		21.58	1.75
3.417	1.90		9.500	4.67		15.583	4.38		21.67	1.75
3.500	1.90		9.583	4.67		15.667	4.38		21.75	1.75
3.583	1.90		9.667	4.67		15.750	4.38		21.83	1.75
3.667	1.90		9.750	5.25		15.833	4.38		21.92	1.75
3.750	1.90		9.833	5.25		15.917	4.38		22.00	1.75
3.833	1.90		9.917	5.25		16.000	4.38		22.08	1.75
3.917	1.90		10.000	5.25		16.083	4.38		22.17	1.75
4.000	1.90		10.083	5.25		16.167	4.38		22.25	1.75
4.083	1.90		10.167	5.25		16.250	2.63		22.33	1.75
4.167	1.90		10.250	6.71		16.333	2.63		22.42	1.75
4.250	2.33		10.333	6.71		16.417	2.63		22.50	1.75
4.333	2.33		10.417	6.71		16.500	2.63		22.58	1.75
4.417	2.33		10.500	6.71		16.583	2.63		22.67	1.75
4.500	2.33		10.583	6.71		16.667	2.63		22.75	1.75
4.583	2.33		10.667	6.71		16.750	2.63		22.83	1.75
4.667	2.33		10.750	9.05		16.833	2.63		22.92	1.75
4.750	2.33		10.833	9.05		16.917	2.63		23.00	1.75
4.833	2.33		10.917	9.05		17.000	2.63		23.08	1.75
4.917	2.33		11.000	9.05		17.083	2.63		23.17	1.75
5.000	2.33		11.083	9.05		17.167	2.63		23.25	1.75
5.083	2.33		11.167	9.05		17.250	2.63		23.33	1.75
5.167	2.33		11.250	14.01		17.333	2.63		23.42	1.75
5.250	2.33		11.333	14.01		17.417	2.63		23.50	1.75
5.333	2.33		11.417	14.01		17.500	2.63		23.58	1.75
5.417	2.33		11.500	14.01		17.583	2.63		23.67	1.75
5.500	2.33		11.583	14.01		17.667	2.63		23.75	1.75
5.583	2.33		11.667	14.01		17.750	2.63		23.83	1.75
5.667	2.33		11.750	43.19		17.833	2.63		23.92	1.75
5.750	2.33		11.833	43.19		17.917	2.63		24.00	1.75
5.833	2.33		11.917	110.89		18.000	2.63		24.08	1.75
5.917	2.33		12.000	110.90		18.083	2.63		24.17	1.75
6.000	2.33		12.083	178.60		18.167	2.63			
6.083	2.33		12.167	178.61		18.250	2.63			

Max.Eff.Inten. (mm/hr)=	178.61	126.63
over (min)	5.00	5.00
Storage Coeff. (min)=	1.01 (ii)	4.57 (ii)
Unit Hyd. Tpeak (min)=	5.00	5.00

Unit Hyd. peak	(cms)=	0.34	0.23	
				TOTALS
PEAK FLOW	(cms)=	0.01	0.09	0.101 (iii)
TIME TO PEAK	(hrs)=	12.17	12.17	12.17
RUNOFF VOLUME	(mm)=	144.42	86.28	90.34
TOTAL RAINFALL	(mm)=	145.92	145.92	145.92
RUNOFF COEFFICIENT	=	0.99	0.59	0.62

***** 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* = 74.0 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 (0204)	Area	(ha)=	0.30	
ID= 1 DT= 5.0 min	Total Imp(%)=	60.00	Dir. Conn.(%)=	50.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.18	0.12
Dep. Storage	(mm)=	1.50	5.00
Average Slope	(%)=	5.00	5.00
Length	(m)=	44.72	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	0.00	6.167	2.33	12.250	21.03	18.33	2.63
0.167	0.00	6.250	2.63	12.333	21.01	18.42	2.63
0.250	1.61	6.333	2.63	12.417	21.01	18.50	2.63
0.333	1.61	6.417	2.63	12.500	21.01	18.58	2.63
0.417	1.61	6.500	2.63	12.583	21.01	18.67	2.63
0.500	1.61	6.583	2.63	12.667	21.01	18.75	2.63
0.583	1.61	6.667	2.63	12.750	10.80	18.83	2.63
0.667	1.61	6.750	2.63	12.833	10.80	18.92	2.63
0.750	1.61	6.833	2.63	12.917	10.80	19.00	2.63
0.833	1.61	6.917	2.63	13.000	10.80	19.08	2.63
0.917	1.61	7.000	2.63	13.083	10.80	19.17	2.63
1.000	1.61	7.083	2.63	13.167	10.80	19.25	2.63
1.083	1.61	7.167	2.63	13.250	7.88	19.33	2.63
1.167	1.61	7.250	3.21	13.333	7.88	19.42	2.63
1.250	1.61	7.333	3.21	13.417	7.88	19.50	2.63
1.333	1.61	7.417	3.21	13.500	7.88	19.58	2.63

1.417	1.61		7.500	3.21		13.583	7.88		19.67	2.63
1.500	1.61		7.583	3.21		13.667	7.88		19.75	2.63
1.583	1.61		7.667	3.21		13.750	6.13		19.83	2.63
1.667	1.61		7.750	3.21		13.833	6.13		19.92	2.63
1.750	1.61		7.833	3.21		13.917	6.13		20.00	2.63
1.833	1.61		7.917	3.21		14.000	6.13		20.08	2.63
1.917	1.61		8.000	3.21		14.083	6.13		20.17	2.63
2.000	1.61		8.083	3.21		14.167	6.13		20.25	1.75
2.083	1.61		8.167	3.21		14.250	4.38		20.33	1.75
2.167	1.61		8.250	3.79		14.333	4.38		20.42	1.75
2.250	1.90		8.333	3.79		14.417	4.38		20.50	1.75
2.333	1.90		8.417	3.79		14.500	4.38		20.58	1.75
2.417	1.90		8.500	3.79		14.583	4.38		20.67	1.75
2.500	1.90		8.583	3.79		14.667	4.38		20.75	1.75
2.583	1.90		8.667	3.79		14.750	4.38		20.83	1.75
2.667	1.90		8.750	4.09		14.833	4.38		20.92	1.75
2.750	1.90		8.833	4.09		14.917	4.38		21.00	1.75
2.833	1.90		8.917	4.09		15.000	4.38		21.08	1.75
2.917	1.90		9.000	4.09		15.083	4.38		21.17	1.75
3.000	1.90		9.083	4.09		15.167	4.38		21.25	1.75
3.083	1.90		9.167	4.09		15.250	4.38		21.33	1.75
3.167	1.90		9.250	4.67		15.333	4.38		21.42	1.75
3.250	1.90		9.333	4.67		15.417	4.38		21.50	1.75
3.333	1.90		9.417	4.67		15.500	4.38		21.58	1.75
3.417	1.90		9.500	4.67		15.583	4.38		21.67	1.75
3.500	1.90		9.583	4.67		15.667	4.38		21.75	1.75
3.583	1.90		9.667	4.67		15.750	4.38		21.83	1.75
3.667	1.90		9.750	5.25		15.833	4.38		21.92	1.75
3.750	1.90		9.833	5.25		15.917	4.38		22.00	1.75
3.833	1.90		9.917	5.25		16.000	4.38		22.08	1.75
3.917	1.90		10.000	5.25		16.083	4.38		22.17	1.75
4.000	1.90		10.083	5.25		16.167	4.38		22.25	1.75
4.083	1.90		10.167	5.25		16.250	2.63		22.33	1.75
4.167	1.90		10.250	6.71		16.333	2.63		22.42	1.75
4.250	2.33		10.333	6.71		16.417	2.63		22.50	1.75
4.333	2.33		10.417	6.71		16.500	2.63		22.58	1.75
4.417	2.33		10.500	6.71		16.583	2.63		22.67	1.75
4.500	2.33		10.583	6.71		16.667	2.63		22.75	1.75
4.583	2.33		10.667	6.71		16.750	2.63		22.83	1.75
4.667	2.33		10.750	9.05		16.833	2.63		22.92	1.75
4.750	2.33		10.833	9.05		16.917	2.63		23.00	1.75
4.833	2.33		10.917	9.05		17.000	2.63		23.08	1.75
4.917	2.33		11.000	9.05		17.083	2.63		23.17	1.75
5.000	2.33		11.083	9.05		17.167	2.63		23.25	1.75
5.083	2.33		11.167	9.05		17.250	2.63		23.33	1.75
5.167	2.33		11.250	14.01		17.333	2.63		23.42	1.75
5.250	2.33		11.333	14.01		17.417	2.63		23.50	1.75
5.333	2.33		11.417	14.01		17.500	2.63		23.58	1.75
5.417	2.33		11.500	14.01		17.583	2.63		23.67	1.75
5.500	2.33		11.583	14.01		17.667	2.63		23.75	1.75
5.583	2.33		11.667	14.01		17.750	2.63		23.83	1.75
5.667	2.33		11.750	43.19		17.833	2.63		23.92	1.75
5.750	2.33		11.833	43.19		17.917	2.63		24.00	1.75

5.833	2.33	11.917	110.89	18.000	2.63	24.08	1.75
5.917	2.33	12.000	110.90	18.083	2.63	24.17	1.75
6.000	2.33	12.083	178.60	18.167	2.63		
6.083	2.33	12.167	178.61	18.250	2.63		

Max.Eff.Inten. (mm/hr)=	178.61	174.42	
over (min)	5.00	5.00	
Storage Coeff. (min)=	0.77 (ii)	4.66 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.34	0.22	
			TOTALS
PEAK FLOW (cms)=	0.07	0.06	0.130 (iii)
TIME TO PEAK (hrs)=	12.17	12.17	12.17
RUNOFF VOLUME (mm)=	144.42	96.07	120.23
TOTAL RAINFALL (mm)=	145.92	145.92	145.92
RUNOFF COEFFICIENT =	0.99	0.66	0.82

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 75.0 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 (0200):	10.86	4.256	12.17	119.42
+ ID2= 2 (0201):	1.43	0.555	12.17	115.35
=====				
ID = 3 (1000):	12.29	4.812	12.17	118.95

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):	12.29	4.812	12.17	118.95
+ ID2= 2 (0202):	1.26	0.486	12.17	115.13
=====				
ID = 1 (1000):	13.55	5.298	12.17	118.59

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):	13.55	5.298	12.17	118.59
+ ID2= 2 (0203):	0.29	0.101	12.17	90.34
=====				
ID = 3 (1000):	13.84	5.399	12.17	118.00

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (1000)	AREA	QPEAK	TPEAK	R.V.
-----	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (1000):	13.84	5.399	12.17	118.00
+ ID2= 2 (0204):	0.30	0.130	12.17	120.23
=====				
ID = 1 (1000):	14.14	5.529	12.17	118.05

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

FINISH

=====

=====

=====

=====

```
V      V      I      SSSSS  U      U      A      L      (v 6.2.2015)
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
```

Developed and Distributed by Smart City Water Inc

Copyright 2007 - 2022 Smart City Water Inc

All rights reserved.

***** 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\jangsoo.lee\AppData\Local\Civica\VH5\191a91e0-1a14-44fd-bc00-4941023c7dee\6bd34ea2-6fd7-41c7-b85a-ae9d835490bf\

Summary filename:

C:\Users\jangsoo.lee\AppData\Local\Civica\VH5\191a91e0-1a14-44fd-bc00-4941023c7dee\6bd34ea2-6fd7-41c7-b85a-ae9d835490bf\

DATE: 09/25/2024

TIME: 11:26:59

USER:

COMMENTS: _____

** SIMULATION : Regional Storm - 48 hr **

READ STORM	Filename: C:\Users\jangsoo.lee\AppData
	ata\Local\Temp\
	c043b895-d4c4-42b1-9a94-e27dedc1a594\8f8698b4
Ptotal=284.00 mm	Comments: Regional Storm - 48 hr

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.00	0.00	13.00	2.00	26.00	2.00	39.00	6.00
1.00	2.00	14.00	2.00	27.00	2.00	40.00	13.00
2.00	2.00	15.00	2.00	28.00	2.00	41.00	17.00
3.00	2.00	16.00	2.00	29.00	2.00	42.00	13.00
4.00	2.00	17.00	2.00	30.00	2.00	43.00	23.00
5.00	2.00	18.00	2.00	31.00	2.00	44.00	13.00
6.00	2.00	19.00	2.00	32.00	2.00	45.00	13.00
7.00	2.00	20.00	2.00	33.00	2.00	46.00	53.00
8.00	2.00	21.00	2.00	34.00	2.00	47.00	38.00
9.00	2.00	22.00	2.00	35.00	2.00	48.00	13.00
10.00	2.00	23.00	2.00	36.00	2.00		
11.00	2.00	24.00	2.00	37.00	6.00		
12.00	2.00	25.00	2.00	38.00	4.00		

| CALIB |
| STANDHYD (0200) |
ID= 1 DT= 5.0 min

Area (ha)= 10.86
Total Imp(%)= 60.00 Dir. Conn.(%)= 50.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	6.52	4.34
Dep. Storage (mm)=	1.50	5.00
Average Slope (%)=	2.00	2.00
Length (m)=	269.07	30.00
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	0.00	12.333	2.00	24.583	2.00	36.83	2.00
0.167	0.00	12.417	2.00	24.667	2.00	36.92	2.00
0.250	0.00	12.500	2.00	24.750	2.00	37.00	2.00
0.333	0.00	12.583	2.00	24.833	2.00	37.08	6.00
0.417	0.00	12.667	2.00	24.917	2.00	37.17	6.00
0.500	0.00	12.750	2.00	25.000	2.00	37.25	6.00
0.583	0.00	12.833	2.00	25.083	2.00	37.33	6.00
0.667	0.00	12.917	2.00	25.167	2.00	37.42	6.00
0.750	0.00	13.000	2.00	25.250	2.00	37.50	6.00
0.833	0.00	13.083	2.00	25.333	2.00	37.58	6.00
0.917	0.00	13.167	2.00	25.417	2.00	37.67	6.00
1.000	0.00	13.250	2.00	25.500	2.00	37.75	6.00
1.083	2.00	13.333	2.00	25.583	2.00	37.83	6.00
1.167	2.00	13.417	2.00	25.667	2.00	37.92	6.00
1.250	2.00	13.500	2.00	25.750	2.00	38.00	6.00
1.333	2.00	13.583	2.00	25.833	2.00	38.08	4.00
1.417	2.00	13.667	2.00	25.917	2.00	38.17	4.00

1.500	2.00	13.750	2.00	26.000	2.00	38.25	4.00
1.583	2.00	13.833	2.00	26.083	2.00	38.33	4.00
1.667	2.00	13.917	2.00	26.167	2.00	38.42	4.00
1.750	2.00	14.000	2.00	26.250	2.00	38.50	4.00
1.833	2.00	14.083	2.00	26.333	2.00	38.58	4.00
1.917	2.00	14.167	2.00	26.417	2.00	38.67	4.00
2.000	2.00	14.250	2.00	26.500	2.00	38.75	4.00
2.083	2.00	14.333	2.00	26.583	2.00	38.83	4.00
2.167	2.00	14.417	2.00	26.667	2.00	38.92	4.00
2.250	2.00	14.500	2.00	26.750	2.00	39.00	4.00
2.333	2.00	14.583	2.00	26.833	2.00	39.08	6.00
2.417	2.00	14.667	2.00	26.917	2.00	39.17	6.00
2.500	2.00	14.750	2.00	27.000	2.00	39.25	6.00
2.583	2.00	14.833	2.00	27.083	2.00	39.33	6.00
2.667	2.00	14.917	2.00	27.167	2.00	39.42	6.00
2.750	2.00	15.000	2.00	27.250	2.00	39.50	6.00
2.833	2.00	15.083	2.00	27.333	2.00	39.58	6.00
2.917	2.00	15.167	2.00	27.417	2.00	39.67	6.00
3.000	2.00	15.250	2.00	27.500	2.00	39.75	6.00
3.083	2.00	15.333	2.00	27.583	2.00	39.83	6.00
3.167	2.00	15.417	2.00	27.667	2.00	39.92	6.00
3.250	2.00	15.500	2.00	27.750	2.00	40.00	6.00
3.333	2.00	15.583	2.00	27.833	2.00	40.08	13.00
3.417	2.00	15.667	2.00	27.917	2.00	40.17	13.00
3.500	2.00	15.750	2.00	28.000	2.00	40.25	13.00
3.583	2.00	15.833	2.00	28.083	2.00	40.33	13.00
3.667	2.00	15.917	2.00	28.167	2.00	40.42	13.00
3.750	2.00	16.000	2.00	28.250	2.00	40.50	13.00
3.833	2.00	16.083	2.00	28.333	2.00	40.58	13.00
3.917	2.00	16.167	2.00	28.417	2.00	40.67	13.00
4.000	2.00	16.250	2.00	28.500	2.00	40.75	13.00
4.083	2.00	16.333	2.00	28.583	2.00	40.83	13.00
4.167	2.00	16.417	2.00	28.667	2.00	40.92	13.00
4.250	2.00	16.500	2.00	28.750	2.00	41.00	13.00
4.333	2.00	16.583	2.00	28.833	2.00	41.08	17.00
4.417	2.00	16.667	2.00	28.917	2.00	41.17	17.00
4.500	2.00	16.750	2.00	29.000	2.00	41.25	17.00
4.583	2.00	16.833	2.00	29.083	2.00	41.33	17.00
4.667	2.00	16.917	2.00	29.167	2.00	41.42	17.00
4.750	2.00	17.000	2.00	29.250	2.00	41.50	17.00
4.833	2.00	17.083	2.00	29.333	2.00	41.58	17.00
4.917	2.00	17.167	2.00	29.417	2.00	41.67	17.00
5.000	2.00	17.250	2.00	29.500	2.00	41.75	17.00
5.083	2.00	17.333	2.00	29.583	2.00	41.83	17.00
5.167	2.00	17.417	2.00	29.667	2.00	41.92	17.00
5.250	2.00	17.500	2.00	29.750	2.00	42.00	17.00
5.333	2.00	17.583	2.00	29.833	2.00	42.08	13.00
5.417	2.00	17.667	2.00	29.917	2.00	42.17	13.00
5.500	2.00	17.750	2.00	30.000	2.00	42.25	13.00
5.583	2.00	17.833	2.00	30.083	2.00	42.33	13.00
5.667	2.00	17.917	2.00	30.167	2.00	42.42	13.00
5.750	2.00	18.000	2.00	30.250	2.00	42.50	13.00
5.833	2.00	18.083	2.00	30.333	2.00	42.58	13.00

5.917	2.00	18.167	2.00	30.417	2.00	42.67	13.00
6.000	2.00	18.250	2.00	30.500	2.00	42.75	13.00
6.083	2.00	18.333	2.00	30.583	2.00	42.83	13.00
6.167	2.00	18.417	2.00	30.667	2.00	42.92	13.00
6.250	2.00	18.500	2.00	30.750	2.00	43.00	13.00
6.333	2.00	18.583	2.00	30.833	2.00	43.08	22.99
6.417	2.00	18.667	2.00	30.917	2.00	43.17	23.00
6.500	2.00	18.750	2.00	31.000	2.00	43.25	23.00
6.583	2.00	18.833	2.00	31.083	2.00	43.33	23.00
6.667	2.00	18.917	2.00	31.167	2.00	43.42	23.00
6.750	2.00	19.000	2.00	31.250	2.00	43.50	23.00
6.833	2.00	19.083	2.00	31.333	2.00	43.58	23.00
6.917	2.00	19.167	2.00	31.417	2.00	43.67	23.00
7.000	2.00	19.250	2.00	31.500	2.00	43.75	23.00
7.083	2.00	19.333	2.00	31.583	2.00	43.83	23.00
7.167	2.00	19.417	2.00	31.667	2.00	43.92	23.00
7.250	2.00	19.500	2.00	31.750	2.00	44.00	23.00
7.333	2.00	19.583	2.00	31.833	2.00	44.08	13.01
7.417	2.00	19.667	2.00	31.917	2.00	44.17	13.00
7.500	2.00	19.750	2.00	32.000	2.00	44.25	13.00
7.583	2.00	19.833	2.00	32.083	2.00	44.33	13.00
7.667	2.00	19.917	2.00	32.167	2.00	44.42	13.00
7.750	2.00	20.000	2.00	32.250	2.00	44.50	13.00
7.833	2.00	20.083	2.00	32.333	2.00	44.58	13.00
7.917	2.00	20.167	2.00	32.417	2.00	44.67	13.00
8.000	2.00	20.250	2.00	32.500	2.00	44.75	13.00
8.083	2.00	20.333	2.00	32.583	2.00	44.83	13.00
8.167	2.00	20.417	2.00	32.667	2.00	44.92	13.00
8.250	2.00	20.500	2.00	32.750	2.00	45.00	13.00
8.333	2.00	20.583	2.00	32.833	2.00	45.08	13.00
8.417	2.00	20.667	2.00	32.917	2.00	45.17	13.00
8.500	2.00	20.750	2.00	33.000	2.00	45.25	13.00
8.583	2.00	20.833	2.00	33.083	2.00	45.33	13.00
8.667	2.00	20.917	2.00	33.167	2.00	45.42	13.00
8.750	2.00	21.000	2.00	33.250	2.00	45.50	13.00
8.833	2.00	21.083	2.00	33.333	2.00	45.58	13.00
8.917	2.00	21.167	2.00	33.417	2.00	45.67	13.00
9.000	2.00	21.250	2.00	33.500	2.00	45.75	13.00
9.083	2.00	21.333	2.00	33.583	2.00	45.83	13.00
9.167	2.00	21.417	2.00	33.667	2.00	45.92	13.00
9.250	2.00	21.500	2.00	33.750	2.00	46.00	13.00
9.333	2.00	21.583	2.00	33.833	2.00	46.08	52.94
9.417	2.00	21.667	2.00	33.917	2.00	46.17	53.00
9.500	2.00	21.750	2.00	34.000	2.00	46.25	53.00
9.583	2.00	21.833	2.00	34.083	2.00	46.33	53.00
9.667	2.00	21.917	2.00	34.167	2.00	46.42	53.00
9.750	2.00	22.000	2.00	34.250	2.00	46.50	53.00
9.833	2.00	22.083	2.00	34.333	2.00	46.58	53.00
9.917	2.00	22.167	2.00	34.417	2.00	46.67	53.00
10.000	2.00	22.250	2.00	34.500	2.00	46.75	53.00
10.083	2.00	22.333	2.00	34.583	2.00	46.83	53.00
10.167	2.00	22.417	2.00	34.667	2.00	46.92	53.00
10.250	2.00	22.500	2.00	34.750	2.00	47.00	53.00

10.333	2.00	22.583	2.00	34.833	2.00	47.08	38.02
10.417	2.00	22.667	2.00	34.917	2.00	47.17	38.00
10.500	2.00	22.750	2.00	35.000	2.00	47.25	38.00
10.583	2.00	22.833	2.00	35.083	2.00	47.33	38.00
10.667	2.00	22.917	2.00	35.167	2.00	47.42	38.00
10.750	2.00	23.000	2.00	35.250	2.00	47.50	38.00
10.833	2.00	23.083	2.00	35.333	2.00	47.58	38.00
10.917	2.00	23.167	2.00	35.417	2.00	47.67	38.00
11.000	2.00	23.250	2.00	35.500	2.00	47.75	38.00
11.083	2.00	23.333	2.00	35.583	2.00	47.83	38.00
11.167	2.00	23.417	2.00	35.667	2.00	47.92	38.00
11.250	2.00	23.500	2.00	35.750	2.00	48.00	38.00
11.333	2.00	23.583	2.00	35.833	2.00	48.08	13.04
11.417	2.00	23.667	2.00	35.917	2.00	48.17	13.00
11.500	2.00	23.750	2.00	36.000	2.00	48.25	13.00
11.583	2.00	23.833	2.00	36.083	2.00	48.33	13.00
11.667	2.00	23.917	2.00	36.167	2.00	48.42	13.00
11.750	2.00	24.000	2.00	36.250	2.00	48.50	13.00
11.833	2.00	24.083	2.00	36.333	2.00	48.58	13.00
11.917	2.00	24.167	2.00	36.417	2.00	48.67	13.00
12.000	2.00	24.250	2.00	36.500	2.00	48.75	13.00
12.083	2.00	24.333	2.00	36.583	2.00	48.83	13.00
12.167	2.00	24.417	2.00	36.667	2.00	48.92	13.00
12.250	2.00	24.500	2.00	36.750	2.00	49.00	13.00

Max.Eff.Inten. (mm/hr)=	53.00	62.39	
over (min)	5.00	15.00	
Storage Coeff. (min)=	4.84 (ii)	12.02 (ii)	
Unit Hyd. Tpeak (min)=	5.00	15.00	
Unit Hyd. peak (cms)=	0.22	0.09	
			TOTALS
PEAK FLOW (cms)=	0.80	0.74	1.542 (iii)
TIME TO PEAK (hrs)=	47.00	47.00	47.00
RUNOFF VOLUME (mm)=	282.50	223.11	252.81
TOTAL RAINFALL (mm)=	284.00	284.00	284.00
RUNOFF COEFFICIENT =	0.99	0.79	0.89

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 74.0 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)=	1.26		
ID= 1 DT= 5.0 min	Total Imp(%)=	55.00	Dir. Conn.(%)=	35.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.69	0.57

Dep. Storage	(mm)=	1.50	5.00
Average Slope	(%)=	2.00	2.00
Length	(m)=	91.65	30.00
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	0.00	12.333	2.00	24.583	2.00	36.83	2.00
0.167	0.00	12.417	2.00	24.667	2.00	36.92	2.00
0.250	0.00	12.500	2.00	24.750	2.00	37.00	2.00
0.333	0.00	12.583	2.00	24.833	2.00	37.08	6.00
0.417	0.00	12.667	2.00	24.917	2.00	37.17	6.00
0.500	0.00	12.750	2.00	25.000	2.00	37.25	6.00
0.583	0.00	12.833	2.00	25.083	2.00	37.33	6.00
0.667	0.00	12.917	2.00	25.167	2.00	37.42	6.00
0.750	0.00	13.000	2.00	25.250	2.00	37.50	6.00
0.833	0.00	13.083	2.00	25.333	2.00	37.58	6.00
0.917	0.00	13.167	2.00	25.417	2.00	37.67	6.00
1.000	0.00	13.250	2.00	25.500	2.00	37.75	6.00
1.083	2.00	13.333	2.00	25.583	2.00	37.83	6.00
1.167	2.00	13.417	2.00	25.667	2.00	37.92	6.00
1.250	2.00	13.500	2.00	25.750	2.00	38.00	6.00
1.333	2.00	13.583	2.00	25.833	2.00	38.08	4.00
1.417	2.00	13.667	2.00	25.917	2.00	38.17	4.00
1.500	2.00	13.750	2.00	26.000	2.00	38.25	4.00
1.583	2.00	13.833	2.00	26.083	2.00	38.33	4.00
1.667	2.00	13.917	2.00	26.167	2.00	38.42	4.00
1.750	2.00	14.000	2.00	26.250	2.00	38.50	4.00
1.833	2.00	14.083	2.00	26.333	2.00	38.58	4.00
1.917	2.00	14.167	2.00	26.417	2.00	38.67	4.00
2.000	2.00	14.250	2.00	26.500	2.00	38.75	4.00
2.083	2.00	14.333	2.00	26.583	2.00	38.83	4.00
2.167	2.00	14.417	2.00	26.667	2.00	38.92	4.00
2.250	2.00	14.500	2.00	26.750	2.00	39.00	4.00
2.333	2.00	14.583	2.00	26.833	2.00	39.08	6.00
2.417	2.00	14.667	2.00	26.917	2.00	39.17	6.00
2.500	2.00	14.750	2.00	27.000	2.00	39.25	6.00
2.583	2.00	14.833	2.00	27.083	2.00	39.33	6.00
2.667	2.00	14.917	2.00	27.167	2.00	39.42	6.00
2.750	2.00	15.000	2.00	27.250	2.00	39.50	6.00
2.833	2.00	15.083	2.00	27.333	2.00	39.58	6.00
2.917	2.00	15.167	2.00	27.417	2.00	39.67	6.00
3.000	2.00	15.250	2.00	27.500	2.00	39.75	6.00
3.083	2.00	15.333	2.00	27.583	2.00	39.83	6.00
3.167	2.00	15.417	2.00	27.667	2.00	39.92	6.00
3.250	2.00	15.500	2.00	27.750	2.00	40.00	6.00
3.333	2.00	15.583	2.00	27.833	2.00	40.08	13.00
3.417	2.00	15.667	2.00	27.917	2.00	40.17	13.00
3.500	2.00	15.750	2.00	28.000	2.00	40.25	13.00

3.583	2.00	15.833	2.00	28.083	2.00	40.33	13.00
3.667	2.00	15.917	2.00	28.167	2.00	40.42	13.00
3.750	2.00	16.000	2.00	28.250	2.00	40.50	13.00
3.833	2.00	16.083	2.00	28.333	2.00	40.58	13.00
3.917	2.00	16.167	2.00	28.417	2.00	40.67	13.00
4.000	2.00	16.250	2.00	28.500	2.00	40.75	13.00
4.083	2.00	16.333	2.00	28.583	2.00	40.83	13.00
4.167	2.00	16.417	2.00	28.667	2.00	40.92	13.00
4.250	2.00	16.500	2.00	28.750	2.00	41.00	13.00
4.333	2.00	16.583	2.00	28.833	2.00	41.08	17.00
4.417	2.00	16.667	2.00	28.917	2.00	41.17	17.00
4.500	2.00	16.750	2.00	29.000	2.00	41.25	17.00
4.583	2.00	16.833	2.00	29.083	2.00	41.33	17.00
4.667	2.00	16.917	2.00	29.167	2.00	41.42	17.00
4.750	2.00	17.000	2.00	29.250	2.00	41.50	17.00
4.833	2.00	17.083	2.00	29.333	2.00	41.58	17.00
4.917	2.00	17.167	2.00	29.417	2.00	41.67	17.00
5.000	2.00	17.250	2.00	29.500	2.00	41.75	17.00
5.083	2.00	17.333	2.00	29.583	2.00	41.83	17.00
5.167	2.00	17.417	2.00	29.667	2.00	41.92	17.00
5.250	2.00	17.500	2.00	29.750	2.00	42.00	17.00
5.333	2.00	17.583	2.00	29.833	2.00	42.08	13.00
5.417	2.00	17.667	2.00	29.917	2.00	42.17	13.00
5.500	2.00	17.750	2.00	30.000	2.00	42.25	13.00
5.583	2.00	17.833	2.00	30.083	2.00	42.33	13.00
5.667	2.00	17.917	2.00	30.167	2.00	42.42	13.00
5.750	2.00	18.000	2.00	30.250	2.00	42.50	13.00
5.833	2.00	18.083	2.00	30.333	2.00	42.58	13.00
5.917	2.00	18.167	2.00	30.417	2.00	42.67	13.00
6.000	2.00	18.250	2.00	30.500	2.00	42.75	13.00
6.083	2.00	18.333	2.00	30.583	2.00	42.83	13.00
6.167	2.00	18.417	2.00	30.667	2.00	42.92	13.00
6.250	2.00	18.500	2.00	30.750	2.00	43.00	13.00
6.333	2.00	18.583	2.00	30.833	2.00	43.08	22.99
6.417	2.00	18.667	2.00	30.917	2.00	43.17	23.00
6.500	2.00	18.750	2.00	31.000	2.00	43.25	23.00
6.583	2.00	18.833	2.00	31.083	2.00	43.33	23.00
6.667	2.00	18.917	2.00	31.167	2.00	43.42	23.00
6.750	2.00	19.000	2.00	31.250	2.00	43.50	23.00
6.833	2.00	19.083	2.00	31.333	2.00	43.58	23.00
6.917	2.00	19.167	2.00	31.417	2.00	43.67	23.00
7.000	2.00	19.250	2.00	31.500	2.00	43.75	23.00
7.083	2.00	19.333	2.00	31.583	2.00	43.83	23.00
7.167	2.00	19.417	2.00	31.667	2.00	43.92	23.00
7.250	2.00	19.500	2.00	31.750	2.00	44.00	23.00
7.333	2.00	19.583	2.00	31.833	2.00	44.08	13.01
7.417	2.00	19.667	2.00	31.917	2.00	44.17	13.00
7.500	2.00	19.750	2.00	32.000	2.00	44.25	13.00
7.583	2.00	19.833	2.00	32.083	2.00	44.33	13.00
7.667	2.00	19.917	2.00	32.167	2.00	44.42	13.00
7.750	2.00	20.000	2.00	32.250	2.00	44.50	13.00
7.833	2.00	20.083	2.00	32.333	2.00	44.58	13.00
7.917	2.00	20.167	2.00	32.417	2.00	44.67	13.00

8.000	2.00	20.250	2.00	32.500	2.00	44.75	13.00
8.083	2.00	20.333	2.00	32.583	2.00	44.83	13.00
8.167	2.00	20.417	2.00	32.667	2.00	44.92	13.00
8.250	2.00	20.500	2.00	32.750	2.00	45.00	13.00
8.333	2.00	20.583	2.00	32.833	2.00	45.08	13.00
8.417	2.00	20.667	2.00	32.917	2.00	45.17	13.00
8.500	2.00	20.750	2.00	33.000	2.00	45.25	13.00
8.583	2.00	20.833	2.00	33.083	2.00	45.33	13.00
8.667	2.00	20.917	2.00	33.167	2.00	45.42	13.00
8.750	2.00	21.000	2.00	33.250	2.00	45.50	13.00
8.833	2.00	21.083	2.00	33.333	2.00	45.58	13.00
8.917	2.00	21.167	2.00	33.417	2.00	45.67	13.00
9.000	2.00	21.250	2.00	33.500	2.00	45.75	13.00
9.083	2.00	21.333	2.00	33.583	2.00	45.83	13.00
9.167	2.00	21.417	2.00	33.667	2.00	45.92	13.00
9.250	2.00	21.500	2.00	33.750	2.00	46.00	13.00
9.333	2.00	21.583	2.00	33.833	2.00	46.08	52.94
9.417	2.00	21.667	2.00	33.917	2.00	46.17	53.00
9.500	2.00	21.750	2.00	34.000	2.00	46.25	53.00
9.583	2.00	21.833	2.00	34.083	2.00	46.33	53.00
9.667	2.00	21.917	2.00	34.167	2.00	46.42	53.00
9.750	2.00	22.000	2.00	34.250	2.00	46.50	53.00
9.833	2.00	22.083	2.00	34.333	2.00	46.58	53.00
9.917	2.00	22.167	2.00	34.417	2.00	46.67	53.00
10.000	2.00	22.250	2.00	34.500	2.00	46.75	53.00
10.083	2.00	22.333	2.00	34.583	2.00	46.83	53.00
10.167	2.00	22.417	2.00	34.667	2.00	46.92	53.00
10.250	2.00	22.500	2.00	34.750	2.00	47.00	53.00
10.333	2.00	22.583	2.00	34.833	2.00	47.08	38.02
10.417	2.00	22.667	2.00	34.917	2.00	47.17	38.00
10.500	2.00	22.750	2.00	35.000	2.00	47.25	38.00
10.583	2.00	22.833	2.00	35.083	2.00	47.33	38.00
10.667	2.00	22.917	2.00	35.167	2.00	47.42	38.00
10.750	2.00	23.000	2.00	35.250	2.00	47.50	38.00
10.833	2.00	23.083	2.00	35.333	2.00	47.58	38.00
10.917	2.00	23.167	2.00	35.417	2.00	47.67	38.00
11.000	2.00	23.250	2.00	35.500	2.00	47.75	38.00
11.083	2.00	23.333	2.00	35.583	2.00	47.83	38.00
11.167	2.00	23.417	2.00	35.667	2.00	47.92	38.00
11.250	2.00	23.500	2.00	35.750	2.00	48.00	38.00
11.333	2.00	23.583	2.00	35.833	2.00	48.08	13.04
11.417	2.00	23.667	2.00	35.917	2.00	48.17	13.00
11.500	2.00	23.750	2.00	36.000	2.00	48.25	13.00
11.583	2.00	23.833	2.00	36.083	2.00	48.33	13.00
11.667	2.00	23.917	2.00	36.167	2.00	48.42	13.00
11.750	2.00	24.000	2.00	36.250	2.00	48.50	13.00
11.833	2.00	24.083	2.00	36.333	2.00	48.58	13.00
11.917	2.00	24.167	2.00	36.417	2.00	48.67	13.00
12.000	2.00	24.250	2.00	36.500	2.00	48.75	13.00
12.083	2.00	24.333	2.00	36.583	2.00	48.83	13.00
12.167	2.00	24.417	2.00	36.667	2.00	48.92	13.00
12.250	2.00	24.500	2.00	36.750	2.00	49.00	13.00

Max.Eff.Inten. (mm/hr)=	53.00	73.00	
over (min)	5.00	10.00	
Storage Coeff. (min)=	2.54 (ii)	9.27 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.29	0.12	
			TOTALS
PEAK FLOW (cms)=	0.06	0.11	0.179 (iii)
TIME TO PEAK (hrs)=	46.67	47.00	47.00
RUNOFF VOLUME (mm)=	282.50	229.91	248.31
TOTAL RAINFALL (mm)=	284.00	284.00	284.00
RUNOFF COEFFICIENT =	0.99	0.81	0.87

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 74.0 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)=	1.43		
ID= 1 DT= 5.0 min	Total Imp(%)=	50.00	Dir. Conn.(%)=	50.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.71	0.71	
Dep. Storage (mm)=	1.50	5.00	
Average Slope (%)=	2.00	2.00	
Length (m)=	97.64	30.00	
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	0.00	12.333	2.00	24.583	2.00	36.83	2.00
0.167	0.00	12.417	2.00	24.667	2.00	36.92	2.00
0.250	0.00	12.500	2.00	24.750	2.00	37.00	2.00
0.333	0.00	12.583	2.00	24.833	2.00	37.08	6.00
0.417	0.00	12.667	2.00	24.917	2.00	37.17	6.00
0.500	0.00	12.750	2.00	25.000	2.00	37.25	6.00
0.583	0.00	12.833	2.00	25.083	2.00	37.33	6.00
0.667	0.00	12.917	2.00	25.167	2.00	37.42	6.00
0.750	0.00	13.000	2.00	25.250	2.00	37.50	6.00
0.833	0.00	13.083	2.00	25.333	2.00	37.58	6.00
0.917	0.00	13.167	2.00	25.417	2.00	37.67	6.00
1.000	0.00	13.250	2.00	25.500	2.00	37.75	6.00
1.083	2.00	13.333	2.00	25.583	2.00	37.83	6.00
1.167	2.00	13.417	2.00	25.667	2.00	37.92	6.00

1.250	2.00	13.500	2.00	25.750	2.00	38.00	6.00
1.333	2.00	13.583	2.00	25.833	2.00	38.08	4.00
1.417	2.00	13.667	2.00	25.917	2.00	38.17	4.00
1.500	2.00	13.750	2.00	26.000	2.00	38.25	4.00
1.583	2.00	13.833	2.00	26.083	2.00	38.33	4.00
1.667	2.00	13.917	2.00	26.167	2.00	38.42	4.00
1.750	2.00	14.000	2.00	26.250	2.00	38.50	4.00
1.833	2.00	14.083	2.00	26.333	2.00	38.58	4.00
1.917	2.00	14.167	2.00	26.417	2.00	38.67	4.00
2.000	2.00	14.250	2.00	26.500	2.00	38.75	4.00
2.083	2.00	14.333	2.00	26.583	2.00	38.83	4.00
2.167	2.00	14.417	2.00	26.667	2.00	38.92	4.00
2.250	2.00	14.500	2.00	26.750	2.00	39.00	4.00
2.333	2.00	14.583	2.00	26.833	2.00	39.08	6.00
2.417	2.00	14.667	2.00	26.917	2.00	39.17	6.00
2.500	2.00	14.750	2.00	27.000	2.00	39.25	6.00
2.583	2.00	14.833	2.00	27.083	2.00	39.33	6.00
2.667	2.00	14.917	2.00	27.167	2.00	39.42	6.00
2.750	2.00	15.000	2.00	27.250	2.00	39.50	6.00
2.833	2.00	15.083	2.00	27.333	2.00	39.58	6.00
2.917	2.00	15.167	2.00	27.417	2.00	39.67	6.00
3.000	2.00	15.250	2.00	27.500	2.00	39.75	6.00
3.083	2.00	15.333	2.00	27.583	2.00	39.83	6.00
3.167	2.00	15.417	2.00	27.667	2.00	39.92	6.00
3.250	2.00	15.500	2.00	27.750	2.00	40.00	6.00
3.333	2.00	15.583	2.00	27.833	2.00	40.08	13.00
3.417	2.00	15.667	2.00	27.917	2.00	40.17	13.00
3.500	2.00	15.750	2.00	28.000	2.00	40.25	13.00
3.583	2.00	15.833	2.00	28.083	2.00	40.33	13.00
3.667	2.00	15.917	2.00	28.167	2.00	40.42	13.00
3.750	2.00	16.000	2.00	28.250	2.00	40.50	13.00
3.833	2.00	16.083	2.00	28.333	2.00	40.58	13.00
3.917	2.00	16.167	2.00	28.417	2.00	40.67	13.00
4.000	2.00	16.250	2.00	28.500	2.00	40.75	13.00
4.083	2.00	16.333	2.00	28.583	2.00	40.83	13.00
4.167	2.00	16.417	2.00	28.667	2.00	40.92	13.00
4.250	2.00	16.500	2.00	28.750	2.00	41.00	13.00
4.333	2.00	16.583	2.00	28.833	2.00	41.08	17.00
4.417	2.00	16.667	2.00	28.917	2.00	41.17	17.00
4.500	2.00	16.750	2.00	29.000	2.00	41.25	17.00
4.583	2.00	16.833	2.00	29.083	2.00	41.33	17.00
4.667	2.00	16.917	2.00	29.167	2.00	41.42	17.00
4.750	2.00	17.000	2.00	29.250	2.00	41.50	17.00
4.833	2.00	17.083	2.00	29.333	2.00	41.58	17.00
4.917	2.00	17.167	2.00	29.417	2.00	41.67	17.00
5.000	2.00	17.250	2.00	29.500	2.00	41.75	17.00
5.083	2.00	17.333	2.00	29.583	2.00	41.83	17.00
5.167	2.00	17.417	2.00	29.667	2.00	41.92	17.00
5.250	2.00	17.500	2.00	29.750	2.00	42.00	17.00
5.333	2.00	17.583	2.00	29.833	2.00	42.08	13.00
5.417	2.00	17.667	2.00	29.917	2.00	42.17	13.00
5.500	2.00	17.750	2.00	30.000	2.00	42.25	13.00
5.583	2.00	17.833	2.00	30.083	2.00	42.33	13.00

5.667	2.00	17.917	2.00	30.167	2.00	42.42	13.00
5.750	2.00	18.000	2.00	30.250	2.00	42.50	13.00
5.833	2.00	18.083	2.00	30.333	2.00	42.58	13.00
5.917	2.00	18.167	2.00	30.417	2.00	42.67	13.00
6.000	2.00	18.250	2.00	30.500	2.00	42.75	13.00
6.083	2.00	18.333	2.00	30.583	2.00	42.83	13.00
6.167	2.00	18.417	2.00	30.667	2.00	42.92	13.00
6.250	2.00	18.500	2.00	30.750	2.00	43.00	13.00
6.333	2.00	18.583	2.00	30.833	2.00	43.08	22.99
6.417	2.00	18.667	2.00	30.917	2.00	43.17	23.00
6.500	2.00	18.750	2.00	31.000	2.00	43.25	23.00
6.583	2.00	18.833	2.00	31.083	2.00	43.33	23.00
6.667	2.00	18.917	2.00	31.167	2.00	43.42	23.00
6.750	2.00	19.000	2.00	31.250	2.00	43.50	23.00
6.833	2.00	19.083	2.00	31.333	2.00	43.58	23.00
6.917	2.00	19.167	2.00	31.417	2.00	43.67	23.00
7.000	2.00	19.250	2.00	31.500	2.00	43.75	23.00
7.083	2.00	19.333	2.00	31.583	2.00	43.83	23.00
7.167	2.00	19.417	2.00	31.667	2.00	43.92	23.00
7.250	2.00	19.500	2.00	31.750	2.00	44.00	23.00
7.333	2.00	19.583	2.00	31.833	2.00	44.08	13.01
7.417	2.00	19.667	2.00	31.917	2.00	44.17	13.00
7.500	2.00	19.750	2.00	32.000	2.00	44.25	13.00
7.583	2.00	19.833	2.00	32.083	2.00	44.33	13.00
7.667	2.00	19.917	2.00	32.167	2.00	44.42	13.00
7.750	2.00	20.000	2.00	32.250	2.00	44.50	13.00
7.833	2.00	20.083	2.00	32.333	2.00	44.58	13.00
7.917	2.00	20.167	2.00	32.417	2.00	44.67	13.00
8.000	2.00	20.250	2.00	32.500	2.00	44.75	13.00
8.083	2.00	20.333	2.00	32.583	2.00	44.83	13.00
8.167	2.00	20.417	2.00	32.667	2.00	44.92	13.00
8.250	2.00	20.500	2.00	32.750	2.00	45.00	13.00
8.333	2.00	20.583	2.00	32.833	2.00	45.08	13.00
8.417	2.00	20.667	2.00	32.917	2.00	45.17	13.00
8.500	2.00	20.750	2.00	33.000	2.00	45.25	13.00
8.583	2.00	20.833	2.00	33.083	2.00	45.33	13.00
8.667	2.00	20.917	2.00	33.167	2.00	45.42	13.00
8.750	2.00	21.000	2.00	33.250	2.00	45.50	13.00
8.833	2.00	21.083	2.00	33.333	2.00	45.58	13.00
8.917	2.00	21.167	2.00	33.417	2.00	45.67	13.00
9.000	2.00	21.250	2.00	33.500	2.00	45.75	13.00
9.083	2.00	21.333	2.00	33.583	2.00	45.83	13.00
9.167	2.00	21.417	2.00	33.667	2.00	45.92	13.00
9.250	2.00	21.500	2.00	33.750	2.00	46.00	13.00
9.333	2.00	21.583	2.00	33.833	2.00	46.08	52.94
9.417	2.00	21.667	2.00	33.917	2.00	46.17	53.00
9.500	2.00	21.750	2.00	34.000	2.00	46.25	53.00
9.583	2.00	21.833	2.00	34.083	2.00	46.33	53.00
9.667	2.00	21.917	2.00	34.167	2.00	46.42	53.00
9.750	2.00	22.000	2.00	34.250	2.00	46.50	53.00
9.833	2.00	22.083	2.00	34.333	2.00	46.58	53.00
9.917	2.00	22.167	2.00	34.417	2.00	46.67	53.00
10.000	2.00	22.250	2.00	34.500	2.00	46.75	53.00

10.083	2.00	22.333	2.00	34.583	2.00	46.83	53.00
10.167	2.00	22.417	2.00	34.667	2.00	46.92	53.00
10.250	2.00	22.500	2.00	34.750	2.00	47.00	53.00
10.333	2.00	22.583	2.00	34.833	2.00	47.08	38.02
10.417	2.00	22.667	2.00	34.917	2.00	47.17	38.00
10.500	2.00	22.750	2.00	35.000	2.00	47.25	38.00
10.583	2.00	22.833	2.00	35.083	2.00	47.33	38.00
10.667	2.00	22.917	2.00	35.167	2.00	47.42	38.00
10.750	2.00	23.000	2.00	35.250	2.00	47.50	38.00
10.833	2.00	23.083	2.00	35.333	2.00	47.58	38.00
10.917	2.00	23.167	2.00	35.417	2.00	47.67	38.00
11.000	2.00	23.250	2.00	35.500	2.00	47.75	38.00
11.083	2.00	23.333	2.00	35.583	2.00	47.83	38.00
11.167	2.00	23.417	2.00	35.667	2.00	47.92	38.00
11.250	2.00	23.500	2.00	35.750	2.00	48.00	38.00
11.333	2.00	23.583	2.00	35.833	2.00	48.08	13.04
11.417	2.00	23.667	2.00	35.917	2.00	48.17	13.00
11.500	2.00	23.750	2.00	36.000	2.00	48.25	13.00
11.583	2.00	23.833	2.00	36.083	2.00	48.33	13.00
11.667	2.00	23.917	2.00	36.167	2.00	48.42	13.00
11.750	2.00	24.000	2.00	36.250	2.00	48.50	13.00
11.833	2.00	24.083	2.00	36.333	2.00	48.58	13.00
11.917	2.00	24.167	2.00	36.417	2.00	48.67	13.00
12.000	2.00	24.250	2.00	36.500	2.00	48.75	13.00
12.083	2.00	24.333	2.00	36.583	2.00	48.83	13.00
12.167	2.00	24.417	2.00	36.667	2.00	48.92	13.00
12.250	2.00	24.500	2.00	36.750	2.00	49.00	13.00

Max.Eff.Inten. (mm/hr)=	53.00	48.69
over (min)	5.00	15.00
Storage Coeff. (min)=	2.64 (ii)	10.56 (ii)
Unit Hyd. Tpeak (min)=	5.00	15.00
Unit Hyd. peak (cms)=	0.29	0.09

TOTALS

PEAK FLOW (cms)=	0.11	0.10	0.201 (iii)
TIME TO PEAK (hrs)=	46.67	47.00	47.00
RUNOFF VOLUME (mm)=	282.50	211.38	246.94
TOTAL RAINFALL (mm)=	284.00	284.00	284.00
RUNOFF COEFFICIENT =	0.99	0.74	0.87

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 74.0 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 (0203)	Area	(ha)=	0.29		
ID= 1 DT= 5.0 min	Total Imp(%)=	7.00	Dir. Conn.(%)=	7.00	

```

-----
                IMPERVIOUS      PERVIOUS (i)
Surface Area    (ha)=          0.02      0.27
Dep. Storage    (mm)=          1.50      5.00
Average Slope    (%)=          2.00      2.00
Length          (m)=          43.97     15.00
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	0.00	12.333	2.00	24.583	2.00	36.83	2.00
0.167	0.00	12.417	2.00	24.667	2.00	36.92	2.00
0.250	0.00	12.500	2.00	24.750	2.00	37.00	2.00
0.333	0.00	12.583	2.00	24.833	2.00	37.08	6.00
0.417	0.00	12.667	2.00	24.917	2.00	37.17	6.00
0.500	0.00	12.750	2.00	25.000	2.00	37.25	6.00
0.583	0.00	12.833	2.00	25.083	2.00	37.33	6.00
0.667	0.00	12.917	2.00	25.167	2.00	37.42	6.00
0.750	0.00	13.000	2.00	25.250	2.00	37.50	6.00
0.833	0.00	13.083	2.00	25.333	2.00	37.58	6.00
0.917	0.00	13.167	2.00	25.417	2.00	37.67	6.00
1.000	0.00	13.250	2.00	25.500	2.00	37.75	6.00
1.083	2.00	13.333	2.00	25.583	2.00	37.83	6.00
1.167	2.00	13.417	2.00	25.667	2.00	37.92	6.00
1.250	2.00	13.500	2.00	25.750	2.00	38.00	6.00
1.333	2.00	13.583	2.00	25.833	2.00	38.08	4.00
1.417	2.00	13.667	2.00	25.917	2.00	38.17	4.00
1.500	2.00	13.750	2.00	26.000	2.00	38.25	4.00
1.583	2.00	13.833	2.00	26.083	2.00	38.33	4.00
1.667	2.00	13.917	2.00	26.167	2.00	38.42	4.00
1.750	2.00	14.000	2.00	26.250	2.00	38.50	4.00
1.833	2.00	14.083	2.00	26.333	2.00	38.58	4.00
1.917	2.00	14.167	2.00	26.417	2.00	38.67	4.00
2.000	2.00	14.250	2.00	26.500	2.00	38.75	4.00
2.083	2.00	14.333	2.00	26.583	2.00	38.83	4.00
2.167	2.00	14.417	2.00	26.667	2.00	38.92	4.00
2.250	2.00	14.500	2.00	26.750	2.00	39.00	4.00
2.333	2.00	14.583	2.00	26.833	2.00	39.08	6.00
2.417	2.00	14.667	2.00	26.917	2.00	39.17	6.00
2.500	2.00	14.750	2.00	27.000	2.00	39.25	6.00
2.583	2.00	14.833	2.00	27.083	2.00	39.33	6.00
2.667	2.00	14.917	2.00	27.167	2.00	39.42	6.00
2.750	2.00	15.000	2.00	27.250	2.00	39.50	6.00
2.833	2.00	15.083	2.00	27.333	2.00	39.58	6.00
2.917	2.00	15.167	2.00	27.417	2.00	39.67	6.00
3.000	2.00	15.250	2.00	27.500	2.00	39.75	6.00
3.083	2.00	15.333	2.00	27.583	2.00	39.83	6.00
3.167	2.00	15.417	2.00	27.667	2.00	39.92	6.00
3.250	2.00	15.500	2.00	27.750	2.00	40.00	6.00

3.333	2.00	15.583	2.00	27.833	2.00	40.08	13.00
3.417	2.00	15.667	2.00	27.917	2.00	40.17	13.00
3.500	2.00	15.750	2.00	28.000	2.00	40.25	13.00
3.583	2.00	15.833	2.00	28.083	2.00	40.33	13.00
3.667	2.00	15.917	2.00	28.167	2.00	40.42	13.00
3.750	2.00	16.000	2.00	28.250	2.00	40.50	13.00
3.833	2.00	16.083	2.00	28.333	2.00	40.58	13.00
3.917	2.00	16.167	2.00	28.417	2.00	40.67	13.00
4.000	2.00	16.250	2.00	28.500	2.00	40.75	13.00
4.083	2.00	16.333	2.00	28.583	2.00	40.83	13.00
4.167	2.00	16.417	2.00	28.667	2.00	40.92	13.00
4.250	2.00	16.500	2.00	28.750	2.00	41.00	13.00
4.333	2.00	16.583	2.00	28.833	2.00	41.08	17.00
4.417	2.00	16.667	2.00	28.917	2.00	41.17	17.00
4.500	2.00	16.750	2.00	29.000	2.00	41.25	17.00
4.583	2.00	16.833	2.00	29.083	2.00	41.33	17.00
4.667	2.00	16.917	2.00	29.167	2.00	41.42	17.00
4.750	2.00	17.000	2.00	29.250	2.00	41.50	17.00
4.833	2.00	17.083	2.00	29.333	2.00	41.58	17.00
4.917	2.00	17.167	2.00	29.417	2.00	41.67	17.00
5.000	2.00	17.250	2.00	29.500	2.00	41.75	17.00
5.083	2.00	17.333	2.00	29.583	2.00	41.83	17.00
5.167	2.00	17.417	2.00	29.667	2.00	41.92	17.00
5.250	2.00	17.500	2.00	29.750	2.00	42.00	17.00
5.333	2.00	17.583	2.00	29.833	2.00	42.08	13.00
5.417	2.00	17.667	2.00	29.917	2.00	42.17	13.00
5.500	2.00	17.750	2.00	30.000	2.00	42.25	13.00
5.583	2.00	17.833	2.00	30.083	2.00	42.33	13.00
5.667	2.00	17.917	2.00	30.167	2.00	42.42	13.00
5.750	2.00	18.000	2.00	30.250	2.00	42.50	13.00
5.833	2.00	18.083	2.00	30.333	2.00	42.58	13.00
5.917	2.00	18.167	2.00	30.417	2.00	42.67	13.00
6.000	2.00	18.250	2.00	30.500	2.00	42.75	13.00
6.083	2.00	18.333	2.00	30.583	2.00	42.83	13.00
6.167	2.00	18.417	2.00	30.667	2.00	42.92	13.00
6.250	2.00	18.500	2.00	30.750	2.00	43.00	13.00
6.333	2.00	18.583	2.00	30.833	2.00	43.08	22.99
6.417	2.00	18.667	2.00	30.917	2.00	43.17	23.00
6.500	2.00	18.750	2.00	31.000	2.00	43.25	23.00
6.583	2.00	18.833	2.00	31.083	2.00	43.33	23.00
6.667	2.00	18.917	2.00	31.167	2.00	43.42	23.00
6.750	2.00	19.000	2.00	31.250	2.00	43.50	23.00
6.833	2.00	19.083	2.00	31.333	2.00	43.58	23.00
6.917	2.00	19.167	2.00	31.417	2.00	43.67	23.00
7.000	2.00	19.250	2.00	31.500	2.00	43.75	23.00
7.083	2.00	19.333	2.00	31.583	2.00	43.83	23.00
7.167	2.00	19.417	2.00	31.667	2.00	43.92	23.00
7.250	2.00	19.500	2.00	31.750	2.00	44.00	23.00
7.333	2.00	19.583	2.00	31.833	2.00	44.08	13.01
7.417	2.00	19.667	2.00	31.917	2.00	44.17	13.00
7.500	2.00	19.750	2.00	32.000	2.00	44.25	13.00
7.583	2.00	19.833	2.00	32.083	2.00	44.33	13.00
7.667	2.00	19.917	2.00	32.167	2.00	44.42	13.00

7.750	2.00	20.000	2.00	32.250	2.00	44.50	13.00
7.833	2.00	20.083	2.00	32.333	2.00	44.58	13.00
7.917	2.00	20.167	2.00	32.417	2.00	44.67	13.00
8.000	2.00	20.250	2.00	32.500	2.00	44.75	13.00
8.083	2.00	20.333	2.00	32.583	2.00	44.83	13.00
8.167	2.00	20.417	2.00	32.667	2.00	44.92	13.00
8.250	2.00	20.500	2.00	32.750	2.00	45.00	13.00
8.333	2.00	20.583	2.00	32.833	2.00	45.08	13.00
8.417	2.00	20.667	2.00	32.917	2.00	45.17	13.00
8.500	2.00	20.750	2.00	33.000	2.00	45.25	13.00
8.583	2.00	20.833	2.00	33.083	2.00	45.33	13.00
8.667	2.00	20.917	2.00	33.167	2.00	45.42	13.00
8.750	2.00	21.000	2.00	33.250	2.00	45.50	13.00
8.833	2.00	21.083	2.00	33.333	2.00	45.58	13.00
8.917	2.00	21.167	2.00	33.417	2.00	45.67	13.00
9.000	2.00	21.250	2.00	33.500	2.00	45.75	13.00
9.083	2.00	21.333	2.00	33.583	2.00	45.83	13.00
9.167	2.00	21.417	2.00	33.667	2.00	45.92	13.00
9.250	2.00	21.500	2.00	33.750	2.00	46.00	13.00
9.333	2.00	21.583	2.00	33.833	2.00	46.08	52.94
9.417	2.00	21.667	2.00	33.917	2.00	46.17	53.00
9.500	2.00	21.750	2.00	34.000	2.00	46.25	53.00
9.583	2.00	21.833	2.00	34.083	2.00	46.33	53.00
9.667	2.00	21.917	2.00	34.167	2.00	46.42	53.00
9.750	2.00	22.000	2.00	34.250	2.00	46.50	53.00
9.833	2.00	22.083	2.00	34.333	2.00	46.58	53.00
9.917	2.00	22.167	2.00	34.417	2.00	46.67	53.00
10.000	2.00	22.250	2.00	34.500	2.00	46.75	53.00
10.083	2.00	22.333	2.00	34.583	2.00	46.83	53.00
10.167	2.00	22.417	2.00	34.667	2.00	46.92	53.00
10.250	2.00	22.500	2.00	34.750	2.00	47.00	53.00
10.333	2.00	22.583	2.00	34.833	2.00	47.08	38.02
10.417	2.00	22.667	2.00	34.917	2.00	47.17	38.00
10.500	2.00	22.750	2.00	35.000	2.00	47.25	38.00
10.583	2.00	22.833	2.00	35.083	2.00	47.33	38.00
10.667	2.00	22.917	2.00	35.167	2.00	47.42	38.00
10.750	2.00	23.000	2.00	35.250	2.00	47.50	38.00
10.833	2.00	23.083	2.00	35.333	2.00	47.58	38.00
10.917	2.00	23.167	2.00	35.417	2.00	47.67	38.00
11.000	2.00	23.250	2.00	35.500	2.00	47.75	38.00
11.083	2.00	23.333	2.00	35.583	2.00	47.83	38.00
11.167	2.00	23.417	2.00	35.667	2.00	47.92	38.00
11.250	2.00	23.500	2.00	35.750	2.00	48.00	38.00
11.333	2.00	23.583	2.00	35.833	2.00	48.08	13.04
11.417	2.00	23.667	2.00	35.917	2.00	48.17	13.00
11.500	2.00	23.750	2.00	36.000	2.00	48.25	13.00
11.583	2.00	23.833	2.00	36.083	2.00	48.33	13.00
11.667	2.00	23.917	2.00	36.167	2.00	48.42	13.00
11.750	2.00	24.000	2.00	36.250	2.00	48.50	13.00
11.833	2.00	24.083	2.00	36.333	2.00	48.58	13.00
11.917	2.00	24.167	2.00	36.417	2.00	48.67	13.00
12.000	2.00	24.250	2.00	36.500	2.00	48.75	13.00
12.083	2.00	24.333	2.00	36.583	2.00	48.83	13.00

12.167	2.00	24.417	2.00	36.667	2.00	48.92	13.00
12.250	2.00	24.500	2.00	36.750	2.00	49.00	13.00

Max.Eff.Inten. (mm/hr)= 53.00 48.69
over (min) 5.00 10.00
Storage Coeff. (min)= 1.63 (ii) 6.86 (ii)
Unit Hyd. Tpeak (min)= 5.00 10.00
Unit Hyd. peak (cms)= 0.32 0.14

TOTALS
PEAK FLOW (cms)= 0.00 0.04 0.039 (iii)
TIME TO PEAK (hrs)= 46.42 47.00 47.00
RUNOFF VOLUME (mm)= 282.50 211.39 216.35
TOTAL RAINFALL (mm)= 284.00 284.00 284.00
RUNOFF COEFFICIENT = 0.99 0.74 0.76

***** 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* = 74.0 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 (0204)		Area	(ha)=	0.30			
ID= 1 DT= 5.0 min		Total Imp(%)=	60.00	Dir. Conn.(%)=	50.00		

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.18	0.12
Dep. Storage	(mm)=	1.50	5.00
Average Slope	(%)=	5.00	5.00
Length	(m)=	44.72	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	0.00	12.333	2.00	24.583	2.00	36.83	2.00
0.167	0.00	12.417	2.00	24.667	2.00	36.92	2.00
0.250	0.00	12.500	2.00	24.750	2.00	37.00	2.00
0.333	0.00	12.583	2.00	24.833	2.00	37.08	6.00
0.417	0.00	12.667	2.00	24.917	2.00	37.17	6.00
0.500	0.00	12.750	2.00	25.000	2.00	37.25	6.00
0.583	0.00	12.833	2.00	25.083	2.00	37.33	6.00
0.667	0.00	12.917	2.00	25.167	2.00	37.42	6.00
0.750	0.00	13.000	2.00	25.250	2.00	37.50	6.00

0.833	0.00	13.083	2.00	25.333	2.00	37.58	6.00
0.917	0.00	13.167	2.00	25.417	2.00	37.67	6.00
1.000	0.00	13.250	2.00	25.500	2.00	37.75	6.00
1.083	2.00	13.333	2.00	25.583	2.00	37.83	6.00
1.167	2.00	13.417	2.00	25.667	2.00	37.92	6.00
1.250	2.00	13.500	2.00	25.750	2.00	38.00	6.00
1.333	2.00	13.583	2.00	25.833	2.00	38.08	4.00
1.417	2.00	13.667	2.00	25.917	2.00	38.17	4.00
1.500	2.00	13.750	2.00	26.000	2.00	38.25	4.00
1.583	2.00	13.833	2.00	26.083	2.00	38.33	4.00
1.667	2.00	13.917	2.00	26.167	2.00	38.42	4.00
1.750	2.00	14.000	2.00	26.250	2.00	38.50	4.00
1.833	2.00	14.083	2.00	26.333	2.00	38.58	4.00
1.917	2.00	14.167	2.00	26.417	2.00	38.67	4.00
2.000	2.00	14.250	2.00	26.500	2.00	38.75	4.00
2.083	2.00	14.333	2.00	26.583	2.00	38.83	4.00
2.167	2.00	14.417	2.00	26.667	2.00	38.92	4.00
2.250	2.00	14.500	2.00	26.750	2.00	39.00	4.00
2.333	2.00	14.583	2.00	26.833	2.00	39.08	6.00
2.417	2.00	14.667	2.00	26.917	2.00	39.17	6.00
2.500	2.00	14.750	2.00	27.000	2.00	39.25	6.00
2.583	2.00	14.833	2.00	27.083	2.00	39.33	6.00
2.667	2.00	14.917	2.00	27.167	2.00	39.42	6.00
2.750	2.00	15.000	2.00	27.250	2.00	39.50	6.00
2.833	2.00	15.083	2.00	27.333	2.00	39.58	6.00
2.917	2.00	15.167	2.00	27.417	2.00	39.67	6.00
3.000	2.00	15.250	2.00	27.500	2.00	39.75	6.00
3.083	2.00	15.333	2.00	27.583	2.00	39.83	6.00
3.167	2.00	15.417	2.00	27.667	2.00	39.92	6.00
3.250	2.00	15.500	2.00	27.750	2.00	40.00	6.00
3.333	2.00	15.583	2.00	27.833	2.00	40.08	13.00
3.417	2.00	15.667	2.00	27.917	2.00	40.17	13.00
3.500	2.00	15.750	2.00	28.000	2.00	40.25	13.00
3.583	2.00	15.833	2.00	28.083	2.00	40.33	13.00
3.667	2.00	15.917	2.00	28.167	2.00	40.42	13.00
3.750	2.00	16.000	2.00	28.250	2.00	40.50	13.00
3.833	2.00	16.083	2.00	28.333	2.00	40.58	13.00
3.917	2.00	16.167	2.00	28.417	2.00	40.67	13.00
4.000	2.00	16.250	2.00	28.500	2.00	40.75	13.00
4.083	2.00	16.333	2.00	28.583	2.00	40.83	13.00
4.167	2.00	16.417	2.00	28.667	2.00	40.92	13.00
4.250	2.00	16.500	2.00	28.750	2.00	41.00	13.00
4.333	2.00	16.583	2.00	28.833	2.00	41.08	17.00
4.417	2.00	16.667	2.00	28.917	2.00	41.17	17.00
4.500	2.00	16.750	2.00	29.000	2.00	41.25	17.00
4.583	2.00	16.833	2.00	29.083	2.00	41.33	17.00
4.667	2.00	16.917	2.00	29.167	2.00	41.42	17.00
4.750	2.00	17.000	2.00	29.250	2.00	41.50	17.00
4.833	2.00	17.083	2.00	29.333	2.00	41.58	17.00
4.917	2.00	17.167	2.00	29.417	2.00	41.67	17.00
5.000	2.00	17.250	2.00	29.500	2.00	41.75	17.00
5.083	2.00	17.333	2.00	29.583	2.00	41.83	17.00
5.167	2.00	17.417	2.00	29.667	2.00	41.92	17.00

5.250	2.00	17.500	2.00	29.750	2.00	42.00	17.00
5.333	2.00	17.583	2.00	29.833	2.00	42.08	13.00
5.417	2.00	17.667	2.00	29.917	2.00	42.17	13.00
5.500	2.00	17.750	2.00	30.000	2.00	42.25	13.00
5.583	2.00	17.833	2.00	30.083	2.00	42.33	13.00
5.667	2.00	17.917	2.00	30.167	2.00	42.42	13.00
5.750	2.00	18.000	2.00	30.250	2.00	42.50	13.00
5.833	2.00	18.083	2.00	30.333	2.00	42.58	13.00
5.917	2.00	18.167	2.00	30.417	2.00	42.67	13.00
6.000	2.00	18.250	2.00	30.500	2.00	42.75	13.00
6.083	2.00	18.333	2.00	30.583	2.00	42.83	13.00
6.167	2.00	18.417	2.00	30.667	2.00	42.92	13.00
6.250	2.00	18.500	2.00	30.750	2.00	43.00	13.00
6.333	2.00	18.583	2.00	30.833	2.00	43.08	22.99
6.417	2.00	18.667	2.00	30.917	2.00	43.17	23.00
6.500	2.00	18.750	2.00	31.000	2.00	43.25	23.00
6.583	2.00	18.833	2.00	31.083	2.00	43.33	23.00
6.667	2.00	18.917	2.00	31.167	2.00	43.42	23.00
6.750	2.00	19.000	2.00	31.250	2.00	43.50	23.00
6.833	2.00	19.083	2.00	31.333	2.00	43.58	23.00
6.917	2.00	19.167	2.00	31.417	2.00	43.67	23.00
7.000	2.00	19.250	2.00	31.500	2.00	43.75	23.00
7.083	2.00	19.333	2.00	31.583	2.00	43.83	23.00
7.167	2.00	19.417	2.00	31.667	2.00	43.92	23.00
7.250	2.00	19.500	2.00	31.750	2.00	44.00	23.00
7.333	2.00	19.583	2.00	31.833	2.00	44.08	13.01
7.417	2.00	19.667	2.00	31.917	2.00	44.17	13.00
7.500	2.00	19.750	2.00	32.000	2.00	44.25	13.00
7.583	2.00	19.833	2.00	32.083	2.00	44.33	13.00
7.667	2.00	19.917	2.00	32.167	2.00	44.42	13.00
7.750	2.00	20.000	2.00	32.250	2.00	44.50	13.00
7.833	2.00	20.083	2.00	32.333	2.00	44.58	13.00
7.917	2.00	20.167	2.00	32.417	2.00	44.67	13.00
8.000	2.00	20.250	2.00	32.500	2.00	44.75	13.00
8.083	2.00	20.333	2.00	32.583	2.00	44.83	13.00
8.167	2.00	20.417	2.00	32.667	2.00	44.92	13.00
8.250	2.00	20.500	2.00	32.750	2.00	45.00	13.00
8.333	2.00	20.583	2.00	32.833	2.00	45.08	13.00
8.417	2.00	20.667	2.00	32.917	2.00	45.17	13.00
8.500	2.00	20.750	2.00	33.000	2.00	45.25	13.00
8.583	2.00	20.833	2.00	33.083	2.00	45.33	13.00
8.667	2.00	20.917	2.00	33.167	2.00	45.42	13.00
8.750	2.00	21.000	2.00	33.250	2.00	45.50	13.00
8.833	2.00	21.083	2.00	33.333	2.00	45.58	13.00
8.917	2.00	21.167	2.00	33.417	2.00	45.67	13.00
9.000	2.00	21.250	2.00	33.500	2.00	45.75	13.00
9.083	2.00	21.333	2.00	33.583	2.00	45.83	13.00
9.167	2.00	21.417	2.00	33.667	2.00	45.92	13.00
9.250	2.00	21.500	2.00	33.750	2.00	46.00	13.00
9.333	2.00	21.583	2.00	33.833	2.00	46.08	52.94
9.417	2.00	21.667	2.00	33.917	2.00	46.17	53.00
9.500	2.00	21.750	2.00	34.000	2.00	46.25	53.00
9.583	2.00	21.833	2.00	34.083	2.00	46.33	53.00

9.667	2.00	21.917	2.00	34.167	2.00	46.42	53.00
9.750	2.00	22.000	2.00	34.250	2.00	46.50	53.00
9.833	2.00	22.083	2.00	34.333	2.00	46.58	53.00
9.917	2.00	22.167	2.00	34.417	2.00	46.67	53.00
10.000	2.00	22.250	2.00	34.500	2.00	46.75	53.00
10.083	2.00	22.333	2.00	34.583	2.00	46.83	53.00
10.167	2.00	22.417	2.00	34.667	2.00	46.92	53.00
10.250	2.00	22.500	2.00	34.750	2.00	47.00	53.00
10.333	2.00	22.583	2.00	34.833	2.00	47.08	38.02
10.417	2.00	22.667	2.00	34.917	2.00	47.17	38.00
10.500	2.00	22.750	2.00	35.000	2.00	47.25	38.00
10.583	2.00	22.833	2.00	35.083	2.00	47.33	38.00
10.667	2.00	22.917	2.00	35.167	2.00	47.42	38.00
10.750	2.00	23.000	2.00	35.250	2.00	47.50	38.00
10.833	2.00	23.083	2.00	35.333	2.00	47.58	38.00
10.917	2.00	23.167	2.00	35.417	2.00	47.67	38.00
11.000	2.00	23.250	2.00	35.500	2.00	47.75	38.00
11.083	2.00	23.333	2.00	35.583	2.00	47.83	38.00
11.167	2.00	23.417	2.00	35.667	2.00	47.92	38.00
11.250	2.00	23.500	2.00	35.750	2.00	48.00	38.00
11.333	2.00	23.583	2.00	35.833	2.00	48.08	13.04
11.417	2.00	23.667	2.00	35.917	2.00	48.17	13.00
11.500	2.00	23.750	2.00	36.000	2.00	48.25	13.00
11.583	2.00	23.833	2.00	36.083	2.00	48.33	13.00
11.667	2.00	23.917	2.00	36.167	2.00	48.42	13.00
11.750	2.00	24.000	2.00	36.250	2.00	48.50	13.00
11.833	2.00	24.083	2.00	36.333	2.00	48.58	13.00
11.917	2.00	24.167	2.00	36.417	2.00	48.67	13.00
12.000	2.00	24.250	2.00	36.500	2.00	48.75	13.00
12.083	2.00	24.333	2.00	36.583	2.00	48.83	13.00
12.167	2.00	24.417	2.00	36.667	2.00	48.92	13.00
12.250	2.00	24.500	2.00	36.750	2.00	49.00	13.00

Max.Eff.Inten. (mm/hr)=	53.00	62.69
over (min)	5.00	10.00
Storage Coeff. (min)=	1.25 (ii)	7.72 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.33	0.13

TOTALS

PEAK FLOW (cms)=	0.02	0.02	0.043 (iii)
TIME TO PEAK (hrs)=	46.33	47.00	47.00
RUNOFF VOLUME (mm)=	282.50	225.46	253.96
TOTAL RAINFALL (mm)=	284.00	284.00	284.00
RUNOFF COEFFICIENT =	0.99	0.79	0.89

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 75.0 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 (0200):	10.86	1.542	47.00	252.81
+ ID2= 2 (0201):	1.43	0.201	47.00	246.94
=====				
ID = 3 (1000):	12.29	1.743	47.00	252.12

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):	12.29	1.743	47.00	252.12
+ ID2= 2 (0202):	1.26	0.179	47.00	248.31
=====				
ID = 1 (1000):	13.55	1.922	47.00	251.77

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):	13.55	1.922	47.00	251.77
+ ID2= 2 (0203):	0.29	0.039	47.00	216.35
=====				
ID = 3 (1000):	13.84	1.962	47.00	251.03

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):	13.84	1.962	47.00	251.03
+ ID2= 2 (0204):	0.30	0.043	47.00	253.96
=====				
ID = 1 (1000):	14.14	2.004	47.00	251.09

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

=====

=====

```
V   V   I   SSSSS   U   U   A   L           (v 6.2.2015)
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
```

Developed and Distributed by Smart City Water Inc

Copyright 2007 - 2022 Smart City Water Inc

All rights reserved.

***** 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\jangsoo.lee\AppData\Local\Civica\XH5\191a91e0-1a14-44fd-bc00-4941023c7dee\0f377c34-5230-4443-927b-74773dc558b5\

Summary filename:

C:\Users\jangsoo.lee\AppData\Local\Civica\XH5\191a91e0-1a14-44fd-bc00-4941023c7dee\0f377c34-5230-4443-927b-74773dc558b5\

DATE: 09/25/2024

TIME: 11:27:08

USER:

COMMENTS: _____

** SIMULATION : 25mm Storm **

CHICAGO STORM	IDF curve parameters: A=1581.200
Ptotal= 25.00 mm	B= 13.000
-----	C= 1.000

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

Duration of storm = 4.00 hrs

Storm time step = 10.00 min
Time to peak ratio = 0.40

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.00	0.37	1.00	2.87	2.00	5.00	3.00	0.76
0.17	0.47	1.17	5.87	2.17	3.14	3.17	0.63
0.33	0.60	1.33	18.62	2.33	2.16	3.33	0.53
0.50	0.80	1.50	68.75	2.50	1.57	3.50	0.45
0.67	1.13	1.67	22.53	2.67	1.20	3.67	0.38
0.83	1.71	1.83	9.20	2.83	0.94	3.83	0.33

| CALIB |
| STANDHYD (0200) | Area (ha)= 10.86
| ID= 1 DT= 5.0 min | Total Imp(%)= 60.00 Dir. Conn.(%)= 50.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	6.52	4.34
Dep. Storage	(mm)=	1.50	5.00
Average Slope	(%)=	2.00	2.00
Length	(m)=	269.07	30.00
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	0.37	1.083	2.87	2.083	5.00	3.08	0.76
0.167	0.37	1.167	2.87	2.167	5.00	3.17	0.76
0.250	0.47	1.250	5.87	2.250	3.14	3.25	0.63
0.333	0.47	1.333	5.87	2.333	3.14	3.33	0.63
0.417	0.60	1.417	18.62	2.417	2.16	3.42	0.53
0.500	0.60	1.500	18.62	2.500	2.16	3.50	0.53
0.583	0.80	1.583	68.75	2.583	1.57	3.58	0.45
0.667	0.80	1.667	68.75	2.667	1.57	3.67	0.45
0.750	1.13	1.750	22.53	2.750	1.20	3.75	0.38
0.833	1.13	1.833	22.53	2.833	1.20	3.83	0.38
0.917	1.71	1.917	9.20	2.917	0.94	3.92	0.33
1.000	1.71	2.000	9.20	3.000	0.94	4.00	0.33

Max.Eff.Inten. (mm/hr)=	68.75	12.48
over (min)	5.00	20.00
Storage Coeff. (min)=	4.37 (ii)	18.02 (ii)
Unit Hyd. Tpeak (min)=	5.00	20.00
Unit Hyd. peak (cms)=	0.23	0.06

TOTALS		
PEAK FLOW (cms)=	0.96	0.08 0.980 (iii)
TIME TO PEAK (hrs)=	1.67	1.92 1.67

RUNOFF VOLUME	(mm)=	23.50	4.77	14.13
TOTAL RAINFALL	(mm)=	25.00	25.00	25.00
RUNOFF COEFFICIENT	=	0.94	0.19	0.57

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 74.0 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)=	1.43	
ID= 1 DT= 5.0 min		Total Imp(%)=	50.00	Dir. Conn.(%)= 50.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.71	0.71
Dep. Storage	(mm)=	1.50	5.00
Average Slope	(%)=	2.00	2.00
Length	(m)=	97.64	30.00
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	0.37	1.083	2.87	2.083	5.00	3.08	0.76
0.167	0.37	1.167	2.87	2.167	5.00	3.17	0.76
0.250	0.47	1.250	5.87	2.250	3.14	3.25	0.63
0.333	0.47	1.333	5.87	2.333	3.14	3.33	0.63
0.417	0.60	1.417	18.62	2.417	2.16	3.42	0.53
0.500	0.60	1.500	18.62	2.500	2.16	3.50	0.53
0.583	0.80	1.583	68.75	2.583	1.57	3.58	0.45
0.667	0.80	1.667	68.75	2.667	1.57	3.67	0.45
0.750	1.13	1.750	22.53	2.750	1.20	3.75	0.38
0.833	1.13	1.833	22.53	2.833	1.20	3.83	0.38
0.917	1.71	1.917	9.20	2.917	0.94	3.92	0.33
1.000	1.71	2.000	9.20	3.000	0.94	4.00	0.33

Max.Eff.Inten. (mm/hr)=	68.75	6.97
over (min)	5.00	20.00
Storage Coeff. (min)=	2.38 (ii)	19.61 (ii)
Unit Hyd. Tpeak (min)=	5.00	20.00
Unit Hyd. peak (cms)=	0.30	0.06

			TOTALS
PEAK FLOW (cms)=	0.14	0.01	0.137 (iii)
TIME TO PEAK (hrs)=	1.67	2.00	1.67
RUNOFF VOLUME (mm)=	23.50	3.66	13.57

TOTAL RAINFALL	(mm)=	25.00	25.00	25.00
RUNOFF COEFFICIENT	=	0.94	0.15	0.54

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 74.0 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 (3000)				
1 + 2 = 3				

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0200):	10.86	0.980	1.67	14.13
+ ID2= 2 (0201):	1.43	0.137	1.67	13.57
=====				
ID = 3 (3000):	12.29	1.116	1.67	14.07

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR(2000)					
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		0.1180	0.5426
	0.0060	0.0590		0.1350	0.5819
	0.0100	0.1205		0.1520	0.6219
	0.0120	0.1522		0.6240	0.7039
	0.0260	0.1845		1.4970	0.7886
	0.0410	0.2510		2.6380	0.8759
	0.0690	0.3201		4.0120	0.9659
	0.0890	0.3917		5.5960	1.0585
	0.0970	0.4284		7.3740	1.1579
	0.1050	0.4658		0.0000	0.0000
	AREA	QPEAK	TPEAK	R.V.	
	(ha)	(cms)	(hrs)	(mm)	
INFLOW : ID= 2 (3000)	12.290	1.116	1.67	14.07	
OUTFLOW: ID= 1 (2000)	12.290	0.016	3.50	13.87	

PEAK FLOW REDUCTION [Qout/Qin] (%)= 1.43
TIME SHIFT OF PEAK FLOW (min)=110.00
MAXIMUM STORAGE USED (ha.m.)= 0.1613

DIVERTHYD(0010)	
IN= 1 # OUT= 5	

Outflow / Inflow Relationships					
Flow 1 + Flow 2 + Flow 3 + Flow 4 + Flow 5 = Total					
(cms)	(cms)	(cms)	(cms)	(cms)	(cms)
0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.09	0.00	0.00	0.00	0.09
0.00	0.12	0.00	0.00	0.00	0.12
0.05	0.13	0.00	0.00	0.00	0.19
0.41	0.14	0.00	0.00	0.00	0.55
0.77	0.14	0.00	0.00	0.00	0.92
1.17	0.15	0.00	0.00	0.00	1.32
1.51	0.15	0.00	0.00	0.00	1.67
	AREA	QPEAK	TPEAK	R.V.	
	(ha)	(cms)	(hrs)	(mm)	
TOTAL HYD. (ID= 1) :	12.29	0.02	3.50	13.87	
=====					
ID= 2 (2) :	0.00	0.00	0.00	0.00	
ID= 3 (2) :	12.29	0.02	3.50	13.87	
ID= 4 (2) :	0.00	0.00	0.00	0.00	
ID= 5 (2) :	0.00	0.00	0.00	0.00	
ID= 6 (2) :	0.00	0.00	0.00	0.00	

CALIB					
STANDHYD (0202)	Area (ha)=	1.26			
ID= 1 DT= 5.0 min	Total Imp(%)=	55.00	Dir. Conn.(%)=	35.00	

	IMPERVIOUS	PERVIOUS (i)			
Surface Area (ha)=	0.69	0.57			
Dep. Storage (mm)=	1.50	5.00			
Average Slope (%)=	2.00	2.00			
Length (m)=	91.65	30.00			
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	0.37	1.083	2.87	2.083	5.00	3.08	0.76
0.167	0.37	1.167	2.87	2.167	5.00	3.17	0.76
0.250	0.47	1.250	5.87	2.250	3.14	3.25	0.63
0.333	0.47	1.333	5.87	2.333	3.14	3.33	0.63
0.417	0.60	1.417	18.62	2.417	2.16	3.42	0.53
0.500	0.60	1.500	18.62	2.500	2.16	3.50	0.53
0.583	0.80	1.583	68.75	2.583	1.57	3.58	0.45
0.667	0.80	1.667	68.75	2.667	1.57	3.67	0.45
0.750	1.13	1.750	22.53	2.750	1.20	3.75	0.38
0.833	1.13	1.833	22.53	2.833	1.20	3.83	0.38
0.917	1.71	1.917	9.20	2.917	0.94	3.92	0.33

	1.000	1.71		2.000	9.20		3.000	0.94		4.00	0.33
Max.Eff.Inten. (mm/hr)=		68.75			17.16						
over (min)		5.00			15.00						
Storage Coeff. (min)=		2.29	(ii)		14.31	(ii)					
Unit Hyd. Tpeak (min)=		5.00			15.00						
Unit Hyd. peak (cms)=		0.30			0.08						
								TOTALS			
PEAK FLOW (cms)=		0.08			0.02			0.090	(iii)		
TIME TO PEAK (hrs)=		1.67			1.83			1.67			
RUNOFF VOLUME (mm)=		23.50			5.57			11.84			
TOTAL RAINFALL (mm)=		25.00			25.00			25.00			
RUNOFF COEFFICIENT =		0.94			0.22			0.47			

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 74.0 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 (4000)				
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.
-----	(ha)	(cms)	(hrs)	(mm)
*** W A R N I N G : HYDROGRAPH 0010 <ID= 1> IS DRY.				
*** W A R N I N G : HYDROGRAPH 4000 = HYDROGRAPH 0202				
ID1= 1 (0010):	0.00	0.000	0.00	0.00
+ ID2= 2 (0202):	1.26	0.090	1.67	11.84
=====				
ID = 3 (4000):	1.26	0.090	1.67	11.84

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB				
STANDHYD (0204)	Area	(ha)=	0.30	
ID= 1 DT= 5.0 min	Total Imp(%)=	60.00	Dir. Conn.(%)=	50.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.18	0.12
Dep. Storage	(mm)=	1.50	5.00
Average Slope	(%)=	5.00	5.00
Length	(m)=	44.72	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	0.37	1.083	2.87	2.083	5.00	3.08	0.76
0.167	0.37	1.167	2.87	2.167	5.00	3.17	0.76
0.250	0.47	1.250	5.87	2.250	3.14	3.25	0.63
0.333	0.47	1.333	5.87	2.333	3.14	3.33	0.63
0.417	0.60	1.417	18.62	2.417	2.16	3.42	0.53
0.500	0.60	1.500	18.62	2.500	2.16	3.50	0.53
0.583	0.80	1.583	68.75	2.583	1.57	3.58	0.45
0.667	0.80	1.667	68.75	2.667	1.57	3.67	0.45
0.750	1.13	1.750	22.53	2.750	1.20	3.75	0.38
0.833	1.13	1.833	22.53	2.833	1.20	3.83	0.38
0.917	1.71	1.917	9.20	2.917	0.94	3.92	0.33
1.000	1.71	2.000	9.20	3.000	0.94	4.00	0.33

Max.Eff.Inten.(mm/hr)=68.7513.03

over (min)5.0015.00

Storage Coeff. (min)=1.13 (ii)13.24 (ii)

Unit Hyd. Tpeak (min)=5.0015.00

Unit Hyd. peak (cms)=0.340.08

TOTALS

PEAK FLOW (cms)=0.030.000.030 (iii)

TIME TO PEAK (hrs)=1.671.831.67

RUNOFF VOLUME (mm)=23.504.9714.21

TOTAL RAINFALL (mm)=25.0025.0025.00

RUNOFF COEFFICIENT =0.940.200.57

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 75.0 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(2001)	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	0.0826	0.0013
	0.0100	0.0000	0.0904	0.0015
	0.0190	0.0002	0.0975	0.0017
	0.0380	0.0004	0.1042	0.0017
	0.0528	0.0006	0.1335	0.0017
	0.0643	0.0009	0.1574	0.0017
	0.0740	0.0011	0.5345	0.0018

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
INFLOW : ID= 2 (0204)	0.300	0.030	1.67	14.21
OUTFLOW: ID= 1 (2001)	0.300	0.030	1.67	14.35

PEAK FLOW REDUCTION [Qout/Qin] (%)=101.79
TIME SHIFT OF PEAK FLOW (min)= 0.00
MAXIMUM STORAGE USED (ha.m.)= 0.0004

**** WARNING : HYDROGRAPH PEAK WAS NOT REDUCED.
CHECK OUTFLOW/STORAGE TABLE OR REDUCE DT.

ADD HYD (5000)				
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.
-----	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0010):	12.29	0.016	3.50	13.87
+ ID2= 2 (2001):	0.30	0.030	1.67	14.35
=====				
ID = 3 (5000):	12.59	0.037	1.67	13.88

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB			
STANDHYD (0203)	Area (ha)=	0.29	
ID= 1 DT= 5.0 min	Total Imp(%)=	7.00	Dir. Conn.(%)= 7.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.02	0.27
Dep. Storage	(mm)=	1.50	5.00
Average Slope	(%)=	2.00	2.00
Length	(m)=	43.97	15.00
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	0.37		1.083	2.87		2.083	5.00		3.08	0.76
0.167	0.37		1.167	2.87		2.167	5.00		3.17	0.76
0.250	0.47		1.250	5.87		2.250	3.14		3.25	0.63
0.333	0.47		1.333	5.87		2.333	3.14		3.33	0.63
0.417	0.60		1.417	18.62		2.417	2.16		3.42	0.53
0.500	0.60		1.500	18.62		2.500	2.16		3.50	0.53
0.583	0.80		1.583	68.75		2.583	1.57		3.58	0.45
0.667	0.80		1.667	68.75		2.667	1.57		3.67	0.45
0.750	1.13		1.750	22.53		2.750	1.20		3.75	0.38
0.833	1.13		1.833	22.53		2.833	1.20		3.83	0.38
0.917	1.71		1.917	9.20		2.917	0.94		3.92	0.33
1.000	1.71		2.000	9.20		3.000	0.94		4.00	0.33

Max.Eff.Inten. (mm/hr)=	68.75	7.73
over (min)	5.00	15.00

Storage Coeff. (min)=	1.47 (ii)	12.38 (ii)	
Unit Hyd. Tpeak (min)=	5.00	15.00	
Unit Hyd. peak (cms)=	0.33	0.08	
			TOTALS
PEAK FLOW (cms)=	0.00	0.00	0.005 (iii)
TIME TO PEAK (hrs)=	1.67	1.83	1.67
RUNOFF VOLUME (mm)=	23.50	3.66	5.02
TOTAL RAINFALL (mm)=	25.00	25.00	25.00
RUNOFF COEFFICIENT =	0.94	0.15	0.20

***** 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* = 74.0 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 (0203):	0.29	0.005	1.67	5.02
+ ID2= 2 (4000):	1.26	0.090	1.67	11.84
=====				
ID = 3 (1000):	1.55	0.095	1.67	10.56

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):	1.55	0.095	1.67	10.56
+ ID2= 2 (5000):	12.59	0.037	1.67	13.88
=====				
ID = 1 (1000):	14.14	0.132	1.67	13.51

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

=====

=====

```
V   V   I   SSSSS   U   U   A   L           (v 6.2.2015)
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
```

Developed and Distributed by Smart City Water Inc

Copyright 2007 - 2022 Smart City Water Inc

All rights reserved.

***** 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\jangsoo.lee\AppData\Local\Civica\VH5\191a91e0-1a14-44fd-bc00-4941023c7dee\34ad6ecb-feb5-421d-bb20-e793c356ae9b\

Summary filename:

C:\Users\jangsoo.lee\AppData\Local\Civica\VH5\191a91e0-1a14-44fd-bc00-4941023c7dee\34ad6ecb-feb5-421d-bb20-e793c356ae9b\

DATE: 09/25/2024

TIME: 11:27:09

USER:

COMMENTS: _____

** SIMULATION : 2yr 24hr 10min SCS Type II **

READ STORM	Filename: C:\Users\jangsoo.lee\AppData
	ata\Local\Temp\
	f94caa1e-fd3a-473e-9aa7-8c465a92b796\6dcf778f
Ptotal= 67.15 mm	Comments: 2yr 24hr 10min SCS Type II

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.00	0.00	6.17	1.21	12.33	9.67	18.50	1.21
0.17	0.74	6.33	1.21	12.50	9.67	18.67	1.21
0.33	0.74	6.50	1.21	12.67	4.97	18.83	1.21
0.50	0.74	6.67	1.21	12.83	4.97	19.00	1.21
0.67	0.74	6.83	1.21	13.00	4.97	19.17	1.21
0.83	0.74	7.00	1.21	13.17	3.63	19.33	1.21
1.00	0.74	7.17	1.48	13.33	3.63	19.50	1.21
1.17	0.74	7.33	1.48	13.50	3.63	19.67	1.21
1.33	0.74	7.50	1.48	13.67	2.82	19.83	1.21
1.50	0.74	7.67	1.48	13.83	2.82	20.00	1.21
1.67	0.74	7.83	1.48	14.00	2.82	20.17	0.81
1.83	0.74	8.00	1.48	14.17	2.01	20.33	0.81
2.00	0.74	8.17	1.75	14.33	2.01	20.50	0.81
2.17	0.87	8.33	1.75	14.50	2.01	20.67	0.81
2.33	0.87	8.50	1.75	14.67	2.01	20.83	0.81
2.50	0.87	8.67	1.88	14.83	2.01	21.00	0.81
2.67	0.87	8.83	1.88	15.00	2.01	21.17	0.81
2.83	0.87	9.00	1.88	15.17	2.01	21.33	0.81
3.00	0.87	9.17	2.15	15.33	2.01	21.50	0.81
3.17	0.87	9.33	2.15	15.50	2.01	21.67	0.81
3.33	0.87	9.50	2.15	15.67	2.01	21.83	0.81
3.50	0.87	9.67	2.42	15.83	2.01	22.00	0.81
3.67	0.87	9.83	2.42	16.00	2.01	22.17	0.81
3.83	0.87	10.00	2.42	16.17	1.21	22.33	0.81
4.00	0.87	10.17	3.09	16.33	1.21	22.50	0.81
4.17	1.07	10.33	3.09	16.50	1.21	22.67	0.81
4.33	1.07	10.50	3.09	16.67	1.21	22.83	0.81
4.50	1.07	10.67	4.16	16.83	1.21	23.00	0.81
4.67	1.07	10.83	4.16	17.00	1.21	23.17	0.81
4.83	1.07	11.00	4.16	17.17	1.21	23.33	0.81
5.00	1.07	11.17	6.45	17.33	1.21	23.50	0.81
5.17	1.07	11.33	6.45	17.50	1.21	23.67	0.81
5.33	1.07	11.50	6.45	17.67	1.21	23.83	0.81
5.50	1.07	11.67	19.88	17.83	1.21	24.00	0.81
5.67	1.07	11.83	51.03	18.00	1.21		
5.83	1.07	12.00	82.19	18.17	1.21		
6.00	1.07	12.17	9.67	18.33	1.21		

| CALIB |
| STANDHYD (0200) |
ID= 1 DT= 5.0 min

Area (ha)= 10.86
Total Imp(%)= 60.00 Dir. Conn.(%)= 50.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	6.52	4.34
Dep. Storage	(mm)=	1.50	5.00
Average Slope	(%)=	2.00	2.00
Length	(m)=	269.07	30.00
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	0.00	6.167	1.07	12.250	9.68	18.33	1.21
0.167	0.00	6.250	1.21	12.333	9.67	18.42	1.21
0.250	0.74	6.333	1.21	12.417	9.67	18.50	1.21
0.333	0.74	6.417	1.21	12.500	9.67	18.58	1.21
0.417	0.74	6.500	1.21	12.583	9.67	18.67	1.21
0.500	0.74	6.583	1.21	12.667	9.67	18.75	1.21
0.583	0.74	6.667	1.21	12.750	4.97	18.83	1.21
0.667	0.74	6.750	1.21	12.833	4.97	18.92	1.21
0.750	0.74	6.833	1.21	12.917	4.97	19.00	1.21
0.833	0.74	6.917	1.21	13.000	4.97	19.08	1.21
0.917	0.74	7.000	1.21	13.083	4.97	19.17	1.21
1.000	0.74	7.083	1.21	13.167	4.97	19.25	1.21
1.083	0.74	7.167	1.21	13.250	3.63	19.33	1.21
1.167	0.74	7.250	1.48	13.333	3.63	19.42	1.21
1.250	0.74	7.333	1.48	13.417	3.63	19.50	1.21
1.333	0.74	7.417	1.48	13.500	3.63	19.58	1.21
1.417	0.74	7.500	1.48	13.583	3.63	19.67	1.21
1.500	0.74	7.583	1.48	13.667	3.63	19.75	1.21
1.583	0.74	7.667	1.48	13.750	2.82	19.83	1.21
1.667	0.74	7.750	1.48	13.833	2.82	19.92	1.21
1.750	0.74	7.833	1.48	13.917	2.82	20.00	1.21
1.833	0.74	7.917	1.48	14.000	2.82	20.08	1.21
1.917	0.74	8.000	1.48	14.083	2.82	20.17	1.21
2.000	0.74	8.083	1.48	14.167	2.82	20.25	0.81
2.083	0.74	8.167	1.48	14.250	2.01	20.33	0.81
2.167	0.74	8.250	1.75	14.333	2.01	20.42	0.81
2.250	0.87	8.333	1.75	14.417	2.01	20.50	0.81
2.333	0.87	8.417	1.75	14.500	2.01	20.58	0.81
2.417	0.87	8.500	1.75	14.583	2.01	20.67	0.81
2.500	0.87	8.583	1.75	14.667	2.01	20.75	0.81
2.583	0.87	8.667	1.75	14.750	2.01	20.83	0.81
2.667	0.87	8.750	1.88	14.833	2.01	20.92	0.81
2.750	0.87	8.833	1.88	14.917	2.01	21.00	0.81
2.833	0.87	8.917	1.88	15.000	2.01	21.08	0.81
2.917	0.87	9.000	1.88	15.083	2.01	21.17	0.81
3.000	0.87	9.083	1.88	15.167	2.01	21.25	0.81
3.083	0.87	9.167	1.88	15.250	2.01	21.33	0.81
3.167	0.87	9.250	2.15	15.333	2.01	21.42	0.81
3.250	0.87	9.333	2.15	15.417	2.01	21.50	0.81
3.333	0.87	9.417	2.15	15.500	2.01	21.58	0.81
3.417	0.87	9.500	2.15	15.583	2.01	21.67	0.81
3.500	0.87	9.583	2.15	15.667	2.01	21.75	0.81
3.583	0.87	9.667	2.15	15.750	2.01	21.83	0.81
3.667	0.87	9.750	2.42	15.833	2.01	21.92	0.81
3.750	0.87	9.833	2.42	15.917	2.01	22.00	0.81
3.833	0.87	9.917	2.42	16.000	2.01	22.08	0.81

3.917	0.87	10.000	2.42	16.083	2.01	22.17	0.81
4.000	0.87	10.083	2.42	16.167	2.01	22.25	0.81
4.083	0.87	10.167	2.42	16.250	1.21	22.33	0.81
4.167	0.87	10.250	3.09	16.333	1.21	22.42	0.81
4.250	1.07	10.333	3.09	16.417	1.21	22.50	0.81
4.333	1.07	10.417	3.09	16.500	1.21	22.58	0.81
4.417	1.07	10.500	3.09	16.583	1.21	22.67	0.81
4.500	1.07	10.583	3.09	16.667	1.21	22.75	0.81
4.583	1.07	10.667	3.09	16.750	1.21	22.83	0.81
4.667	1.07	10.750	4.16	16.833	1.21	22.92	0.81
4.750	1.07	10.833	4.16	16.917	1.21	23.00	0.81
4.833	1.07	10.917	4.16	17.000	1.21	23.08	0.81
4.917	1.07	11.000	4.16	17.083	1.21	23.17	0.81
5.000	1.07	11.083	4.16	17.167	1.21	23.25	0.81
5.083	1.07	11.167	4.16	17.250	1.21	23.33	0.81
5.167	1.07	11.250	6.45	17.333	1.21	23.42	0.81
5.250	1.07	11.333	6.45	17.417	1.21	23.50	0.81
5.333	1.07	11.417	6.45	17.500	1.21	23.58	0.81
5.417	1.07	11.500	6.45	17.583	1.21	23.67	0.81
5.500	1.07	11.583	6.45	17.667	1.21	23.75	0.81
5.583	1.07	11.667	6.45	17.750	1.21	23.83	0.81
5.667	1.07	11.750	19.87	17.833	1.21	23.92	0.81
5.750	1.07	11.833	19.88	17.917	1.21	24.00	0.81
5.833	1.07	11.917	51.03	18.000	1.21	24.08	0.81
5.917	1.07	12.000	51.03	18.083	1.21	24.17	0.81
6.000	1.07	12.083	82.19	18.167	1.21		
6.083	1.07	12.167	82.19	18.250	1.21		

Max.Eff.Inten. (mm/hr)=82.1955.10

over (min)5.0015.00

Storage Coeff. (min)=4.06 (ii)11.60 (ii)

Unit Hyd. Tpeak (min)=5.0015.00

Unit Hyd. peak (cms)=0.240.09

TOTALS

PEAK FLOW (cms)=1.200.401.528 (iii)

TIME TO PEAK (hrs)=12.1712.2512.17

RUNOFF VOLUME (mm)=65.6529.6447.64

TOTAL RAINFALL (mm)=67.1567.1567.15

RUNOFF COEFFICIENT =0.980.440.71

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 74.0Ia = 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)= 1.43

| ID= 1 DT= 5.0 min | Total Imp(%)= 50.00 Dir. Conn.(%)= 50.00

```

-----
                IMPERVIOUS      PERVIOUS (i)
Surface Area    (ha)=          0.71      0.71
Dep. Storage    (mm)=          1.50      5.00
Average Slope   (%)=          2.00      2.00
Length          (m)=          97.64     30.00
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	0.00	6.167	1.07	12.250	9.68	18.33	1.21
0.167	0.00	6.250	1.21	12.333	9.67	18.42	1.21
0.250	0.74	6.333	1.21	12.417	9.67	18.50	1.21
0.333	0.74	6.417	1.21	12.500	9.67	18.58	1.21
0.417	0.74	6.500	1.21	12.583	9.67	18.67	1.21
0.500	0.74	6.583	1.21	12.667	9.67	18.75	1.21
0.583	0.74	6.667	1.21	12.750	4.97	18.83	1.21
0.667	0.74	6.750	1.21	12.833	4.97	18.92	1.21
0.750	0.74	6.833	1.21	12.917	4.97	19.00	1.21
0.833	0.74	6.917	1.21	13.000	4.97	19.08	1.21
0.917	0.74	7.000	1.21	13.083	4.97	19.17	1.21
1.000	0.74	7.083	1.21	13.167	4.97	19.25	1.21
1.083	0.74	7.167	1.21	13.250	3.63	19.33	1.21
1.167	0.74	7.250	1.48	13.333	3.63	19.42	1.21
1.250	0.74	7.333	1.48	13.417	3.63	19.50	1.21
1.333	0.74	7.417	1.48	13.500	3.63	19.58	1.21
1.417	0.74	7.500	1.48	13.583	3.63	19.67	1.21
1.500	0.74	7.583	1.48	13.667	3.63	19.75	1.21
1.583	0.74	7.667	1.48	13.750	2.82	19.83	1.21
1.667	0.74	7.750	1.48	13.833	2.82	19.92	1.21
1.750	0.74	7.833	1.48	13.917	2.82	20.00	1.21
1.833	0.74	7.917	1.48	14.000	2.82	20.08	1.21
1.917	0.74	8.000	1.48	14.083	2.82	20.17	1.21
2.000	0.74	8.083	1.48	14.167	2.82	20.25	0.81
2.083	0.74	8.167	1.48	14.250	2.01	20.33	0.81
2.167	0.74	8.250	1.75	14.333	2.01	20.42	0.81
2.250	0.87	8.333	1.75	14.417	2.01	20.50	0.81
2.333	0.87	8.417	1.75	14.500	2.01	20.58	0.81
2.417	0.87	8.500	1.75	14.583	2.01	20.67	0.81
2.500	0.87	8.583	1.75	14.667	2.01	20.75	0.81
2.583	0.87	8.667	1.75	14.750	2.01	20.83	0.81
2.667	0.87	8.750	1.88	14.833	2.01	20.92	0.81
2.750	0.87	8.833	1.88	14.917	2.01	21.00	0.81
2.833	0.87	8.917	1.88	15.000	2.01	21.08	0.81
2.917	0.87	9.000	1.88	15.083	2.01	21.17	0.81
3.000	0.87	9.083	1.88	15.167	2.01	21.25	0.81
3.083	0.87	9.167	1.88	15.250	2.01	21.33	0.81
3.167	0.87	9.250	2.15	15.333	2.01	21.42	0.81
3.250	0.87	9.333	2.15	15.417	2.01	21.50	0.81

3.333	0.87		9.417	2.15		15.500	2.01		21.58	0.81
3.417	0.87		9.500	2.15		15.583	2.01		21.67	0.81
3.500	0.87		9.583	2.15		15.667	2.01		21.75	0.81
3.583	0.87		9.667	2.15		15.750	2.01		21.83	0.81
3.667	0.87		9.750	2.42		15.833	2.01		21.92	0.81
3.750	0.87		9.833	2.42		15.917	2.01		22.00	0.81
3.833	0.87		9.917	2.42		16.000	2.01		22.08	0.81
3.917	0.87		10.000	2.42		16.083	2.01		22.17	0.81
4.000	0.87		10.083	2.42		16.167	2.01		22.25	0.81
4.083	0.87		10.167	2.42		16.250	1.21		22.33	0.81
4.167	0.87		10.250	3.09		16.333	1.21		22.42	0.81
4.250	1.07		10.333	3.09		16.417	1.21		22.50	0.81
4.333	1.07		10.417	3.09		16.500	1.21		22.58	0.81
4.417	1.07		10.500	3.09		16.583	1.21		22.67	0.81
4.500	1.07		10.583	3.09		16.667	1.21		22.75	0.81
4.583	1.07		10.667	3.09		16.750	1.21		22.83	0.81
4.667	1.07		10.750	4.16		16.833	1.21		22.92	0.81
4.750	1.07		10.833	4.16		16.917	1.21		23.00	0.81
4.833	1.07		10.917	4.16		17.000	1.21		23.08	0.81
4.917	1.07		11.000	4.16		17.083	1.21		23.17	0.81
5.000	1.07		11.083	4.16		17.167	1.21		23.25	0.81
5.083	1.07		11.167	4.16		17.250	1.21		23.33	0.81
5.167	1.07		11.250	6.45		17.333	1.21		23.42	0.81
5.250	1.07		11.333	6.45		17.417	1.21		23.50	0.81
5.333	1.07		11.417	6.45		17.500	1.21		23.58	0.81
5.417	1.07		11.500	6.45		17.583	1.21		23.67	0.81
5.500	1.07		11.583	6.45		17.667	1.21		23.75	0.81
5.583	1.07		11.667	6.45		17.750	1.21		23.83	0.81
5.667	1.07		11.750	19.87		17.833	1.21		23.92	0.81
5.750	1.07		11.833	19.88		17.917	1.21		24.00	0.81
5.833	1.07		11.917	51.03		18.000	1.21		24.08	0.81
5.917	1.07		12.000	51.03		18.083	1.21		24.17	0.81
6.000	1.07		12.083	82.19		18.167	1.21			
6.083	1.07		12.167	82.19		18.250	1.21			

Max.Eff.Inten. (mm/hr)=	82.19	38.01
over (min)	5.00	15.00
Storage Coeff. (min)=	2.21 (ii)	10.96 (ii)
Unit Hyd. Tpeak (min)=	5.00	15.00
Unit Hyd. peak (cms)=	0.30	0.09

TOTALS

PEAK FLOW (cms)=	0.16	0.05	0.200 (iii)
TIME TO PEAK (hrs)=	12.17	12.25	12.17
RUNOFF VOLUME (mm)=	65.65	25.51	45.58
TOTAL RAINFALL (mm)=	67.15	67.15	67.15
RUNOFF COEFFICIENT =	0.98	0.38	0.68

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:

CN* = 74.0 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 (3000)				
1 + 2 = 3				
	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0200):	10.86	1.528	12.17	47.64
+ ID2= 2 (0201):	1.43	0.200	12.17	45.58
=====				
ID = 3 (3000):	12.29	1.729	12.17	47.40

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR(2000)					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				0.1180	0.5426	
		0.0060	0.0590				0.1350	0.5819	
		0.0100	0.1205				0.1520	0.6219	
		0.0120	0.1522				0.6240	0.7039	
		0.0260	0.1845				1.4970	0.7886	
		0.0410	0.2510				2.6380	0.8759	
		0.0690	0.3201				4.0120	0.9659	
		0.0890	0.3917				5.5960	1.0585	
		0.0970	0.4284				7.3740	1.1579	
		0.1050	0.4658				0.0000	0.0000	
		AREA	QPEAK	TPEAK			R.V.		
		(ha)	(cms)	(hrs)			(mm)		
INFLOW : ID= 2 (3000)		12.290	1.729	12.17			47.40		
OUTFLOW: ID= 1 (2000)		12.290	0.086	13.83			47.20		

PEAK FLOW REDUCTION [Qout/Qin] (%)= 4.98
TIME SHIFT OF PEAK FLOW (min)=100.00
MAXIMUM STORAGE USED (ha.m.)= 0.3814

DIVERTHYD(0010)					
IN= 1 # OUT= 5					

Outflow / Inflow Relationships

Flow 1 + Flow 2 + Flow 3 + Flow 4 + Flow 5 = Total					
(cms)	(cms)	(cms)	(cms)	(cms)	(cms)
0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.09	0.00	0.00	0.00	0.09
0.00	0.12	0.00	0.00	0.00	0.12
0.05	0.13	0.00	0.00	0.00	0.19

0.41	0.14	0.00	0.00	0.00	0.55
0.77	0.14	0.00	0.00	0.00	0.92
1.17	0.15	0.00	0.00	0.00	1.32
1.51	0.15	0.00	0.00	0.00	1.67

		AREA	QPEAK	TPEAK	R.V.
		(ha)	(cms)	(hrs)	(mm)
TOTAL HYD. (ID= 1):		12.29	0.09	13.83	47.20
=====					
ID= 2	(2)	: 0.00	0.00	13.83	47.20
ID= 3	(2)	: 12.29	0.09	13.83	47.20
ID= 4	(2)	: 0.00	0.00	0.00	0.00
ID= 5	(2)	: 0.00	0.00	0.00	0.00
ID= 6	(2)	: 0.00	0.00	0.00	0.00

| CALIB |
| STANDHYD (0202) | Area (ha)= 1.26
| ID= 1 DT= 5.0 min | Total Imp(%)= 55.00 Dir. Conn.(%)= 35.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.69	0.57
Dep. Storage	(mm)=	1.50	5.00
Average Slope	(%)=	2.00	2.00
Length	(m)=	91.65	30.00
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	0.00	6.167	1.07	12.250	9.68	18.33	1.21
0.167	0.00	6.250	1.21	12.333	9.67	18.42	1.21
0.250	0.74	6.333	1.21	12.417	9.67	18.50	1.21
0.333	0.74	6.417	1.21	12.500	9.67	18.58	1.21
0.417	0.74	6.500	1.21	12.583	9.67	18.67	1.21
0.500	0.74	6.583	1.21	12.667	9.67	18.75	1.21
0.583	0.74	6.667	1.21	12.750	4.97	18.83	1.21
0.667	0.74	6.750	1.21	12.833	4.97	18.92	1.21
0.750	0.74	6.833	1.21	12.917	4.97	19.00	1.21
0.833	0.74	6.917	1.21	13.000	4.97	19.08	1.21
0.917	0.74	7.000	1.21	13.083	4.97	19.17	1.21
1.000	0.74	7.083	1.21	13.167	4.97	19.25	1.21
1.083	0.74	7.167	1.21	13.250	3.63	19.33	1.21
1.167	0.74	7.250	1.48	13.333	3.63	19.42	1.21
1.250	0.74	7.333	1.48	13.417	3.63	19.50	1.21
1.333	0.74	7.417	1.48	13.500	3.63	19.58	1.21
1.417	0.74	7.500	1.48	13.583	3.63	19.67	1.21
1.500	0.74	7.583	1.48	13.667	3.63	19.75	1.21
1.583	0.74	7.667	1.48	13.750	2.82	19.83	1.21
1.667	0.74	7.750	1.48	13.833	2.82	19.92	1.21

1.750	0.74		7.833	1.48		13.917	2.82		20.00	1.21
1.833	0.74		7.917	1.48		14.000	2.82		20.08	1.21
1.917	0.74		8.000	1.48		14.083	2.82		20.17	1.21
2.000	0.74		8.083	1.48		14.167	2.82		20.25	0.81
2.083	0.74		8.167	1.48		14.250	2.01		20.33	0.81
2.167	0.74		8.250	1.75		14.333	2.01		20.42	0.81
2.250	0.87		8.333	1.75		14.417	2.01		20.50	0.81
2.333	0.87		8.417	1.75		14.500	2.01		20.58	0.81
2.417	0.87		8.500	1.75		14.583	2.01		20.67	0.81
2.500	0.87		8.583	1.75		14.667	2.01		20.75	0.81
2.583	0.87		8.667	1.75		14.750	2.01		20.83	0.81
2.667	0.87		8.750	1.88		14.833	2.01		20.92	0.81
2.750	0.87		8.833	1.88		14.917	2.01		21.00	0.81
2.833	0.87		8.917	1.88		15.000	2.01		21.08	0.81
2.917	0.87		9.000	1.88		15.083	2.01		21.17	0.81
3.000	0.87		9.083	1.88		15.167	2.01		21.25	0.81
3.083	0.87		9.167	1.88		15.250	2.01		21.33	0.81
3.167	0.87		9.250	2.15		15.333	2.01		21.42	0.81
3.250	0.87		9.333	2.15		15.417	2.01		21.50	0.81
3.333	0.87		9.417	2.15		15.500	2.01		21.58	0.81
3.417	0.87		9.500	2.15		15.583	2.01		21.67	0.81
3.500	0.87		9.583	2.15		15.667	2.01		21.75	0.81
3.583	0.87		9.667	2.15		15.750	2.01		21.83	0.81
3.667	0.87		9.750	2.42		15.833	2.01		21.92	0.81
3.750	0.87		9.833	2.42		15.917	2.01		22.00	0.81
3.833	0.87		9.917	2.42		16.000	2.01		22.08	0.81
3.917	0.87		10.000	2.42		16.083	2.01		22.17	0.81
4.000	0.87		10.083	2.42		16.167	2.01		22.25	0.81
4.083	0.87		10.167	2.42		16.250	1.21		22.33	0.81
4.167	0.87		10.250	3.09		16.333	1.21		22.42	0.81
4.250	1.07		10.333	3.09		16.417	1.21		22.50	0.81
4.333	1.07		10.417	3.09		16.500	1.21		22.58	0.81
4.417	1.07		10.500	3.09		16.583	1.21		22.67	0.81
4.500	1.07		10.583	3.09		16.667	1.21		22.75	0.81
4.583	1.07		10.667	3.09		16.750	1.21		22.83	0.81
4.667	1.07		10.750	4.16		16.833	1.21		22.92	0.81
4.750	1.07		10.833	4.16		16.917	1.21		23.00	0.81
4.833	1.07		10.917	4.16		17.000	1.21		23.08	0.81
4.917	1.07		11.000	4.16		17.083	1.21		23.17	0.81
5.000	1.07		11.083	4.16		17.167	1.21		23.25	0.81
5.083	1.07		11.167	4.16		17.250	1.21		23.33	0.81
5.167	1.07		11.250	6.45		17.333	1.21		23.42	0.81
5.250	1.07		11.333	6.45		17.417	1.21		23.50	0.81
5.333	1.07		11.417	6.45		17.500	1.21		23.58	0.81
5.417	1.07		11.500	6.45		17.583	1.21		23.67	0.81
5.500	1.07		11.583	6.45		17.667	1.21		23.75	0.81
5.583	1.07		11.667	6.45		17.750	1.21		23.83	0.81
5.667	1.07		11.750	19.87		17.833	1.21		23.92	0.81
5.750	1.07		11.833	19.88		17.917	1.21		24.00	0.81
5.833	1.07		11.917	51.03		18.000	1.21		24.08	0.81
5.917	1.07		12.000	51.03		18.083	1.21		24.17	0.81
6.000	1.07		12.083	82.19		18.167	1.21			
6.083	1.07		12.167	82.19		18.250	1.21			

Max.Eff.Inten. (mm/hr)=	82.19	69.29	
over (min)	5.00	10.00	
Storage Coeff. (min)=	2.13 (ii)	9.01 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.31	0.12	
			TOTALS
PEAK FLOW (cms)=	0.10	0.08	0.176 (iii)
TIME TO PEAK (hrs)=	12.17	12.17	12.17
RUNOFF VOLUME (mm)=	65.65	32.33	43.99
TOTAL RAINFALL (mm)=	67.15	67.15	67.15
RUNOFF COEFFICIENT =	0.98	0.48	0.66

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 74.0 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 (4000)				
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0010):	0.00	0.000	13.83	47.20
+ ID2= 2 (0202):	1.26	0.176	12.17	43.99
=====				
ID = 3 (4000):	1.26	0.176	12.17	43.99

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB	
STANDHYD (0204)	Area (ha)= 0.30
ID= 1 DT= 5.0 min	Total Imp(%)= 60.00 Dir. Conn.(%)= 50.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.18	0.12
Dep. Storage	(mm)=	1.50	5.00
Average Slope	(%)=	5.00	5.00
Length	(m)=	44.72	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	0.00	6.167	1.07	12.250	9.68	18.33	1.21

0.167	0.00		6.250	1.21		12.333	9.67		18.42	1.21
0.250	0.74		6.333	1.21		12.417	9.67		18.50	1.21
0.333	0.74		6.417	1.21		12.500	9.67		18.58	1.21
0.417	0.74		6.500	1.21		12.583	9.67		18.67	1.21
0.500	0.74		6.583	1.21		12.667	9.67		18.75	1.21
0.583	0.74		6.667	1.21		12.750	4.97		18.83	1.21
0.667	0.74		6.750	1.21		12.833	4.97		18.92	1.21
0.750	0.74		6.833	1.21		12.917	4.97		19.00	1.21
0.833	0.74		6.917	1.21		13.000	4.97		19.08	1.21
0.917	0.74		7.000	1.21		13.083	4.97		19.17	1.21
1.000	0.74		7.083	1.21		13.167	4.97		19.25	1.21
1.083	0.74		7.167	1.21		13.250	3.63		19.33	1.21
1.167	0.74		7.250	1.48		13.333	3.63		19.42	1.21
1.250	0.74		7.333	1.48		13.417	3.63		19.50	1.21
1.333	0.74		7.417	1.48		13.500	3.63		19.58	1.21
1.417	0.74		7.500	1.48		13.583	3.63		19.67	1.21
1.500	0.74		7.583	1.48		13.667	3.63		19.75	1.21
1.583	0.74		7.667	1.48		13.750	2.82		19.83	1.21
1.667	0.74		7.750	1.48		13.833	2.82		19.92	1.21
1.750	0.74		7.833	1.48		13.917	2.82		20.00	1.21
1.833	0.74		7.917	1.48		14.000	2.82		20.08	1.21
1.917	0.74		8.000	1.48		14.083	2.82		20.17	1.21
2.000	0.74		8.083	1.48		14.167	2.82		20.25	0.81
2.083	0.74		8.167	1.48		14.250	2.01		20.33	0.81
2.167	0.74		8.250	1.75		14.333	2.01		20.42	0.81
2.250	0.87		8.333	1.75		14.417	2.01		20.50	0.81
2.333	0.87		8.417	1.75		14.500	2.01		20.58	0.81
2.417	0.87		8.500	1.75		14.583	2.01		20.67	0.81
2.500	0.87		8.583	1.75		14.667	2.01		20.75	0.81
2.583	0.87		8.667	1.75		14.750	2.01		20.83	0.81
2.667	0.87		8.750	1.88		14.833	2.01		20.92	0.81
2.750	0.87		8.833	1.88		14.917	2.01		21.00	0.81
2.833	0.87		8.917	1.88		15.000	2.01		21.08	0.81
2.917	0.87		9.000	1.88		15.083	2.01		21.17	0.81
3.000	0.87		9.083	1.88		15.167	2.01		21.25	0.81
3.083	0.87		9.167	1.88		15.250	2.01		21.33	0.81
3.167	0.87		9.250	2.15		15.333	2.01		21.42	0.81
3.250	0.87		9.333	2.15		15.417	2.01		21.50	0.81
3.333	0.87		9.417	2.15		15.500	2.01		21.58	0.81
3.417	0.87		9.500	2.15		15.583	2.01		21.67	0.81
3.500	0.87		9.583	2.15		15.667	2.01		21.75	0.81
3.583	0.87		9.667	2.15		15.750	2.01		21.83	0.81
3.667	0.87		9.750	2.42		15.833	2.01		21.92	0.81
3.750	0.87		9.833	2.42		15.917	2.01		22.00	0.81
3.833	0.87		9.917	2.42		16.000	2.01		22.08	0.81
3.917	0.87		10.000	2.42		16.083	2.01		22.17	0.81
4.000	0.87		10.083	2.42		16.167	2.01		22.25	0.81
4.083	0.87		10.167	2.42		16.250	1.21		22.33	0.81
4.167	0.87		10.250	3.09		16.333	1.21		22.42	0.81
4.250	1.07		10.333	3.09		16.417	1.21		22.50	0.81
4.333	1.07		10.417	3.09		16.500	1.21		22.58	0.81
4.417	1.07		10.500	3.09		16.583	1.21		22.67	0.81
4.500	1.07		10.583	3.09		16.667	1.21		22.75	0.81

4.583	1.07	10.667	3.09	16.750	1.21	22.83	0.81
4.667	1.07	10.750	4.16	16.833	1.21	22.92	0.81
4.750	1.07	10.833	4.16	16.917	1.21	23.00	0.81
4.833	1.07	10.917	4.16	17.000	1.21	23.08	0.81
4.917	1.07	11.000	4.16	17.083	1.21	23.17	0.81
5.000	1.07	11.083	4.16	17.167	1.21	23.25	0.81
5.083	1.07	11.167	4.16	17.250	1.21	23.33	0.81
5.167	1.07	11.250	6.45	17.333	1.21	23.42	0.81
5.250	1.07	11.333	6.45	17.417	1.21	23.50	0.81
5.333	1.07	11.417	6.45	17.500	1.21	23.58	0.81
5.417	1.07	11.500	6.45	17.583	1.21	23.67	0.81
5.500	1.07	11.583	6.45	17.667	1.21	23.75	0.81
5.583	1.07	11.667	6.45	17.750	1.21	23.83	0.81
5.667	1.07	11.750	19.87	17.833	1.21	23.92	0.81
5.750	1.07	11.833	19.88	17.917	1.21	24.00	0.81
5.833	1.07	11.917	51.03	18.000	1.21	24.08	0.81
5.917	1.07	12.000	51.03	18.083	1.21	24.17	0.81
6.000	1.07	12.083	82.19	18.167	1.21		
6.083	1.07	12.167	82.19	18.250	1.21		

Max.Eff.Inten. (mm/hr)=82.1956.69

over (min)5.0010.00

Storage Coeff. (min)=1.05 (ii)7.78 (ii)

Unit Hyd. Tpeak (min)=5.0010.00

Unit Hyd. peak (cms)=0.340.13

TOTALS

PEAK FLOW (cms)=0.030.010.048 (iii)

TIME TO PEAK (hrs)=12.1712.1712.17

RUNOFF VOLUME (mm)=65.6530.4748.05

TOTAL RAINFALL (mm)=67.1567.1567.15

RUNOFF COEFFICIENT =0.980.450.72

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 75.0 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(2001)	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		0.0826 0.0013
	0.0100	0.0000		0.0904 0.0015
	0.0190	0.0002		0.0975 0.0017
	0.0380	0.0004		0.1042 0.0017
	0.0528	0.0006		0.1335 0.0017
	0.0643	0.0009		0.1574 0.0017
	0.0740	0.0011		0.5345 0.0018

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
INFLOW : ID= 2 (0204)	0.300	0.048	12.17	48.05
OUTFLOW: ID= 1 (2001)	0.300	0.046	12.17	48.09
PEAK FLOW REDUCTION [Qout/Qin] (%)=	95.79			
TIME SHIFT OF PEAK FLOW	(min)= 0.00			
MAXIMUM STORAGE USED	(ha.m.)= 0.0006			

ADD HYD (5000)				
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.
-----	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0010):	12.29	0.086	13.83	47.20
+ ID2= 2 (2001):	0.30	0.046	12.17	48.09
=====				
ID = 3 (5000):	12.59	0.089	13.67	47.22

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB	
STANDHYD (0203)	Area (ha)= 0.29
ID= 1 DT= 5.0 min	Total Imp(%)= 7.00 Dir. Conn.(%)= 7.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.02	0.27
Dep. Storage (mm)=	1.50	5.00
Average Slope (%)=	2.00	2.00
Length (m)=	43.97	15.00
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	0.00	6.167	1.07	12.250	9.68	18.33	1.21
0.167	0.00	6.250	1.21	12.333	9.67	18.42	1.21
0.250	0.74	6.333	1.21	12.417	9.67	18.50	1.21
0.333	0.74	6.417	1.21	12.500	9.67	18.58	1.21
0.417	0.74	6.500	1.21	12.583	9.67	18.67	1.21
0.500	0.74	6.583	1.21	12.667	9.67	18.75	1.21
0.583	0.74	6.667	1.21	12.750	4.97	18.83	1.21
0.667	0.74	6.750	1.21	12.833	4.97	18.92	1.21
0.750	0.74	6.833	1.21	12.917	4.97	19.00	1.21
0.833	0.74	6.917	1.21	13.000	4.97	19.08	1.21
0.917	0.74	7.000	1.21	13.083	4.97	19.17	1.21
1.000	0.74	7.083	1.21	13.167	4.97	19.25	1.21

1.083	0.74		7.167	1.21		13.250	3.63		19.33	1.21
1.167	0.74		7.250	1.48		13.333	3.63		19.42	1.21
1.250	0.74		7.333	1.48		13.417	3.63		19.50	1.21
1.333	0.74		7.417	1.48		13.500	3.63		19.58	1.21
1.417	0.74		7.500	1.48		13.583	3.63		19.67	1.21
1.500	0.74		7.583	1.48		13.667	3.63		19.75	1.21
1.583	0.74		7.667	1.48		13.750	2.82		19.83	1.21
1.667	0.74		7.750	1.48		13.833	2.82		19.92	1.21
1.750	0.74		7.833	1.48		13.917	2.82		20.00	1.21
1.833	0.74		7.917	1.48		14.000	2.82		20.08	1.21
1.917	0.74		8.000	1.48		14.083	2.82		20.17	1.21
2.000	0.74		8.083	1.48		14.167	2.82		20.25	0.81
2.083	0.74		8.167	1.48		14.250	2.01		20.33	0.81
2.167	0.74		8.250	1.75		14.333	2.01		20.42	0.81
2.250	0.87		8.333	1.75		14.417	2.01		20.50	0.81
2.333	0.87		8.417	1.75		14.500	2.01		20.58	0.81
2.417	0.87		8.500	1.75		14.583	2.01		20.67	0.81
2.500	0.87		8.583	1.75		14.667	2.01		20.75	0.81
2.583	0.87		8.667	1.75		14.750	2.01		20.83	0.81
2.667	0.87		8.750	1.88		14.833	2.01		20.92	0.81
2.750	0.87		8.833	1.88		14.917	2.01		21.00	0.81
2.833	0.87		8.917	1.88		15.000	2.01		21.08	0.81
2.917	0.87		9.000	1.88		15.083	2.01		21.17	0.81
3.000	0.87		9.083	1.88		15.167	2.01		21.25	0.81
3.083	0.87		9.167	1.88		15.250	2.01		21.33	0.81
3.167	0.87		9.250	2.15		15.333	2.01		21.42	0.81
3.250	0.87		9.333	2.15		15.417	2.01		21.50	0.81
3.333	0.87		9.417	2.15		15.500	2.01		21.58	0.81
3.417	0.87		9.500	2.15		15.583	2.01		21.67	0.81
3.500	0.87		9.583	2.15		15.667	2.01		21.75	0.81
3.583	0.87		9.667	2.15		15.750	2.01		21.83	0.81
3.667	0.87		9.750	2.42		15.833	2.01		21.92	0.81
3.750	0.87		9.833	2.42		15.917	2.01		22.00	0.81
3.833	0.87		9.917	2.42		16.000	2.01		22.08	0.81
3.917	0.87		10.000	2.42		16.083	2.01		22.17	0.81
4.000	0.87		10.083	2.42		16.167	2.01		22.25	0.81
4.083	0.87		10.167	2.42		16.250	1.21		22.33	0.81
4.167	0.87		10.250	3.09		16.333	1.21		22.42	0.81
4.250	1.07		10.333	3.09		16.417	1.21		22.50	0.81
4.333	1.07		10.417	3.09		16.500	1.21		22.58	0.81
4.417	1.07		10.500	3.09		16.583	1.21		22.67	0.81
4.500	1.07		10.583	3.09		16.667	1.21		22.75	0.81
4.583	1.07		10.667	3.09		16.750	1.21		22.83	0.81
4.667	1.07		10.750	4.16		16.833	1.21		22.92	0.81
4.750	1.07		10.833	4.16		16.917	1.21		23.00	0.81
4.833	1.07		10.917	4.16		17.000	1.21		23.08	0.81
4.917	1.07		11.000	4.16		17.083	1.21		23.17	0.81
5.000	1.07		11.083	4.16		17.167	1.21		23.25	0.81
5.083	1.07		11.167	4.16		17.250	1.21		23.33	0.81
5.167	1.07		11.250	6.45		17.333	1.21		23.42	0.81
5.250	1.07		11.333	6.45		17.417	1.21		23.50	0.81
5.333	1.07		11.417	6.45		17.500	1.21		23.58	0.81
5.417	1.07		11.500	6.45		17.583	1.21		23.67	0.81

5.500	1.07	11.583	6.45	17.667	1.21	23.75	0.81
5.583	1.07	11.667	6.45	17.750	1.21	23.83	0.81
5.667	1.07	11.750	19.87	17.833	1.21	23.92	0.81
5.750	1.07	11.833	19.88	17.917	1.21	24.00	0.81
5.833	1.07	11.917	51.03	18.000	1.21	24.08	0.81
5.917	1.07	12.000	51.03	18.083	1.21	24.17	0.81
6.000	1.07	12.083	82.19	18.167	1.21		
6.083	1.07	12.167	82.19	18.250	1.21		

Max.Eff.Inten. (mm/hr)=82.1938.01

over (min)5.0010.00

Storage Coeff. (min)=1.37 (ii)7.14 (ii)

Unit Hyd. Tpeak (min)=5.0010.00

Unit Hyd. peak (cms)=0.330.14

TOTALS

PEAK FLOW (cms)=0.000.020.026 (iii)

TIME TO PEAK (hrs)=12.1712.1712.17

RUNOFF VOLUME (mm)=65.6525.5128.31

TOTAL RAINFALL (mm)=67.1567.1567.15

RUNOFF COEFFICIENT =0.980.380.42

***** 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* = 74.0Ia = 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 (0203):	0.29	0.026	12.17	28.31
+ ID2= 2 (4000):	1.26	0.176	12.17	43.99
=====				
ID = 3 (1000):	1.55	0.202	12.17	41.05

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):	1.55	0.202	12.17	41.05
+ ID2= 2 (5000):	12.59	0.089	13.67	47.22
=====				
ID = 1 (1000):	14.14	0.289	12.17	46.55

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

=====

=====

```
V      V      I      SSSSS  U      U      A      L      (v 6.2.2015)
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
```

Developed and Distributed by Smart City Water Inc

Copyright 2007 - 2022 Smart City Water Inc

All rights reserved.

***** 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\jangsoo.lee\AppData\Local\Civica\VH5\191a91e0-1a14-44fd-bc00-4941023c7dee\05bb6089-b378-4d06-88b3-693cfbdc125d\

Summary filename:

C:\Users\jangsoo.lee\AppData\Local\Civica\VH5\191a91e0-1a14-44fd-bc00-4941023c7dee\05bb6089-b378-4d06-88b3-693cfbdc125d\

DATE: 09/25/2024

TIME: 11:27:08

USER:

COMMENTS: _____

** SIMULATION : 5yr 24hr 10min SCS Type II **

READ STORM	Filename: C:\Users\jangsoo.lee\AppData
	ata\Local\Temp\
	f94caale-fd3a-473e-9aa7-8c465a92b796\0156f81c
Ptotal= 88.91 mm	Comments: 5yr 24hr 10min SCS Type II

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.00	0.00	6.17	1.60	12.33	12.80	18.50	1.60
0.17	0.98	6.33	1.60	12.50	12.80	18.67	1.60
0.33	0.98	6.50	1.60	12.67	6.58	18.83	1.60
0.50	0.98	6.67	1.60	12.83	6.58	19.00	1.60
0.67	0.98	6.83	1.60	13.00	6.58	19.17	1.60
0.83	0.98	7.00	1.60	13.17	4.80	19.33	1.60
1.00	0.98	7.17	1.96	13.33	4.80	19.50	1.60
1.17	0.98	7.33	1.96	13.50	4.80	19.67	1.60
1.33	0.98	7.50	1.96	13.67	3.73	19.83	1.60
1.50	0.98	7.67	1.96	13.83	3.73	20.00	1.60
1.67	0.98	7.83	1.96	14.00	3.73	20.17	1.07
1.83	0.98	8.00	1.96	14.17	2.67	20.33	1.07
2.00	0.98	8.17	2.31	14.33	2.67	20.50	1.07
2.17	1.16	8.33	2.31	14.50	2.67	20.67	1.07
2.33	1.16	8.50	2.31	14.67	2.67	20.83	1.07
2.50	1.16	8.67	2.49	14.83	2.67	21.00	1.07
2.67	1.16	8.83	2.49	15.00	2.67	21.17	1.07
2.83	1.16	9.00	2.49	15.17	2.67	21.33	1.07
3.00	1.16	9.17	2.85	15.33	2.67	21.50	1.07
3.17	1.16	9.33	2.85	15.50	2.67	21.67	1.07
3.33	1.16	9.50	2.85	15.67	2.67	21.83	1.07
3.50	1.16	9.67	3.20	15.83	2.67	22.00	1.07
3.67	1.16	9.83	3.20	16.00	2.67	22.17	1.07
3.83	1.16	10.00	3.20	16.17	1.60	22.33	1.07
4.00	1.16	10.17	4.09	16.33	1.60	22.50	1.07
4.17	1.42	10.33	4.09	16.50	1.60	22.67	1.07
4.33	1.42	10.50	4.09	16.67	1.60	22.83	1.07
4.50	1.42	10.67	5.51	16.83	1.60	23.00	1.07
4.67	1.42	10.83	5.51	17.00	1.60	23.17	1.07
4.83	1.42	11.00	5.51	17.17	1.60	23.33	1.07
5.00	1.42	11.17	8.54	17.33	1.60	23.50	1.07
5.17	1.42	11.33	8.54	17.50	1.60	23.67	1.07
5.33	1.42	11.50	8.54	17.67	1.60	23.83	1.07
5.50	1.42	11.67	26.32	17.83	1.60	24.00	1.07
5.67	1.42	11.83	67.57	18.00	1.60		
5.83	1.42	12.00	108.83	18.17	1.60		
6.00	1.42	12.17	12.80	18.33	1.60		

| CALIB |
| STANDHYD (0200) |
ID= 1 DT= 5.0 min

Area (ha)= 10.86
Total Imp(%)= 60.00 Dir. Conn.(%)= 50.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	6.52	4.34
Dep. Storage	(mm)=	1.50	5.00
Average Slope	(%)=	2.00	2.00
Length	(m)=	269.07	30.00
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	0.00	6.167	1.42	12.250	12.82	18.33	1.60
0.167	0.00	6.250	1.60	12.333	12.80	18.42	1.60
0.250	0.98	6.333	1.60	12.417	12.80	18.50	1.60
0.333	0.98	6.417	1.60	12.500	12.80	18.58	1.60
0.417	0.98	6.500	1.60	12.583	12.80	18.67	1.60
0.500	0.98	6.583	1.60	12.667	12.80	18.75	1.60
0.583	0.98	6.667	1.60	12.750	6.58	18.83	1.60
0.667	0.98	6.750	1.60	12.833	6.58	18.92	1.60
0.750	0.98	6.833	1.60	12.917	6.58	19.00	1.60
0.833	0.98	6.917	1.60	13.000	6.58	19.08	1.60
0.917	0.98	7.000	1.60	13.083	6.58	19.17	1.60
1.000	0.98	7.083	1.60	13.167	6.58	19.25	1.60
1.083	0.98	7.167	1.60	13.250	4.80	19.33	1.60
1.167	0.98	7.250	1.96	13.333	4.80	19.42	1.60
1.250	0.98	7.333	1.96	13.417	4.80	19.50	1.60
1.333	0.98	7.417	1.96	13.500	4.80	19.58	1.60
1.417	0.98	7.500	1.96	13.583	4.80	19.67	1.60
1.500	0.98	7.583	1.96	13.667	4.80	19.75	1.60
1.583	0.98	7.667	1.96	13.750	3.73	19.83	1.60
1.667	0.98	7.750	1.96	13.833	3.73	19.92	1.60
1.750	0.98	7.833	1.96	13.917	3.73	20.00	1.60
1.833	0.98	7.917	1.96	14.000	3.73	20.08	1.60
1.917	0.98	8.000	1.96	14.083	3.73	20.17	1.60
2.000	0.98	8.083	1.96	14.167	3.73	20.25	1.07
2.083	0.98	8.167	1.96	14.250	2.67	20.33	1.07
2.167	0.98	8.250	2.31	14.333	2.67	20.42	1.07
2.250	1.16	8.333	2.31	14.417	2.67	20.50	1.07
2.333	1.16	8.417	2.31	14.500	2.67	20.58	1.07
2.417	1.16	8.500	2.31	14.583	2.67	20.67	1.07
2.500	1.16	8.583	2.31	14.667	2.67	20.75	1.07
2.583	1.16	8.667	2.31	14.750	2.67	20.83	1.07
2.667	1.16	8.750	2.49	14.833	2.67	20.92	1.07
2.750	1.16	8.833	2.49	14.917	2.67	21.00	1.07
2.833	1.16	8.917	2.49	15.000	2.67	21.08	1.07
2.917	1.16	9.000	2.49	15.083	2.67	21.17	1.07
3.000	1.16	9.083	2.49	15.167	2.67	21.25	1.07
3.083	1.16	9.167	2.49	15.250	2.67	21.33	1.07
3.167	1.16	9.250	2.85	15.333	2.67	21.42	1.07
3.250	1.16	9.333	2.85	15.417	2.67	21.50	1.07
3.333	1.16	9.417	2.85	15.500	2.67	21.58	1.07
3.417	1.16	9.500	2.85	15.583	2.67	21.67	1.07
3.500	1.16	9.583	2.85	15.667	2.67	21.75	1.07
3.583	1.16	9.667	2.85	15.750	2.67	21.83	1.07
3.667	1.16	9.750	3.20	15.833	2.67	21.92	1.07
3.750	1.16	9.833	3.20	15.917	2.67	22.00	1.07
3.833	1.16	9.917	3.20	16.000	2.67	22.08	1.07

3.917	1.16	10.000	3.20	16.083	2.67	22.17	1.07
4.000	1.16	10.083	3.20	16.167	2.67	22.25	1.07
4.083	1.16	10.167	3.20	16.250	1.60	22.33	1.07
4.167	1.16	10.250	4.09	16.333	1.60	22.42	1.07
4.250	1.42	10.333	4.09	16.417	1.60	22.50	1.07
4.333	1.42	10.417	4.09	16.500	1.60	22.58	1.07
4.417	1.42	10.500	4.09	16.583	1.60	22.67	1.07
4.500	1.42	10.583	4.09	16.667	1.60	22.75	1.07
4.583	1.42	10.667	4.09	16.750	1.60	22.83	1.07
4.667	1.42	10.750	5.51	16.833	1.60	22.92	1.07
4.750	1.42	10.833	5.51	16.917	1.60	23.00	1.07
4.833	1.42	10.917	5.51	17.000	1.60	23.08	1.07
4.917	1.42	11.000	5.51	17.083	1.60	23.17	1.07
5.000	1.42	11.083	5.51	17.167	1.60	23.25	1.07
5.083	1.42	11.167	5.51	17.250	1.60	23.33	1.07
5.167	1.42	11.250	8.54	17.333	1.60	23.42	1.07
5.250	1.42	11.333	8.54	17.417	1.60	23.50	1.07
5.333	1.42	11.417	8.54	17.500	1.60	23.58	1.07
5.417	1.42	11.500	8.54	17.583	1.60	23.67	1.07
5.500	1.42	11.583	8.54	17.667	1.60	23.75	1.07
5.583	1.42	11.667	8.54	17.750	1.60	23.83	1.07
5.667	1.42	11.750	26.32	17.833	1.60	23.92	1.07
5.750	1.42	11.833	26.32	17.917	1.60	24.00	1.07
5.833	1.42	11.917	67.57	18.000	1.60	24.08	1.07
5.917	1.42	12.000	67.57	18.083	1.60	24.17	1.07
6.000	1.42	12.083	108.82	18.167	1.60		
6.083	1.42	12.167	108.83	18.250	1.60		

Max.Eff.Inten. (mm/hr)=	108.83	85.31	
over (min)	5.00	10.00	
Storage Coeff. (min)=	3.63 (ii)	9.96 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.25	0.11	
			TOTALS
PEAK FLOW (cms)=	1.60	0.69	2.294 (iii)
TIME TO PEAK (hrs)=	12.17	12.17	12.17
RUNOFF VOLUME (mm)=	87.41	46.13	66.77
TOTAL RAINFALL (mm)=	88.91	88.91	88.91
RUNOFF COEFFICIENT =	0.98	0.52	0.75

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 74.0 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)=	1.43		
ID= 1 DT= 5.0 min	Total Imp(%)=	50.00	Dir. Conn.(%)=	50.00

```

-----
                IMPERVIOUS      PERVIOUS (i)
Surface Area    (ha)=          0.71      0.71
Dep. Storage    (mm)=          1.50      5.00
Average Slope    (%)=          2.00      2.00
Length          (m)=          97.64     30.00
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	0.00	6.167	1.42	12.250	12.82	18.33	1.60
0.167	0.00	6.250	1.60	12.333	12.80	18.42	1.60
0.250	0.98	6.333	1.60	12.417	12.80	18.50	1.60
0.333	0.98	6.417	1.60	12.500	12.80	18.58	1.60
0.417	0.98	6.500	1.60	12.583	12.80	18.67	1.60
0.500	0.98	6.583	1.60	12.667	12.80	18.75	1.60
0.583	0.98	6.667	1.60	12.750	6.58	18.83	1.60
0.667	0.98	6.750	1.60	12.833	6.58	18.92	1.60
0.750	0.98	6.833	1.60	12.917	6.58	19.00	1.60
0.833	0.98	6.917	1.60	13.000	6.58	19.08	1.60
0.917	0.98	7.000	1.60	13.083	6.58	19.17	1.60
1.000	0.98	7.083	1.60	13.167	6.58	19.25	1.60
1.083	0.98	7.167	1.60	13.250	4.80	19.33	1.60
1.167	0.98	7.250	1.96	13.333	4.80	19.42	1.60
1.250	0.98	7.333	1.96	13.417	4.80	19.50	1.60
1.333	0.98	7.417	1.96	13.500	4.80	19.58	1.60
1.417	0.98	7.500	1.96	13.583	4.80	19.67	1.60
1.500	0.98	7.583	1.96	13.667	4.80	19.75	1.60
1.583	0.98	7.667	1.96	13.750	3.73	19.83	1.60
1.667	0.98	7.750	1.96	13.833	3.73	19.92	1.60
1.750	0.98	7.833	1.96	13.917	3.73	20.00	1.60
1.833	0.98	7.917	1.96	14.000	3.73	20.08	1.60
1.917	0.98	8.000	1.96	14.083	3.73	20.17	1.60
2.000	0.98	8.083	1.96	14.167	3.73	20.25	1.07
2.083	0.98	8.167	1.96	14.250	2.67	20.33	1.07
2.167	0.98	8.250	2.31	14.333	2.67	20.42	1.07
2.250	1.16	8.333	2.31	14.417	2.67	20.50	1.07
2.333	1.16	8.417	2.31	14.500	2.67	20.58	1.07
2.417	1.16	8.500	2.31	14.583	2.67	20.67	1.07
2.500	1.16	8.583	2.31	14.667	2.67	20.75	1.07
2.583	1.16	8.667	2.31	14.750	2.67	20.83	1.07
2.667	1.16	8.750	2.49	14.833	2.67	20.92	1.07
2.750	1.16	8.833	2.49	14.917	2.67	21.00	1.07
2.833	1.16	8.917	2.49	15.000	2.67	21.08	1.07
2.917	1.16	9.000	2.49	15.083	2.67	21.17	1.07
3.000	1.16	9.083	2.49	15.167	2.67	21.25	1.07
3.083	1.16	9.167	2.49	15.250	2.67	21.33	1.07
3.167	1.16	9.250	2.85	15.333	2.67	21.42	1.07
3.250	1.16	9.333	2.85	15.417	2.67	21.50	1.07

3.333	1.16		9.417	2.85		15.500	2.67		21.58	1.07
3.417	1.16		9.500	2.85		15.583	2.67		21.67	1.07
3.500	1.16		9.583	2.85		15.667	2.67		21.75	1.07
3.583	1.16		9.667	2.85		15.750	2.67		21.83	1.07
3.667	1.16		9.750	3.20		15.833	2.67		21.92	1.07
3.750	1.16		9.833	3.20		15.917	2.67		22.00	1.07
3.833	1.16		9.917	3.20		16.000	2.67		22.08	1.07
3.917	1.16		10.000	3.20		16.083	2.67		22.17	1.07
4.000	1.16		10.083	3.20		16.167	2.67		22.25	1.07
4.083	1.16		10.167	3.20		16.250	1.60		22.33	1.07
4.167	1.16		10.250	4.09		16.333	1.60		22.42	1.07
4.250	1.42		10.333	4.09		16.417	1.60		22.50	1.07
4.333	1.42		10.417	4.09		16.500	1.60		22.58	1.07
4.417	1.42		10.500	4.09		16.583	1.60		22.67	1.07
4.500	1.42		10.583	4.09		16.667	1.60		22.75	1.07
4.583	1.42		10.667	4.09		16.750	1.60		22.83	1.07
4.667	1.42		10.750	5.51		16.833	1.60		22.92	1.07
4.750	1.42		10.833	5.51		16.917	1.60		23.00	1.07
4.833	1.42		10.917	5.51		17.000	1.60		23.08	1.07
4.917	1.42		11.000	5.51		17.083	1.60		23.17	1.07
5.000	1.42		11.083	5.51		17.167	1.60		23.25	1.07
5.083	1.42		11.167	5.51		17.250	1.60		23.33	1.07
5.167	1.42		11.250	8.54		17.333	1.60		23.42	1.07
5.250	1.42		11.333	8.54		17.417	1.60		23.50	1.07
5.333	1.42		11.417	8.54		17.500	1.60		23.58	1.07
5.417	1.42		11.500	8.54		17.583	1.60		23.67	1.07
5.500	1.42		11.583	8.54		17.667	1.60		23.75	1.07
5.583	1.42		11.667	8.54		17.750	1.60		23.83	1.07
5.667	1.42		11.750	26.32		17.833	1.60		23.92	1.07
5.750	1.42		11.833	26.32		17.917	1.60		24.00	1.07
5.833	1.42		11.917	67.57		18.000	1.60		24.08	1.07
5.917	1.42		12.000	67.57		18.083	1.60		24.17	1.07
6.000	1.42		12.083	108.82		18.167	1.60			
6.083	1.42		12.167	108.83		18.250	1.60			

Max.Eff.Inten. (mm/hr)=	108.83	60.42
over (min)	5.00	10.00
Storage Coeff. (min)=	1.98 (ii)	9.24 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.31	0.12

TOTALS

PEAK FLOW (cms)=	0.22	0.08	0.298 (iii)
TIME TO PEAK (hrs)=	12.17	12.17	12.17
RUNOFF VOLUME (mm)=	87.41	40.66	64.03
TOTAL RAINFALL (mm)=	88.91	88.91	88.91
RUNOFF COEFFICIENT =	0.98	0.46	0.72

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:

CN* = 74.0 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 (3000)				
1 + 2 = 3				

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0200):	10.86	2.294	12.17	66.77
+ ID2= 2 (0201):	1.43	0.298	12.17	64.03
=====				
ID = 3 (3000):	12.29	2.592	12.17	66.45

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR(2000)					
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		0.1180	0.5426
	0.0060	0.0590		0.1350	0.5819
	0.0100	0.1205		0.1520	0.6219
	0.0120	0.1522		0.6240	0.7039
	0.0260	0.1845		1.4970	0.7886
	0.0410	0.2510		2.6380	0.8759
	0.0690	0.3201		4.0120	0.9659
	0.0890	0.3917		5.5960	1.0585
	0.0970	0.4284		7.3740	1.1579
	0.1050	0.4658		0.0000	0.0000
	AREA	QPEAK	TPEAK	R.V.	
	(ha)	(cms)	(hrs)	(mm)	
INFLOW : ID= 2 (3000)	12.290	2.592	12.17	66.45	
OUTFLOW: ID= 1 (2000)	12.290	0.117	13.83	66.25	

PEAK FLOW REDUCTION [Qout/Qin](%)= 4.51
TIME SHIFT OF PEAK FLOW (min)=100.00
MAXIMUM STORAGE USED (ha.m.)= 0.5361

DIVERTHYD(0010)					
IN= 1 # OUT= 5					

Outflow / Inflow Relationships

Flow 1 + Flow 2 + Flow 3 + Flow 4 + Flow 5 = Total					
(cms)	(cms)	(cms)	(cms)	(cms)	(cms)
0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.09	0.00	0.00	0.00	0.09
0.00	0.12	0.00	0.00	0.00	0.12
0.05	0.13	0.00	0.00	0.00	0.19

0.41	0.14	0.00	0.00	0.00	0.55
0.77	0.14	0.00	0.00	0.00	0.92
1.17	0.15	0.00	0.00	0.00	1.32
1.51	0.15	0.00	0.00	0.00	1.67

		AREA	QPEAK	TPEAK	R.V.
		(ha)	(cms)	(hrs)	(mm)
TOTAL HYD. (ID= 1):		12.29	0.12	13.83	66.25
=====					
ID= 2	(2)	: 0.00	0.00	13.83	66.25
ID= 3	(2)	: 12.29	0.12	13.83	66.25
ID= 4	(2)	: 0.00	0.00	0.00	0.00
ID= 5	(2)	: 0.00	0.00	0.00	0.00
ID= 6	(2)	: 0.00	0.00	0.00	0.00

CALIB					
STANDHYD (0202)		Area	(ha)=	1.26	
ID= 1 DT= 5.0 min		Total Imp(%)=	55.00	Dir. Conn.(%)=	35.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.69	0.57
Dep. Storage	(mm)=	1.50	5.00
Average Slope	(%)=	2.00	2.00
Length	(m)=	91.65	30.00
Mannings n	=	0.013	0.250

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

----- TRANSFORMED HYETOGRAPH -----							
TIME	RAIN		TIME	RAIN		TIME	RAIN
hrs	mm/hr		hrs	mm/hr		hrs	mm/hr
0.083	0.00		6.167	1.42		12.250	12.82
0.167	0.00		6.250	1.60		12.333	12.80
0.250	0.98		6.333	1.60		12.417	12.80
0.333	0.98		6.417	1.60		12.500	12.80
0.417	0.98		6.500	1.60		12.583	12.80
0.500	0.98		6.583	1.60		12.667	12.80
0.583	0.98		6.667	1.60		12.750	6.58
0.667	0.98		6.750	1.60		12.833	6.58
0.750	0.98		6.833	1.60		12.917	6.58
0.833	0.98		6.917	1.60		13.000	6.58
0.917	0.98		7.000	1.60		13.083	6.58
1.000	0.98		7.083	1.60		13.167	6.58
1.083	0.98		7.167	1.60		13.250	4.80
1.167	0.98		7.250	1.96		13.333	4.80
1.250	0.98		7.333	1.96		13.417	4.80
1.333	0.98		7.417	1.96		13.500	4.80
1.417	0.98		7.500	1.96		13.583	4.80
1.500	0.98		7.583	1.96		13.667	4.80
1.583	0.98		7.667	1.96		13.750	3.73
1.667	0.98		7.750	1.96		13.833	3.73

1.750	0.98		7.833	1.96		13.917	3.73		20.00	1.60
1.833	0.98		7.917	1.96		14.000	3.73		20.08	1.60
1.917	0.98		8.000	1.96		14.083	3.73		20.17	1.60
2.000	0.98		8.083	1.96		14.167	3.73		20.25	1.07
2.083	0.98		8.167	1.96		14.250	2.67		20.33	1.07
2.167	0.98		8.250	2.31		14.333	2.67		20.42	1.07
2.250	1.16		8.333	2.31		14.417	2.67		20.50	1.07
2.333	1.16		8.417	2.31		14.500	2.67		20.58	1.07
2.417	1.16		8.500	2.31		14.583	2.67		20.67	1.07
2.500	1.16		8.583	2.31		14.667	2.67		20.75	1.07
2.583	1.16		8.667	2.31		14.750	2.67		20.83	1.07
2.667	1.16		8.750	2.49		14.833	2.67		20.92	1.07
2.750	1.16		8.833	2.49		14.917	2.67		21.00	1.07
2.833	1.16		8.917	2.49		15.000	2.67		21.08	1.07
2.917	1.16		9.000	2.49		15.083	2.67		21.17	1.07
3.000	1.16		9.083	2.49		15.167	2.67		21.25	1.07
3.083	1.16		9.167	2.49		15.250	2.67		21.33	1.07
3.167	1.16		9.250	2.85		15.333	2.67		21.42	1.07
3.250	1.16		9.333	2.85		15.417	2.67		21.50	1.07
3.333	1.16		9.417	2.85		15.500	2.67		21.58	1.07
3.417	1.16		9.500	2.85		15.583	2.67		21.67	1.07
3.500	1.16		9.583	2.85		15.667	2.67		21.75	1.07
3.583	1.16		9.667	2.85		15.750	2.67		21.83	1.07
3.667	1.16		9.750	3.20		15.833	2.67		21.92	1.07
3.750	1.16		9.833	3.20		15.917	2.67		22.00	1.07
3.833	1.16		9.917	3.20		16.000	2.67		22.08	1.07
3.917	1.16		10.000	3.20		16.083	2.67		22.17	1.07
4.000	1.16		10.083	3.20		16.167	2.67		22.25	1.07
4.083	1.16		10.167	3.20		16.250	1.60		22.33	1.07
4.167	1.16		10.250	4.09		16.333	1.60		22.42	1.07
4.250	1.42		10.333	4.09		16.417	1.60		22.50	1.07
4.333	1.42		10.417	4.09		16.500	1.60		22.58	1.07
4.417	1.42		10.500	4.09		16.583	1.60		22.67	1.07
4.500	1.42		10.583	4.09		16.667	1.60		22.75	1.07
4.583	1.42		10.667	4.09		16.750	1.60		22.83	1.07
4.667	1.42		10.750	5.51		16.833	1.60		22.92	1.07
4.750	1.42		10.833	5.51		16.917	1.60		23.00	1.07
4.833	1.42		10.917	5.51		17.000	1.60		23.08	1.07
4.917	1.42		11.000	5.51		17.083	1.60		23.17	1.07
5.000	1.42		11.083	5.51		17.167	1.60		23.25	1.07
5.083	1.42		11.167	5.51		17.250	1.60		23.33	1.07
5.167	1.42		11.250	8.54		17.333	1.60		23.42	1.07
5.250	1.42		11.333	8.54		17.417	1.60		23.50	1.07
5.333	1.42		11.417	8.54		17.500	1.60		23.58	1.07
5.417	1.42		11.500	8.54		17.583	1.60		23.67	1.07
5.500	1.42		11.583	8.54		17.667	1.60		23.75	1.07
5.583	1.42		11.667	8.54		17.750	1.60		23.83	1.07
5.667	1.42		11.750	26.32		17.833	1.60		23.92	1.07
5.750	1.42		11.833	26.32		17.917	1.60		24.00	1.07
5.833	1.42		11.917	67.57		18.000	1.60		24.08	1.07
5.917	1.42		12.000	67.57		18.083	1.60		24.17	1.07
6.000	1.42		12.083	108.82		18.167	1.60			
6.083	1.42		12.167	108.83		18.250	1.60			

Max.Eff.Inten. (mm/hr)=	108.83	105.57	
over (min)	5.00	10.00	
Storage Coeff. (min)=	1.90 (ii)	7.72 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.32	0.13	
			TOTALS
PEAK FLOW (cms)=	0.13	0.12	0.257 (iii)
TIME TO PEAK (hrs)=	12.17	12.17	12.17
RUNOFF VOLUME (mm)=	87.41	49.59	62.82
TOTAL RAINFALL (mm)=	88.91	88.91	88.91
RUNOFF COEFFICIENT =	0.98	0.56	0.71

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 74.0 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 (4000)				
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.
-----	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0010):	0.00	0.000	13.83	66.25
+ ID2= 2 (0202):	1.26	0.257	12.17	62.82
=====				
ID = 3 (4000):	1.26	0.257	12.17	62.82

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB				
STANDHYD (0204)	Area	(ha)=	0.30	
ID= 1 DT= 5.0 min	Total Imp (%)=	60.00	Dir. Conn. (%)=	50.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.18	0.12
Dep. Storage	(mm)=	1.50	5.00
Average Slope	(%)=	5.00	5.00
Length	(m)=	44.72	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
hrs	mm/hr		hrs	mm/hr		hrs	mm/hr
0.083	0.00		6.167	1.42		12.250	12.82
						18.33	1.60

0.167	0.00		6.250	1.60		12.333	12.80		18.42	1.60
0.250	0.98		6.333	1.60		12.417	12.80		18.50	1.60
0.333	0.98		6.417	1.60		12.500	12.80		18.58	1.60
0.417	0.98		6.500	1.60		12.583	12.80		18.67	1.60
0.500	0.98		6.583	1.60		12.667	12.80		18.75	1.60
0.583	0.98		6.667	1.60		12.750	6.58		18.83	1.60
0.667	0.98		6.750	1.60		12.833	6.58		18.92	1.60
0.750	0.98		6.833	1.60		12.917	6.58		19.00	1.60
0.833	0.98		6.917	1.60		13.000	6.58		19.08	1.60
0.917	0.98		7.000	1.60		13.083	6.58		19.17	1.60
1.000	0.98		7.083	1.60		13.167	6.58		19.25	1.60
1.083	0.98		7.167	1.60		13.250	4.80		19.33	1.60
1.167	0.98		7.250	1.96		13.333	4.80		19.42	1.60
1.250	0.98		7.333	1.96		13.417	4.80		19.50	1.60
1.333	0.98		7.417	1.96		13.500	4.80		19.58	1.60
1.417	0.98		7.500	1.96		13.583	4.80		19.67	1.60
1.500	0.98		7.583	1.96		13.667	4.80		19.75	1.60
1.583	0.98		7.667	1.96		13.750	3.73		19.83	1.60
1.667	0.98		7.750	1.96		13.833	3.73		19.92	1.60
1.750	0.98		7.833	1.96		13.917	3.73		20.00	1.60
1.833	0.98		7.917	1.96		14.000	3.73		20.08	1.60
1.917	0.98		8.000	1.96		14.083	3.73		20.17	1.60
2.000	0.98		8.083	1.96		14.167	3.73		20.25	1.07
2.083	0.98		8.167	1.96		14.250	2.67		20.33	1.07
2.167	0.98		8.250	2.31		14.333	2.67		20.42	1.07
2.250	1.16		8.333	2.31		14.417	2.67		20.50	1.07
2.333	1.16		8.417	2.31		14.500	2.67		20.58	1.07
2.417	1.16		8.500	2.31		14.583	2.67		20.67	1.07
2.500	1.16		8.583	2.31		14.667	2.67		20.75	1.07
2.583	1.16		8.667	2.31		14.750	2.67		20.83	1.07
2.667	1.16		8.750	2.49		14.833	2.67		20.92	1.07
2.750	1.16		8.833	2.49		14.917	2.67		21.00	1.07
2.833	1.16		8.917	2.49		15.000	2.67		21.08	1.07
2.917	1.16		9.000	2.49		15.083	2.67		21.17	1.07
3.000	1.16		9.083	2.49		15.167	2.67		21.25	1.07
3.083	1.16		9.167	2.49		15.250	2.67		21.33	1.07
3.167	1.16		9.250	2.85		15.333	2.67		21.42	1.07
3.250	1.16		9.333	2.85		15.417	2.67		21.50	1.07
3.333	1.16		9.417	2.85		15.500	2.67		21.58	1.07
3.417	1.16		9.500	2.85		15.583	2.67		21.67	1.07
3.500	1.16		9.583	2.85		15.667	2.67		21.75	1.07
3.583	1.16		9.667	2.85		15.750	2.67		21.83	1.07
3.667	1.16		9.750	3.20		15.833	2.67		21.92	1.07
3.750	1.16		9.833	3.20		15.917	2.67		22.00	1.07
3.833	1.16		9.917	3.20		16.000	2.67		22.08	1.07
3.917	1.16		10.000	3.20		16.083	2.67		22.17	1.07
4.000	1.16		10.083	3.20		16.167	2.67		22.25	1.07
4.083	1.16		10.167	3.20		16.250	1.60		22.33	1.07
4.167	1.16		10.250	4.09		16.333	1.60		22.42	1.07
4.250	1.42		10.333	4.09		16.417	1.60		22.50	1.07
4.333	1.42		10.417	4.09		16.500	1.60		22.58	1.07
4.417	1.42		10.500	4.09		16.583	1.60		22.67	1.07
4.500	1.42		10.583	4.09		16.667	1.60		22.75	1.07

4.583	1.42	10.667	4.09	16.750	1.60	22.83	1.07
4.667	1.42	10.750	5.51	16.833	1.60	22.92	1.07
4.750	1.42	10.833	5.51	16.917	1.60	23.00	1.07
4.833	1.42	10.917	5.51	17.000	1.60	23.08	1.07
4.917	1.42	11.000	5.51	17.083	1.60	23.17	1.07
5.000	1.42	11.083	5.51	17.167	1.60	23.25	1.07
5.083	1.42	11.167	5.51	17.250	1.60	23.33	1.07
5.167	1.42	11.250	8.54	17.333	1.60	23.42	1.07
5.250	1.42	11.333	8.54	17.417	1.60	23.50	1.07
5.333	1.42	11.417	8.54	17.500	1.60	23.58	1.07
5.417	1.42	11.500	8.54	17.583	1.60	23.67	1.07
5.500	1.42	11.583	8.54	17.667	1.60	23.75	1.07
5.583	1.42	11.667	8.54	17.750	1.60	23.83	1.07
5.667	1.42	11.750	26.32	17.833	1.60	23.92	1.07
5.750	1.42	11.833	26.32	17.917	1.60	24.00	1.07
5.833	1.42	11.917	67.57	18.000	1.60	24.08	1.07
5.917	1.42	12.000	67.57	18.083	1.60	24.17	1.07
6.000	1.42	12.083	108.82	18.167	1.60		
6.083	1.42	12.167	108.83	18.250	1.60		

Max.Eff.Inten. (mm/hr)=	108.83	87.37	
over (min)	5.00	10.00	
Storage Coeff. (min)=	0.94 (ii)	5.68 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.34	0.15	
			TOTALS
PEAK FLOW (cms)=	0.05	0.02	0.069 (iii)
TIME TO PEAK (hrs)=	12.17	12.17	12.17
RUNOFF VOLUME (mm)=	87.41	47.23	67.31
TOTAL RAINFALL (mm)=	88.91	88.91	88.91
RUNOFF COEFFICIENT =	0.98	0.53	0.76

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 75.0 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(2001)	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		0.0826 0.0013
	0.0100	0.0000		0.0904 0.0015
	0.0190	0.0002		0.0975 0.0017
	0.0380	0.0004		0.1042 0.0017
	0.0528	0.0006		0.1335 0.0017
	0.0643	0.0009		0.1574 0.0017
	0.0740	0.0011		0.5345 0.0018

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
INFLOW : ID= 2 (0204)	0.300	0.069	12.17	67.31
OUTFLOW: ID= 1 (2001)	0.300	0.064	12.17	67.32

PEAK FLOW REDUCTION [Qout/Qin] (%)= 92.36
TIME SHIFT OF PEAK FLOW (min)= 0.00
MAXIMUM STORAGE USED (ha.m.)= 0.0009

| ADD HYD (5000) |
| 1 + 2 = 3 |

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0010):	12.29	0.117	13.83	66.25
+ ID2= 2 (2001):	0.30	0.064	12.17	67.32
=====				
ID = 3 (5000):	12.59	0.145	12.25	66.27

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| CALIB |
| STANDHYD (0203) |
| ID= 1 DT= 5.0 min |

Area (ha)= 0.29
Total Imp(%)= 7.00 Dir. Conn.(%)= 7.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.02	0.27
Dep. Storage (mm)=	1.50	5.00
Average Slope (%)=	2.00	2.00
Length (m)=	43.97	15.00
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	0.00	6.167	1.42	12.250	12.82	18.33	1.60
0.167	0.00	6.250	1.60	12.333	12.80	18.42	1.60
0.250	0.98	6.333	1.60	12.417	12.80	18.50	1.60
0.333	0.98	6.417	1.60	12.500	12.80	18.58	1.60
0.417	0.98	6.500	1.60	12.583	12.80	18.67	1.60
0.500	0.98	6.583	1.60	12.667	12.80	18.75	1.60
0.583	0.98	6.667	1.60	12.750	6.58	18.83	1.60
0.667	0.98	6.750	1.60	12.833	6.58	18.92	1.60
0.750	0.98	6.833	1.60	12.917	6.58	19.00	1.60
0.833	0.98	6.917	1.60	13.000	6.58	19.08	1.60
0.917	0.98	7.000	1.60	13.083	6.58	19.17	1.60
1.000	0.98	7.083	1.60	13.167	6.58	19.25	1.60

1.083	0.98		7.167	1.60		13.250	4.80		19.33	1.60
1.167	0.98		7.250	1.96		13.333	4.80		19.42	1.60
1.250	0.98		7.333	1.96		13.417	4.80		19.50	1.60
1.333	0.98		7.417	1.96		13.500	4.80		19.58	1.60
1.417	0.98		7.500	1.96		13.583	4.80		19.67	1.60
1.500	0.98		7.583	1.96		13.667	4.80		19.75	1.60
1.583	0.98		7.667	1.96		13.750	3.73		19.83	1.60
1.667	0.98		7.750	1.96		13.833	3.73		19.92	1.60
1.750	0.98		7.833	1.96		13.917	3.73		20.00	1.60
1.833	0.98		7.917	1.96		14.000	3.73		20.08	1.60
1.917	0.98		8.000	1.96		14.083	3.73		20.17	1.60
2.000	0.98		8.083	1.96		14.167	3.73		20.25	1.07
2.083	0.98		8.167	1.96		14.250	2.67		20.33	1.07
2.167	0.98		8.250	2.31		14.333	2.67		20.42	1.07
2.250	1.16		8.333	2.31		14.417	2.67		20.50	1.07
2.333	1.16		8.417	2.31		14.500	2.67		20.58	1.07
2.417	1.16		8.500	2.31		14.583	2.67		20.67	1.07
2.500	1.16		8.583	2.31		14.667	2.67		20.75	1.07
2.583	1.16		8.667	2.31		14.750	2.67		20.83	1.07
2.667	1.16		8.750	2.49		14.833	2.67		20.92	1.07
2.750	1.16		8.833	2.49		14.917	2.67		21.00	1.07
2.833	1.16		8.917	2.49		15.000	2.67		21.08	1.07
2.917	1.16		9.000	2.49		15.083	2.67		21.17	1.07
3.000	1.16		9.083	2.49		15.167	2.67		21.25	1.07
3.083	1.16		9.167	2.49		15.250	2.67		21.33	1.07
3.167	1.16		9.250	2.85		15.333	2.67		21.42	1.07
3.250	1.16		9.333	2.85		15.417	2.67		21.50	1.07
3.333	1.16		9.417	2.85		15.500	2.67		21.58	1.07
3.417	1.16		9.500	2.85		15.583	2.67		21.67	1.07
3.500	1.16		9.583	2.85		15.667	2.67		21.75	1.07
3.583	1.16		9.667	2.85		15.750	2.67		21.83	1.07
3.667	1.16		9.750	3.20		15.833	2.67		21.92	1.07
3.750	1.16		9.833	3.20		15.917	2.67		22.00	1.07
3.833	1.16		9.917	3.20		16.000	2.67		22.08	1.07
3.917	1.16		10.000	3.20		16.083	2.67		22.17	1.07
4.000	1.16		10.083	3.20		16.167	2.67		22.25	1.07
4.083	1.16		10.167	3.20		16.250	1.60		22.33	1.07
4.167	1.16		10.250	4.09		16.333	1.60		22.42	1.07
4.250	1.42		10.333	4.09		16.417	1.60		22.50	1.07
4.333	1.42		10.417	4.09		16.500	1.60		22.58	1.07
4.417	1.42		10.500	4.09		16.583	1.60		22.67	1.07
4.500	1.42		10.583	4.09		16.667	1.60		22.75	1.07
4.583	1.42		10.667	4.09		16.750	1.60		22.83	1.07
4.667	1.42		10.750	5.51		16.833	1.60		22.92	1.07
4.750	1.42		10.833	5.51		16.917	1.60		23.00	1.07
4.833	1.42		10.917	5.51		17.000	1.60		23.08	1.07
4.917	1.42		11.000	5.51		17.083	1.60		23.17	1.07
5.000	1.42		11.083	5.51		17.167	1.60		23.25	1.07
5.083	1.42		11.167	5.51		17.250	1.60		23.33	1.07
5.167	1.42		11.250	8.54		17.333	1.60		23.42	1.07
5.250	1.42		11.333	8.54		17.417	1.60		23.50	1.07
5.333	1.42		11.417	8.54		17.500	1.60		23.58	1.07
5.417	1.42		11.500	8.54		17.583	1.60		23.67	1.07

5.500	1.42	11.583	8.54	17.667	1.60	23.75	1.07
5.583	1.42	11.667	8.54	17.750	1.60	23.83	1.07
5.667	1.42	11.750	26.32	17.833	1.60	23.92	1.07
5.750	1.42	11.833	26.32	17.917	1.60	24.00	1.07
5.833	1.42	11.917	67.57	18.000	1.60	24.08	1.07
5.917	1.42	12.000	67.57	18.083	1.60	24.17	1.07
6.000	1.42	12.083	108.82	18.167	1.60		
6.083	1.42	12.167	108.83	18.250	1.60		

Max.Eff.Inten. (mm/hr)=	108.83	60.42
over (min)	5.00	10.00
Storage Coeff. (min)=	1.23 (ii)	6.02 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.33	0.15

TOTALS

PEAK FLOW (cms)=	0.01	0.04	0.042 (iii)
TIME TO PEAK (hrs)=	12.17	12.17	12.17
RUNOFF VOLUME (mm)=	87.41	40.66	43.92
TOTAL RAINFALL (mm)=	88.91	88.91	88.91
RUNOFF COEFFICIENT =	0.98	0.46	0.49

***** 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* = 74.0 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 (0203):	0.29	0.042	12.17	43.92
+ ID2= 2 (4000):	1.26	0.257	12.17	62.82
=====				
ID = 3 (1000):	1.55	0.300	12.17	59.29

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):	1.55	0.300	12.17	59.29
+ ID2= 2 (5000):	12.59	0.145	12.25	66.27
=====				
ID = 1 (1000):	14.14	0.444	12.17	65.51

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

=====

=====

```
V   V   I   SSSSS   U   U   A   L           (v 6.2.2015)
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
```

Developed and Distributed by Smart City Water Inc

Copyright 2007 - 2022 Smart City Water Inc

All rights reserved.

***** 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\jangsoo.lee\AppData\Local\Civica\VH5\191a91e0-1a14-44fd-bc00-4941023c7dee\2e8e62ab-7e5f-4efd-9ba6-73140069ce32\

Summary filename:

C:\Users\jangsoo.lee\AppData\Local\Civica\VH5\191a91e0-1a14-44fd-bc00-4941023c7dee\2e8e62ab-7e5f-4efd-9ba6-73140069ce32\

DATE: 09/25/2024

TIME: 11:27:09

USER:

COMMENTS: _____

** SIMULATION : 10yr 24hr 10min SCS Type II **

READ STORM	Filename: C:\Users\jangsoo.lee\AppData
	ata\Local\Temp\
	f94caa1e-fd3a-473e-9aa7-8c465a92b796\4d30c99e
Ptotal=103.09 mm	Comments: 10yr 24hr 10min SCS Type II

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.00	0.00	6.17	1.86	12.33	14.84	18.50	1.86
0.17	1.13	6.33	1.86	12.50	14.84	18.67	1.86
0.33	1.13	6.50	1.86	12.67	7.63	18.83	1.86
0.50	1.13	6.67	1.86	12.83	7.63	19.00	1.86
0.67	1.13	6.83	1.86	13.00	7.63	19.17	1.86
0.83	1.13	7.00	1.86	13.17	5.57	19.33	1.86
1.00	1.13	7.17	2.27	13.33	5.57	19.50	1.86
1.17	1.13	7.33	2.27	13.50	5.57	19.67	1.86
1.33	1.13	7.50	2.27	13.67	4.33	19.83	1.86
1.50	1.13	7.67	2.27	13.83	4.33	20.00	1.86
1.67	1.13	7.83	2.27	14.00	4.33	20.17	1.24
1.83	1.13	8.00	2.27	14.17	3.09	20.33	1.24
2.00	1.13	8.17	2.68	14.33	3.09	20.50	1.24
2.17	1.34	8.33	2.68	14.50	3.09	20.67	1.24
2.33	1.34	8.50	2.68	14.67	3.09	20.83	1.24
2.50	1.34	8.67	2.89	14.83	3.09	21.00	1.24
2.67	1.34	8.83	2.89	15.00	3.09	21.17	1.24
2.83	1.34	9.00	2.89	15.17	3.09	21.33	1.24
3.00	1.34	9.17	3.30	15.33	3.09	21.50	1.24
3.17	1.34	9.33	3.30	15.50	3.09	21.67	1.24
3.33	1.34	9.50	3.30	15.67	3.09	21.83	1.24
3.50	1.34	9.67	3.71	15.83	3.09	22.00	1.24
3.67	1.34	9.83	3.71	16.00	3.09	22.17	1.24
3.83	1.34	10.00	3.71	16.17	1.86	22.33	1.24
4.00	1.34	10.17	4.74	16.33	1.86	22.50	1.24
4.17	1.65	10.33	4.74	16.50	1.86	22.67	1.24
4.33	1.65	10.50	4.74	16.67	1.86	22.83	1.24
4.50	1.65	10.67	6.39	16.83	1.86	23.00	1.24
4.67	1.65	10.83	6.39	17.00	1.86	23.17	1.24
4.83	1.65	11.00	6.39	17.17	1.86	23.33	1.24
5.00	1.65	11.17	9.90	17.33	1.86	23.50	1.24
5.17	1.65	11.33	9.90	17.50	1.86	23.67	1.24
5.33	1.65	11.50	9.90	17.67	1.86	23.83	1.24
5.50	1.65	11.67	30.51	17.83	1.86	24.00	1.24
5.67	1.65	11.83	78.35	18.00	1.86		
5.83	1.65	12.00	126.18	18.17	1.86		
6.00	1.65	12.17	14.84	18.33	1.86		

| CALIB |
| STANDHYD (0200) |
ID= 1 DT= 5.0 min

Area (ha)= 10.86
Total Imp(%)= 60.00 Dir. Conn.(%)= 50.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	6.52	4.34
Dep. Storage	(mm)=	1.50	5.00
Average Slope	(%)=	2.00	2.00
Length	(m)=	269.07	30.00
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	0.00	6.167	1.65	12.250	14.86	18.33	1.86
0.167	0.00	6.250	1.86	12.333	14.84	18.42	1.86
0.250	1.13	6.333	1.86	12.417	14.84	18.50	1.86
0.333	1.13	6.417	1.86	12.500	14.84	18.58	1.86
0.417	1.13	6.500	1.86	12.583	14.84	18.67	1.86
0.500	1.13	6.583	1.86	12.667	14.84	18.75	1.86
0.583	1.13	6.667	1.86	12.750	7.63	18.83	1.86
0.667	1.13	6.750	1.86	12.833	7.63	18.92	1.86
0.750	1.13	6.833	1.86	12.917	7.63	19.00	1.86
0.833	1.13	6.917	1.86	13.000	7.63	19.08	1.86
0.917	1.13	7.000	1.86	13.083	7.63	19.17	1.86
1.000	1.13	7.083	1.86	13.167	7.63	19.25	1.86
1.083	1.13	7.167	1.86	13.250	5.57	19.33	1.86
1.167	1.13	7.250	2.27	13.333	5.57	19.42	1.86
1.250	1.13	7.333	2.27	13.417	5.57	19.50	1.86
1.333	1.13	7.417	2.27	13.500	5.57	19.58	1.86
1.417	1.13	7.500	2.27	13.583	5.57	19.67	1.86
1.500	1.13	7.583	2.27	13.667	5.57	19.75	1.86
1.583	1.13	7.667	2.27	13.750	4.33	19.83	1.86
1.667	1.13	7.750	2.27	13.833	4.33	19.92	1.86
1.750	1.13	7.833	2.27	13.917	4.33	20.00	1.86
1.833	1.13	7.917	2.27	14.000	4.33	20.08	1.86
1.917	1.13	8.000	2.27	14.083	4.33	20.17	1.86
2.000	1.13	8.083	2.27	14.167	4.33	20.25	1.24
2.083	1.13	8.167	2.27	14.250	3.09	20.33	1.24
2.167	1.13	8.250	2.68	14.333	3.09	20.42	1.24
2.250	1.34	8.333	2.68	14.417	3.09	20.50	1.24
2.333	1.34	8.417	2.68	14.500	3.09	20.58	1.24
2.417	1.34	8.500	2.68	14.583	3.09	20.67	1.24
2.500	1.34	8.583	2.68	14.667	3.09	20.75	1.24
2.583	1.34	8.667	2.68	14.750	3.09	20.83	1.24
2.667	1.34	8.750	2.89	14.833	3.09	20.92	1.24
2.750	1.34	8.833	2.89	14.917	3.09	21.00	1.24
2.833	1.34	8.917	2.89	15.000	3.09	21.08	1.24
2.917	1.34	9.000	2.89	15.083	3.09	21.17	1.24
3.000	1.34	9.083	2.89	15.167	3.09	21.25	1.24
3.083	1.34	9.167	2.89	15.250	3.09	21.33	1.24
3.167	1.34	9.250	3.30	15.333	3.09	21.42	1.24
3.250	1.34	9.333	3.30	15.417	3.09	21.50	1.24
3.333	1.34	9.417	3.30	15.500	3.09	21.58	1.24
3.417	1.34	9.500	3.30	15.583	3.09	21.67	1.24
3.500	1.34	9.583	3.30	15.667	3.09	21.75	1.24
3.583	1.34	9.667	3.30	15.750	3.09	21.83	1.24
3.667	1.34	9.750	3.71	15.833	3.09	21.92	1.24
3.750	1.34	9.833	3.71	15.917	3.09	22.00	1.24
3.833	1.34	9.917	3.71	16.000	3.09	22.08	1.24

3.917	1.34	10.000	3.71	16.083	3.09	22.17	1.24
4.000	1.34	10.083	3.71	16.167	3.09	22.25	1.24
4.083	1.34	10.167	3.71	16.250	1.86	22.33	1.24
4.167	1.34	10.250	4.74	16.333	1.86	22.42	1.24
4.250	1.65	10.333	4.74	16.417	1.86	22.50	1.24
4.333	1.65	10.417	4.74	16.500	1.86	22.58	1.24
4.417	1.65	10.500	4.74	16.583	1.86	22.67	1.24
4.500	1.65	10.583	4.74	16.667	1.86	22.75	1.24
4.583	1.65	10.667	4.74	16.750	1.86	22.83	1.24
4.667	1.65	10.750	6.39	16.833	1.86	22.92	1.24
4.750	1.65	10.833	6.39	16.917	1.86	23.00	1.24
4.833	1.65	10.917	6.39	17.000	1.86	23.08	1.24
4.917	1.65	11.000	6.39	17.083	1.86	23.17	1.24
5.000	1.65	11.083	6.39	17.167	1.86	23.25	1.24
5.083	1.65	11.167	6.39	17.250	1.86	23.33	1.24
5.167	1.65	11.250	9.90	17.333	1.86	23.42	1.24
5.250	1.65	11.333	9.90	17.417	1.86	23.50	1.24
5.333	1.65	11.417	9.90	17.500	1.86	23.58	1.24
5.417	1.65	11.500	9.90	17.583	1.86	23.67	1.24
5.500	1.65	11.583	9.90	17.667	1.86	23.75	1.24
5.583	1.65	11.667	9.90	17.750	1.86	23.83	1.24
5.667	1.65	11.750	30.51	17.833	1.86	23.92	1.24
5.750	1.65	11.833	30.51	17.917	1.86	24.00	1.24
5.833	1.65	11.917	78.34	18.000	1.86	24.08	1.24
5.917	1.65	12.000	78.35	18.083	1.86	24.17	1.24
6.000	1.65	12.083	126.18	18.167	1.86		
6.083	1.65	12.167	126.18	18.250	1.86		

Max.Eff.Inten. (mm/hr)=	126.18	106.09	
over (min)	5.00	10.00	
Storage Coeff. (min)=	3.42 (ii)	8.37 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.26	0.12	
			TOTALS
PEAK FLOW (cms)=	1.86	0.93	2.793 (iii)
TIME TO PEAK (hrs)=	12.17	12.17	12.17
RUNOFF VOLUME (mm)=	101.59	57.59	79.59
TOTAL RAINFALL (mm)=	103.09	103.09	103.09
RUNOFF COEFFICIENT =	0.99	0.56	0.77

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 74.0 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)=	1.43		
ID= 1 DT= 5.0 min	Total Imp(%)=	50.00	Dir. Conn.(%)=	50.00	

```

-----
                IMPERVIOUS      PERVIOUS (i)
Surface Area    (ha)=          0.71      0.71
Dep. Storage    (mm)=          1.50      5.00
Average Slope    (%)=          2.00      2.00
Length          (m)=          97.64     30.00
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	0.00	6.167	1.65	12.250	14.86	18.33	1.86
0.167	0.00	6.250	1.86	12.333	14.84	18.42	1.86
0.250	1.13	6.333	1.86	12.417	14.84	18.50	1.86
0.333	1.13	6.417	1.86	12.500	14.84	18.58	1.86
0.417	1.13	6.500	1.86	12.583	14.84	18.67	1.86
0.500	1.13	6.583	1.86	12.667	14.84	18.75	1.86
0.583	1.13	6.667	1.86	12.750	7.63	18.83	1.86
0.667	1.13	6.750	1.86	12.833	7.63	18.92	1.86
0.750	1.13	6.833	1.86	12.917	7.63	19.00	1.86
0.833	1.13	6.917	1.86	13.000	7.63	19.08	1.86
0.917	1.13	7.000	1.86	13.083	7.63	19.17	1.86
1.000	1.13	7.083	1.86	13.167	7.63	19.25	1.86
1.083	1.13	7.167	1.86	13.250	5.57	19.33	1.86
1.167	1.13	7.250	2.27	13.333	5.57	19.42	1.86
1.250	1.13	7.333	2.27	13.417	5.57	19.50	1.86
1.333	1.13	7.417	2.27	13.500	5.57	19.58	1.86
1.417	1.13	7.500	2.27	13.583	5.57	19.67	1.86
1.500	1.13	7.583	2.27	13.667	5.57	19.75	1.86
1.583	1.13	7.667	2.27	13.750	4.33	19.83	1.86
1.667	1.13	7.750	2.27	13.833	4.33	19.92	1.86
1.750	1.13	7.833	2.27	13.917	4.33	20.00	1.86
1.833	1.13	7.917	2.27	14.000	4.33	20.08	1.86
1.917	1.13	8.000	2.27	14.083	4.33	20.17	1.86
2.000	1.13	8.083	2.27	14.167	4.33	20.25	1.24
2.083	1.13	8.167	2.27	14.250	3.09	20.33	1.24
2.167	1.13	8.250	2.68	14.333	3.09	20.42	1.24
2.250	1.34	8.333	2.68	14.417	3.09	20.50	1.24
2.333	1.34	8.417	2.68	14.500	3.09	20.58	1.24
2.417	1.34	8.500	2.68	14.583	3.09	20.67	1.24
2.500	1.34	8.583	2.68	14.667	3.09	20.75	1.24
2.583	1.34	8.667	2.68	14.750	3.09	20.83	1.24
2.667	1.34	8.750	2.89	14.833	3.09	20.92	1.24
2.750	1.34	8.833	2.89	14.917	3.09	21.00	1.24
2.833	1.34	8.917	2.89	15.000	3.09	21.08	1.24
2.917	1.34	9.000	2.89	15.083	3.09	21.17	1.24
3.000	1.34	9.083	2.89	15.167	3.09	21.25	1.24
3.083	1.34	9.167	2.89	15.250	3.09	21.33	1.24
3.167	1.34	9.250	3.30	15.333	3.09	21.42	1.24
3.250	1.34	9.333	3.30	15.417	3.09	21.50	1.24

3.333	1.34		9.417	3.30		15.500	3.09		21.58	1.24
3.417	1.34		9.500	3.30		15.583	3.09		21.67	1.24
3.500	1.34		9.583	3.30		15.667	3.09		21.75	1.24
3.583	1.34		9.667	3.30		15.750	3.09		21.83	1.24
3.667	1.34		9.750	3.71		15.833	3.09		21.92	1.24
3.750	1.34		9.833	3.71		15.917	3.09		22.00	1.24
3.833	1.34		9.917	3.71		16.000	3.09		22.08	1.24
3.917	1.34		10.000	3.71		16.083	3.09		22.17	1.24
4.000	1.34		10.083	3.71		16.167	3.09		22.25	1.24
4.083	1.34		10.167	3.71		16.250	1.86		22.33	1.24
4.167	1.34		10.250	4.74		16.333	1.86		22.42	1.24
4.250	1.65		10.333	4.74		16.417	1.86		22.50	1.24
4.333	1.65		10.417	4.74		16.500	1.86		22.58	1.24
4.417	1.65		10.500	4.74		16.583	1.86		22.67	1.24
4.500	1.65		10.583	4.74		16.667	1.86		22.75	1.24
4.583	1.65		10.667	4.74		16.750	1.86		22.83	1.24
4.667	1.65		10.750	6.39		16.833	1.86		22.92	1.24
4.750	1.65		10.833	6.39		16.917	1.86		23.00	1.24
4.833	1.65		10.917	6.39		17.000	1.86		23.08	1.24
4.917	1.65		11.000	6.39		17.083	1.86		23.17	1.24
5.000	1.65		11.083	6.39		17.167	1.86		23.25	1.24
5.083	1.65		11.167	6.39		17.250	1.86		23.33	1.24
5.167	1.65		11.250	9.90		17.333	1.86		23.42	1.24
5.250	1.65		11.333	9.90		17.417	1.86		23.50	1.24
5.333	1.65		11.417	9.90		17.500	1.86		23.58	1.24
5.417	1.65		11.500	9.90		17.583	1.86		23.67	1.24
5.500	1.65		11.583	9.90		17.667	1.86		23.75	1.24
5.583	1.65		11.667	9.90		17.750	1.86		23.83	1.24
5.667	1.65		11.750	30.51		17.833	1.86		23.92	1.24
5.750	1.65		11.833	30.51		17.917	1.86		24.00	1.24
5.833	1.65		11.917	78.34		18.000	1.86		24.08	1.24
5.917	1.65		12.000	78.35		18.083	1.86		24.17	1.24
6.000	1.65		12.083	126.18		18.167	1.86			
6.083	1.65		12.167	126.18		18.250	1.86			

Max.Eff.Inten. (mm/hr)=	126.18	76.12
over (min)	5.00	10.00
Storage Coeff. (min)=	1.86 (ii)	8.49 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.32	0.12

TOTALS

PEAK FLOW (cms)=	0.25	0.11	0.358 (iii)
TIME TO PEAK (hrs)=	12.17	12.17	12.17
RUNOFF VOLUME (mm)=	101.59	51.36	76.47
TOTAL RAINFALL (mm)=	103.09	103.09	103.09
RUNOFF COEFFICIENT =	0.99	0.50	0.74

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:

CN* = 74.0 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 (3000)				
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.
-----	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0200):	10.86	2.793	12.17	79.59
+ ID2= 2 (0201):	1.43	0.358	12.17	76.47
=====				
ID = 3 (3000):	12.29	3.151	12.17	79.23

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR(2000)	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		0.1180 0.5426
	0.0060	0.0590		0.1350 0.5819
	0.0100	0.1205		0.1520 0.6219
	0.0120	0.1522		0.6240 0.7039
	0.0260	0.1845		1.4970 0.7886
	0.0410	0.2510		2.6380 0.8759
	0.0690	0.3201		4.0120 0.9659
	0.0890	0.3917		5.5960 1.0585
	0.0970	0.4284		7.3740 1.1579
	0.1050	0.4658		0.0000 0.0000
	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
INFLOW : ID= 2 (3000)	12.290	3.151	12.17	79.23
OUTFLOW: ID= 1 (2000)	12.290	0.186	13.33	79.03

PEAK FLOW REDUCTION [Qout/Qin] (%)= 5.91
TIME SHIFT OF PEAK FLOW (min)= 70.00
MAXIMUM STORAGE USED (ha.m.)= 0.6279

| DIVERTHYD(0010) |

| IN= 1 # OUT= 5 |

Outflow / Inflow Relationships

Flow 1 + Flow 2 + Flow 3 + Flow 4 + Flow 5 = Total					
(cms)	(cms)	(cms)	(cms)	(cms)	(cms)
0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.09	0.00	0.00	0.00	0.09
0.00	0.12	0.00	0.00	0.00	0.12
0.05	0.13	0.00	0.00	0.00	0.19

0.41	0.14	0.00	0.00	0.00	0.55
0.77	0.14	0.00	0.00	0.00	0.92
1.17	0.15	0.00	0.00	0.00	1.32
1.51	0.15	0.00	0.00	0.00	1.67
		AREA	QPEAK	TPEAK	R.V.
		(ha)	(cms)	(hrs)	(mm)
TOTAL HYD. (ID= 1):		12.29	0.19	13.33	79.03
=====					
ID= 2	(2)	:	0.56	0.05	13.33 79.03
ID= 3	(2)	:	11.73	0.13	13.33 79.03
ID= 4	(2)	:	0.00	0.00	0.00 0.00
ID= 5	(2)	:	0.00	0.00	0.00 0.00
ID= 6	(2)	:	0.00	0.00	0.00 0.00

CALIB					
STANDHYD (0202)		Area	(ha)=	1.26	
ID= 1 DT= 5.0 min		Total Imp(%)=	55.00	Dir. Conn.(%)=	35.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.69	0.57
Dep. Storage	(mm)=	1.50	5.00
Average Slope	(%)=	2.00	2.00
Length	(m)=	91.65	30.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----							
TIME	RAIN		TIME	RAIN		TIME	RAIN
hrs	mm/hr		hrs	mm/hr		hrs	mm/hr
0.083	0.00		6.167	1.65		12.250	14.86
0.167	0.00		6.250	1.86		12.333	14.84
0.250	1.13		6.333	1.86		12.417	14.84
0.333	1.13		6.417	1.86		12.500	14.84
0.417	1.13		6.500	1.86		12.583	14.84
0.500	1.13		6.583	1.86		12.667	14.84
0.583	1.13		6.667	1.86		12.750	7.63
0.667	1.13		6.750	1.86		12.833	7.63
0.750	1.13		6.833	1.86		12.917	7.63
0.833	1.13		6.917	1.86		13.000	7.63
0.917	1.13		7.000	1.86		13.083	7.63
1.000	1.13		7.083	1.86		13.167	7.63
1.083	1.13		7.167	1.86		13.250	5.57
1.167	1.13		7.250	2.27		13.333	5.57
1.250	1.13		7.333	2.27		13.417	5.57
1.333	1.13		7.417	2.27		13.500	5.57
1.417	1.13		7.500	2.27		13.583	5.57
1.500	1.13		7.583	2.27		13.667	5.57
1.583	1.13		7.667	2.27		13.750	4.33
1.667	1.13		7.750	2.27		13.833	4.33

1.750	1.13		7.833	2.27		13.917	4.33		20.00	1.86
1.833	1.13		7.917	2.27		14.000	4.33		20.08	1.86
1.917	1.13		8.000	2.27		14.083	4.33		20.17	1.86
2.000	1.13		8.083	2.27		14.167	4.33		20.25	1.24
2.083	1.13		8.167	2.27		14.250	3.09		20.33	1.24
2.167	1.13		8.250	2.68		14.333	3.09		20.42	1.24
2.250	1.34		8.333	2.68		14.417	3.09		20.50	1.24
2.333	1.34		8.417	2.68		14.500	3.09		20.58	1.24
2.417	1.34		8.500	2.68		14.583	3.09		20.67	1.24
2.500	1.34		8.583	2.68		14.667	3.09		20.75	1.24
2.583	1.34		8.667	2.68		14.750	3.09		20.83	1.24
2.667	1.34		8.750	2.89		14.833	3.09		20.92	1.24
2.750	1.34		8.833	2.89		14.917	3.09		21.00	1.24
2.833	1.34		8.917	2.89		15.000	3.09		21.08	1.24
2.917	1.34		9.000	2.89		15.083	3.09		21.17	1.24
3.000	1.34		9.083	2.89		15.167	3.09		21.25	1.24
3.083	1.34		9.167	2.89		15.250	3.09		21.33	1.24
3.167	1.34		9.250	3.30		15.333	3.09		21.42	1.24
3.250	1.34		9.333	3.30		15.417	3.09		21.50	1.24
3.333	1.34		9.417	3.30		15.500	3.09		21.58	1.24
3.417	1.34		9.500	3.30		15.583	3.09		21.67	1.24
3.500	1.34		9.583	3.30		15.667	3.09		21.75	1.24
3.583	1.34		9.667	3.30		15.750	3.09		21.83	1.24
3.667	1.34		9.750	3.71		15.833	3.09		21.92	1.24
3.750	1.34		9.833	3.71		15.917	3.09		22.00	1.24
3.833	1.34		9.917	3.71		16.000	3.09		22.08	1.24
3.917	1.34		10.000	3.71		16.083	3.09		22.17	1.24
4.000	1.34		10.083	3.71		16.167	3.09		22.25	1.24
4.083	1.34		10.167	3.71		16.250	1.86		22.33	1.24
4.167	1.34		10.250	4.74		16.333	1.86		22.42	1.24
4.250	1.65		10.333	4.74		16.417	1.86		22.50	1.24
4.333	1.65		10.417	4.74		16.500	1.86		22.58	1.24
4.417	1.65		10.500	4.74		16.583	1.86		22.67	1.24
4.500	1.65		10.583	4.74		16.667	1.86		22.75	1.24
4.583	1.65		10.667	4.74		16.750	1.86		22.83	1.24
4.667	1.65		10.750	6.39		16.833	1.86		22.92	1.24
4.750	1.65		10.833	6.39		16.917	1.86		23.00	1.24
4.833	1.65		10.917	6.39		17.000	1.86		23.08	1.24
4.917	1.65		11.000	6.39		17.083	1.86		23.17	1.24
5.000	1.65		11.083	6.39		17.167	1.86		23.25	1.24
5.083	1.65		11.167	6.39		17.250	1.86		23.33	1.24
5.167	1.65		11.250	9.90		17.333	1.86		23.42	1.24
5.250	1.65		11.333	9.90		17.417	1.86		23.50	1.24
5.333	1.65		11.417	9.90		17.500	1.86		23.58	1.24
5.417	1.65		11.500	9.90		17.583	1.86		23.67	1.24
5.500	1.65		11.583	9.90		17.667	1.86		23.75	1.24
5.583	1.65		11.667	9.90		17.750	1.86		23.83	1.24
5.667	1.65		11.750	30.51		17.833	1.86		23.92	1.24
5.750	1.65		11.833	30.51		17.917	1.86		24.00	1.24
5.833	1.65		11.917	78.34		18.000	1.86		24.08	1.24
5.917	1.65		12.000	78.35		18.083	1.86		24.17	1.24
6.000	1.65		12.083	126.18		18.167	1.86			
6.083	1.65		12.167	126.18		18.250	1.86			

Max.Eff.Inten. (mm/hr)=	126.18	130.27	
over (min)	5.00	10.00	
Storage Coeff. (min)=	1.79 (ii)	7.14 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.32	0.14	
			TOTALS
PEAK FLOW (cms)=	0.15	0.16	0.313 (iii)
TIME TO PEAK (hrs)=	12.17	12.17	12.17
RUNOFF VOLUME (mm)=	101.59	61.49	75.52
TOTAL RAINFALL (mm)=	103.09	103.09	103.09
RUNOFF COEFFICIENT =	0.99	0.60	0.73

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 74.0 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 (4000)				
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.
-----	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0010):	0.56	0.054	13.33	79.03
+ ID2= 2 (0202):	1.26	0.313	12.17	75.52
=====				
ID = 3 (4000):	1.82	0.313	12.17	76.60

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB				
STANDHYD (0204)	Area	(ha)=	0.30	
ID= 1 DT= 5.0 min	Total Imp (%)=	60.00	Dir. Conn. (%)=	50.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.18	0.12
Dep. Storage	(mm)=	1.50	5.00
Average Slope	(%)=	5.00	5.00
Length	(m)=	44.72	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
hrs	mm/hr		hrs	mm/hr		hrs	mm/hr
0.083	0.00		6.167	1.65		12.250	14.86
						18.33	1.86

0.167	0.00		6.250	1.86		12.333	14.84		18.42	1.86
0.250	1.13		6.333	1.86		12.417	14.84		18.50	1.86
0.333	1.13		6.417	1.86		12.500	14.84		18.58	1.86
0.417	1.13		6.500	1.86		12.583	14.84		18.67	1.86
0.500	1.13		6.583	1.86		12.667	14.84		18.75	1.86
0.583	1.13		6.667	1.86		12.750	7.63		18.83	1.86
0.667	1.13		6.750	1.86		12.833	7.63		18.92	1.86
0.750	1.13		6.833	1.86		12.917	7.63		19.00	1.86
0.833	1.13		6.917	1.86		13.000	7.63		19.08	1.86
0.917	1.13		7.000	1.86		13.083	7.63		19.17	1.86
1.000	1.13		7.083	1.86		13.167	7.63		19.25	1.86
1.083	1.13		7.167	1.86		13.250	5.57		19.33	1.86
1.167	1.13		7.250	2.27		13.333	5.57		19.42	1.86
1.250	1.13		7.333	2.27		13.417	5.57		19.50	1.86
1.333	1.13		7.417	2.27		13.500	5.57		19.58	1.86
1.417	1.13		7.500	2.27		13.583	5.57		19.67	1.86
1.500	1.13		7.583	2.27		13.667	5.57		19.75	1.86
1.583	1.13		7.667	2.27		13.750	4.33		19.83	1.86
1.667	1.13		7.750	2.27		13.833	4.33		19.92	1.86
1.750	1.13		7.833	2.27		13.917	4.33		20.00	1.86
1.833	1.13		7.917	2.27		14.000	4.33		20.08	1.86
1.917	1.13		8.000	2.27		14.083	4.33		20.17	1.86
2.000	1.13		8.083	2.27		14.167	4.33		20.25	1.24
2.083	1.13		8.167	2.27		14.250	3.09		20.33	1.24
2.167	1.13		8.250	2.68		14.333	3.09		20.42	1.24
2.250	1.34		8.333	2.68		14.417	3.09		20.50	1.24
2.333	1.34		8.417	2.68		14.500	3.09		20.58	1.24
2.417	1.34		8.500	2.68		14.583	3.09		20.67	1.24
2.500	1.34		8.583	2.68		14.667	3.09		20.75	1.24
2.583	1.34		8.667	2.68		14.750	3.09		20.83	1.24
2.667	1.34		8.750	2.89		14.833	3.09		20.92	1.24
2.750	1.34		8.833	2.89		14.917	3.09		21.00	1.24
2.833	1.34		8.917	2.89		15.000	3.09		21.08	1.24
2.917	1.34		9.000	2.89		15.083	3.09		21.17	1.24
3.000	1.34		9.083	2.89		15.167	3.09		21.25	1.24
3.083	1.34		9.167	2.89		15.250	3.09		21.33	1.24
3.167	1.34		9.250	3.30		15.333	3.09		21.42	1.24
3.250	1.34		9.333	3.30		15.417	3.09		21.50	1.24
3.333	1.34		9.417	3.30		15.500	3.09		21.58	1.24
3.417	1.34		9.500	3.30		15.583	3.09		21.67	1.24
3.500	1.34		9.583	3.30		15.667	3.09		21.75	1.24
3.583	1.34		9.667	3.30		15.750	3.09		21.83	1.24
3.667	1.34		9.750	3.71		15.833	3.09		21.92	1.24
3.750	1.34		9.833	3.71		15.917	3.09		22.00	1.24
3.833	1.34		9.917	3.71		16.000	3.09		22.08	1.24
3.917	1.34		10.000	3.71		16.083	3.09		22.17	1.24
4.000	1.34		10.083	3.71		16.167	3.09		22.25	1.24
4.083	1.34		10.167	3.71		16.250	1.86		22.33	1.24
4.167	1.34		10.250	4.74		16.333	1.86		22.42	1.24
4.250	1.65		10.333	4.74		16.417	1.86		22.50	1.24
4.333	1.65		10.417	4.74		16.500	1.86		22.58	1.24
4.417	1.65		10.500	4.74		16.583	1.86		22.67	1.24
4.500	1.65		10.583	4.74		16.667	1.86		22.75	1.24

4.583	1.65	10.667	4.74	16.750	1.86	22.83	1.24
4.667	1.65	10.750	6.39	16.833	1.86	22.92	1.24
4.750	1.65	10.833	6.39	16.917	1.86	23.00	1.24
4.833	1.65	10.917	6.39	17.000	1.86	23.08	1.24
4.917	1.65	11.000	6.39	17.083	1.86	23.17	1.24
5.000	1.65	11.083	6.39	17.167	1.86	23.25	1.24
5.083	1.65	11.167	6.39	17.250	1.86	23.33	1.24
5.167	1.65	11.250	9.90	17.333	1.86	23.42	1.24
5.250	1.65	11.333	9.90	17.417	1.86	23.50	1.24
5.333	1.65	11.417	9.90	17.500	1.86	23.58	1.24
5.417	1.65	11.500	9.90	17.583	1.86	23.67	1.24
5.500	1.65	11.583	9.90	17.667	1.86	23.75	1.24
5.583	1.65	11.667	9.90	17.750	1.86	23.83	1.24
5.667	1.65	11.750	30.51	17.833	1.86	23.92	1.24
5.750	1.65	11.833	30.51	17.917	1.86	24.00	1.24
5.833	1.65	11.917	78.34	18.000	1.86	24.08	1.24
5.917	1.65	12.000	78.35	18.083	1.86	24.17	1.24
6.000	1.65	12.083	126.18	18.167	1.86		
6.083	1.65	12.167	126.18	18.250	1.86		

Max.Eff.Inten. (mm/hr)=	126.18	108.39	
over (min)	5.00	10.00	
Storage Coeff. (min)=	0.89 (ii)	5.35 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.34	0.16	
			TOTALS
PEAK FLOW (cms)=	0.05	0.03	0.083 (iii)
TIME TO PEAK (hrs)=	12.17	12.17	12.17
RUNOFF VOLUME (mm)=	101.59	58.86	80.22
TOTAL RAINFALL (mm)=	103.09	103.09	103.09
RUNOFF COEFFICIENT =	0.99	0.57	0.78

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 75.0 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(2001)	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		0.0826 0.0013
	0.0100	0.0000		0.0904 0.0015
	0.0190	0.0002		0.0975 0.0017
	0.0380	0.0004		0.1042 0.0017
	0.0528	0.0006		0.1335 0.0017
	0.0643	0.0009		0.1574 0.0017
	0.0740	0.0011		0.5345 0.0018

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
INFLOW : ID= 2 (0204)	0.300	0.083	12.17	80.22
OUTFLOW: ID= 1 (2001)	0.300	0.075	12.17	80.32

PEAK FLOW REDUCTION [Qout/Qin] (%)= 90.26
TIME SHIFT OF PEAK FLOW (min)= 0.00
MAXIMUM STORAGE USED (ha.m.)= 0.0012

| ADD HYD (5000) |
1 + 2 = 3

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0010):	11.73	0.132	13.33	79.03
+ ID2= 2 (2001):	0.30	0.075	12.17	80.32
=====				
ID = 3 (5000):	12.03	0.174	12.17	79.06

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| CALIB |
| STANDHYD (0203) |
ID= 1 DT= 5.0 min

Area (ha)= 0.29
Total Imp(%)= 7.00 Dir. Conn.(%)= 7.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.02	0.27
Dep. Storage (mm)=	1.50	5.00
Average Slope (%)=	2.00	2.00
Length (m)=	43.97	15.00
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	0.00	6.167	1.65	12.250	14.86	18.33	1.86
0.167	0.00	6.250	1.86	12.333	14.84	18.42	1.86
0.250	1.13	6.333	1.86	12.417	14.84	18.50	1.86
0.333	1.13	6.417	1.86	12.500	14.84	18.58	1.86
0.417	1.13	6.500	1.86	12.583	14.84	18.67	1.86
0.500	1.13	6.583	1.86	12.667	14.84	18.75	1.86
0.583	1.13	6.667	1.86	12.750	7.63	18.83	1.86
0.667	1.13	6.750	1.86	12.833	7.63	18.92	1.86
0.750	1.13	6.833	1.86	12.917	7.63	19.00	1.86
0.833	1.13	6.917	1.86	13.000	7.63	19.08	1.86
0.917	1.13	7.000	1.86	13.083	7.63	19.17	1.86
1.000	1.13	7.083	1.86	13.167	7.63	19.25	1.86

1.083	1.13		7.167	1.86		13.250	5.57		19.33	1.86
1.167	1.13		7.250	2.27		13.333	5.57		19.42	1.86
1.250	1.13		7.333	2.27		13.417	5.57		19.50	1.86
1.333	1.13		7.417	2.27		13.500	5.57		19.58	1.86
1.417	1.13		7.500	2.27		13.583	5.57		19.67	1.86
1.500	1.13		7.583	2.27		13.667	5.57		19.75	1.86
1.583	1.13		7.667	2.27		13.750	4.33		19.83	1.86
1.667	1.13		7.750	2.27		13.833	4.33		19.92	1.86
1.750	1.13		7.833	2.27		13.917	4.33		20.00	1.86
1.833	1.13		7.917	2.27		14.000	4.33		20.08	1.86
1.917	1.13		8.000	2.27		14.083	4.33		20.17	1.86
2.000	1.13		8.083	2.27		14.167	4.33		20.25	1.24
2.083	1.13		8.167	2.27		14.250	3.09		20.33	1.24
2.167	1.13		8.250	2.68		14.333	3.09		20.42	1.24
2.250	1.34		8.333	2.68		14.417	3.09		20.50	1.24
2.333	1.34		8.417	2.68		14.500	3.09		20.58	1.24
2.417	1.34		8.500	2.68		14.583	3.09		20.67	1.24
2.500	1.34		8.583	2.68		14.667	3.09		20.75	1.24
2.583	1.34		8.667	2.68		14.750	3.09		20.83	1.24
2.667	1.34		8.750	2.89		14.833	3.09		20.92	1.24
2.750	1.34		8.833	2.89		14.917	3.09		21.00	1.24
2.833	1.34		8.917	2.89		15.000	3.09		21.08	1.24
2.917	1.34		9.000	2.89		15.083	3.09		21.17	1.24
3.000	1.34		9.083	2.89		15.167	3.09		21.25	1.24
3.083	1.34		9.167	2.89		15.250	3.09		21.33	1.24
3.167	1.34		9.250	3.30		15.333	3.09		21.42	1.24
3.250	1.34		9.333	3.30		15.417	3.09		21.50	1.24
3.333	1.34		9.417	3.30		15.500	3.09		21.58	1.24
3.417	1.34		9.500	3.30		15.583	3.09		21.67	1.24
3.500	1.34		9.583	3.30		15.667	3.09		21.75	1.24
3.583	1.34		9.667	3.30		15.750	3.09		21.83	1.24
3.667	1.34		9.750	3.71		15.833	3.09		21.92	1.24
3.750	1.34		9.833	3.71		15.917	3.09		22.00	1.24
3.833	1.34		9.917	3.71		16.000	3.09		22.08	1.24
3.917	1.34		10.000	3.71		16.083	3.09		22.17	1.24
4.000	1.34		10.083	3.71		16.167	3.09		22.25	1.24
4.083	1.34		10.167	3.71		16.250	1.86		22.33	1.24
4.167	1.34		10.250	4.74		16.333	1.86		22.42	1.24
4.250	1.65		10.333	4.74		16.417	1.86		22.50	1.24
4.333	1.65		10.417	4.74		16.500	1.86		22.58	1.24
4.417	1.65		10.500	4.74		16.583	1.86		22.67	1.24
4.500	1.65		10.583	4.74		16.667	1.86		22.75	1.24
4.583	1.65		10.667	4.74		16.750	1.86		22.83	1.24
4.667	1.65		10.750	6.39		16.833	1.86		22.92	1.24
4.750	1.65		10.833	6.39		16.917	1.86		23.00	1.24
4.833	1.65		10.917	6.39		17.000	1.86		23.08	1.24
4.917	1.65		11.000	6.39		17.083	1.86		23.17	1.24
5.000	1.65		11.083	6.39		17.167	1.86		23.25	1.24
5.083	1.65		11.167	6.39		17.250	1.86		23.33	1.24
5.167	1.65		11.250	9.90		17.333	1.86		23.42	1.24
5.250	1.65		11.333	9.90		17.417	1.86		23.50	1.24
5.333	1.65		11.417	9.90		17.500	1.86		23.58	1.24
5.417	1.65		11.500	9.90		17.583	1.86		23.67	1.24

5.500	1.65	11.583	9.90	17.667	1.86	23.75	1.24
5.583	1.65	11.667	9.90	17.750	1.86	23.83	1.24
5.667	1.65	11.750	30.51	17.833	1.86	23.92	1.24
5.750	1.65	11.833	30.51	17.917	1.86	24.00	1.24
5.833	1.65	11.917	78.34	18.000	1.86	24.08	1.24
5.917	1.65	12.000	78.35	18.083	1.86	24.17	1.24
6.000	1.65	12.083	126.18	18.167	1.86		
6.083	1.65	12.167	126.18	18.250	1.86		

Max.Eff.Inten. (mm/hr)= 126.18 76.12
over (min) 5.00 10.00
Storage Coeff. (min)= 1.15 (ii) 5.52 (ii)
Unit Hyd. Tpeak (min)= 5.00 10.00
Unit Hyd. peak (cms)= 0.34 0.16

TOTALS
PEAK FLOW (cms)= 0.01 0.05 0.054 (iii)
TIME TO PEAK (hrs)= 12.17 12.17 12.17
RUNOFF VOLUME (mm)= 101.59 51.36 54.86
TOTAL RAINFALL (mm)= 103.09 103.09 103.09
RUNOFF COEFFICIENT = 0.99 0.50 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* = 74.0 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 (0203):	0.29	0.054	12.17	54.86
+ ID2= 2 (4000):	1.82	0.313	12.17	76.60
=====				
ID = 3 (1000):	2.11	0.366	12.17	73.61

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):	2.11	0.366	12.17	73.61
+ ID2= 2 (5000):	12.03	0.174	12.17	79.06
=====				
ID = 1 (1000):	14.14	0.540	12.17	78.25

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

=====

=====

```
V   V   I   SSSSS   U   U   A   L           (v 6.2.2015)
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
```

Developed and Distributed by Smart City Water Inc

Copyright 2007 - 2022 Smart City Water Inc

All rights reserved.

***** 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\jangsoo.lee\AppData\Local\Civica\VH5\191a91e0-1a14-44fd-bc00-4941023c7dee\24c5719a-5620-4421-b078-30f388e8d0df\

Summary filename:

C:\Users\jangsoo.lee\AppData\Local\Civica\VH5\191a91e0-1a14-44fd-bc00-4941023c7dee\24c5719a-5620-4421-b078-30f388e8d0df\

DATE: 09/25/2024

TIME: 11:27:08

USER:

COMMENTS: _____

** SIMULATION : 25yr 24 hr 10min SCS Type II **

READ STORM	Filename: C:\Users\jangsoo.lee\AppData
	ata\Local\Temp\
	f94caa1e-fd3a-473e-9aa7-8c465a92b796\a2f42d0e
Ptotal=121.70 mm	Comments: 25yr 24hr 10min SCS Type II

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.00	0.00	6.17	2.19	12.33	17.52	18.50	2.19
0.17	1.34	6.33	2.19	12.50	17.52	18.67	2.19
0.33	1.34	6.50	2.19	12.67	9.01	18.83	2.19
0.50	1.34	6.67	2.19	12.83	9.01	19.00	2.19
0.67	1.34	6.83	2.19	13.00	9.01	19.17	2.19
0.83	1.34	7.00	2.19	13.17	6.57	19.33	2.19
1.00	1.34	7.17	2.68	13.33	6.57	19.50	2.19
1.17	1.34	7.33	2.68	13.50	6.57	19.67	2.19
1.33	1.34	7.50	2.68	13.67	5.11	19.83	2.19
1.50	1.34	7.67	2.68	13.83	5.11	20.00	2.19
1.67	1.34	7.83	2.68	14.00	5.11	20.17	1.46
1.83	1.34	8.00	2.68	14.17	3.65	20.33	1.46
2.00	1.34	8.17	3.16	14.33	3.65	20.50	1.46
2.17	1.58	8.33	3.16	14.50	3.65	20.67	1.46
2.33	1.58	8.50	3.16	14.67	3.65	20.83	1.46
2.50	1.58	8.67	3.41	14.83	3.65	21.00	1.46
2.67	1.58	8.83	3.41	15.00	3.65	21.17	1.46
2.83	1.58	9.00	3.41	15.17	3.65	21.33	1.46
3.00	1.58	9.17	3.89	15.33	3.65	21.50	1.46
3.17	1.58	9.33	3.89	15.50	3.65	21.67	1.46
3.33	1.58	9.50	3.89	15.67	3.65	21.83	1.46
3.50	1.58	9.67	4.38	15.83	3.65	22.00	1.46
3.67	1.58	9.83	4.38	16.00	3.65	22.17	1.46
3.83	1.58	10.00	4.38	16.17	2.19	22.33	1.46
4.00	1.58	10.17	5.60	16.33	2.19	22.50	1.46
4.17	1.95	10.33	5.60	16.50	2.19	22.67	1.46
4.33	1.95	10.50	5.60	16.67	2.19	22.83	1.46
4.50	1.95	10.67	7.55	16.83	2.19	23.00	1.46
4.67	1.95	10.83	7.55	17.00	2.19	23.17	1.46
4.83	1.95	11.00	7.55	17.17	2.19	23.33	1.46
5.00	1.95	11.17	11.68	17.33	2.19	23.50	1.46
5.17	1.95	11.33	11.68	17.50	2.19	23.67	1.46
5.33	1.95	11.50	11.68	17.67	2.19	23.83	1.46
5.50	1.95	11.67	36.02	17.83	2.19	24.00	1.46
5.67	1.95	11.83	92.49	18.00	2.19		
5.83	1.95	12.00	148.96	18.17	2.19		
6.00	1.95	12.17	17.52	18.33	2.19		

| CALIB |
| STANDHYD (0200) |
ID= 1 DT= 5.0 min

Area (ha)= 10.86
Total Imp(%)= 60.00 Dir. Conn.(%)= 50.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	6.52	4.34
Dep. Storage	(mm)=	1.50	5.00
Average Slope	(%)=	2.00	2.00
Length	(m)=	269.07	30.00
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	0.00	6.167	1.95	12.250	17.54	18.33	2.19
0.167	0.00	6.250	2.19	12.333	17.52	18.42	2.19
0.250	1.34	6.333	2.19	12.417	17.52	18.50	2.19
0.333	1.34	6.417	2.19	12.500	17.52	18.58	2.19
0.417	1.34	6.500	2.19	12.583	17.52	18.67	2.19
0.500	1.34	6.583	2.19	12.667	17.52	18.75	2.19
0.583	1.34	6.667	2.19	12.750	9.01	18.83	2.19
0.667	1.34	6.750	2.19	12.833	9.01	18.92	2.19
0.750	1.34	6.833	2.19	12.917	9.01	19.00	2.19
0.833	1.34	6.917	2.19	13.000	9.01	19.08	2.19
0.917	1.34	7.000	2.19	13.083	9.01	19.17	2.19
1.000	1.34	7.083	2.19	13.167	9.01	19.25	2.19
1.083	1.34	7.167	2.19	13.250	6.57	19.33	2.19
1.167	1.34	7.250	2.68	13.333	6.57	19.42	2.19
1.250	1.34	7.333	2.68	13.417	6.57	19.50	2.19
1.333	1.34	7.417	2.68	13.500	6.57	19.58	2.19
1.417	1.34	7.500	2.68	13.583	6.57	19.67	2.19
1.500	1.34	7.583	2.68	13.667	6.57	19.75	2.19
1.583	1.34	7.667	2.68	13.750	5.11	19.83	2.19
1.667	1.34	7.750	2.68	13.833	5.11	19.92	2.19
1.750	1.34	7.833	2.68	13.917	5.11	20.00	2.19
1.833	1.34	7.917	2.68	14.000	5.11	20.08	2.19
1.917	1.34	8.000	2.68	14.083	5.11	20.17	2.19
2.000	1.34	8.083	2.68	14.167	5.11	20.25	1.46
2.083	1.34	8.167	2.68	14.250	3.65	20.33	1.46
2.167	1.34	8.250	3.16	14.333	3.65	20.42	1.46
2.250	1.58	8.333	3.16	14.417	3.65	20.50	1.46
2.333	1.58	8.417	3.16	14.500	3.65	20.58	1.46
2.417	1.58	8.500	3.16	14.583	3.65	20.67	1.46
2.500	1.58	8.583	3.16	14.667	3.65	20.75	1.46
2.583	1.58	8.667	3.16	14.750	3.65	20.83	1.46
2.667	1.58	8.750	3.41	14.833	3.65	20.92	1.46
2.750	1.58	8.833	3.41	14.917	3.65	21.00	1.46
2.833	1.58	8.917	3.41	15.000	3.65	21.08	1.46
2.917	1.58	9.000	3.41	15.083	3.65	21.17	1.46
3.000	1.58	9.083	3.41	15.167	3.65	21.25	1.46
3.083	1.58	9.167	3.41	15.250	3.65	21.33	1.46
3.167	1.58	9.250	3.89	15.333	3.65	21.42	1.46
3.250	1.58	9.333	3.89	15.417	3.65	21.50	1.46
3.333	1.58	9.417	3.89	15.500	3.65	21.58	1.46
3.417	1.58	9.500	3.89	15.583	3.65	21.67	1.46
3.500	1.58	9.583	3.89	15.667	3.65	21.75	1.46
3.583	1.58	9.667	3.89	15.750	3.65	21.83	1.46
3.667	1.58	9.750	4.38	15.833	3.65	21.92	1.46
3.750	1.58	9.833	4.38	15.917	3.65	22.00	1.46
3.833	1.58	9.917	4.38	16.000	3.65	22.08	1.46

3.917	1.58	10.000	4.38	16.083	3.65	22.17	1.46
4.000	1.58	10.083	4.38	16.167	3.65	22.25	1.46
4.083	1.58	10.167	4.38	16.250	2.19	22.33	1.46
4.167	1.58	10.250	5.60	16.333	2.19	22.42	1.46
4.250	1.95	10.333	5.60	16.417	2.19	22.50	1.46
4.333	1.95	10.417	5.60	16.500	2.19	22.58	1.46
4.417	1.95	10.500	5.60	16.583	2.19	22.67	1.46
4.500	1.95	10.583	5.60	16.667	2.19	22.75	1.46
4.583	1.95	10.667	5.60	16.750	2.19	22.83	1.46
4.667	1.95	10.750	7.55	16.833	2.19	22.92	1.46
4.750	1.95	10.833	7.55	16.917	2.19	23.00	1.46
4.833	1.95	10.917	7.55	17.000	2.19	23.08	1.46
4.917	1.95	11.000	7.55	17.083	2.19	23.17	1.46
5.000	1.95	11.083	7.55	17.167	2.19	23.25	1.46
5.083	1.95	11.167	7.55	17.250	2.19	23.33	1.46
5.167	1.95	11.250	11.68	17.333	2.19	23.42	1.46
5.250	1.95	11.333	11.68	17.417	2.19	23.50	1.46
5.333	1.95	11.417	11.68	17.500	2.19	23.58	1.46
5.417	1.95	11.500	11.68	17.583	2.19	23.67	1.46
5.500	1.95	11.583	11.68	17.667	2.19	23.75	1.46
5.583	1.95	11.667	11.68	17.750	2.19	23.83	1.46
5.667	1.95	11.750	36.02	17.833	2.19	23.92	1.46
5.750	1.95	11.833	36.02	17.917	2.19	24.00	1.46
5.833	1.95	11.917	92.49	18.000	2.19	24.08	1.46
5.917	1.95	12.000	92.49	18.083	2.19	24.17	1.46
6.000	1.95	12.083	148.95	18.167	2.19		
6.083	1.95	12.167	148.96	18.250	2.19		

Max.Eff.Inten. (mm/hr)=148.96134.20

over (min)5.0010.00

Storage Coeff. (min)=3.20 (ii)7.84 (ii)

Unit Hyd. Tpeak (min)=5.0010.00

Unit Hyd. peak (cms)=0.270.13

TOTALS

PEAK FLOW (cms)=2.211.213.420 (iii)

TIME TO PEAK (hrs)=12.1712.1712.17

RUNOFF VOLUME (mm)=120.2073.2696.73

TOTAL RAINFALL (mm)=121.70121.70121.70

RUNOFF COEFFICIENT =0.990.600.79

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 74.0Ia = 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)= 1.43

| ID= 1 DT= 5.0 min | Total Imp(%)= 50.00 Dir. Conn.(%)= 50.00

```

-----
                IMPERVIOUS      PERVIOUS (i)
Surface Area    (ha)=          0.71      0.71
Dep. Storage    (mm)=          1.50      5.00
Average Slope   (%)=          2.00      2.00
Length          (m)=          97.64     30.00
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	0.00	6.167	1.95	12.250	17.54	18.33	2.19
0.167	0.00	6.250	2.19	12.333	17.52	18.42	2.19
0.250	1.34	6.333	2.19	12.417	17.52	18.50	2.19
0.333	1.34	6.417	2.19	12.500	17.52	18.58	2.19
0.417	1.34	6.500	2.19	12.583	17.52	18.67	2.19
0.500	1.34	6.583	2.19	12.667	17.52	18.75	2.19
0.583	1.34	6.667	2.19	12.750	9.01	18.83	2.19
0.667	1.34	6.750	2.19	12.833	9.01	18.92	2.19
0.750	1.34	6.833	2.19	12.917	9.01	19.00	2.19
0.833	1.34	6.917	2.19	13.000	9.01	19.08	2.19
0.917	1.34	7.000	2.19	13.083	9.01	19.17	2.19
1.000	1.34	7.083	2.19	13.167	9.01	19.25	2.19
1.083	1.34	7.167	2.19	13.250	6.57	19.33	2.19
1.167	1.34	7.250	2.68	13.333	6.57	19.42	2.19
1.250	1.34	7.333	2.68	13.417	6.57	19.50	2.19
1.333	1.34	7.417	2.68	13.500	6.57	19.58	2.19
1.417	1.34	7.500	2.68	13.583	6.57	19.67	2.19
1.500	1.34	7.583	2.68	13.667	6.57	19.75	2.19
1.583	1.34	7.667	2.68	13.750	5.11	19.83	2.19
1.667	1.34	7.750	2.68	13.833	5.11	19.92	2.19
1.750	1.34	7.833	2.68	13.917	5.11	20.00	2.19
1.833	1.34	7.917	2.68	14.000	5.11	20.08	2.19
1.917	1.34	8.000	2.68	14.083	5.11	20.17	2.19
2.000	1.34	8.083	2.68	14.167	5.11	20.25	1.46
2.083	1.34	8.167	2.68	14.250	3.65	20.33	1.46
2.167	1.34	8.250	3.16	14.333	3.65	20.42	1.46
2.250	1.58	8.333	3.16	14.417	3.65	20.50	1.46
2.333	1.58	8.417	3.16	14.500	3.65	20.58	1.46
2.417	1.58	8.500	3.16	14.583	3.65	20.67	1.46
2.500	1.58	8.583	3.16	14.667	3.65	20.75	1.46
2.583	1.58	8.667	3.16	14.750	3.65	20.83	1.46
2.667	1.58	8.750	3.41	14.833	3.65	20.92	1.46
2.750	1.58	8.833	3.41	14.917	3.65	21.00	1.46
2.833	1.58	8.917	3.41	15.000	3.65	21.08	1.46
2.917	1.58	9.000	3.41	15.083	3.65	21.17	1.46
3.000	1.58	9.083	3.41	15.167	3.65	21.25	1.46
3.083	1.58	9.167	3.41	15.250	3.65	21.33	1.46
3.167	1.58	9.250	3.89	15.333	3.65	21.42	1.46
3.250	1.58	9.333	3.89	15.417	3.65	21.50	1.46

3.333	1.58		9.417	3.89		15.500	3.65		21.58	1.46
3.417	1.58		9.500	3.89		15.583	3.65		21.67	1.46
3.500	1.58		9.583	3.89		15.667	3.65		21.75	1.46
3.583	1.58		9.667	3.89		15.750	3.65		21.83	1.46
3.667	1.58		9.750	4.38		15.833	3.65		21.92	1.46
3.750	1.58		9.833	4.38		15.917	3.65		22.00	1.46
3.833	1.58		9.917	4.38		16.000	3.65		22.08	1.46
3.917	1.58		10.000	4.38		16.083	3.65		22.17	1.46
4.000	1.58		10.083	4.38		16.167	3.65		22.25	1.46
4.083	1.58		10.167	4.38		16.250	2.19		22.33	1.46
4.167	1.58		10.250	5.60		16.333	2.19		22.42	1.46
4.250	1.95		10.333	5.60		16.417	2.19		22.50	1.46
4.333	1.95		10.417	5.60		16.500	2.19		22.58	1.46
4.417	1.95		10.500	5.60		16.583	2.19		22.67	1.46
4.500	1.95		10.583	5.60		16.667	2.19		22.75	1.46
4.583	1.95		10.667	5.60		16.750	2.19		22.83	1.46
4.667	1.95		10.750	7.55		16.833	2.19		22.92	1.46
4.750	1.95		10.833	7.55		16.917	2.19		23.00	1.46
4.833	1.95		10.917	7.55		17.000	2.19		23.08	1.46
4.917	1.95		11.000	7.55		17.083	2.19		23.17	1.46
5.000	1.95		11.083	7.55		17.167	2.19		23.25	1.46
5.083	1.95		11.167	7.55		17.250	2.19		23.33	1.46
5.167	1.95		11.250	11.68		17.333	2.19		23.42	1.46
5.250	1.95		11.333	11.68		17.417	2.19		23.50	1.46
5.333	1.95		11.417	11.68		17.500	2.19		23.58	1.46
5.417	1.95		11.500	11.68		17.583	2.19		23.67	1.46
5.500	1.95		11.583	11.68		17.667	2.19		23.75	1.46
5.583	1.95		11.667	11.68		17.750	2.19		23.83	1.46
5.667	1.95		11.750	36.02		17.833	2.19		23.92	1.46
5.750	1.95		11.833	36.02		17.917	2.19		24.00	1.46
5.833	1.95		11.917	92.49		18.000	2.19		24.08	1.46
5.917	1.95		12.000	92.49		18.083	2.19		24.17	1.46
6.000	1.95		12.083	148.95		18.167	2.19			
6.083	1.95		12.167	148.96		18.250	2.19			

Max.Eff.Inten. (mm/hr)=	148.96	97.62
over (min)	5.00	10.00
Storage Coeff. (min)=	1.74 (ii)	7.74 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.32	0.13

TOTALS

PEAK FLOW (cms)=	0.30	0.14	0.440 (iii)
TIME TO PEAK (hrs)=	12.17	12.17	12.17
RUNOFF VOLUME (mm)=	120.20	66.13	93.16
TOTAL RAINFALL (mm)=	121.70	121.70	121.70
RUNOFF COEFFICIENT =	0.99	0.54	0.77

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:

CN* = 74.0 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 (3000)				
1 + 2 = 3				

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0200):	10.86	3.420	12.17	96.73
+ ID2= 2 (0201):	1.43	0.440	12.17	93.16
=====				
ID = 3 (3000):	12.29	3.860	12.17	96.31

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR(2000)					
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		0.1180	0.5426
	0.0060	0.0590		0.1350	0.5819
	0.0100	0.1205		0.1520	0.6219
	0.0120	0.1522		0.6240	0.7039
	0.0260	0.1845		1.4970	0.7886
	0.0410	0.2510		2.6380	0.8759
	0.0690	0.3201		4.0120	0.9659
	0.0890	0.3917		5.5960	1.0585
	0.0970	0.4284		7.3740	1.1579
	0.1050	0.4658		0.0000	0.0000
	AREA	QPEAK	TPEAK	R.V.	
	(ha)	(cms)	(hrs)	(mm)	
INFLOW : ID= 2 (3000)	12.290	3.860	12.17	96.31	
OUTFLOW: ID= 1 (2000)	12.290	0.547	12.67	96.11	

PEAK FLOW REDUCTION [Qout/Qin] (%)= 14.16
TIME SHIFT OF PEAK FLOW (min)= 30.00
MAXIMUM STORAGE USED (ha.m.)= 0.6909

DIVERTHYD(0010)					
IN= 1 # OUT= 5					

Outflow / Inflow Relationships

Flow 1 + Flow 2 + Flow 3 + Flow 4 + Flow 5 = Total					
(cms)	(cms)	(cms)	(cms)	(cms)	(cms)
0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.09	0.00	0.00	0.00	0.09
0.00	0.12	0.00	0.00	0.00	0.12
0.05	0.13	0.00	0.00	0.00	0.19

0.41	0.14	0.00	0.00	0.00	0.55
0.77	0.14	0.00	0.00	0.00	0.92
1.17	0.15	0.00	0.00	0.00	1.32
1.51	0.15	0.00	0.00	0.00	1.67

		AREA	QPEAK	TPEAK	R.V.
		(ha)	(cms)	(hrs)	(mm)
TOTAL HYD. (ID= 1):		12.29	0.55	12.67	96.11
=====					
ID= 2	(2)	:	2.05	0.41	12.67 96.11
ID= 3	(2)	:	10.24	0.14	12.67 96.11
ID= 4	(2)	:	0.00	0.00	0.00 0.00
ID= 5	(2)	:	0.00	0.00	0.00 0.00
ID= 6	(2)	:	0.00	0.00	0.00 0.00

CALIB					
STANDHYD (0202)		Area	(ha)=	1.26	
ID= 1 DT= 5.0 min		Total Imp(%)=	55.00	Dir. Conn.(%)=	35.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.69	0.57
Dep. Storage	(mm)=	1.50	5.00
Average Slope	(%)=	2.00	2.00
Length	(m)=	91.65	30.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----							
TIME	RAIN		TIME	RAIN		TIME	RAIN
hrs	mm/hr		hrs	mm/hr		hrs	mm/hr
0.083	0.00		6.167	1.95		12.250	17.54
0.167	0.00		6.250	2.19		12.333	17.52
0.250	1.34		6.333	2.19		12.417	17.52
0.333	1.34		6.417	2.19		12.500	17.52
0.417	1.34		6.500	2.19		12.583	17.52
0.500	1.34		6.583	2.19		12.667	17.52
0.583	1.34		6.667	2.19		12.750	9.01
0.667	1.34		6.750	2.19		12.833	9.01
0.750	1.34		6.833	2.19		12.917	9.01
0.833	1.34		6.917	2.19		13.000	9.01
0.917	1.34		7.000	2.19		13.083	9.01
1.000	1.34		7.083	2.19		13.167	9.01
1.083	1.34		7.167	2.19		13.250	6.57
1.167	1.34		7.250	2.68		13.333	6.57
1.250	1.34		7.333	2.68		13.417	6.57
1.333	1.34		7.417	2.68		13.500	6.57
1.417	1.34		7.500	2.68		13.583	6.57
1.500	1.34		7.583	2.68		13.667	6.57
1.583	1.34		7.667	2.68		13.750	5.11
1.667	1.34		7.750	2.68		13.833	5.11

1.750	1.34		7.833	2.68		13.917	5.11		20.00	2.19
1.833	1.34		7.917	2.68		14.000	5.11		20.08	2.19
1.917	1.34		8.000	2.68		14.083	5.11		20.17	2.19
2.000	1.34		8.083	2.68		14.167	5.11		20.25	1.46
2.083	1.34		8.167	2.68		14.250	3.65		20.33	1.46
2.167	1.34		8.250	3.16		14.333	3.65		20.42	1.46
2.250	1.58		8.333	3.16		14.417	3.65		20.50	1.46
2.333	1.58		8.417	3.16		14.500	3.65		20.58	1.46
2.417	1.58		8.500	3.16		14.583	3.65		20.67	1.46
2.500	1.58		8.583	3.16		14.667	3.65		20.75	1.46
2.583	1.58		8.667	3.16		14.750	3.65		20.83	1.46
2.667	1.58		8.750	3.41		14.833	3.65		20.92	1.46
2.750	1.58		8.833	3.41		14.917	3.65		21.00	1.46
2.833	1.58		8.917	3.41		15.000	3.65		21.08	1.46
2.917	1.58		9.000	3.41		15.083	3.65		21.17	1.46
3.000	1.58		9.083	3.41		15.167	3.65		21.25	1.46
3.083	1.58		9.167	3.41		15.250	3.65		21.33	1.46
3.167	1.58		9.250	3.89		15.333	3.65		21.42	1.46
3.250	1.58		9.333	3.89		15.417	3.65		21.50	1.46
3.333	1.58		9.417	3.89		15.500	3.65		21.58	1.46
3.417	1.58		9.500	3.89		15.583	3.65		21.67	1.46
3.500	1.58		9.583	3.89		15.667	3.65		21.75	1.46
3.583	1.58		9.667	3.89		15.750	3.65		21.83	1.46
3.667	1.58		9.750	4.38		15.833	3.65		21.92	1.46
3.750	1.58		9.833	4.38		15.917	3.65		22.00	1.46
3.833	1.58		9.917	4.38		16.000	3.65		22.08	1.46
3.917	1.58		10.000	4.38		16.083	3.65		22.17	1.46
4.000	1.58		10.083	4.38		16.167	3.65		22.25	1.46
4.083	1.58		10.167	4.38		16.250	2.19		22.33	1.46
4.167	1.58		10.250	5.60		16.333	2.19		22.42	1.46
4.250	1.95		10.333	5.60		16.417	2.19		22.50	1.46
4.333	1.95		10.417	5.60		16.500	2.19		22.58	1.46
4.417	1.95		10.500	5.60		16.583	2.19		22.67	1.46
4.500	1.95		10.583	5.60		16.667	2.19		22.75	1.46
4.583	1.95		10.667	5.60		16.750	2.19		22.83	1.46
4.667	1.95		10.750	7.55		16.833	2.19		22.92	1.46
4.750	1.95		10.833	7.55		16.917	2.19		23.00	1.46
4.833	1.95		10.917	7.55		17.000	2.19		23.08	1.46
4.917	1.95		11.000	7.55		17.083	2.19		23.17	1.46
5.000	1.95		11.083	7.55		17.167	2.19		23.25	1.46
5.083	1.95		11.167	7.55		17.250	2.19		23.33	1.46
5.167	1.95		11.250	11.68		17.333	2.19		23.42	1.46
5.250	1.95		11.333	11.68		17.417	2.19		23.50	1.46
5.333	1.95		11.417	11.68		17.500	2.19		23.58	1.46
5.417	1.95		11.500	11.68		17.583	2.19		23.67	1.46
5.500	1.95		11.583	11.68		17.667	2.19		23.75	1.46
5.583	1.95		11.667	11.68		17.750	2.19		23.83	1.46
5.667	1.95		11.750	36.02		17.833	2.19		23.92	1.46
5.750	1.95		11.833	36.02		17.917	2.19		24.00	1.46
5.833	1.95		11.917	92.49		18.000	2.19		24.08	1.46
5.917	1.95		12.000	92.49		18.083	2.19		24.17	1.46
6.000	1.95		12.083	148.95		18.167	2.19			
6.083	1.95		12.167	148.96		18.250	2.19			

Max.Eff.Inten. (mm/hr)=	148.96	163.41	
over (min)	5.00	10.00	
Storage Coeff. (min)=	1.68 (ii)	6.56 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.32	0.14	
			TOTALS
PEAK FLOW (cms)=	0.18	0.20	0.387 (iii)
TIME TO PEAK (hrs)=	12.17	12.17	12.17
RUNOFF VOLUME (mm)=	120.20	77.66	92.55
TOTAL RAINFALL (mm)=	121.70	121.70	121.70
RUNOFF COEFFICIENT =	0.99	0.64	0.76

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 74.0 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 (4000)				
1 + 2 = 3				

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0010):	2.05	0.407	12.67	96.11
+ ID2= 2 (0202):	1.26	0.387	12.17	92.55
=====				
ID = 3 (4000):	3.31	0.464	12.67	94.75

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB					
STANDHYD (0204)					
ID= 1 DT= 5.0 min					

Area (ha)=		0.30			
Total Imp(%)=		60.00	Dir. Conn.(%)= 50.00		

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.18	0.12
Dep. Storage (mm)=	1.50	5.00
Average Slope (%)=	5.00	5.00
Length (m)=	44.72	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	0.00	6.167	1.95	12.250	17.54	18.33	2.19

0.167	0.00		6.250	2.19		12.333	17.52		18.42	2.19
0.250	1.34		6.333	2.19		12.417	17.52		18.50	2.19
0.333	1.34		6.417	2.19		12.500	17.52		18.58	2.19
0.417	1.34		6.500	2.19		12.583	17.52		18.67	2.19
0.500	1.34		6.583	2.19		12.667	17.52		18.75	2.19
0.583	1.34		6.667	2.19		12.750	9.01		18.83	2.19
0.667	1.34		6.750	2.19		12.833	9.01		18.92	2.19
0.750	1.34		6.833	2.19		12.917	9.01		19.00	2.19
0.833	1.34		6.917	2.19		13.000	9.01		19.08	2.19
0.917	1.34		7.000	2.19		13.083	9.01		19.17	2.19
1.000	1.34		7.083	2.19		13.167	9.01		19.25	2.19
1.083	1.34		7.167	2.19		13.250	6.57		19.33	2.19
1.167	1.34		7.250	2.68		13.333	6.57		19.42	2.19
1.250	1.34		7.333	2.68		13.417	6.57		19.50	2.19
1.333	1.34		7.417	2.68		13.500	6.57		19.58	2.19
1.417	1.34		7.500	2.68		13.583	6.57		19.67	2.19
1.500	1.34		7.583	2.68		13.667	6.57		19.75	2.19
1.583	1.34		7.667	2.68		13.750	5.11		19.83	2.19
1.667	1.34		7.750	2.68		13.833	5.11		19.92	2.19
1.750	1.34		7.833	2.68		13.917	5.11		20.00	2.19
1.833	1.34		7.917	2.68		14.000	5.11		20.08	2.19
1.917	1.34		8.000	2.68		14.083	5.11		20.17	2.19
2.000	1.34		8.083	2.68		14.167	5.11		20.25	1.46
2.083	1.34		8.167	2.68		14.250	3.65		20.33	1.46
2.167	1.34		8.250	3.16		14.333	3.65		20.42	1.46
2.250	1.58		8.333	3.16		14.417	3.65		20.50	1.46
2.333	1.58		8.417	3.16		14.500	3.65		20.58	1.46
2.417	1.58		8.500	3.16		14.583	3.65		20.67	1.46
2.500	1.58		8.583	3.16		14.667	3.65		20.75	1.46
2.583	1.58		8.667	3.16		14.750	3.65		20.83	1.46
2.667	1.58		8.750	3.41		14.833	3.65		20.92	1.46
2.750	1.58		8.833	3.41		14.917	3.65		21.00	1.46
2.833	1.58		8.917	3.41		15.000	3.65		21.08	1.46
2.917	1.58		9.000	3.41		15.083	3.65		21.17	1.46
3.000	1.58		9.083	3.41		15.167	3.65		21.25	1.46
3.083	1.58		9.167	3.41		15.250	3.65		21.33	1.46
3.167	1.58		9.250	3.89		15.333	3.65		21.42	1.46
3.250	1.58		9.333	3.89		15.417	3.65		21.50	1.46
3.333	1.58		9.417	3.89		15.500	3.65		21.58	1.46
3.417	1.58		9.500	3.89		15.583	3.65		21.67	1.46
3.500	1.58		9.583	3.89		15.667	3.65		21.75	1.46
3.583	1.58		9.667	3.89		15.750	3.65		21.83	1.46
3.667	1.58		9.750	4.38		15.833	3.65		21.92	1.46
3.750	1.58		9.833	4.38		15.917	3.65		22.00	1.46
3.833	1.58		9.917	4.38		16.000	3.65		22.08	1.46
3.917	1.58		10.000	4.38		16.083	3.65		22.17	1.46
4.000	1.58		10.083	4.38		16.167	3.65		22.25	1.46
4.083	1.58		10.167	4.38		16.250	2.19		22.33	1.46
4.167	1.58		10.250	5.60		16.333	2.19		22.42	1.46
4.250	1.95		10.333	5.60		16.417	2.19		22.50	1.46
4.333	1.95		10.417	5.60		16.500	2.19		22.58	1.46
4.417	1.95		10.500	5.60		16.583	2.19		22.67	1.46
4.500	1.95		10.583	5.60		16.667	2.19		22.75	1.46

4.583	1.95	10.667	5.60	16.750	2.19	22.83	1.46
4.667	1.95	10.750	7.55	16.833	2.19	22.92	1.46
4.750	1.95	10.833	7.55	16.917	2.19	23.00	1.46
4.833	1.95	10.917	7.55	17.000	2.19	23.08	1.46
4.917	1.95	11.000	7.55	17.083	2.19	23.17	1.46
5.000	1.95	11.083	7.55	17.167	2.19	23.25	1.46
5.083	1.95	11.167	7.55	17.250	2.19	23.33	1.46
5.167	1.95	11.250	11.68	17.333	2.19	23.42	1.46
5.250	1.95	11.333	11.68	17.417	2.19	23.50	1.46
5.333	1.95	11.417	11.68	17.500	2.19	23.58	1.46
5.417	1.95	11.500	11.68	17.583	2.19	23.67	1.46
5.500	1.95	11.583	11.68	17.667	2.19	23.75	1.46
5.583	1.95	11.667	11.68	17.750	2.19	23.83	1.46
5.667	1.95	11.750	36.02	17.833	2.19	23.92	1.46
5.750	1.95	11.833	36.02	17.917	2.19	24.00	1.46
5.833	1.95	11.917	92.49	18.000	2.19	24.08	1.46
5.917	1.95	12.000	92.49	18.083	2.19	24.17	1.46
6.000	1.95	12.083	148.95	18.167	2.19		
6.083	1.95	12.167	148.96	18.250	2.19		

Max.Eff.Inten. (mm/hr)=	148.96	136.74	
over (min)	5.00	10.00	
Storage Coeff. (min)=	0.83 (ii)	5.01 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.34	0.16	
			TOTALS
PEAK FLOW (cms)=	0.06	0.04	0.101 (iii)
TIME TO PEAK (hrs)=	12.17	12.17	12.17
RUNOFF VOLUME (mm)=	120.20	74.71	97.45
TOTAL RAINFALL (mm)=	121.70	121.70	121.70
RUNOFF COEFFICIENT =	0.99	0.61	0.80

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 75.0 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(2001)	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		0.0826 0.0013
	0.0100	0.0000		0.0904 0.0015
	0.0190	0.0002		0.0975 0.0017
	0.0380	0.0004		0.1042 0.0017
	0.0528	0.0006		0.1335 0.0017
	0.0643	0.0009		0.1574 0.0017
	0.0740	0.0011		0.5345 0.0018

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
INFLOW : ID= 2 (0204)	0.300	0.101	12.17	97.45
OUTFLOW: ID= 1 (2001)	0.300	0.089	12.17	97.46

PEAK FLOW REDUCTION [Qout/Qin] (%)= 88.45
TIME SHIFT OF PEAK FLOW (min)= 0.00
MAXIMUM STORAGE USED (ha.m.)= 0.0016

| ADD HYD (5000) |
1 + 2 = 3

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0010):	10.24	0.140	12.67	96.11
+ ID2= 2 (2001):	0.30	0.089	12.17	97.46
=====				
ID = 3 (5000):	10.54	0.206	12.17	96.15

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| CALIB |
| STANDHYD (0203) |
ID= 1 DT= 5.0 min

Area (ha)= 0.29
Total Imp(%)= 7.00 Dir. Conn.(%)= 7.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.02	0.27
Dep. Storage (mm)=	1.50	5.00
Average Slope (%)=	2.00	2.00
Length (m)=	43.97	15.00
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	0.00	6.167	1.95	12.250	17.54	18.33	2.19
0.167	0.00	6.250	2.19	12.333	17.52	18.42	2.19
0.250	1.34	6.333	2.19	12.417	17.52	18.50	2.19
0.333	1.34	6.417	2.19	12.500	17.52	18.58	2.19
0.417	1.34	6.500	2.19	12.583	17.52	18.67	2.19
0.500	1.34	6.583	2.19	12.667	17.52	18.75	2.19
0.583	1.34	6.667	2.19	12.750	9.01	18.83	2.19
0.667	1.34	6.750	2.19	12.833	9.01	18.92	2.19
0.750	1.34	6.833	2.19	12.917	9.01	19.00	2.19
0.833	1.34	6.917	2.19	13.000	9.01	19.08	2.19
0.917	1.34	7.000	2.19	13.083	9.01	19.17	2.19
1.000	1.34	7.083	2.19	13.167	9.01	19.25	2.19

1.083	1.34		7.167	2.19		13.250	6.57		19.33	2.19
1.167	1.34		7.250	2.68		13.333	6.57		19.42	2.19
1.250	1.34		7.333	2.68		13.417	6.57		19.50	2.19
1.333	1.34		7.417	2.68		13.500	6.57		19.58	2.19
1.417	1.34		7.500	2.68		13.583	6.57		19.67	2.19
1.500	1.34		7.583	2.68		13.667	6.57		19.75	2.19
1.583	1.34		7.667	2.68		13.750	5.11		19.83	2.19
1.667	1.34		7.750	2.68		13.833	5.11		19.92	2.19
1.750	1.34		7.833	2.68		13.917	5.11		20.00	2.19
1.833	1.34		7.917	2.68		14.000	5.11		20.08	2.19
1.917	1.34		8.000	2.68		14.083	5.11		20.17	2.19
2.000	1.34		8.083	2.68		14.167	5.11		20.25	1.46
2.083	1.34		8.167	2.68		14.250	3.65		20.33	1.46
2.167	1.34		8.250	3.16		14.333	3.65		20.42	1.46
2.250	1.58		8.333	3.16		14.417	3.65		20.50	1.46
2.333	1.58		8.417	3.16		14.500	3.65		20.58	1.46
2.417	1.58		8.500	3.16		14.583	3.65		20.67	1.46
2.500	1.58		8.583	3.16		14.667	3.65		20.75	1.46
2.583	1.58		8.667	3.16		14.750	3.65		20.83	1.46
2.667	1.58		8.750	3.41		14.833	3.65		20.92	1.46
2.750	1.58		8.833	3.41		14.917	3.65		21.00	1.46
2.833	1.58		8.917	3.41		15.000	3.65		21.08	1.46
2.917	1.58		9.000	3.41		15.083	3.65		21.17	1.46
3.000	1.58		9.083	3.41		15.167	3.65		21.25	1.46
3.083	1.58		9.167	3.41		15.250	3.65		21.33	1.46
3.167	1.58		9.250	3.89		15.333	3.65		21.42	1.46
3.250	1.58		9.333	3.89		15.417	3.65		21.50	1.46
3.333	1.58		9.417	3.89		15.500	3.65		21.58	1.46
3.417	1.58		9.500	3.89		15.583	3.65		21.67	1.46
3.500	1.58		9.583	3.89		15.667	3.65		21.75	1.46
3.583	1.58		9.667	3.89		15.750	3.65		21.83	1.46
3.667	1.58		9.750	4.38		15.833	3.65		21.92	1.46
3.750	1.58		9.833	4.38		15.917	3.65		22.00	1.46
3.833	1.58		9.917	4.38		16.000	3.65		22.08	1.46
3.917	1.58		10.000	4.38		16.083	3.65		22.17	1.46
4.000	1.58		10.083	4.38		16.167	3.65		22.25	1.46
4.083	1.58		10.167	4.38		16.250	2.19		22.33	1.46
4.167	1.58		10.250	5.60		16.333	2.19		22.42	1.46
4.250	1.95		10.333	5.60		16.417	2.19		22.50	1.46
4.333	1.95		10.417	5.60		16.500	2.19		22.58	1.46
4.417	1.95		10.500	5.60		16.583	2.19		22.67	1.46
4.500	1.95		10.583	5.60		16.667	2.19		22.75	1.46
4.583	1.95		10.667	5.60		16.750	2.19		22.83	1.46
4.667	1.95		10.750	7.55		16.833	2.19		22.92	1.46
4.750	1.95		10.833	7.55		16.917	2.19		23.00	1.46
4.833	1.95		10.917	7.55		17.000	2.19		23.08	1.46
4.917	1.95		11.000	7.55		17.083	2.19		23.17	1.46
5.000	1.95		11.083	7.55		17.167	2.19		23.25	1.46
5.083	1.95		11.167	7.55		17.250	2.19		23.33	1.46
5.167	1.95		11.250	11.68		17.333	2.19		23.42	1.46
5.250	1.95		11.333	11.68		17.417	2.19		23.50	1.46
5.333	1.95		11.417	11.68		17.500	2.19		23.58	1.46
5.417	1.95		11.500	11.68		17.583	2.19		23.67	1.46

5.500	1.95	11.583	11.68	17.667	2.19	23.75	1.46
5.583	1.95	11.667	11.68	17.750	2.19	23.83	1.46
5.667	1.95	11.750	36.02	17.833	2.19	23.92	1.46
5.750	1.95	11.833	36.02	17.917	2.19	24.00	1.46
5.833	1.95	11.917	92.49	18.000	2.19	24.08	1.46
5.917	1.95	12.000	92.49	18.083	2.19	24.17	1.46
6.000	1.95	12.083	148.95	18.167	2.19		
6.083	1.95	12.167	148.96	18.250	2.19		

Max.Eff.Inten. (mm/hr)=	148.96	97.62
over (min)	5.00	10.00
Storage Coeff. (min)=	1.08 (ii)	5.04 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.34	0.16

TOTALS			
PEAK FLOW (cms)=	0.01	0.06	0.070 (iii)
TIME TO PEAK (hrs)=	12.17	12.17	12.17
RUNOFF VOLUME (mm)=	120.20	66.13	69.90
TOTAL RAINFALL (mm)=	121.70	121.70	121.70
RUNOFF COEFFICIENT =	0.99	0.54	0.57

***** 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* = 74.0 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 (0203):	0.29	0.070	12.17	69.90
+ ID2= 2 (4000):	3.31	0.464	12.67	94.75
=====				
ID = 3 (1000):	3.60	0.475	12.67	92.75

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):	3.60	0.475	12.67	92.75
+ ID2= 2 (5000):	10.54	0.206	12.17	96.15
=====				
ID = 1 (1000):	14.14	0.663	12.17	95.28

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

=====

=====

```
V   V   I   SSSSS   U   U   A   L           (v 6.2.2015)
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
```

Developed and Distributed by Smart City Water Inc

Copyright 2007 - 2022 Smart City Water Inc

All rights reserved.

***** 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\jangsoo.lee\AppData\Local\Civica\VH5\191a91e0-1a14-44fd-bc00-4941023c7dee\10a403fc-5539-4077-a3e5-ee20a10ff69f\

Summary filename:

C:\Users\jangsoo.lee\AppData\Local\Civica\VH5\191a91e0-1a14-44fd-bc00-4941023c7dee\10a403fc-5539-4077-a3e5-ee20a10ff69f\

DATE: 09/25/2024

TIME: 11:27:08

USER:

COMMENTS: _____

** SIMULATION : 50yr 24hr 10min SCS Type II **

READ STORM	Filename: C:\Users\jangsoo.lee\AppData
	ata\Local\Temp\
	f94caa1e-fd3a-473e-9aa7-8c465a92b796\eb01ca32
Ptotal=134.56 mm	Comments: 50yr 24hr 10min SCS Type II

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.00	0.00	6.17	2.42	12.33	19.38	18.50	2.42
0.17	1.48	6.33	2.42	12.50	19.38	18.67	2.42
0.33	1.48	6.50	2.42	12.67	9.96	18.83	2.42
0.50	1.48	6.67	2.42	12.83	9.96	19.00	2.42
0.67	1.48	6.83	2.42	13.00	9.96	19.17	2.42
0.83	1.48	7.00	2.42	13.17	7.27	19.33	2.42
1.00	1.48	7.17	2.96	13.33	7.27	19.50	2.42
1.17	1.48	7.33	2.96	13.50	7.27	19.67	2.42
1.33	1.48	7.50	2.96	13.67	5.65	19.83	2.42
1.50	1.48	7.67	2.96	13.83	5.65	20.00	2.42
1.67	1.48	7.83	2.96	14.00	5.65	20.17	1.61
1.83	1.48	8.00	2.96	14.17	4.04	20.33	1.61
2.00	1.48	8.17	3.50	14.33	4.04	20.50	1.61
2.17	1.75	8.33	3.50	14.50	4.04	20.67	1.61
2.33	1.75	8.50	3.50	14.67	4.04	20.83	1.61
2.50	1.75	8.67	3.77	14.83	4.04	21.00	1.61
2.67	1.75	8.83	3.77	15.00	4.04	21.17	1.61
2.83	1.75	9.00	3.77	15.17	4.04	21.33	1.61
3.00	1.75	9.17	4.31	15.33	4.04	21.50	1.61
3.17	1.75	9.33	4.31	15.50	4.04	21.67	1.61
3.33	1.75	9.50	4.31	15.67	4.04	21.83	1.61
3.50	1.75	9.67	4.84	15.83	4.04	22.00	1.61
3.67	1.75	9.83	4.84	16.00	4.04	22.17	1.61
3.83	1.75	10.00	4.84	16.17	2.42	22.33	1.61
4.00	1.75	10.17	6.19	16.33	2.42	22.50	1.61
4.17	2.15	10.33	6.19	16.50	2.42	22.67	1.61
4.33	2.15	10.50	6.19	16.67	2.42	22.83	1.61
4.50	2.15	10.67	8.34	16.83	2.42	23.00	1.61
4.67	2.15	10.83	8.34	17.00	2.42	23.17	1.61
4.83	2.15	11.00	8.34	17.17	2.42	23.33	1.61
5.00	2.15	11.17	12.92	17.33	2.42	23.50	1.61
5.17	2.15	11.33	12.92	17.50	2.42	23.67	1.61
5.33	2.15	11.50	12.92	17.67	2.42	23.83	1.61
5.50	2.15	11.67	39.83	17.83	2.42	24.00	1.61
5.67	2.15	11.83	102.27	18.00	2.42		
5.83	2.15	12.00	164.70	18.17	2.42		
6.00	2.15	12.17	19.38	18.33	2.42		

| CALIB |
| STANDHYD (0200) |
ID= 1 DT= 5.0 min

Area (ha)= 10.86
Total Imp(%)= 60.00 Dir. Conn.(%)= 50.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	6.52	4.34
Dep. Storage	(mm)=	1.50	5.00
Average Slope	(%)=	2.00	2.00
Length	(m)=	269.07	30.00
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	0.00	6.167	2.15	12.250	19.39	18.33	2.42
0.167	0.00	6.250	2.42	12.333	19.38	18.42	2.42
0.250	1.48	6.333	2.42	12.417	19.38	18.50	2.42
0.333	1.48	6.417	2.42	12.500	19.38	18.58	2.42
0.417	1.48	6.500	2.42	12.583	19.38	18.67	2.42
0.500	1.48	6.583	2.42	12.667	19.38	18.75	2.42
0.583	1.48	6.667	2.42	12.750	9.96	18.83	2.42
0.667	1.48	6.750	2.42	12.833	9.96	18.92	2.42
0.750	1.48	6.833	2.42	12.917	9.96	19.00	2.42
0.833	1.48	6.917	2.42	13.000	9.96	19.08	2.42
0.917	1.48	7.000	2.42	13.083	9.96	19.17	2.42
1.000	1.48	7.083	2.42	13.167	9.96	19.25	2.42
1.083	1.48	7.167	2.42	13.250	7.27	19.33	2.42
1.167	1.48	7.250	2.96	13.333	7.27	19.42	2.42
1.250	1.48	7.333	2.96	13.417	7.27	19.50	2.42
1.333	1.48	7.417	2.96	13.500	7.27	19.58	2.42
1.417	1.48	7.500	2.96	13.583	7.27	19.67	2.42
1.500	1.48	7.583	2.96	13.667	7.27	19.75	2.42
1.583	1.48	7.667	2.96	13.750	5.65	19.83	2.42
1.667	1.48	7.750	2.96	13.833	5.65	19.92	2.42
1.750	1.48	7.833	2.96	13.917	5.65	20.00	2.42
1.833	1.48	7.917	2.96	14.000	5.65	20.08	2.42
1.917	1.48	8.000	2.96	14.083	5.65	20.17	2.42
2.000	1.48	8.083	2.96	14.167	5.65	20.25	1.61
2.083	1.48	8.167	2.96	14.250	4.04	20.33	1.61
2.167	1.48	8.250	3.50	14.333	4.04	20.42	1.61
2.250	1.75	8.333	3.50	14.417	4.04	20.50	1.61
2.333	1.75	8.417	3.50	14.500	4.04	20.58	1.61
2.417	1.75	8.500	3.50	14.583	4.04	20.67	1.61
2.500	1.75	8.583	3.50	14.667	4.04	20.75	1.61
2.583	1.75	8.667	3.50	14.750	4.04	20.83	1.61
2.667	1.75	8.750	3.77	14.833	4.04	20.92	1.61
2.750	1.75	8.833	3.77	14.917	4.04	21.00	1.61
2.833	1.75	8.917	3.77	15.000	4.04	21.08	1.61
2.917	1.75	9.000	3.77	15.083	4.04	21.17	1.61
3.000	1.75	9.083	3.77	15.167	4.04	21.25	1.61
3.083	1.75	9.167	3.77	15.250	4.04	21.33	1.61
3.167	1.75	9.250	4.31	15.333	4.04	21.42	1.61
3.250	1.75	9.333	4.31	15.417	4.04	21.50	1.61
3.333	1.75	9.417	4.31	15.500	4.04	21.58	1.61
3.417	1.75	9.500	4.31	15.583	4.04	21.67	1.61
3.500	1.75	9.583	4.31	15.667	4.04	21.75	1.61
3.583	1.75	9.667	4.31	15.750	4.04	21.83	1.61
3.667	1.75	9.750	4.84	15.833	4.04	21.92	1.61
3.750	1.75	9.833	4.84	15.917	4.04	22.00	1.61
3.833	1.75	9.917	4.84	16.000	4.04	22.08	1.61

3.917	1.75	10.000	4.84	16.083	4.04	22.17	1.61
4.000	1.75	10.083	4.84	16.167	4.04	22.25	1.61
4.083	1.75	10.167	4.84	16.250	2.42	22.33	1.61
4.167	1.75	10.250	6.19	16.333	2.42	22.42	1.61
4.250	2.15	10.333	6.19	16.417	2.42	22.50	1.61
4.333	2.15	10.417	6.19	16.500	2.42	22.58	1.61
4.417	2.15	10.500	6.19	16.583	2.42	22.67	1.61
4.500	2.15	10.583	6.19	16.667	2.42	22.75	1.61
4.583	2.15	10.667	6.19	16.750	2.42	22.83	1.61
4.667	2.15	10.750	8.34	16.833	2.42	22.92	1.61
4.750	2.15	10.833	8.34	16.917	2.42	23.00	1.61
4.833	2.15	10.917	8.34	17.000	2.42	23.08	1.61
4.917	2.15	11.000	8.34	17.083	2.42	23.17	1.61
5.000	2.15	11.083	8.34	17.167	2.42	23.25	1.61
5.083	2.15	11.167	8.34	17.250	2.42	23.33	1.61
5.167	2.15	11.250	12.92	17.333	2.42	23.42	1.61
5.250	2.15	11.333	12.92	17.417	2.42	23.50	1.61
5.333	2.15	11.417	12.92	17.500	2.42	23.58	1.61
5.417	2.15	11.500	12.92	17.583	2.42	23.67	1.61
5.500	2.15	11.583	12.92	17.667	2.42	23.75	1.61
5.583	2.15	11.667	12.92	17.750	2.42	23.83	1.61
5.667	2.15	11.750	39.83	17.833	2.42	23.92	1.61
5.750	2.15	11.833	39.83	17.917	2.42	24.00	1.61
5.833	2.15	11.917	102.26	18.000	2.42	24.08	1.61
5.917	2.15	12.000	102.27	18.083	2.42	24.17	1.61
6.000	2.15	12.083	164.69	18.167	2.42		
6.083	2.15	12.167	164.70	18.250	2.42		

Max.Eff.Inten. (mm/hr)=	164.70	153.99	
over (min)	5.00	10.00	
Storage Coeff. (min)=	3.08 (ii)	7.53 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.27	0.13	
			TOTALS
PEAK FLOW (cms)=	2.45	1.42	3.862 (iii)
TIME TO PEAK (hrs)=	12.17	12.17	12.17
RUNOFF VOLUME (mm)=	133.06	84.40	108.73
TOTAL RAINFALL (mm)=	134.56	134.56	134.56
RUNOFF COEFFICIENT =	0.99	0.63	0.81

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 74.0 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)=	1.43		
ID= 1 DT= 5.0 min	Total Imp(%)=	50.00	Dir. Conn.(%)=	50.00	

```

-----
                IMPERVIOUS      PERVIOUS (i)
Surface Area    (ha)=          0.71      0.71
Dep. Storage    (mm)=          1.50      5.00
Average Slope    (%)=          2.00      2.00
Length          (m)=          97.64     30.00
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	0.00	6.167	2.15	12.250	19.39	18.33	2.42
0.167	0.00	6.250	2.42	12.333	19.38	18.42	2.42
0.250	1.48	6.333	2.42	12.417	19.38	18.50	2.42
0.333	1.48	6.417	2.42	12.500	19.38	18.58	2.42
0.417	1.48	6.500	2.42	12.583	19.38	18.67	2.42
0.500	1.48	6.583	2.42	12.667	19.38	18.75	2.42
0.583	1.48	6.667	2.42	12.750	9.96	18.83	2.42
0.667	1.48	6.750	2.42	12.833	9.96	18.92	2.42
0.750	1.48	6.833	2.42	12.917	9.96	19.00	2.42
0.833	1.48	6.917	2.42	13.000	9.96	19.08	2.42
0.917	1.48	7.000	2.42	13.083	9.96	19.17	2.42
1.000	1.48	7.083	2.42	13.167	9.96	19.25	2.42
1.083	1.48	7.167	2.42	13.250	7.27	19.33	2.42
1.167	1.48	7.250	2.96	13.333	7.27	19.42	2.42
1.250	1.48	7.333	2.96	13.417	7.27	19.50	2.42
1.333	1.48	7.417	2.96	13.500	7.27	19.58	2.42
1.417	1.48	7.500	2.96	13.583	7.27	19.67	2.42
1.500	1.48	7.583	2.96	13.667	7.27	19.75	2.42
1.583	1.48	7.667	2.96	13.750	5.65	19.83	2.42
1.667	1.48	7.750	2.96	13.833	5.65	19.92	2.42
1.750	1.48	7.833	2.96	13.917	5.65	20.00	2.42
1.833	1.48	7.917	2.96	14.000	5.65	20.08	2.42
1.917	1.48	8.000	2.96	14.083	5.65	20.17	2.42
2.000	1.48	8.083	2.96	14.167	5.65	20.25	1.61
2.083	1.48	8.167	2.96	14.250	4.04	20.33	1.61
2.167	1.48	8.250	3.50	14.333	4.04	20.42	1.61
2.250	1.75	8.333	3.50	14.417	4.04	20.50	1.61
2.333	1.75	8.417	3.50	14.500	4.04	20.58	1.61
2.417	1.75	8.500	3.50	14.583	4.04	20.67	1.61
2.500	1.75	8.583	3.50	14.667	4.04	20.75	1.61
2.583	1.75	8.667	3.50	14.750	4.04	20.83	1.61
2.667	1.75	8.750	3.77	14.833	4.04	20.92	1.61
2.750	1.75	8.833	3.77	14.917	4.04	21.00	1.61
2.833	1.75	8.917	3.77	15.000	4.04	21.08	1.61
2.917	1.75	9.000	3.77	15.083	4.04	21.17	1.61
3.000	1.75	9.083	3.77	15.167	4.04	21.25	1.61
3.083	1.75	9.167	3.77	15.250	4.04	21.33	1.61
3.167	1.75	9.250	4.31	15.333	4.04	21.42	1.61
3.250	1.75	9.333	4.31	15.417	4.04	21.50	1.61

3.333	1.75		9.417	4.31		15.500	4.04		21.58	1.61
3.417	1.75		9.500	4.31		15.583	4.04		21.67	1.61
3.500	1.75		9.583	4.31		15.667	4.04		21.75	1.61
3.583	1.75		9.667	4.31		15.750	4.04		21.83	1.61
3.667	1.75		9.750	4.84		15.833	4.04		21.92	1.61
3.750	1.75		9.833	4.84		15.917	4.04		22.00	1.61
3.833	1.75		9.917	4.84		16.000	4.04		22.08	1.61
3.917	1.75		10.000	4.84		16.083	4.04		22.17	1.61
4.000	1.75		10.083	4.84		16.167	4.04		22.25	1.61
4.083	1.75		10.167	4.84		16.250	2.42		22.33	1.61
4.167	1.75		10.250	6.19		16.333	2.42		22.42	1.61
4.250	2.15		10.333	6.19		16.417	2.42		22.50	1.61
4.333	2.15		10.417	6.19		16.500	2.42		22.58	1.61
4.417	2.15		10.500	6.19		16.583	2.42		22.67	1.61
4.500	2.15		10.583	6.19		16.667	2.42		22.75	1.61
4.583	2.15		10.667	6.19		16.750	2.42		22.83	1.61
4.667	2.15		10.750	8.34		16.833	2.42		22.92	1.61
4.750	2.15		10.833	8.34		16.917	2.42		23.00	1.61
4.833	2.15		10.917	8.34		17.000	2.42		23.08	1.61
4.917	2.15		11.000	8.34		17.083	2.42		23.17	1.61
5.000	2.15		11.083	8.34		17.167	2.42		23.25	1.61
5.083	2.15		11.167	8.34		17.250	2.42		23.33	1.61
5.167	2.15		11.250	12.92		17.333	2.42		23.42	1.61
5.250	2.15		11.333	12.92		17.417	2.42		23.50	1.61
5.333	2.15		11.417	12.92		17.500	2.42		23.58	1.61
5.417	2.15		11.500	12.92		17.583	2.42		23.67	1.61
5.500	2.15		11.583	12.92		17.667	2.42		23.75	1.61
5.583	2.15		11.667	12.92		17.750	2.42		23.83	1.61
5.667	2.15		11.750	39.83		17.833	2.42		23.92	1.61
5.750	2.15		11.833	39.83		17.917	2.42		24.00	1.61
5.833	2.15		11.917	102.26		18.000	2.42		24.08	1.61
5.917	2.15		12.000	102.27		18.083	2.42		24.17	1.61
6.000	2.15		12.083	164.69		18.167	2.42			
6.083	2.15		12.167	164.70		18.250	2.42			

Max.Eff.Inten. (mm/hr)=	164.70	112.90
over (min)	5.00	10.00
Storage Coeff. (min)=	1.68 (ii)	6.54 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.32	0.14

TOTALS

PEAK FLOW (cms)=	0.33	0.18	0.504 (iii)
TIME TO PEAK (hrs)=	12.17	12.17	12.17
RUNOFF VOLUME (mm)=	133.06	76.72	104.88
TOTAL RAINFALL (mm)=	134.56	134.56	134.56
RUNOFF COEFFICIENT =	0.99	0.57	0.78

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:

CN* = 74.0 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 (3000)				
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.
-----	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0200):	10.86	3.862	12.17	108.73
+ ID2= 2 (0201):	1.43	0.504	12.17	104.88
=====				
ID = 3 (3000):	12.29	4.366	12.17	108.28

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR(2000)	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		0.1180 0.5426
	0.0060	0.0590		0.1350 0.5819
	0.0100	0.1205		0.1520 0.6219
	0.0120	0.1522		0.6240 0.7039
	0.0260	0.1845		1.4970 0.7886
	0.0410	0.2510		2.6380 0.8759
	0.0690	0.3201		4.0120 0.9659
	0.0890	0.3917		5.5960 1.0585
	0.0970	0.4284		7.3740 1.1579
	0.1050	0.4658		0.0000 0.0000
	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
INFLOW : ID= 2 (3000)	12.290	4.366	12.17	108.28
OUTFLOW: ID= 1 (2000)	12.290	0.917	12.42	108.08

PEAK FLOW REDUCTION [Qout/Qin] (%)= 21.00
TIME SHIFT OF PEAK FLOW (min)= 15.00
MAXIMUM STORAGE USED (ha.m.)= 0.7325

DIVERTHYD(0010)
IN= 1 # OUT= 5

Outflow / Inflow Relationships

Flow 1	Flow 2	Flow 3	Flow 4	Flow 5	Total
(cms)	(cms)	(cms)	(cms)	(cms)	(cms)
0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.09	0.00	0.00	0.00	0.09
0.00	0.12	0.00	0.00	0.00	0.12
0.05	0.13	0.00	0.00	0.00	0.19

0.41	0.14	0.00	0.00	0.00	0.55
0.77	0.14	0.00	0.00	0.00	0.92
1.17	0.15	0.00	0.00	0.00	1.32
1.51	0.15	0.00	0.00	0.00	1.67

		AREA	QPEAK	TPEAK	R.V.
		(ha)	(cms)	(hrs)	(mm)
TOTAL HYD. (ID= 1):		12.29	0.92	12.42	108.08
=====					
ID= 2	(2)	:	2.87	0.77	12.42 108.08
ID= 3	(2)	:	9.42	0.14	12.42 108.08
ID= 4	(2)	:	0.00	0.00	0.00 0.00
ID= 5	(2)	:	0.00	0.00	0.00 0.00
ID= 6	(2)	:	0.00	0.00	0.00 0.00

CALIB					
STANDHYD (0202)		Area	(ha)=	1.26	
ID= 1 DT= 5.0 min		Total Imp(%)=	55.00	Dir. Conn.(%)=	35.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.69	0.57
Dep. Storage	(mm)=	1.50	5.00
Average Slope	(%)=	2.00	2.00
Length	(m)=	91.65	30.00
Mannings n	=	0.013	0.250

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

----- TRANSFORMED HYETOGRAPH -----							
TIME	RAIN		TIME	RAIN		TIME	RAIN
hrs	mm/hr		hrs	mm/hr		hrs	mm/hr
0.083	0.00		6.167	2.15		12.250	19.39
0.167	0.00		6.250	2.42		12.333	19.38
0.250	1.48		6.333	2.42		12.417	19.38
0.333	1.48		6.417	2.42		12.500	19.38
0.417	1.48		6.500	2.42		12.583	19.38
0.500	1.48		6.583	2.42		12.667	19.38
0.583	1.48		6.667	2.42		12.750	9.96
0.667	1.48		6.750	2.42		12.833	9.96
0.750	1.48		6.833	2.42		12.917	9.96
0.833	1.48		6.917	2.42		13.000	9.96
0.917	1.48		7.000	2.42		13.083	9.96
1.000	1.48		7.083	2.42		13.167	9.96
1.083	1.48		7.167	2.42		13.250	7.27
1.167	1.48		7.250	2.96		13.333	7.27
1.250	1.48		7.333	2.96		13.417	7.27
1.333	1.48		7.417	2.96		13.500	7.27
1.417	1.48		7.500	2.96		13.583	7.27
1.500	1.48		7.583	2.96		13.667	7.27
1.583	1.48		7.667	2.96		13.750	5.65
1.667	1.48		7.750	2.96		13.833	5.65

1.750	1.48		7.833	2.96		13.917	5.65		20.00	2.42
1.833	1.48		7.917	2.96		14.000	5.65		20.08	2.42
1.917	1.48		8.000	2.96		14.083	5.65		20.17	2.42
2.000	1.48		8.083	2.96		14.167	5.65		20.25	1.61
2.083	1.48		8.167	2.96		14.250	4.04		20.33	1.61
2.167	1.48		8.250	3.50		14.333	4.04		20.42	1.61
2.250	1.75		8.333	3.50		14.417	4.04		20.50	1.61
2.333	1.75		8.417	3.50		14.500	4.04		20.58	1.61
2.417	1.75		8.500	3.50		14.583	4.04		20.67	1.61
2.500	1.75		8.583	3.50		14.667	4.04		20.75	1.61
2.583	1.75		8.667	3.50		14.750	4.04		20.83	1.61
2.667	1.75		8.750	3.77		14.833	4.04		20.92	1.61
2.750	1.75		8.833	3.77		14.917	4.04		21.00	1.61
2.833	1.75		8.917	3.77		15.000	4.04		21.08	1.61
2.917	1.75		9.000	3.77		15.083	4.04		21.17	1.61
3.000	1.75		9.083	3.77		15.167	4.04		21.25	1.61
3.083	1.75		9.167	3.77		15.250	4.04		21.33	1.61
3.167	1.75		9.250	4.31		15.333	4.04		21.42	1.61
3.250	1.75		9.333	4.31		15.417	4.04		21.50	1.61
3.333	1.75		9.417	4.31		15.500	4.04		21.58	1.61
3.417	1.75		9.500	4.31		15.583	4.04		21.67	1.61
3.500	1.75		9.583	4.31		15.667	4.04		21.75	1.61
3.583	1.75		9.667	4.31		15.750	4.04		21.83	1.61
3.667	1.75		9.750	4.84		15.833	4.04		21.92	1.61
3.750	1.75		9.833	4.84		15.917	4.04		22.00	1.61
3.833	1.75		9.917	4.84		16.000	4.04		22.08	1.61
3.917	1.75		10.000	4.84		16.083	4.04		22.17	1.61
4.000	1.75		10.083	4.84		16.167	4.04		22.25	1.61
4.083	1.75		10.167	4.84		16.250	2.42		22.33	1.61
4.167	1.75		10.250	6.19		16.333	2.42		22.42	1.61
4.250	2.15		10.333	6.19		16.417	2.42		22.50	1.61
4.333	2.15		10.417	6.19		16.500	2.42		22.58	1.61
4.417	2.15		10.500	6.19		16.583	2.42		22.67	1.61
4.500	2.15		10.583	6.19		16.667	2.42		22.75	1.61
4.583	2.15		10.667	6.19		16.750	2.42		22.83	1.61
4.667	2.15		10.750	8.34		16.833	2.42		22.92	1.61
4.750	2.15		10.833	8.34		16.917	2.42		23.00	1.61
4.833	2.15		10.917	8.34		17.000	2.42		23.08	1.61
4.917	2.15		11.000	8.34		17.083	2.42		23.17	1.61
5.000	2.15		11.083	8.34		17.167	2.42		23.25	1.61
5.083	2.15		11.167	8.34		17.250	2.42		23.33	1.61
5.167	2.15		11.250	12.92		17.333	2.42		23.42	1.61
5.250	2.15		11.333	12.92		17.417	2.42		23.50	1.61
5.333	2.15		11.417	12.92		17.500	2.42		23.58	1.61
5.417	2.15		11.500	12.92		17.583	2.42		23.67	1.61
5.500	2.15		11.583	12.92		17.667	2.42		23.75	1.61
5.583	2.15		11.667	12.92		17.750	2.42		23.83	1.61
5.667	2.15		11.750	39.83		17.833	2.42		23.92	1.61
5.750	2.15		11.833	39.83		17.917	2.42		24.00	1.61
5.833	2.15		11.917	102.26		18.000	2.42		24.08	1.61
5.917	2.15		12.000	102.27		18.083	2.42		24.17	1.61
6.000	2.15		12.083	164.69		18.167	2.42			
6.083	2.15		12.167	164.70		18.250	2.42			

Max.Eff.Inten. (mm/hr)=	164.70	186.64	
over (min)	5.00	10.00	
Storage Coeff. (min)=	1.61 (ii)	6.24 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.32	0.15	
			TOTALS
PEAK FLOW (cms)=	0.20	0.24	0.440 (iii)
TIME TO PEAK (hrs)=	12.17	12.17	12.17
RUNOFF VOLUME (mm)=	133.06	89.10	104.49
TOTAL RAINFALL (mm)=	134.56	134.56	134.56
RUNOFF COEFFICIENT =	0.99	0.66	0.78

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 74.0 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 (4000)				
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.
-----	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0010):	2.87	0.772	12.42	108.08
+ ID2= 2 (0202):	1.26	0.440	12.17	104.49
=====				
ID = 3 (4000):	4.13	0.868	12.42	106.99

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB				
STANDHYD (0204)	Area	(ha)=	0.30	
ID= 1 DT= 5.0 min	Total Imp (%)=	60.00	Dir. Conn. (%)=	50.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.18	0.12
Dep. Storage	(mm)=	1.50	5.00
Average Slope	(%)=	5.00	5.00
Length	(m)=	44.72	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
hrs	mm/hr		hrs	mm/hr		hrs	mm/hr
0.083	0.00		6.167	2.15		12.250	19.39
						18.33	2.42

0.167	0.00		6.250	2.42		12.333	19.38		18.42	2.42
0.250	1.48		6.333	2.42		12.417	19.38		18.50	2.42
0.333	1.48		6.417	2.42		12.500	19.38		18.58	2.42
0.417	1.48		6.500	2.42		12.583	19.38		18.67	2.42
0.500	1.48		6.583	2.42		12.667	19.38		18.75	2.42
0.583	1.48		6.667	2.42		12.750	9.96		18.83	2.42
0.667	1.48		6.750	2.42		12.833	9.96		18.92	2.42
0.750	1.48		6.833	2.42		12.917	9.96		19.00	2.42
0.833	1.48		6.917	2.42		13.000	9.96		19.08	2.42
0.917	1.48		7.000	2.42		13.083	9.96		19.17	2.42
1.000	1.48		7.083	2.42		13.167	9.96		19.25	2.42
1.083	1.48		7.167	2.42		13.250	7.27		19.33	2.42
1.167	1.48		7.250	2.96		13.333	7.27		19.42	2.42
1.250	1.48		7.333	2.96		13.417	7.27		19.50	2.42
1.333	1.48		7.417	2.96		13.500	7.27		19.58	2.42
1.417	1.48		7.500	2.96		13.583	7.27		19.67	2.42
1.500	1.48		7.583	2.96		13.667	7.27		19.75	2.42
1.583	1.48		7.667	2.96		13.750	5.65		19.83	2.42
1.667	1.48		7.750	2.96		13.833	5.65		19.92	2.42
1.750	1.48		7.833	2.96		13.917	5.65		20.00	2.42
1.833	1.48		7.917	2.96		14.000	5.65		20.08	2.42
1.917	1.48		8.000	2.96		14.083	5.65		20.17	2.42
2.000	1.48		8.083	2.96		14.167	5.65		20.25	1.61
2.083	1.48		8.167	2.96		14.250	4.04		20.33	1.61
2.167	1.48		8.250	3.50		14.333	4.04		20.42	1.61
2.250	1.75		8.333	3.50		14.417	4.04		20.50	1.61
2.333	1.75		8.417	3.50		14.500	4.04		20.58	1.61
2.417	1.75		8.500	3.50		14.583	4.04		20.67	1.61
2.500	1.75		8.583	3.50		14.667	4.04		20.75	1.61
2.583	1.75		8.667	3.50		14.750	4.04		20.83	1.61
2.667	1.75		8.750	3.77		14.833	4.04		20.92	1.61
2.750	1.75		8.833	3.77		14.917	4.04		21.00	1.61
2.833	1.75		8.917	3.77		15.000	4.04		21.08	1.61
2.917	1.75		9.000	3.77		15.083	4.04		21.17	1.61
3.000	1.75		9.083	3.77		15.167	4.04		21.25	1.61
3.083	1.75		9.167	3.77		15.250	4.04		21.33	1.61
3.167	1.75		9.250	4.31		15.333	4.04		21.42	1.61
3.250	1.75		9.333	4.31		15.417	4.04		21.50	1.61
3.333	1.75		9.417	4.31		15.500	4.04		21.58	1.61
3.417	1.75		9.500	4.31		15.583	4.04		21.67	1.61
3.500	1.75		9.583	4.31		15.667	4.04		21.75	1.61
3.583	1.75		9.667	4.31		15.750	4.04		21.83	1.61
3.667	1.75		9.750	4.84		15.833	4.04		21.92	1.61
3.750	1.75		9.833	4.84		15.917	4.04		22.00	1.61
3.833	1.75		9.917	4.84		16.000	4.04		22.08	1.61
3.917	1.75		10.000	4.84		16.083	4.04		22.17	1.61
4.000	1.75		10.083	4.84		16.167	4.04		22.25	1.61
4.083	1.75		10.167	4.84		16.250	2.42		22.33	1.61
4.167	1.75		10.250	6.19		16.333	2.42		22.42	1.61
4.250	2.15		10.333	6.19		16.417	2.42		22.50	1.61
4.333	2.15		10.417	6.19		16.500	2.42		22.58	1.61
4.417	2.15		10.500	6.19		16.583	2.42		22.67	1.61
4.500	2.15		10.583	6.19		16.667	2.42		22.75	1.61

4.583	2.15	10.667	6.19	16.750	2.42	22.83	1.61
4.667	2.15	10.750	8.34	16.833	2.42	22.92	1.61
4.750	2.15	10.833	8.34	16.917	2.42	23.00	1.61
4.833	2.15	10.917	8.34	17.000	2.42	23.08	1.61
4.917	2.15	11.000	8.34	17.083	2.42	23.17	1.61
5.000	2.15	11.083	8.34	17.167	2.42	23.25	1.61
5.083	2.15	11.167	8.34	17.250	2.42	23.33	1.61
5.167	2.15	11.250	12.92	17.333	2.42	23.42	1.61
5.250	2.15	11.333	12.92	17.417	2.42	23.50	1.61
5.333	2.15	11.417	12.92	17.500	2.42	23.58	1.61
5.417	2.15	11.500	12.92	17.583	2.42	23.67	1.61
5.500	2.15	11.583	12.92	17.667	2.42	23.75	1.61
5.583	2.15	11.667	12.92	17.750	2.42	23.83	1.61
5.667	2.15	11.750	39.83	17.833	2.42	23.92	1.61
5.750	2.15	11.833	39.83	17.917	2.42	24.00	1.61
5.833	2.15	11.917	102.26	18.000	2.42	24.08	1.61
5.917	2.15	12.000	102.27	18.083	2.42	24.17	1.61
6.000	2.15	12.083	164.69	18.167	2.42		
6.083	2.15	12.167	164.70	18.250	2.42		

Max.Eff.Inten. (mm/hr)=	164.70	156.66	
over (min)	5.00	5.00	
Storage Coeff. (min)=	0.80 (ii)	4.81 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.34	0.22	
			TOTALS
PEAK FLOW (cms)=	0.07	0.05	0.118 (iii)
TIME TO PEAK (hrs)=	12.17	12.17	12.17
RUNOFF VOLUME (mm)=	133.06	85.96	109.50
TOTAL RAINFALL (mm)=	134.56	134.56	134.56
RUNOFF COEFFICIENT =	0.99	0.64	0.81

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 75.0 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(2001)	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		0.0826 0.0013
	0.0100	0.0000		0.0904 0.0015
	0.0190	0.0002		0.0975 0.0017
	0.0380	0.0004		0.1042 0.0017
	0.0528	0.0006		0.1335 0.0017
	0.0643	0.0009		0.1574 0.0017
	0.0740	0.0011		0.5345 0.0018

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
INFLOW : ID= 2 (0204)	0.300	0.118	12.17	109.50
OUTFLOW: ID= 1 (2001)	0.300	0.119	12.17	109.53

PEAK FLOW REDUCTION [Qout/Qin] (%)=100.28
TIME SHIFT OF PEAK FLOW (min)= 0.00
MAXIMUM STORAGE USED (ha.m.)= 0.0017

**** WARNING : HYDROGRAPH PEAK WAS NOT REDUCED.
CHECK OUTFLOW/STORAGE TABLE OR REDUCE DT.

ADD HYD (5000)				
1 + 2 = 3				

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0010):	9.42	0.145	12.42	108.08
+ ID2= 2 (2001):	0.30	0.119	12.17	109.53
=====				
ID = 3 (5000):	9.72	0.242	12.17	108.13

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB				
STANDHYD (0203)				
ID= 1 DT= 5.0 min				

Area	(ha)=	0.29		
Total Imp	(%)=	7.00	Dir. Conn. (%)=	7.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)= 0.02	0.27
Dep. Storage	(mm)= 1.50	5.00
Average Slope	(%)= 2.00	2.00
Length	(m)= 43.97	15.00
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	0.00	6.167	2.15	12.250	19.39	18.33	2.42
0.167	0.00	6.250	2.42	12.333	19.38	18.42	2.42
0.250	1.48	6.333	2.42	12.417	19.38	18.50	2.42
0.333	1.48	6.417	2.42	12.500	19.38	18.58	2.42
0.417	1.48	6.500	2.42	12.583	19.38	18.67	2.42
0.500	1.48	6.583	2.42	12.667	19.38	18.75	2.42
0.583	1.48	6.667	2.42	12.750	9.96	18.83	2.42
0.667	1.48	6.750	2.42	12.833	9.96	18.92	2.42
0.750	1.48	6.833	2.42	12.917	9.96	19.00	2.42
0.833	1.48	6.917	2.42	13.000	9.96	19.08	2.42

0.917	1.48		7.000	2.42		13.083	9.96		19.17	2.42
1.000	1.48		7.083	2.42		13.167	9.96		19.25	2.42
1.083	1.48		7.167	2.42		13.250	7.27		19.33	2.42
1.167	1.48		7.250	2.96		13.333	7.27		19.42	2.42
1.250	1.48		7.333	2.96		13.417	7.27		19.50	2.42
1.333	1.48		7.417	2.96		13.500	7.27		19.58	2.42
1.417	1.48		7.500	2.96		13.583	7.27		19.67	2.42
1.500	1.48		7.583	2.96		13.667	7.27		19.75	2.42
1.583	1.48		7.667	2.96		13.750	5.65		19.83	2.42
1.667	1.48		7.750	2.96		13.833	5.65		19.92	2.42
1.750	1.48		7.833	2.96		13.917	5.65		20.00	2.42
1.833	1.48		7.917	2.96		14.000	5.65		20.08	2.42
1.917	1.48		8.000	2.96		14.083	5.65		20.17	2.42
2.000	1.48		8.083	2.96		14.167	5.65		20.25	1.61
2.083	1.48		8.167	2.96		14.250	4.04		20.33	1.61
2.167	1.48		8.250	3.50		14.333	4.04		20.42	1.61
2.250	1.75		8.333	3.50		14.417	4.04		20.50	1.61
2.333	1.75		8.417	3.50		14.500	4.04		20.58	1.61
2.417	1.75		8.500	3.50		14.583	4.04		20.67	1.61
2.500	1.75		8.583	3.50		14.667	4.04		20.75	1.61
2.583	1.75		8.667	3.50		14.750	4.04		20.83	1.61
2.667	1.75		8.750	3.77		14.833	4.04		20.92	1.61
2.750	1.75		8.833	3.77		14.917	4.04		21.00	1.61
2.833	1.75		8.917	3.77		15.000	4.04		21.08	1.61
2.917	1.75		9.000	3.77		15.083	4.04		21.17	1.61
3.000	1.75		9.083	3.77		15.167	4.04		21.25	1.61
3.083	1.75		9.167	3.77		15.250	4.04		21.33	1.61
3.167	1.75		9.250	4.31		15.333	4.04		21.42	1.61
3.250	1.75		9.333	4.31		15.417	4.04		21.50	1.61
3.333	1.75		9.417	4.31		15.500	4.04		21.58	1.61
3.417	1.75		9.500	4.31		15.583	4.04		21.67	1.61
3.500	1.75		9.583	4.31		15.667	4.04		21.75	1.61
3.583	1.75		9.667	4.31		15.750	4.04		21.83	1.61
3.667	1.75		9.750	4.84		15.833	4.04		21.92	1.61
3.750	1.75		9.833	4.84		15.917	4.04		22.00	1.61
3.833	1.75		9.917	4.84		16.000	4.04		22.08	1.61
3.917	1.75		10.000	4.84		16.083	4.04		22.17	1.61
4.000	1.75		10.083	4.84		16.167	4.04		22.25	1.61
4.083	1.75		10.167	4.84		16.250	2.42		22.33	1.61
4.167	1.75		10.250	6.19		16.333	2.42		22.42	1.61
4.250	2.15		10.333	6.19		16.417	2.42		22.50	1.61
4.333	2.15		10.417	6.19		16.500	2.42		22.58	1.61
4.417	2.15		10.500	6.19		16.583	2.42		22.67	1.61
4.500	2.15		10.583	6.19		16.667	2.42		22.75	1.61
4.583	2.15		10.667	6.19		16.750	2.42		22.83	1.61
4.667	2.15		10.750	8.34		16.833	2.42		22.92	1.61
4.750	2.15		10.833	8.34		16.917	2.42		23.00	1.61
4.833	2.15		10.917	8.34		17.000	2.42		23.08	1.61
4.917	2.15		11.000	8.34		17.083	2.42		23.17	1.61
5.000	2.15		11.083	8.34		17.167	2.42		23.25	1.61
5.083	2.15		11.167	8.34		17.250	2.42		23.33	1.61
5.167	2.15		11.250	12.92		17.333	2.42		23.42	1.61
5.250	2.15		11.333	12.92		17.417	2.42		23.50	1.61

5.333	2.15	11.417	12.92	17.500	2.42	23.58	1.61
5.417	2.15	11.500	12.92	17.583	2.42	23.67	1.61
5.500	2.15	11.583	12.92	17.667	2.42	23.75	1.61
5.583	2.15	11.667	12.92	17.750	2.42	23.83	1.61
5.667	2.15	11.750	39.83	17.833	2.42	23.92	1.61
5.750	2.15	11.833	39.83	17.917	2.42	24.00	1.61
5.833	2.15	11.917	102.26	18.000	2.42	24.08	1.61
5.917	2.15	12.000	102.27	18.083	2.42	24.17	1.61
6.000	2.15	12.083	164.69	18.167	2.42		
6.083	2.15	12.167	164.70	18.250	2.42		

Max.Eff.Inten. (mm/hr)= 164.70 112.90
over (min) 5.00 5.00
Storage Coeff. (min)= 1.04 (ii) 4.77 (ii)
Unit Hyd. Tpeak (min)= 5.00 5.00
Unit Hyd. peak (cms)= 0.34 0.22

TOTALS
PEAK FLOW (cms)= 0.01 0.08 0.090 (iii)
TIME TO PEAK (hrs)= 12.17 12.17 12.17
RUNOFF VOLUME (mm)= 133.06 76.72 80.65
TOTAL RAINFALL (mm)= 134.56 134.56 134.56
RUNOFF COEFFICIENT = 0.99 0.57 0.60

***** 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* = 74.0 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 (0203):	0.29	0.090	12.17	80.65
+ ID2= 2 (4000):	4.13	0.868	12.42	106.99
=====				
ID = 3 (1000):	4.42	0.883	12.42	105.26

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):	4.42	0.883	12.42	105.26
+ ID2= 2 (5000):	9.72	0.242	12.17	108.13

=====

ID = 1 (1000):	14.14	1.046	12.42	107.23

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

=====

=====

```
V   V   I   SSSSS   U   U   A   L           (v 6.2.2015)
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
```

Developed and Distributed by Smart City Water Inc

Copyright 2007 - 2022 Smart City Water Inc

All rights reserved.

***** 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\jangsoo.lee\AppData\Local\Civica\VH5\191a91e0-1a14-44fd-bc00-4941023c7dee\d20466c8-516
1-44fe-b9db-de5207db91b1\
Summary filename:
C:\Users\jangsoo.lee\AppData\Local\Civica\VH5\191a91e0-1a14-44fd-bc00-4941023c7dee\d20466c8-516
1-44fe-b9db-de5207db91b1\

DATE: 09/25/2024

TIME: 11:27:09

USER:

COMMENTS: _____

** SIMULATION : 100yr 24hr 10min SCS Type II **

READ STORM	Filename: C:\Users\jangsoo.lee\AppData
	ata\Local\Temp\
	f94caa1e-fd3a-473e-9aa7-8c465a92b796\1118027b
Ptotal=145.92 mm	Comments: 100yr 24hr 10min SCS Type II

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.00	0.00	6.17	2.63	12.33	21.01	18.50	2.63
0.17	1.61	6.33	2.63	12.50	21.01	18.67	2.63
0.33	1.61	6.50	2.63	12.67	10.80	18.83	2.63
0.50	1.61	6.67	2.63	12.83	10.80	19.00	2.63
0.67	1.61	6.83	2.63	13.00	10.80	19.17	2.63
0.83	1.61	7.00	2.63	13.17	7.88	19.33	2.63
1.00	1.61	7.17	3.21	13.33	7.88	19.50	2.63
1.17	1.61	7.33	3.21	13.50	7.88	19.67	2.63
1.33	1.61	7.50	3.21	13.67	6.13	19.83	2.63
1.50	1.61	7.67	3.21	13.83	6.13	20.00	2.63
1.67	1.61	7.83	3.21	14.00	6.13	20.17	1.75
1.83	1.61	8.00	3.21	14.17	4.38	20.33	1.75
2.00	1.61	8.17	3.79	14.33	4.38	20.50	1.75
2.17	1.90	8.33	3.79	14.50	4.38	20.67	1.75
2.33	1.90	8.50	3.79	14.67	4.38	20.83	1.75
2.50	1.90	8.67	4.09	14.83	4.38	21.00	1.75
2.67	1.90	8.83	4.09	15.00	4.38	21.17	1.75
2.83	1.90	9.00	4.09	15.17	4.38	21.33	1.75
3.00	1.90	9.17	4.67	15.33	4.38	21.50	1.75
3.17	1.90	9.33	4.67	15.50	4.38	21.67	1.75
3.33	1.90	9.50	4.67	15.67	4.38	21.83	1.75
3.50	1.90	9.67	5.25	15.83	4.38	22.00	1.75
3.67	1.90	9.83	5.25	16.00	4.38	22.17	1.75
3.83	1.90	10.00	5.25	16.17	2.63	22.33	1.75
4.00	1.90	10.17	6.71	16.33	2.63	22.50	1.75
4.17	2.33	10.33	6.71	16.50	2.63	22.67	1.75
4.33	2.33	10.50	6.71	16.67	2.63	22.83	1.75
4.50	2.33	10.67	9.05	16.83	2.63	23.00	1.75
4.67	2.33	10.83	9.05	17.00	2.63	23.17	1.75
4.83	2.33	11.00	9.05	17.17	2.63	23.33	1.75
5.00	2.33	11.17	14.01	17.33	2.63	23.50	1.75
5.17	2.33	11.33	14.01	17.50	2.63	23.67	1.75
5.33	2.33	11.50	14.01	17.67	2.63	23.83	1.75
5.50	2.33	11.67	43.19	17.83	2.63	24.00	1.75
5.67	2.33	11.83	110.90	18.00	2.63		
5.83	2.33	12.00	178.61	18.17	2.63		
6.00	2.33	12.17	21.01	18.33	2.63		

| CALIB |
| STANDHYD (0200) |
ID= 1 DT= 5.0 min

Area (ha)= 10.86
Total Imp(%)= 60.00 Dir. Conn.(%)= 50.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	6.52	4.34
Dep. Storage	(mm)=	1.50	5.00
Average Slope	(%)=	2.00	2.00
Length	(m)=	269.07	30.00
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	0.00	6.167	2.33	12.250	21.03	18.33	2.63
0.167	0.00	6.250	2.63	12.333	21.01	18.42	2.63
0.250	1.61	6.333	2.63	12.417	21.01	18.50	2.63
0.333	1.61	6.417	2.63	12.500	21.01	18.58	2.63
0.417	1.61	6.500	2.63	12.583	21.01	18.67	2.63
0.500	1.61	6.583	2.63	12.667	21.01	18.75	2.63
0.583	1.61	6.667	2.63	12.750	10.80	18.83	2.63
0.667	1.61	6.750	2.63	12.833	10.80	18.92	2.63
0.750	1.61	6.833	2.63	12.917	10.80	19.00	2.63
0.833	1.61	6.917	2.63	13.000	10.80	19.08	2.63
0.917	1.61	7.000	2.63	13.083	10.80	19.17	2.63
1.000	1.61	7.083	2.63	13.167	10.80	19.25	2.63
1.083	1.61	7.167	2.63	13.250	7.88	19.33	2.63
1.167	1.61	7.250	3.21	13.333	7.88	19.42	2.63
1.250	1.61	7.333	3.21	13.417	7.88	19.50	2.63
1.333	1.61	7.417	3.21	13.500	7.88	19.58	2.63
1.417	1.61	7.500	3.21	13.583	7.88	19.67	2.63
1.500	1.61	7.583	3.21	13.667	7.88	19.75	2.63
1.583	1.61	7.667	3.21	13.750	6.13	19.83	2.63
1.667	1.61	7.750	3.21	13.833	6.13	19.92	2.63
1.750	1.61	7.833	3.21	13.917	6.13	20.00	2.63
1.833	1.61	7.917	3.21	14.000	6.13	20.08	2.63
1.917	1.61	8.000	3.21	14.083	6.13	20.17	2.63
2.000	1.61	8.083	3.21	14.167	6.13	20.25	1.75
2.083	1.61	8.167	3.21	14.250	4.38	20.33	1.75
2.167	1.61	8.250	3.79	14.333	4.38	20.42	1.75
2.250	1.90	8.333	3.79	14.417	4.38	20.50	1.75
2.333	1.90	8.417	3.79	14.500	4.38	20.58	1.75
2.417	1.90	8.500	3.79	14.583	4.38	20.67	1.75
2.500	1.90	8.583	3.79	14.667	4.38	20.75	1.75
2.583	1.90	8.667	3.79	14.750	4.38	20.83	1.75
2.667	1.90	8.750	4.09	14.833	4.38	20.92	1.75
2.750	1.90	8.833	4.09	14.917	4.38	21.00	1.75
2.833	1.90	8.917	4.09	15.000	4.38	21.08	1.75
2.917	1.90	9.000	4.09	15.083	4.38	21.17	1.75
3.000	1.90	9.083	4.09	15.167	4.38	21.25	1.75
3.083	1.90	9.167	4.09	15.250	4.38	21.33	1.75
3.167	1.90	9.250	4.67	15.333	4.38	21.42	1.75
3.250	1.90	9.333	4.67	15.417	4.38	21.50	1.75
3.333	1.90	9.417	4.67	15.500	4.38	21.58	1.75
3.417	1.90	9.500	4.67	15.583	4.38	21.67	1.75
3.500	1.90	9.583	4.67	15.667	4.38	21.75	1.75
3.583	1.90	9.667	4.67	15.750	4.38	21.83	1.75
3.667	1.90	9.750	5.25	15.833	4.38	21.92	1.75
3.750	1.90	9.833	5.25	15.917	4.38	22.00	1.75
3.833	1.90	9.917	5.25	16.000	4.38	22.08	1.75

3.917	1.90	10.000	5.25	16.083	4.38	22.17	1.75
4.000	1.90	10.083	5.25	16.167	4.38	22.25	1.75
4.083	1.90	10.167	5.25	16.250	2.63	22.33	1.75
4.167	1.90	10.250	6.71	16.333	2.63	22.42	1.75
4.250	2.33	10.333	6.71	16.417	2.63	22.50	1.75
4.333	2.33	10.417	6.71	16.500	2.63	22.58	1.75
4.417	2.33	10.500	6.71	16.583	2.63	22.67	1.75
4.500	2.33	10.583	6.71	16.667	2.63	22.75	1.75
4.583	2.33	10.667	6.71	16.750	2.63	22.83	1.75
4.667	2.33	10.750	9.05	16.833	2.63	22.92	1.75
4.750	2.33	10.833	9.05	16.917	2.63	23.00	1.75
4.833	2.33	10.917	9.05	17.000	2.63	23.08	1.75
4.917	2.33	11.000	9.05	17.083	2.63	23.17	1.75
5.000	2.33	11.083	9.05	17.167	2.63	23.25	1.75
5.083	2.33	11.167	9.05	17.250	2.63	23.33	1.75
5.167	2.33	11.250	14.01	17.333	2.63	23.42	1.75
5.250	2.33	11.333	14.01	17.417	2.63	23.50	1.75
5.333	2.33	11.417	14.01	17.500	2.63	23.58	1.75
5.417	2.33	11.500	14.01	17.583	2.63	23.67	1.75
5.500	2.33	11.583	14.01	17.667	2.63	23.75	1.75
5.583	2.33	11.667	14.01	17.750	2.63	23.83	1.75
5.667	2.33	11.750	43.19	17.833	2.63	23.92	1.75
5.750	2.33	11.833	43.19	17.917	2.63	24.00	1.75
5.833	2.33	11.917	110.89	18.000	2.63	24.08	1.75
5.917	2.33	12.000	110.90	18.083	2.63	24.17	1.75
6.000	2.33	12.083	178.60	18.167	2.63		
6.083	2.33	12.167	178.61	18.250	2.63		

Max.Eff.Inten. (mm/hr)=	178.61	171.66	
over (min)	5.00	10.00	
Storage Coeff. (min)=	2.98 (ii)	7.29 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.28	0.14	
			TOTALS
PEAK FLOW (cms)=	2.66	1.60	4.256 (iii)
TIME TO PEAK (hrs)=	12.17	12.17	12.17
RUNOFF VOLUME (mm)=	144.42	94.42	119.42
TOTAL RAINFALL (mm)=	145.92	145.92	145.92
RUNOFF COEFFICIENT =	0.99	0.65	0.82

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 74.0 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)=	1.43		
ID= 1 DT= 5.0 min	Total Imp(%)=	50.00	Dir. Conn.(%)=	50.00	

```

-----
                IMPERVIOUS      PERVIOUS (i)
Surface Area    (ha)=          0.71      0.71
Dep. Storage    (mm)=          1.50      5.00
Average Slope   (%)=          2.00      2.00
Length          (m)=          97.64     30.00
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	0.00	6.167	2.33	12.250	21.03	18.33	2.63
0.167	0.00	6.250	2.63	12.333	21.01	18.42	2.63
0.250	1.61	6.333	2.63	12.417	21.01	18.50	2.63
0.333	1.61	6.417	2.63	12.500	21.01	18.58	2.63
0.417	1.61	6.500	2.63	12.583	21.01	18.67	2.63
0.500	1.61	6.583	2.63	12.667	21.01	18.75	2.63
0.583	1.61	6.667	2.63	12.750	10.80	18.83	2.63
0.667	1.61	6.750	2.63	12.833	10.80	18.92	2.63
0.750	1.61	6.833	2.63	12.917	10.80	19.00	2.63
0.833	1.61	6.917	2.63	13.000	10.80	19.08	2.63
0.917	1.61	7.000	2.63	13.083	10.80	19.17	2.63
1.000	1.61	7.083	2.63	13.167	10.80	19.25	2.63
1.083	1.61	7.167	2.63	13.250	7.88	19.33	2.63
1.167	1.61	7.250	3.21	13.333	7.88	19.42	2.63
1.250	1.61	7.333	3.21	13.417	7.88	19.50	2.63
1.333	1.61	7.417	3.21	13.500	7.88	19.58	2.63
1.417	1.61	7.500	3.21	13.583	7.88	19.67	2.63
1.500	1.61	7.583	3.21	13.667	7.88	19.75	2.63
1.583	1.61	7.667	3.21	13.750	6.13	19.83	2.63
1.667	1.61	7.750	3.21	13.833	6.13	19.92	2.63
1.750	1.61	7.833	3.21	13.917	6.13	20.00	2.63
1.833	1.61	7.917	3.21	14.000	6.13	20.08	2.63
1.917	1.61	8.000	3.21	14.083	6.13	20.17	2.63
2.000	1.61	8.083	3.21	14.167	6.13	20.25	1.75
2.083	1.61	8.167	3.21	14.250	4.38	20.33	1.75
2.167	1.61	8.250	3.79	14.333	4.38	20.42	1.75
2.250	1.90	8.333	3.79	14.417	4.38	20.50	1.75
2.333	1.90	8.417	3.79	14.500	4.38	20.58	1.75
2.417	1.90	8.500	3.79	14.583	4.38	20.67	1.75
2.500	1.90	8.583	3.79	14.667	4.38	20.75	1.75
2.583	1.90	8.667	3.79	14.750	4.38	20.83	1.75
2.667	1.90	8.750	4.09	14.833	4.38	20.92	1.75
2.750	1.90	8.833	4.09	14.917	4.38	21.00	1.75
2.833	1.90	8.917	4.09	15.000	4.38	21.08	1.75
2.917	1.90	9.000	4.09	15.083	4.38	21.17	1.75
3.000	1.90	9.083	4.09	15.167	4.38	21.25	1.75
3.083	1.90	9.167	4.09	15.250	4.38	21.33	1.75
3.167	1.90	9.250	4.67	15.333	4.38	21.42	1.75
3.250	1.90	9.333	4.67	15.417	4.38	21.50	1.75

3.333	1.90		9.417	4.67		15.500	4.38		21.58	1.75
3.417	1.90		9.500	4.67		15.583	4.38		21.67	1.75
3.500	1.90		9.583	4.67		15.667	4.38		21.75	1.75
3.583	1.90		9.667	4.67		15.750	4.38		21.83	1.75
3.667	1.90		9.750	5.25		15.833	4.38		21.92	1.75
3.750	1.90		9.833	5.25		15.917	4.38		22.00	1.75
3.833	1.90		9.917	5.25		16.000	4.38		22.08	1.75
3.917	1.90		10.000	5.25		16.083	4.38		22.17	1.75
4.000	1.90		10.083	5.25		16.167	4.38		22.25	1.75
4.083	1.90		10.167	5.25		16.250	2.63		22.33	1.75
4.167	1.90		10.250	6.71		16.333	2.63		22.42	1.75
4.250	2.33		10.333	6.71		16.417	2.63		22.50	1.75
4.333	2.33		10.417	6.71		16.500	2.63		22.58	1.75
4.417	2.33		10.500	6.71		16.583	2.63		22.67	1.75
4.500	2.33		10.583	6.71		16.667	2.63		22.75	1.75
4.583	2.33		10.667	6.71		16.750	2.63		22.83	1.75
4.667	2.33		10.750	9.05		16.833	2.63		22.92	1.75
4.750	2.33		10.833	9.05		16.917	2.63		23.00	1.75
4.833	2.33		10.917	9.05		17.000	2.63		23.08	1.75
4.917	2.33		11.000	9.05		17.083	2.63		23.17	1.75
5.000	2.33		11.083	9.05		17.167	2.63		23.25	1.75
5.083	2.33		11.167	9.05		17.250	2.63		23.33	1.75
5.167	2.33		11.250	14.01		17.333	2.63		23.42	1.75
5.250	2.33		11.333	14.01		17.417	2.63		23.50	1.75
5.333	2.33		11.417	14.01		17.500	2.63		23.58	1.75
5.417	2.33		11.500	14.01		17.583	2.63		23.67	1.75
5.500	2.33		11.583	14.01		17.667	2.63		23.75	1.75
5.583	2.33		11.667	14.01		17.750	2.63		23.83	1.75
5.667	2.33		11.750	43.19		17.833	2.63		23.92	1.75
5.750	2.33		11.833	43.19		17.917	2.63		24.00	1.75
5.833	2.33		11.917	110.89		18.000	2.63		24.08	1.75
5.917	2.33		12.000	110.90		18.083	2.63		24.17	1.75
6.000	2.33		12.083	178.60		18.167	2.63			
6.083	2.33		12.167	178.61		18.250	2.63			

Max.Eff.Inten. (mm/hr)=	178.61	126.63
over (min)	5.00	10.00
Storage Coeff. (min)=	1.62 (ii)	6.33 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.32	0.15

TOTALS

PEAK FLOW (cms)=	0.35	0.20	0.555 (iii)
TIME TO PEAK (hrs)=	12.17	12.17	12.17
RUNOFF VOLUME (mm)=	144.42	86.28	115.35
TOTAL RAINFALL (mm)=	145.92	145.92	145.92
RUNOFF COEFFICIENT =	0.99	0.59	0.79

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:

CN* = 74.0 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 (3000)				
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.
-----	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0200):	10.86	4.256	12.17	119.42
+ ID2= 2 (0201):	1.43	0.555	12.17	115.35
=====				
ID = 3 (3000):	12.29	4.812	12.17	118.95

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR(2000)	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		0.1180 0.5426
	0.0060	0.0590		0.1350 0.5819
	0.0100	0.1205		0.1520 0.6219
	0.0120	0.1522		0.6240 0.7039
	0.0260	0.1845		1.4970 0.7886
	0.0410	0.2510		2.6380 0.8759
	0.0690	0.3201		4.0120 0.9659
	0.0890	0.3917		5.5960 1.0585
	0.0970	0.4284		7.3740 1.1579
	0.1050	0.4658		0.0000 0.0000

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
INFLOW : ID= 2 (3000)	12.290	4.812	12.17	118.95
OUTFLOW: ID= 1 (2000)	12.290	1.321	12.33	118.74

PEAK FLOW REDUCTION [Qout/Qin] (%)= 27.45
TIME SHIFT OF PEAK FLOW (min)= 10.00
MAXIMUM STORAGE USED (ha.m.)= 0.7730

DIVERTHYD(0010)
IN= 1 # OUT= 5

Outflow / Inflow Relationships

Flow 1	Flow 2	Flow 3	Flow 4	Flow 5	Total
(cms)	(cms)	(cms)	(cms)	(cms)	(cms)
0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.09	0.00	0.00	0.00	0.09
0.00	0.12	0.00	0.00	0.00	0.12
0.05	0.13	0.00	0.00	0.00	0.19

0.41	0.14	0.00	0.00	0.00	0.55
0.77	0.14	0.00	0.00	0.00	0.92
1.17	0.15	0.00	0.00	0.00	1.32
1.51	0.15	0.00	0.00	0.00	1.67

		AREA	QPEAK	TPEAK	R.V.
		(ha)	(cms)	(hrs)	(mm)
TOTAL HYD. (ID= 1):		12.29	1.32	12.33	118.74
=====					
ID= 2	(2)	: 3.48	1.17	12.33	118.74
ID= 3	(2)	: 8.81	0.15	12.33	118.74
ID= 4	(2)	: 0.00	0.00	0.00	0.00
ID= 5	(2)	: 0.00	0.00	0.00	0.00
ID= 6	(2)	: 0.00	0.00	0.00	0.00

CALIB					
STANDHYD (0202)		Area	(ha)=	1.26	
ID= 1 DT= 5.0 min		Total Imp(%)=	55.00	Dir. Conn.(%)=	35.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.69	0.57
Dep. Storage	(mm)=	1.50	5.00
Average Slope	(%)=	2.00	2.00
Length	(m)=	91.65	30.00
Mannings n	=	0.013	0.250

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

----- TRANSFORMED HYETOGRAPH -----							
TIME	RAIN		TIME	RAIN		TIME	RAIN
hrs	mm/hr		hrs	mm/hr		hrs	mm/hr
0.083	0.00		6.167	2.33		12.250	21.03
0.167	0.00		6.250	2.63		12.333	21.01
0.250	1.61		6.333	2.63		12.417	21.01
0.333	1.61		6.417	2.63		12.500	21.01
0.417	1.61		6.500	2.63		12.583	21.01
0.500	1.61		6.583	2.63		12.667	21.01
0.583	1.61		6.667	2.63		12.750	10.80
0.667	1.61		6.750	2.63		12.833	10.80
0.750	1.61		6.833	2.63		12.917	10.80
0.833	1.61		6.917	2.63		13.000	10.80
0.917	1.61		7.000	2.63		13.083	10.80
1.000	1.61		7.083	2.63		13.167	10.80
1.083	1.61		7.167	2.63		13.250	7.88
1.167	1.61		7.250	3.21		13.333	7.88
1.250	1.61		7.333	3.21		13.417	7.88
1.333	1.61		7.417	3.21		13.500	7.88
1.417	1.61		7.500	3.21		13.583	7.88
1.500	1.61		7.583	3.21		13.667	7.88
1.583	1.61		7.667	3.21		13.750	6.13
1.667	1.61		7.750	3.21		13.833	6.13

1.750	1.61		7.833	3.21		13.917	6.13		20.00	2.63
1.833	1.61		7.917	3.21		14.000	6.13		20.08	2.63
1.917	1.61		8.000	3.21		14.083	6.13		20.17	2.63
2.000	1.61		8.083	3.21		14.167	6.13		20.25	1.75
2.083	1.61		8.167	3.21		14.250	4.38		20.33	1.75
2.167	1.61		8.250	3.79		14.333	4.38		20.42	1.75
2.250	1.90		8.333	3.79		14.417	4.38		20.50	1.75
2.333	1.90		8.417	3.79		14.500	4.38		20.58	1.75
2.417	1.90		8.500	3.79		14.583	4.38		20.67	1.75
2.500	1.90		8.583	3.79		14.667	4.38		20.75	1.75
2.583	1.90		8.667	3.79		14.750	4.38		20.83	1.75
2.667	1.90		8.750	4.09		14.833	4.38		20.92	1.75
2.750	1.90		8.833	4.09		14.917	4.38		21.00	1.75
2.833	1.90		8.917	4.09		15.000	4.38		21.08	1.75
2.917	1.90		9.000	4.09		15.083	4.38		21.17	1.75
3.000	1.90		9.083	4.09		15.167	4.38		21.25	1.75
3.083	1.90		9.167	4.09		15.250	4.38		21.33	1.75
3.167	1.90		9.250	4.67		15.333	4.38		21.42	1.75
3.250	1.90		9.333	4.67		15.417	4.38		21.50	1.75
3.333	1.90		9.417	4.67		15.500	4.38		21.58	1.75
3.417	1.90		9.500	4.67		15.583	4.38		21.67	1.75
3.500	1.90		9.583	4.67		15.667	4.38		21.75	1.75
3.583	1.90		9.667	4.67		15.750	4.38		21.83	1.75
3.667	1.90		9.750	5.25		15.833	4.38		21.92	1.75
3.750	1.90		9.833	5.25		15.917	4.38		22.00	1.75
3.833	1.90		9.917	5.25		16.000	4.38		22.08	1.75
3.917	1.90		10.000	5.25		16.083	4.38		22.17	1.75
4.000	1.90		10.083	5.25		16.167	4.38		22.25	1.75
4.083	1.90		10.167	5.25		16.250	2.63		22.33	1.75
4.167	1.90		10.250	6.71		16.333	2.63		22.42	1.75
4.250	2.33		10.333	6.71		16.417	2.63		22.50	1.75
4.333	2.33		10.417	6.71		16.500	2.63		22.58	1.75
4.417	2.33		10.500	6.71		16.583	2.63		22.67	1.75
4.500	2.33		10.583	6.71		16.667	2.63		22.75	1.75
4.583	2.33		10.667	6.71		16.750	2.63		22.83	1.75
4.667	2.33		10.750	9.05		16.833	2.63		22.92	1.75
4.750	2.33		10.833	9.05		16.917	2.63		23.00	1.75
4.833	2.33		10.917	9.05		17.000	2.63		23.08	1.75
4.917	2.33		11.000	9.05		17.083	2.63		23.17	1.75
5.000	2.33		11.083	9.05		17.167	2.63		23.25	1.75
5.083	2.33		11.167	9.05		17.250	2.63		23.33	1.75
5.167	2.33		11.250	14.01		17.333	2.63		23.42	1.75
5.250	2.33		11.333	14.01		17.417	2.63		23.50	1.75
5.333	2.33		11.417	14.01		17.500	2.63		23.58	1.75
5.417	2.33		11.500	14.01		17.583	2.63		23.67	1.75
5.500	2.33		11.583	14.01		17.667	2.63		23.75	1.75
5.583	2.33		11.667	14.01		17.750	2.63		23.83	1.75
5.667	2.33		11.750	43.19		17.833	2.63		23.92	1.75
5.750	2.33		11.833	43.19		17.917	2.63		24.00	1.75
5.833	2.33		11.917	110.89		18.000	2.63		24.08	1.75
5.917	2.33		12.000	110.90		18.083	2.63		24.17	1.75
6.000	2.33		12.083	178.60		18.167	2.63			
6.083	2.33		12.167	178.61		18.250	2.63			

Max.Eff.Inten. (mm/hr)=	178.61	207.30	
over (min)	5.00	10.00	
Storage Coeff. (min)=	1.56 (ii)	6.00 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.33	0.15	
			TOTALS
PEAK FLOW (cms)=	0.22	0.27	0.486 (iii)
TIME TO PEAK (hrs)=	12.17	12.17	12.17
RUNOFF VOLUME (mm)=	144.42	99.36	115.13
TOTAL RAINFALL (mm)=	145.92	145.92	145.92
RUNOFF COEFFICIENT =	0.99	0.68	0.79

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 74.0 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 (4000)				
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0010):	3.48	1.171	12.33	118.74
+ ID2= 2 (0202):	1.26	0.486	12.17	115.13
=====				
ID = 3 (4000):	4.74	1.324	12.33	117.78

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB	
STANDHYD (0204)	Area (ha)= 0.30
ID= 1 DT= 5.0 min	Total Imp(%)= 60.00 Dir. Conn.(%)= 50.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.18	0.12
Dep. Storage	(mm)=	1.50	5.00
Average Slope	(%)=	5.00	5.00
Length	(m)=	44.72	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	0.00	6.167	2.33	12.250	21.03	18.33	2.63

0.167	0.00		6.250	2.63		12.333	21.01		18.42	2.63
0.250	1.61		6.333	2.63		12.417	21.01		18.50	2.63
0.333	1.61		6.417	2.63		12.500	21.01		18.58	2.63
0.417	1.61		6.500	2.63		12.583	21.01		18.67	2.63
0.500	1.61		6.583	2.63		12.667	21.01		18.75	2.63
0.583	1.61		6.667	2.63		12.750	10.80		18.83	2.63
0.667	1.61		6.750	2.63		12.833	10.80		18.92	2.63
0.750	1.61		6.833	2.63		12.917	10.80		19.00	2.63
0.833	1.61		6.917	2.63		13.000	10.80		19.08	2.63
0.917	1.61		7.000	2.63		13.083	10.80		19.17	2.63
1.000	1.61		7.083	2.63		13.167	10.80		19.25	2.63
1.083	1.61		7.167	2.63		13.250	7.88		19.33	2.63
1.167	1.61		7.250	3.21		13.333	7.88		19.42	2.63
1.250	1.61		7.333	3.21		13.417	7.88		19.50	2.63
1.333	1.61		7.417	3.21		13.500	7.88		19.58	2.63
1.417	1.61		7.500	3.21		13.583	7.88		19.67	2.63
1.500	1.61		7.583	3.21		13.667	7.88		19.75	2.63
1.583	1.61		7.667	3.21		13.750	6.13		19.83	2.63
1.667	1.61		7.750	3.21		13.833	6.13		19.92	2.63
1.750	1.61		7.833	3.21		13.917	6.13		20.00	2.63
1.833	1.61		7.917	3.21		14.000	6.13		20.08	2.63
1.917	1.61		8.000	3.21		14.083	6.13		20.17	2.63
2.000	1.61		8.083	3.21		14.167	6.13		20.25	1.75
2.083	1.61		8.167	3.21		14.250	4.38		20.33	1.75
2.167	1.61		8.250	3.79		14.333	4.38		20.42	1.75
2.250	1.90		8.333	3.79		14.417	4.38		20.50	1.75
2.333	1.90		8.417	3.79		14.500	4.38		20.58	1.75
2.417	1.90		8.500	3.79		14.583	4.38		20.67	1.75
2.500	1.90		8.583	3.79		14.667	4.38		20.75	1.75
2.583	1.90		8.667	3.79		14.750	4.38		20.83	1.75
2.667	1.90		8.750	4.09		14.833	4.38		20.92	1.75
2.750	1.90		8.833	4.09		14.917	4.38		21.00	1.75
2.833	1.90		8.917	4.09		15.000	4.38		21.08	1.75
2.917	1.90		9.000	4.09		15.083	4.38		21.17	1.75
3.000	1.90		9.083	4.09		15.167	4.38		21.25	1.75
3.083	1.90		9.167	4.09		15.250	4.38		21.33	1.75
3.167	1.90		9.250	4.67		15.333	4.38		21.42	1.75
3.250	1.90		9.333	4.67		15.417	4.38		21.50	1.75
3.333	1.90		9.417	4.67		15.500	4.38		21.58	1.75
3.417	1.90		9.500	4.67		15.583	4.38		21.67	1.75
3.500	1.90		9.583	4.67		15.667	4.38		21.75	1.75
3.583	1.90		9.667	4.67		15.750	4.38		21.83	1.75
3.667	1.90		9.750	5.25		15.833	4.38		21.92	1.75
3.750	1.90		9.833	5.25		15.917	4.38		22.00	1.75
3.833	1.90		9.917	5.25		16.000	4.38		22.08	1.75
3.917	1.90		10.000	5.25		16.083	4.38		22.17	1.75
4.000	1.90		10.083	5.25		16.167	4.38		22.25	1.75
4.083	1.90		10.167	5.25		16.250	2.63		22.33	1.75
4.167	1.90		10.250	6.71		16.333	2.63		22.42	1.75
4.250	2.33		10.333	6.71		16.417	2.63		22.50	1.75
4.333	2.33		10.417	6.71		16.500	2.63		22.58	1.75
4.417	2.33		10.500	6.71		16.583	2.63		22.67	1.75
4.500	2.33		10.583	6.71		16.667	2.63		22.75	1.75

4.583	2.33	10.667	6.71	16.750	2.63	22.83	1.75
4.667	2.33	10.750	9.05	16.833	2.63	22.92	1.75
4.750	2.33	10.833	9.05	16.917	2.63	23.00	1.75
4.833	2.33	10.917	9.05	17.000	2.63	23.08	1.75
4.917	2.33	11.000	9.05	17.083	2.63	23.17	1.75
5.000	2.33	11.083	9.05	17.167	2.63	23.25	1.75
5.083	2.33	11.167	9.05	17.250	2.63	23.33	1.75
5.167	2.33	11.250	14.01	17.333	2.63	23.42	1.75
5.250	2.33	11.333	14.01	17.417	2.63	23.50	1.75
5.333	2.33	11.417	14.01	17.500	2.63	23.58	1.75
5.417	2.33	11.500	14.01	17.583	2.63	23.67	1.75
5.500	2.33	11.583	14.01	17.667	2.63	23.75	1.75
5.583	2.33	11.667	14.01	17.750	2.63	23.83	1.75
5.667	2.33	11.750	43.19	17.833	2.63	23.92	1.75
5.750	2.33	11.833	43.19	17.917	2.63	24.00	1.75
5.833	2.33	11.917	110.89	18.000	2.63	24.08	1.75
5.917	2.33	12.000	110.90	18.083	2.63	24.17	1.75
6.000	2.33	12.083	178.60	18.167	2.63		
6.083	2.33	12.167	178.61	18.250	2.63		

Max.Eff.Inten. (mm/hr)=	178.61	174.42	
over (min)	5.00	5.00	
Storage Coeff. (min)=	0.77 (ii)	4.66 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.34	0.22	
			TOTALS
PEAK FLOW (cms)=	0.07	0.06	0.130 (iii)
TIME TO PEAK (hrs)=	12.17	12.17	12.17
RUNOFF VOLUME (mm)=	144.42	96.07	120.23
TOTAL RAINFALL (mm)=	145.92	145.92	145.92
RUNOFF COEFFICIENT =	0.99	0.66	0.82

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 75.0 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(2001)	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		0.0826 0.0013
	0.0100	0.0000		0.0904 0.0015
	0.0190	0.0002		0.0975 0.0017
	0.0380	0.0004		0.1042 0.0017
	0.0528	0.0006		0.1335 0.0017
	0.0643	0.0009		0.1574 0.0017
	0.0740	0.0011		0.5345 0.0018

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
INFLOW : ID= 2 (0204)	0.300	0.130	12.17	120.23
OUTFLOW: ID= 1 (2001)	0.300	0.146	12.17	120.29
PEAK FLOW REDUCTION	[Qout/Qin] (%)=112.26			
TIME SHIFT OF PEAK FLOW	(min)= 0.00			
MAXIMUM STORAGE USED	(ha.m.)= 0.0015			
***** WARNING : HYDROGRAPH PEAK WAS NOT REDUCED.				
CHECK OUTFLOW/STORAGE TABLE OR REDUCE DT.				

ADD HYD (5000)				
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.
-----	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0010):	8.81	0.150	12.33	118.74
+ ID2= 2 (2001):	0.30	0.146	12.17	120.29
=====				
ID = 3 (5000):	9.11	0.282	12.17	118.79

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.				

CALIB				
STANDHYD (0203)	Area	(ha)=	0.29	
ID= 1 DT= 5.0 min	Total Imp (%)	=	7.00	Dir. Conn. (%) = 7.00

	IMPERVIOUS		PERVIOUS (i)	
Surface Area	(ha)=	0.02	0.27	
Dep. Storage	(mm)=	1.50	5.00	
Average Slope	(%)=	2.00	2.00	
Length	(m)=	43.97	15.00	
Mannings n	=	0.013	0.250	

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

---- TRANSFORMED HYETOGRAPH ----							
TIME	RAIN		TIME	RAIN		TIME	RAIN
hrs	mm/hr		hrs	mm/hr		hrs	mm/hr
0.083	0.00		6.167	2.33		12.250	21.03
0.167	0.00		6.250	2.63		12.333	21.01
0.250	1.61		6.333	2.63		12.417	21.01
0.333	1.61		6.417	2.63		12.500	21.01
0.417	1.61		6.500	2.63		12.583	21.01
0.500	1.61		6.583	2.63		12.667	21.01
0.583	1.61		6.667	2.63		12.750	10.80
0.667	1.61		6.750	2.63		12.833	10.80
0.750	1.61		6.833	2.63		12.917	10.80
0.833	1.61		6.917	2.63		13.000	10.80

0.917	1.61		7.000	2.63		13.083	10.80		19.17	2.63
1.000	1.61		7.083	2.63		13.167	10.80		19.25	2.63
1.083	1.61		7.167	2.63		13.250	7.88		19.33	2.63
1.167	1.61		7.250	3.21		13.333	7.88		19.42	2.63
1.250	1.61		7.333	3.21		13.417	7.88		19.50	2.63
1.333	1.61		7.417	3.21		13.500	7.88		19.58	2.63
1.417	1.61		7.500	3.21		13.583	7.88		19.67	2.63
1.500	1.61		7.583	3.21		13.667	7.88		19.75	2.63
1.583	1.61		7.667	3.21		13.750	6.13		19.83	2.63
1.667	1.61		7.750	3.21		13.833	6.13		19.92	2.63
1.750	1.61		7.833	3.21		13.917	6.13		20.00	2.63
1.833	1.61		7.917	3.21		14.000	6.13		20.08	2.63
1.917	1.61		8.000	3.21		14.083	6.13		20.17	2.63
2.000	1.61		8.083	3.21		14.167	6.13		20.25	1.75
2.083	1.61		8.167	3.21		14.250	4.38		20.33	1.75
2.167	1.61		8.250	3.79		14.333	4.38		20.42	1.75
2.250	1.90		8.333	3.79		14.417	4.38		20.50	1.75
2.333	1.90		8.417	3.79		14.500	4.38		20.58	1.75
2.417	1.90		8.500	3.79		14.583	4.38		20.67	1.75
2.500	1.90		8.583	3.79		14.667	4.38		20.75	1.75
2.583	1.90		8.667	3.79		14.750	4.38		20.83	1.75
2.667	1.90		8.750	4.09		14.833	4.38		20.92	1.75
2.750	1.90		8.833	4.09		14.917	4.38		21.00	1.75
2.833	1.90		8.917	4.09		15.000	4.38		21.08	1.75
2.917	1.90		9.000	4.09		15.083	4.38		21.17	1.75
3.000	1.90		9.083	4.09		15.167	4.38		21.25	1.75
3.083	1.90		9.167	4.09		15.250	4.38		21.33	1.75
3.167	1.90		9.250	4.67		15.333	4.38		21.42	1.75
3.250	1.90		9.333	4.67		15.417	4.38		21.50	1.75
3.333	1.90		9.417	4.67		15.500	4.38		21.58	1.75
3.417	1.90		9.500	4.67		15.583	4.38		21.67	1.75
3.500	1.90		9.583	4.67		15.667	4.38		21.75	1.75
3.583	1.90		9.667	4.67		15.750	4.38		21.83	1.75
3.667	1.90		9.750	5.25		15.833	4.38		21.92	1.75
3.750	1.90		9.833	5.25		15.917	4.38		22.00	1.75
3.833	1.90		9.917	5.25		16.000	4.38		22.08	1.75
3.917	1.90		10.000	5.25		16.083	4.38		22.17	1.75
4.000	1.90		10.083	5.25		16.167	4.38		22.25	1.75
4.083	1.90		10.167	5.25		16.250	2.63		22.33	1.75
4.167	1.90		10.250	6.71		16.333	2.63		22.42	1.75
4.250	2.33		10.333	6.71		16.417	2.63		22.50	1.75
4.333	2.33		10.417	6.71		16.500	2.63		22.58	1.75
4.417	2.33		10.500	6.71		16.583	2.63		22.67	1.75
4.500	2.33		10.583	6.71		16.667	2.63		22.75	1.75
4.583	2.33		10.667	6.71		16.750	2.63		22.83	1.75
4.667	2.33		10.750	9.05		16.833	2.63		22.92	1.75
4.750	2.33		10.833	9.05		16.917	2.63		23.00	1.75
4.833	2.33		10.917	9.05		17.000	2.63		23.08	1.75
4.917	2.33		11.000	9.05		17.083	2.63		23.17	1.75
5.000	2.33		11.083	9.05		17.167	2.63		23.25	1.75
5.083	2.33		11.167	9.05		17.250	2.63		23.33	1.75
5.167	2.33		11.250	14.01		17.333	2.63		23.42	1.75
5.250	2.33		11.333	14.01		17.417	2.63		23.50	1.75

5.333	2.33	11.417	14.01	17.500	2.63		23.58	1.75
5.417	2.33	11.500	14.01	17.583	2.63		23.67	1.75
5.500	2.33	11.583	14.01	17.667	2.63		23.75	1.75
5.583	2.33	11.667	14.01	17.750	2.63		23.83	1.75
5.667	2.33	11.750	43.19	17.833	2.63		23.92	1.75
5.750	2.33	11.833	43.19	17.917	2.63		24.00	1.75
5.833	2.33	11.917	110.89	18.000	2.63		24.08	1.75
5.917	2.33	12.000	110.90	18.083	2.63		24.17	1.75
6.000	2.33	12.083	178.60	18.167	2.63			
6.083	2.33	12.167	178.61	18.250	2.63			

Max.Eff.Inten. (mm/hr)=	178.61	126.63	
over (min)	5.00	5.00	
Storage Coeff. (min)=	1.01 (ii)	4.57 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.34	0.23	
			TOTALS
PEAK FLOW (cms)=	0.01	0.09	0.101 (iii)
TIME TO PEAK (hrs)=	12.17	12.17	12.17
RUNOFF VOLUME (mm)=	144.42	86.28	90.34
TOTAL RAINFALL (mm)=	145.92	145.92	145.92
RUNOFF COEFFICIENT =	0.99	0.59	0.62

***** 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* = 74.0 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 (0203):	0.29	0.101	12.17	90.34
+ ID2= 2 (4000):	4.74	1.324	12.33	117.78
=====				
ID = 3 (1000):	5.03	1.346	12.33	116.20

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):	5.03	1.346	12.33	116.20
+ ID2= 2 (5000):	9.11	0.282	12.17	118.79

=====

ID = 1 (1000):	14.14	1.524	12.33	117.87

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

FINISH

=====

=====

=====

=====

```
V      V      I      SSSSS  U      U      A      L      (v 6.2.2015)
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
```

Developed and Distributed by Smart City Water Inc

Copyright 2007 - 2022 Smart City Water Inc

All rights reserved.

***** 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\jangsoo.lee\AppData\Local\Civica\VH5\191a91e0-1a14-44fd-bc00-4941023c7dee\3384979d-6ae1-4356-9c2d-23e66e0edeb1\

Summary filename:

C:\Users\jangsoo.lee\AppData\Local\Civica\VH5\191a91e0-1a14-44fd-bc00-4941023c7dee\3384979d-6ae1-4356-9c2d-23e66e0edeb1\

DATE: 09/25/2024

TIME: 11:27:09

USER:

COMMENTS: _____

** SIMULATION : Regional Storm - 48 hr **

READ STORM	Filename: C:\Users\jangsoo.lee\AppData
	ata\Local\Temp\
	f94caale-fd3a-473e-9aa7-8c465a92b796\8f8698b4
Ptotal=284.00 mm	Comments: Regional Storm - 48 hr

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.00	0.00	13.00	2.00	26.00	2.00	39.00	6.00
1.00	2.00	14.00	2.00	27.00	2.00	40.00	13.00
2.00	2.00	15.00	2.00	28.00	2.00	41.00	17.00
3.00	2.00	16.00	2.00	29.00	2.00	42.00	13.00
4.00	2.00	17.00	2.00	30.00	2.00	43.00	23.00
5.00	2.00	18.00	2.00	31.00	2.00	44.00	13.00
6.00	2.00	19.00	2.00	32.00	2.00	45.00	13.00
7.00	2.00	20.00	2.00	33.00	2.00	46.00	53.00
8.00	2.00	21.00	2.00	34.00	2.00	47.00	38.00
9.00	2.00	22.00	2.00	35.00	2.00	48.00	13.00
10.00	2.00	23.00	2.00	36.00	2.00		
11.00	2.00	24.00	2.00	37.00	6.00		
12.00	2.00	25.00	2.00	38.00	4.00		

| CALIB |
| STANDHYD (0200) | Area (ha)= 10.86
| ID= 1 DT= 5.0 min | Total Imp(%)= 60.00 Dir. Conn.(%)= 50.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	6.52	4.34
Dep. Storage (mm)=	1.50	5.00
Average Slope (%)=	2.00	2.00
Length (m)=	269.07	30.00
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	0.00	12.333	2.00	24.583	2.00	36.83	2.00
0.167	0.00	12.417	2.00	24.667	2.00	36.92	2.00
0.250	0.00	12.500	2.00	24.750	2.00	37.00	2.00
0.333	0.00	12.583	2.00	24.833	2.00	37.08	6.00
0.417	0.00	12.667	2.00	24.917	2.00	37.17	6.00
0.500	0.00	12.750	2.00	25.000	2.00	37.25	6.00
0.583	0.00	12.833	2.00	25.083	2.00	37.33	6.00
0.667	0.00	12.917	2.00	25.167	2.00	37.42	6.00
0.750	0.00	13.000	2.00	25.250	2.00	37.50	6.00
0.833	0.00	13.083	2.00	25.333	2.00	37.58	6.00
0.917	0.00	13.167	2.00	25.417	2.00	37.67	6.00
1.000	0.00	13.250	2.00	25.500	2.00	37.75	6.00
1.083	2.00	13.333	2.00	25.583	2.00	37.83	6.00
1.167	2.00	13.417	2.00	25.667	2.00	37.92	6.00
1.250	2.00	13.500	2.00	25.750	2.00	38.00	6.00
1.333	2.00	13.583	2.00	25.833	2.00	38.08	4.00
1.417	2.00	13.667	2.00	25.917	2.00	38.17	4.00

1.500	2.00	13.750	2.00	26.000	2.00	38.25	4.00
1.583	2.00	13.833	2.00	26.083	2.00	38.33	4.00
1.667	2.00	13.917	2.00	26.167	2.00	38.42	4.00
1.750	2.00	14.000	2.00	26.250	2.00	38.50	4.00
1.833	2.00	14.083	2.00	26.333	2.00	38.58	4.00
1.917	2.00	14.167	2.00	26.417	2.00	38.67	4.00
2.000	2.00	14.250	2.00	26.500	2.00	38.75	4.00
2.083	2.00	14.333	2.00	26.583	2.00	38.83	4.00
2.167	2.00	14.417	2.00	26.667	2.00	38.92	4.00
2.250	2.00	14.500	2.00	26.750	2.00	39.00	4.00
2.333	2.00	14.583	2.00	26.833	2.00	39.08	6.00
2.417	2.00	14.667	2.00	26.917	2.00	39.17	6.00
2.500	2.00	14.750	2.00	27.000	2.00	39.25	6.00
2.583	2.00	14.833	2.00	27.083	2.00	39.33	6.00
2.667	2.00	14.917	2.00	27.167	2.00	39.42	6.00
2.750	2.00	15.000	2.00	27.250	2.00	39.50	6.00
2.833	2.00	15.083	2.00	27.333	2.00	39.58	6.00
2.917	2.00	15.167	2.00	27.417	2.00	39.67	6.00
3.000	2.00	15.250	2.00	27.500	2.00	39.75	6.00
3.083	2.00	15.333	2.00	27.583	2.00	39.83	6.00
3.167	2.00	15.417	2.00	27.667	2.00	39.92	6.00
3.250	2.00	15.500	2.00	27.750	2.00	40.00	6.00
3.333	2.00	15.583	2.00	27.833	2.00	40.08	13.00
3.417	2.00	15.667	2.00	27.917	2.00	40.17	13.00
3.500	2.00	15.750	2.00	28.000	2.00	40.25	13.00
3.583	2.00	15.833	2.00	28.083	2.00	40.33	13.00
3.667	2.00	15.917	2.00	28.167	2.00	40.42	13.00
3.750	2.00	16.000	2.00	28.250	2.00	40.50	13.00
3.833	2.00	16.083	2.00	28.333	2.00	40.58	13.00
3.917	2.00	16.167	2.00	28.417	2.00	40.67	13.00
4.000	2.00	16.250	2.00	28.500	2.00	40.75	13.00
4.083	2.00	16.333	2.00	28.583	2.00	40.83	13.00
4.167	2.00	16.417	2.00	28.667	2.00	40.92	13.00
4.250	2.00	16.500	2.00	28.750	2.00	41.00	13.00
4.333	2.00	16.583	2.00	28.833	2.00	41.08	17.00
4.417	2.00	16.667	2.00	28.917	2.00	41.17	17.00
4.500	2.00	16.750	2.00	29.000	2.00	41.25	17.00
4.583	2.00	16.833	2.00	29.083	2.00	41.33	17.00
4.667	2.00	16.917	2.00	29.167	2.00	41.42	17.00
4.750	2.00	17.000	2.00	29.250	2.00	41.50	17.00
4.833	2.00	17.083	2.00	29.333	2.00	41.58	17.00
4.917	2.00	17.167	2.00	29.417	2.00	41.67	17.00
5.000	2.00	17.250	2.00	29.500	2.00	41.75	17.00
5.083	2.00	17.333	2.00	29.583	2.00	41.83	17.00
5.167	2.00	17.417	2.00	29.667	2.00	41.92	17.00
5.250	2.00	17.500	2.00	29.750	2.00	42.00	17.00
5.333	2.00	17.583	2.00	29.833	2.00	42.08	13.00
5.417	2.00	17.667	2.00	29.917	2.00	42.17	13.00
5.500	2.00	17.750	2.00	30.000	2.00	42.25	13.00
5.583	2.00	17.833	2.00	30.083	2.00	42.33	13.00
5.667	2.00	17.917	2.00	30.167	2.00	42.42	13.00
5.750	2.00	18.000	2.00	30.250	2.00	42.50	13.00
5.833	2.00	18.083	2.00	30.333	2.00	42.58	13.00

5.917	2.00	18.167	2.00	30.417	2.00	42.67	13.00
6.000	2.00	18.250	2.00	30.500	2.00	42.75	13.00
6.083	2.00	18.333	2.00	30.583	2.00	42.83	13.00
6.167	2.00	18.417	2.00	30.667	2.00	42.92	13.00
6.250	2.00	18.500	2.00	30.750	2.00	43.00	13.00
6.333	2.00	18.583	2.00	30.833	2.00	43.08	22.99
6.417	2.00	18.667	2.00	30.917	2.00	43.17	23.00
6.500	2.00	18.750	2.00	31.000	2.00	43.25	23.00
6.583	2.00	18.833	2.00	31.083	2.00	43.33	23.00
6.667	2.00	18.917	2.00	31.167	2.00	43.42	23.00
6.750	2.00	19.000	2.00	31.250	2.00	43.50	23.00
6.833	2.00	19.083	2.00	31.333	2.00	43.58	23.00
6.917	2.00	19.167	2.00	31.417	2.00	43.67	23.00
7.000	2.00	19.250	2.00	31.500	2.00	43.75	23.00
7.083	2.00	19.333	2.00	31.583	2.00	43.83	23.00
7.167	2.00	19.417	2.00	31.667	2.00	43.92	23.00
7.250	2.00	19.500	2.00	31.750	2.00	44.00	23.00
7.333	2.00	19.583	2.00	31.833	2.00	44.08	13.01
7.417	2.00	19.667	2.00	31.917	2.00	44.17	13.00
7.500	2.00	19.750	2.00	32.000	2.00	44.25	13.00
7.583	2.00	19.833	2.00	32.083	2.00	44.33	13.00
7.667	2.00	19.917	2.00	32.167	2.00	44.42	13.00
7.750	2.00	20.000	2.00	32.250	2.00	44.50	13.00
7.833	2.00	20.083	2.00	32.333	2.00	44.58	13.00
7.917	2.00	20.167	2.00	32.417	2.00	44.67	13.00
8.000	2.00	20.250	2.00	32.500	2.00	44.75	13.00
8.083	2.00	20.333	2.00	32.583	2.00	44.83	13.00
8.167	2.00	20.417	2.00	32.667	2.00	44.92	13.00
8.250	2.00	20.500	2.00	32.750	2.00	45.00	13.00
8.333	2.00	20.583	2.00	32.833	2.00	45.08	13.00
8.417	2.00	20.667	2.00	32.917	2.00	45.17	13.00
8.500	2.00	20.750	2.00	33.000	2.00	45.25	13.00
8.583	2.00	20.833	2.00	33.083	2.00	45.33	13.00
8.667	2.00	20.917	2.00	33.167	2.00	45.42	13.00
8.750	2.00	21.000	2.00	33.250	2.00	45.50	13.00
8.833	2.00	21.083	2.00	33.333	2.00	45.58	13.00
8.917	2.00	21.167	2.00	33.417	2.00	45.67	13.00
9.000	2.00	21.250	2.00	33.500	2.00	45.75	13.00
9.083	2.00	21.333	2.00	33.583	2.00	45.83	13.00
9.167	2.00	21.417	2.00	33.667	2.00	45.92	13.00
9.250	2.00	21.500	2.00	33.750	2.00	46.00	13.00
9.333	2.00	21.583	2.00	33.833	2.00	46.08	52.94
9.417	2.00	21.667	2.00	33.917	2.00	46.17	53.00
9.500	2.00	21.750	2.00	34.000	2.00	46.25	53.00
9.583	2.00	21.833	2.00	34.083	2.00	46.33	53.00
9.667	2.00	21.917	2.00	34.167	2.00	46.42	53.00
9.750	2.00	22.000	2.00	34.250	2.00	46.50	53.00
9.833	2.00	22.083	2.00	34.333	2.00	46.58	53.00
9.917	2.00	22.167	2.00	34.417	2.00	46.67	53.00
10.000	2.00	22.250	2.00	34.500	2.00	46.75	53.00
10.083	2.00	22.333	2.00	34.583	2.00	46.83	53.00
10.167	2.00	22.417	2.00	34.667	2.00	46.92	53.00
10.250	2.00	22.500	2.00	34.750	2.00	47.00	53.00

10.333	2.00	22.583	2.00	34.833	2.00	47.08	38.02
10.417	2.00	22.667	2.00	34.917	2.00	47.17	38.00
10.500	2.00	22.750	2.00	35.000	2.00	47.25	38.00
10.583	2.00	22.833	2.00	35.083	2.00	47.33	38.00
10.667	2.00	22.917	2.00	35.167	2.00	47.42	38.00
10.750	2.00	23.000	2.00	35.250	2.00	47.50	38.00
10.833	2.00	23.083	2.00	35.333	2.00	47.58	38.00
10.917	2.00	23.167	2.00	35.417	2.00	47.67	38.00
11.000	2.00	23.250	2.00	35.500	2.00	47.75	38.00
11.083	2.00	23.333	2.00	35.583	2.00	47.83	38.00
11.167	2.00	23.417	2.00	35.667	2.00	47.92	38.00
11.250	2.00	23.500	2.00	35.750	2.00	48.00	38.00
11.333	2.00	23.583	2.00	35.833	2.00	48.08	13.04
11.417	2.00	23.667	2.00	35.917	2.00	48.17	13.00
11.500	2.00	23.750	2.00	36.000	2.00	48.25	13.00
11.583	2.00	23.833	2.00	36.083	2.00	48.33	13.00
11.667	2.00	23.917	2.00	36.167	2.00	48.42	13.00
11.750	2.00	24.000	2.00	36.250	2.00	48.50	13.00
11.833	2.00	24.083	2.00	36.333	2.00	48.58	13.00
11.917	2.00	24.167	2.00	36.417	2.00	48.67	13.00
12.000	2.00	24.250	2.00	36.500	2.00	48.75	13.00
12.083	2.00	24.333	2.00	36.583	2.00	48.83	13.00
12.167	2.00	24.417	2.00	36.667	2.00	48.92	13.00
12.250	2.00	24.500	2.00	36.750	2.00	49.00	13.00

Max.Eff.Inten. (mm/hr)=53.0062.39

over (min)5.0015.00

Storage Coeff. (min)=4.84 (ii)12.02 (ii)

Unit Hyd. Tpeak (min)=5.0015.00

Unit Hyd. peak (cms)=0.220.09

TOTALS

PEAK FLOW (cms)=0.800.741.542 (iii)

TIME TO PEAK (hrs)=47.0047.0047.00

RUNOFF VOLUME (mm)=282.50223.11252.81

TOTAL RAINFALL (mm)=284.00284.00284.00

RUNOFF COEFFICIENT =0.990.790.89

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 74.0Ia = 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)= 1.43

| ID= 1 DT= 5.0 min | Total Imp(%)= 50.00Dir. Conn.(%)= 50.00

IMPERVIOUSPERVIOUS (i)

Surface Area (ha)=0.710.71

Dep. Storage	(mm)=	1.50	5.00
Average Slope	(%)=	2.00	2.00
Length	(m)=	97.64	30.00
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	0.00	12.333	2.00	24.583	2.00	36.83	2.00
0.167	0.00	12.417	2.00	24.667	2.00	36.92	2.00
0.250	0.00	12.500	2.00	24.750	2.00	37.00	2.00
0.333	0.00	12.583	2.00	24.833	2.00	37.08	6.00
0.417	0.00	12.667	2.00	24.917	2.00	37.17	6.00
0.500	0.00	12.750	2.00	25.000	2.00	37.25	6.00
0.583	0.00	12.833	2.00	25.083	2.00	37.33	6.00
0.667	0.00	12.917	2.00	25.167	2.00	37.42	6.00
0.750	0.00	13.000	2.00	25.250	2.00	37.50	6.00
0.833	0.00	13.083	2.00	25.333	2.00	37.58	6.00
0.917	0.00	13.167	2.00	25.417	2.00	37.67	6.00
1.000	0.00	13.250	2.00	25.500	2.00	37.75	6.00
1.083	2.00	13.333	2.00	25.583	2.00	37.83	6.00
1.167	2.00	13.417	2.00	25.667	2.00	37.92	6.00
1.250	2.00	13.500	2.00	25.750	2.00	38.00	6.00
1.333	2.00	13.583	2.00	25.833	2.00	38.08	4.00
1.417	2.00	13.667	2.00	25.917	2.00	38.17	4.00
1.500	2.00	13.750	2.00	26.000	2.00	38.25	4.00
1.583	2.00	13.833	2.00	26.083	2.00	38.33	4.00
1.667	2.00	13.917	2.00	26.167	2.00	38.42	4.00
1.750	2.00	14.000	2.00	26.250	2.00	38.50	4.00
1.833	2.00	14.083	2.00	26.333	2.00	38.58	4.00
1.917	2.00	14.167	2.00	26.417	2.00	38.67	4.00
2.000	2.00	14.250	2.00	26.500	2.00	38.75	4.00
2.083	2.00	14.333	2.00	26.583	2.00	38.83	4.00
2.167	2.00	14.417	2.00	26.667	2.00	38.92	4.00
2.250	2.00	14.500	2.00	26.750	2.00	39.00	4.00
2.333	2.00	14.583	2.00	26.833	2.00	39.08	6.00
2.417	2.00	14.667	2.00	26.917	2.00	39.17	6.00
2.500	2.00	14.750	2.00	27.000	2.00	39.25	6.00
2.583	2.00	14.833	2.00	27.083	2.00	39.33	6.00
2.667	2.00	14.917	2.00	27.167	2.00	39.42	6.00
2.750	2.00	15.000	2.00	27.250	2.00	39.50	6.00
2.833	2.00	15.083	2.00	27.333	2.00	39.58	6.00
2.917	2.00	15.167	2.00	27.417	2.00	39.67	6.00
3.000	2.00	15.250	2.00	27.500	2.00	39.75	6.00
3.083	2.00	15.333	2.00	27.583	2.00	39.83	6.00
3.167	2.00	15.417	2.00	27.667	2.00	39.92	6.00
3.250	2.00	15.500	2.00	27.750	2.00	40.00	6.00
3.333	2.00	15.583	2.00	27.833	2.00	40.08	13.00
3.417	2.00	15.667	2.00	27.917	2.00	40.17	13.00
3.500	2.00	15.750	2.00	28.000	2.00	40.25	13.00

3.583	2.00	15.833	2.00	28.083	2.00	40.33	13.00
3.667	2.00	15.917	2.00	28.167	2.00	40.42	13.00
3.750	2.00	16.000	2.00	28.250	2.00	40.50	13.00
3.833	2.00	16.083	2.00	28.333	2.00	40.58	13.00
3.917	2.00	16.167	2.00	28.417	2.00	40.67	13.00
4.000	2.00	16.250	2.00	28.500	2.00	40.75	13.00
4.083	2.00	16.333	2.00	28.583	2.00	40.83	13.00
4.167	2.00	16.417	2.00	28.667	2.00	40.92	13.00
4.250	2.00	16.500	2.00	28.750	2.00	41.00	13.00
4.333	2.00	16.583	2.00	28.833	2.00	41.08	17.00
4.417	2.00	16.667	2.00	28.917	2.00	41.17	17.00
4.500	2.00	16.750	2.00	29.000	2.00	41.25	17.00
4.583	2.00	16.833	2.00	29.083	2.00	41.33	17.00
4.667	2.00	16.917	2.00	29.167	2.00	41.42	17.00
4.750	2.00	17.000	2.00	29.250	2.00	41.50	17.00
4.833	2.00	17.083	2.00	29.333	2.00	41.58	17.00
4.917	2.00	17.167	2.00	29.417	2.00	41.67	17.00
5.000	2.00	17.250	2.00	29.500	2.00	41.75	17.00
5.083	2.00	17.333	2.00	29.583	2.00	41.83	17.00
5.167	2.00	17.417	2.00	29.667	2.00	41.92	17.00
5.250	2.00	17.500	2.00	29.750	2.00	42.00	17.00
5.333	2.00	17.583	2.00	29.833	2.00	42.08	13.00
5.417	2.00	17.667	2.00	29.917	2.00	42.17	13.00
5.500	2.00	17.750	2.00	30.000	2.00	42.25	13.00
5.583	2.00	17.833	2.00	30.083	2.00	42.33	13.00
5.667	2.00	17.917	2.00	30.167	2.00	42.42	13.00
5.750	2.00	18.000	2.00	30.250	2.00	42.50	13.00
5.833	2.00	18.083	2.00	30.333	2.00	42.58	13.00
5.917	2.00	18.167	2.00	30.417	2.00	42.67	13.00
6.000	2.00	18.250	2.00	30.500	2.00	42.75	13.00
6.083	2.00	18.333	2.00	30.583	2.00	42.83	13.00
6.167	2.00	18.417	2.00	30.667	2.00	42.92	13.00
6.250	2.00	18.500	2.00	30.750	2.00	43.00	13.00
6.333	2.00	18.583	2.00	30.833	2.00	43.08	22.99
6.417	2.00	18.667	2.00	30.917	2.00	43.17	23.00
6.500	2.00	18.750	2.00	31.000	2.00	43.25	23.00
6.583	2.00	18.833	2.00	31.083	2.00	43.33	23.00
6.667	2.00	18.917	2.00	31.167	2.00	43.42	23.00
6.750	2.00	19.000	2.00	31.250	2.00	43.50	23.00
6.833	2.00	19.083	2.00	31.333	2.00	43.58	23.00
6.917	2.00	19.167	2.00	31.417	2.00	43.67	23.00
7.000	2.00	19.250	2.00	31.500	2.00	43.75	23.00
7.083	2.00	19.333	2.00	31.583	2.00	43.83	23.00
7.167	2.00	19.417	2.00	31.667	2.00	43.92	23.00
7.250	2.00	19.500	2.00	31.750	2.00	44.00	23.00
7.333	2.00	19.583	2.00	31.833	2.00	44.08	13.01
7.417	2.00	19.667	2.00	31.917	2.00	44.17	13.00
7.500	2.00	19.750	2.00	32.000	2.00	44.25	13.00
7.583	2.00	19.833	2.00	32.083	2.00	44.33	13.00
7.667	2.00	19.917	2.00	32.167	2.00	44.42	13.00
7.750	2.00	20.000	2.00	32.250	2.00	44.50	13.00
7.833	2.00	20.083	2.00	32.333	2.00	44.58	13.00
7.917	2.00	20.167	2.00	32.417	2.00	44.67	13.00

8.000	2.00	20.250	2.00	32.500	2.00	44.75	13.00
8.083	2.00	20.333	2.00	32.583	2.00	44.83	13.00
8.167	2.00	20.417	2.00	32.667	2.00	44.92	13.00
8.250	2.00	20.500	2.00	32.750	2.00	45.00	13.00
8.333	2.00	20.583	2.00	32.833	2.00	45.08	13.00
8.417	2.00	20.667	2.00	32.917	2.00	45.17	13.00
8.500	2.00	20.750	2.00	33.000	2.00	45.25	13.00
8.583	2.00	20.833	2.00	33.083	2.00	45.33	13.00
8.667	2.00	20.917	2.00	33.167	2.00	45.42	13.00
8.750	2.00	21.000	2.00	33.250	2.00	45.50	13.00
8.833	2.00	21.083	2.00	33.333	2.00	45.58	13.00
8.917	2.00	21.167	2.00	33.417	2.00	45.67	13.00
9.000	2.00	21.250	2.00	33.500	2.00	45.75	13.00
9.083	2.00	21.333	2.00	33.583	2.00	45.83	13.00
9.167	2.00	21.417	2.00	33.667	2.00	45.92	13.00
9.250	2.00	21.500	2.00	33.750	2.00	46.00	13.00
9.333	2.00	21.583	2.00	33.833	2.00	46.08	52.94
9.417	2.00	21.667	2.00	33.917	2.00	46.17	53.00
9.500	2.00	21.750	2.00	34.000	2.00	46.25	53.00
9.583	2.00	21.833	2.00	34.083	2.00	46.33	53.00
9.667	2.00	21.917	2.00	34.167	2.00	46.42	53.00
9.750	2.00	22.000	2.00	34.250	2.00	46.50	53.00
9.833	2.00	22.083	2.00	34.333	2.00	46.58	53.00
9.917	2.00	22.167	2.00	34.417	2.00	46.67	53.00
10.000	2.00	22.250	2.00	34.500	2.00	46.75	53.00
10.083	2.00	22.333	2.00	34.583	2.00	46.83	53.00
10.167	2.00	22.417	2.00	34.667	2.00	46.92	53.00
10.250	2.00	22.500	2.00	34.750	2.00	47.00	53.00
10.333	2.00	22.583	2.00	34.833	2.00	47.08	38.02
10.417	2.00	22.667	2.00	34.917	2.00	47.17	38.00
10.500	2.00	22.750	2.00	35.000	2.00	47.25	38.00
10.583	2.00	22.833	2.00	35.083	2.00	47.33	38.00
10.667	2.00	22.917	2.00	35.167	2.00	47.42	38.00
10.750	2.00	23.000	2.00	35.250	2.00	47.50	38.00
10.833	2.00	23.083	2.00	35.333	2.00	47.58	38.00
10.917	2.00	23.167	2.00	35.417	2.00	47.67	38.00
11.000	2.00	23.250	2.00	35.500	2.00	47.75	38.00
11.083	2.00	23.333	2.00	35.583	2.00	47.83	38.00
11.167	2.00	23.417	2.00	35.667	2.00	47.92	38.00
11.250	2.00	23.500	2.00	35.750	2.00	48.00	38.00
11.333	2.00	23.583	2.00	35.833	2.00	48.08	13.04
11.417	2.00	23.667	2.00	35.917	2.00	48.17	13.00
11.500	2.00	23.750	2.00	36.000	2.00	48.25	13.00
11.583	2.00	23.833	2.00	36.083	2.00	48.33	13.00
11.667	2.00	23.917	2.00	36.167	2.00	48.42	13.00
11.750	2.00	24.000	2.00	36.250	2.00	48.50	13.00
11.833	2.00	24.083	2.00	36.333	2.00	48.58	13.00
11.917	2.00	24.167	2.00	36.417	2.00	48.67	13.00
12.000	2.00	24.250	2.00	36.500	2.00	48.75	13.00
12.083	2.00	24.333	2.00	36.583	2.00	48.83	13.00
12.167	2.00	24.417	2.00	36.667	2.00	48.92	13.00
12.250	2.00	24.500	2.00	36.750	2.00	49.00	13.00

Max.Eff.Inten. (mm/hr)=	53.00	48.69	
over (min)	5.00	15.00	
Storage Coeff. (min)=	2.64 (ii)	10.56 (ii)	
Unit Hyd. Tpeak (min)=	5.00	15.00	
Unit Hyd. peak (cms)=	0.29	0.09	
			TOTALS
PEAK FLOW (cms)=	0.11	0.10	0.201 (iii)
TIME TO PEAK (hrs)=	46.67	47.00	47.00
RUNOFF VOLUME (mm)=	282.50	211.38	246.94
TOTAL RAINFALL (mm)=	284.00	284.00	284.00
RUNOFF COEFFICIENT =	0.99	0.74	0.87

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 74.0 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 (3000)				
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.
-----	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0200):	10.86	1.542	47.00	252.81
+ ID2= 2 (0201):	1.43	0.201	47.00	246.94
=====				
ID = 3 (3000):	12.29	1.743	47.00	252.12

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR(2000)	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	0.1180	0.5426
	0.0060	0.0590	0.1350	0.5819
	0.0100	0.1205	0.1520	0.6219
	0.0120	0.1522	0.6240	0.7039
	0.0260	0.1845	1.4970	0.7886
	0.0410	0.2510	2.6380	0.8759
	0.0690	0.3201	4.0120	0.9659
	0.0890	0.3917	5.5960	1.0585
	0.0970	0.4284	7.3740	1.1579
	0.1050	0.4658	0.0000	0.0000
	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
INFLOW : ID= 2 (3000)	12.290	1.743	47.00	252.12
OUTFLOW: ID= 1 (2000)	12.290	1.669	47.00	251.67

PEAK FLOW REDUCTION [Qout/Qin] (%)= 95.77
TIME SHIFT OF PEAK FLOW (min)= 0.00
MAXIMUM STORAGE USED (ha.m.)= 0.8028

| DIVERTHYD(0010) |
| IN= 1 # OUT= 5 |

Outflow / Inflow Relationships

Flow 1	Flow 2	Flow 3	Flow 4	Flow 5	Total
(cms)	(cms)	(cms)	(cms)	(cms)	(cms)
0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.09	0.00	0.00	0.00	0.09
0.00	0.12	0.00	0.00	0.00	0.12
0.05	0.13	0.00	0.00	0.00	0.19
0.41	0.14	0.00	0.00	0.00	0.55
0.77	0.14	0.00	0.00	0.00	0.92
1.17	0.15	0.00	0.00	0.00	1.32
1.51	0.15	0.00	0.00	0.00	1.67

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
TOTAL HYD. (ID= 1):	12.29	1.67	47.00	251.67
=====				
ID= 2 (2) :	6.32	1.51	47.00	251.67
ID= 3 (2) :	5.97	0.15	47.00	251.67
ID= 4 (2) :	0.00	0.00	0.00	0.00
ID= 5 (2) :	0.00	0.00	0.00	0.00
ID= 6 (2) :	0.00	0.00	0.00	0.00

| CALIB |
| STANDHYD (0202) | Area (ha)= 1.26
| ID= 1 DT= 5.0 min | Total Imp(%)= 55.00 Dir. Conn.(%)= 35.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.69	0.57
Dep. Storage (mm)=	1.50	5.00
Average Slope (%)=	2.00	2.00
Length (m)=	91.65	30.00
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	0.00	12.333	2.00	24.583	2.00	36.83	2.00
0.167	0.00	12.417	2.00	24.667	2.00	36.92	2.00

0.250	0.00	12.500	2.00	24.750	2.00	37.00	2.00
0.333	0.00	12.583	2.00	24.833	2.00	37.08	6.00
0.417	0.00	12.667	2.00	24.917	2.00	37.17	6.00
0.500	0.00	12.750	2.00	25.000	2.00	37.25	6.00
0.583	0.00	12.833	2.00	25.083	2.00	37.33	6.00
0.667	0.00	12.917	2.00	25.167	2.00	37.42	6.00
0.750	0.00	13.000	2.00	25.250	2.00	37.50	6.00
0.833	0.00	13.083	2.00	25.333	2.00	37.58	6.00
0.917	0.00	13.167	2.00	25.417	2.00	37.67	6.00
1.000	0.00	13.250	2.00	25.500	2.00	37.75	6.00
1.083	2.00	13.333	2.00	25.583	2.00	37.83	6.00
1.167	2.00	13.417	2.00	25.667	2.00	37.92	6.00
1.250	2.00	13.500	2.00	25.750	2.00	38.00	6.00
1.333	2.00	13.583	2.00	25.833	2.00	38.08	4.00
1.417	2.00	13.667	2.00	25.917	2.00	38.17	4.00
1.500	2.00	13.750	2.00	26.000	2.00	38.25	4.00
1.583	2.00	13.833	2.00	26.083	2.00	38.33	4.00
1.667	2.00	13.917	2.00	26.167	2.00	38.42	4.00
1.750	2.00	14.000	2.00	26.250	2.00	38.50	4.00
1.833	2.00	14.083	2.00	26.333	2.00	38.58	4.00
1.917	2.00	14.167	2.00	26.417	2.00	38.67	4.00
2.000	2.00	14.250	2.00	26.500	2.00	38.75	4.00
2.083	2.00	14.333	2.00	26.583	2.00	38.83	4.00
2.167	2.00	14.417	2.00	26.667	2.00	38.92	4.00
2.250	2.00	14.500	2.00	26.750	2.00	39.00	4.00
2.333	2.00	14.583	2.00	26.833	2.00	39.08	6.00
2.417	2.00	14.667	2.00	26.917	2.00	39.17	6.00
2.500	2.00	14.750	2.00	27.000	2.00	39.25	6.00
2.583	2.00	14.833	2.00	27.083	2.00	39.33	6.00
2.667	2.00	14.917	2.00	27.167	2.00	39.42	6.00
2.750	2.00	15.000	2.00	27.250	2.00	39.50	6.00
2.833	2.00	15.083	2.00	27.333	2.00	39.58	6.00
2.917	2.00	15.167	2.00	27.417	2.00	39.67	6.00
3.000	2.00	15.250	2.00	27.500	2.00	39.75	6.00
3.083	2.00	15.333	2.00	27.583	2.00	39.83	6.00
3.167	2.00	15.417	2.00	27.667	2.00	39.92	6.00
3.250	2.00	15.500	2.00	27.750	2.00	40.00	6.00
3.333	2.00	15.583	2.00	27.833	2.00	40.08	13.00
3.417	2.00	15.667	2.00	27.917	2.00	40.17	13.00
3.500	2.00	15.750	2.00	28.000	2.00	40.25	13.00
3.583	2.00	15.833	2.00	28.083	2.00	40.33	13.00
3.667	2.00	15.917	2.00	28.167	2.00	40.42	13.00
3.750	2.00	16.000	2.00	28.250	2.00	40.50	13.00
3.833	2.00	16.083	2.00	28.333	2.00	40.58	13.00
3.917	2.00	16.167	2.00	28.417	2.00	40.67	13.00
4.000	2.00	16.250	2.00	28.500	2.00	40.75	13.00
4.083	2.00	16.333	2.00	28.583	2.00	40.83	13.00
4.167	2.00	16.417	2.00	28.667	2.00	40.92	13.00
4.250	2.00	16.500	2.00	28.750	2.00	41.00	13.00
4.333	2.00	16.583	2.00	28.833	2.00	41.08	17.00
4.417	2.00	16.667	2.00	28.917	2.00	41.17	17.00
4.500	2.00	16.750	2.00	29.000	2.00	41.25	17.00
4.583	2.00	16.833	2.00	29.083	2.00	41.33	17.00

4.667	2.00	16.917	2.00	29.167	2.00	41.42	17.00
4.750	2.00	17.000	2.00	29.250	2.00	41.50	17.00
4.833	2.00	17.083	2.00	29.333	2.00	41.58	17.00
4.917	2.00	17.167	2.00	29.417	2.00	41.67	17.00
5.000	2.00	17.250	2.00	29.500	2.00	41.75	17.00
5.083	2.00	17.333	2.00	29.583	2.00	41.83	17.00
5.167	2.00	17.417	2.00	29.667	2.00	41.92	17.00
5.250	2.00	17.500	2.00	29.750	2.00	42.00	17.00
5.333	2.00	17.583	2.00	29.833	2.00	42.08	13.00
5.417	2.00	17.667	2.00	29.917	2.00	42.17	13.00
5.500	2.00	17.750	2.00	30.000	2.00	42.25	13.00
5.583	2.00	17.833	2.00	30.083	2.00	42.33	13.00
5.667	2.00	17.917	2.00	30.167	2.00	42.42	13.00
5.750	2.00	18.000	2.00	30.250	2.00	42.50	13.00
5.833	2.00	18.083	2.00	30.333	2.00	42.58	13.00
5.917	2.00	18.167	2.00	30.417	2.00	42.67	13.00
6.000	2.00	18.250	2.00	30.500	2.00	42.75	13.00
6.083	2.00	18.333	2.00	30.583	2.00	42.83	13.00
6.167	2.00	18.417	2.00	30.667	2.00	42.92	13.00
6.250	2.00	18.500	2.00	30.750	2.00	43.00	13.00
6.333	2.00	18.583	2.00	30.833	2.00	43.08	22.99
6.417	2.00	18.667	2.00	30.917	2.00	43.17	23.00
6.500	2.00	18.750	2.00	31.000	2.00	43.25	23.00
6.583	2.00	18.833	2.00	31.083	2.00	43.33	23.00
6.667	2.00	18.917	2.00	31.167	2.00	43.42	23.00
6.750	2.00	19.000	2.00	31.250	2.00	43.50	23.00
6.833	2.00	19.083	2.00	31.333	2.00	43.58	23.00
6.917	2.00	19.167	2.00	31.417	2.00	43.67	23.00
7.000	2.00	19.250	2.00	31.500	2.00	43.75	23.00
7.083	2.00	19.333	2.00	31.583	2.00	43.83	23.00
7.167	2.00	19.417	2.00	31.667	2.00	43.92	23.00
7.250	2.00	19.500	2.00	31.750	2.00	44.00	23.00
7.333	2.00	19.583	2.00	31.833	2.00	44.08	13.01
7.417	2.00	19.667	2.00	31.917	2.00	44.17	13.00
7.500	2.00	19.750	2.00	32.000	2.00	44.25	13.00
7.583	2.00	19.833	2.00	32.083	2.00	44.33	13.00
7.667	2.00	19.917	2.00	32.167	2.00	44.42	13.00
7.750	2.00	20.000	2.00	32.250	2.00	44.50	13.00
7.833	2.00	20.083	2.00	32.333	2.00	44.58	13.00
7.917	2.00	20.167	2.00	32.417	2.00	44.67	13.00
8.000	2.00	20.250	2.00	32.500	2.00	44.75	13.00
8.083	2.00	20.333	2.00	32.583	2.00	44.83	13.00
8.167	2.00	20.417	2.00	32.667	2.00	44.92	13.00
8.250	2.00	20.500	2.00	32.750	2.00	45.00	13.00
8.333	2.00	20.583	2.00	32.833	2.00	45.08	13.00
8.417	2.00	20.667	2.00	32.917	2.00	45.17	13.00
8.500	2.00	20.750	2.00	33.000	2.00	45.25	13.00
8.583	2.00	20.833	2.00	33.083	2.00	45.33	13.00
8.667	2.00	20.917	2.00	33.167	2.00	45.42	13.00
8.750	2.00	21.000	2.00	33.250	2.00	45.50	13.00
8.833	2.00	21.083	2.00	33.333	2.00	45.58	13.00
8.917	2.00	21.167	2.00	33.417	2.00	45.67	13.00
9.000	2.00	21.250	2.00	33.500	2.00	45.75	13.00

9.083	2.00	21.333	2.00	33.583	2.00	45.83	13.00
9.167	2.00	21.417	2.00	33.667	2.00	45.92	13.00
9.250	2.00	21.500	2.00	33.750	2.00	46.00	13.00
9.333	2.00	21.583	2.00	33.833	2.00	46.08	52.94
9.417	2.00	21.667	2.00	33.917	2.00	46.17	53.00
9.500	2.00	21.750	2.00	34.000	2.00	46.25	53.00
9.583	2.00	21.833	2.00	34.083	2.00	46.33	53.00
9.667	2.00	21.917	2.00	34.167	2.00	46.42	53.00
9.750	2.00	22.000	2.00	34.250	2.00	46.50	53.00
9.833	2.00	22.083	2.00	34.333	2.00	46.58	53.00
9.917	2.00	22.167	2.00	34.417	2.00	46.67	53.00
10.000	2.00	22.250	2.00	34.500	2.00	46.75	53.00
10.083	2.00	22.333	2.00	34.583	2.00	46.83	53.00
10.167	2.00	22.417	2.00	34.667	2.00	46.92	53.00
10.250	2.00	22.500	2.00	34.750	2.00	47.00	53.00
10.333	2.00	22.583	2.00	34.833	2.00	47.08	38.02
10.417	2.00	22.667	2.00	34.917	2.00	47.17	38.00
10.500	2.00	22.750	2.00	35.000	2.00	47.25	38.00
10.583	2.00	22.833	2.00	35.083	2.00	47.33	38.00
10.667	2.00	22.917	2.00	35.167	2.00	47.42	38.00
10.750	2.00	23.000	2.00	35.250	2.00	47.50	38.00
10.833	2.00	23.083	2.00	35.333	2.00	47.58	38.00
10.917	2.00	23.167	2.00	35.417	2.00	47.67	38.00
11.000	2.00	23.250	2.00	35.500	2.00	47.75	38.00
11.083	2.00	23.333	2.00	35.583	2.00	47.83	38.00
11.167	2.00	23.417	2.00	35.667	2.00	47.92	38.00
11.250	2.00	23.500	2.00	35.750	2.00	48.00	38.00
11.333	2.00	23.583	2.00	35.833	2.00	48.08	13.04
11.417	2.00	23.667	2.00	35.917	2.00	48.17	13.00
11.500	2.00	23.750	2.00	36.000	2.00	48.25	13.00
11.583	2.00	23.833	2.00	36.083	2.00	48.33	13.00
11.667	2.00	23.917	2.00	36.167	2.00	48.42	13.00
11.750	2.00	24.000	2.00	36.250	2.00	48.50	13.00
11.833	2.00	24.083	2.00	36.333	2.00	48.58	13.00
11.917	2.00	24.167	2.00	36.417	2.00	48.67	13.00
12.000	2.00	24.250	2.00	36.500	2.00	48.75	13.00
12.083	2.00	24.333	2.00	36.583	2.00	48.83	13.00
12.167	2.00	24.417	2.00	36.667	2.00	48.92	13.00
12.250	2.00	24.500	2.00	36.750	2.00	49.00	13.00

Max.Eff.Inten. (mm/hr)=	53.00	73.00
over (min)	5.00	10.00
Storage Coeff. (min)=	2.54 (ii)	9.27 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.29	0.12

TOTALS

PEAK FLOW (cms)=	0.06	0.11	0.179 (iii)
TIME TO PEAK (hrs)=	46.67	47.00	47.00
RUNOFF VOLUME (mm)=	282.50	229.91	248.31
TOTAL RAINFALL (mm)=	284.00	284.00	284.00
RUNOFF COEFFICIENT =	0.99	0.81	0.87

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 74.0 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 (4000)				
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.
-----	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0010):	6.32	1.515	47.00	251.67
+ ID2= 2 (0202):	1.26	0.179	47.00	248.31
=====				
ID = 3 (4000):	7.58	1.694	47.00	251.11

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB			
STANDHYD (0204)	Area (ha)=	0.30	
ID= 1 DT= 5.0 min	Total Imp(%)=	60.00	Dir. Conn.(%)= 50.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.18	0.12
Dep. Storage	(mm)=	1.50	5.00
Average Slope	(%)=	5.00	5.00
Length	(m)=	44.72	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
hrs	mm/hr		hrs	mm/hr		hrs	mm/hr
0.083	0.00		12.333	2.00		24.583	2.00
0.167	0.00		12.417	2.00		24.667	2.00
0.250	0.00		12.500	2.00		24.750	2.00
0.333	0.00		12.583	2.00		24.833	2.00
0.417	0.00		12.667	2.00		24.917	2.00
0.500	0.00		12.750	2.00		25.000	2.00
0.583	0.00		12.833	2.00		25.083	2.00
0.667	0.00		12.917	2.00		25.167	2.00
0.750	0.00		13.000	2.00		25.250	2.00
0.833	0.00		13.083	2.00		25.333	2.00
0.917	0.00		13.167	2.00		25.417	2.00
1.000	0.00		13.250	2.00		25.500	2.00
1.083	2.00		13.333	2.00		25.583	2.00
1.167	2.00		13.417	2.00		25.667	2.00
1.250	2.00		13.500	2.00		25.750	2.00

1.333	2.00	13.583	2.00	25.833	2.00	38.08	4.00
1.417	2.00	13.667	2.00	25.917	2.00	38.17	4.00
1.500	2.00	13.750	2.00	26.000	2.00	38.25	4.00
1.583	2.00	13.833	2.00	26.083	2.00	38.33	4.00
1.667	2.00	13.917	2.00	26.167	2.00	38.42	4.00
1.750	2.00	14.000	2.00	26.250	2.00	38.50	4.00
1.833	2.00	14.083	2.00	26.333	2.00	38.58	4.00
1.917	2.00	14.167	2.00	26.417	2.00	38.67	4.00
2.000	2.00	14.250	2.00	26.500	2.00	38.75	4.00
2.083	2.00	14.333	2.00	26.583	2.00	38.83	4.00
2.167	2.00	14.417	2.00	26.667	2.00	38.92	4.00
2.250	2.00	14.500	2.00	26.750	2.00	39.00	4.00
2.333	2.00	14.583	2.00	26.833	2.00	39.08	6.00
2.417	2.00	14.667	2.00	26.917	2.00	39.17	6.00
2.500	2.00	14.750	2.00	27.000	2.00	39.25	6.00
2.583	2.00	14.833	2.00	27.083	2.00	39.33	6.00
2.667	2.00	14.917	2.00	27.167	2.00	39.42	6.00
2.750	2.00	15.000	2.00	27.250	2.00	39.50	6.00
2.833	2.00	15.083	2.00	27.333	2.00	39.58	6.00
2.917	2.00	15.167	2.00	27.417	2.00	39.67	6.00
3.000	2.00	15.250	2.00	27.500	2.00	39.75	6.00
3.083	2.00	15.333	2.00	27.583	2.00	39.83	6.00
3.167	2.00	15.417	2.00	27.667	2.00	39.92	6.00
3.250	2.00	15.500	2.00	27.750	2.00	40.00	6.00
3.333	2.00	15.583	2.00	27.833	2.00	40.08	13.00
3.417	2.00	15.667	2.00	27.917	2.00	40.17	13.00
3.500	2.00	15.750	2.00	28.000	2.00	40.25	13.00
3.583	2.00	15.833	2.00	28.083	2.00	40.33	13.00
3.667	2.00	15.917	2.00	28.167	2.00	40.42	13.00
3.750	2.00	16.000	2.00	28.250	2.00	40.50	13.00
3.833	2.00	16.083	2.00	28.333	2.00	40.58	13.00
3.917	2.00	16.167	2.00	28.417	2.00	40.67	13.00
4.000	2.00	16.250	2.00	28.500	2.00	40.75	13.00
4.083	2.00	16.333	2.00	28.583	2.00	40.83	13.00
4.167	2.00	16.417	2.00	28.667	2.00	40.92	13.00
4.250	2.00	16.500	2.00	28.750	2.00	41.00	13.00
4.333	2.00	16.583	2.00	28.833	2.00	41.08	17.00
4.417	2.00	16.667	2.00	28.917	2.00	41.17	17.00
4.500	2.00	16.750	2.00	29.000	2.00	41.25	17.00
4.583	2.00	16.833	2.00	29.083	2.00	41.33	17.00
4.667	2.00	16.917	2.00	29.167	2.00	41.42	17.00
4.750	2.00	17.000	2.00	29.250	2.00	41.50	17.00
4.833	2.00	17.083	2.00	29.333	2.00	41.58	17.00
4.917	2.00	17.167	2.00	29.417	2.00	41.67	17.00
5.000	2.00	17.250	2.00	29.500	2.00	41.75	17.00
5.083	2.00	17.333	2.00	29.583	2.00	41.83	17.00
5.167	2.00	17.417	2.00	29.667	2.00	41.92	17.00
5.250	2.00	17.500	2.00	29.750	2.00	42.00	17.00
5.333	2.00	17.583	2.00	29.833	2.00	42.08	13.00
5.417	2.00	17.667	2.00	29.917	2.00	42.17	13.00
5.500	2.00	17.750	2.00	30.000	2.00	42.25	13.00
5.583	2.00	17.833	2.00	30.083	2.00	42.33	13.00
5.667	2.00	17.917	2.00	30.167	2.00	42.42	13.00

5.750	2.00	18.000	2.00	30.250	2.00	42.50	13.00
5.833	2.00	18.083	2.00	30.333	2.00	42.58	13.00
5.917	2.00	18.167	2.00	30.417	2.00	42.67	13.00
6.000	2.00	18.250	2.00	30.500	2.00	42.75	13.00
6.083	2.00	18.333	2.00	30.583	2.00	42.83	13.00
6.167	2.00	18.417	2.00	30.667	2.00	42.92	13.00
6.250	2.00	18.500	2.00	30.750	2.00	43.00	13.00
6.333	2.00	18.583	2.00	30.833	2.00	43.08	22.99
6.417	2.00	18.667	2.00	30.917	2.00	43.17	23.00
6.500	2.00	18.750	2.00	31.000	2.00	43.25	23.00
6.583	2.00	18.833	2.00	31.083	2.00	43.33	23.00
6.667	2.00	18.917	2.00	31.167	2.00	43.42	23.00
6.750	2.00	19.000	2.00	31.250	2.00	43.50	23.00
6.833	2.00	19.083	2.00	31.333	2.00	43.58	23.00
6.917	2.00	19.167	2.00	31.417	2.00	43.67	23.00
7.000	2.00	19.250	2.00	31.500	2.00	43.75	23.00
7.083	2.00	19.333	2.00	31.583	2.00	43.83	23.00
7.167	2.00	19.417	2.00	31.667	2.00	43.92	23.00
7.250	2.00	19.500	2.00	31.750	2.00	44.00	23.00
7.333	2.00	19.583	2.00	31.833	2.00	44.08	13.01
7.417	2.00	19.667	2.00	31.917	2.00	44.17	13.00
7.500	2.00	19.750	2.00	32.000	2.00	44.25	13.00
7.583	2.00	19.833	2.00	32.083	2.00	44.33	13.00
7.667	2.00	19.917	2.00	32.167	2.00	44.42	13.00
7.750	2.00	20.000	2.00	32.250	2.00	44.50	13.00
7.833	2.00	20.083	2.00	32.333	2.00	44.58	13.00
7.917	2.00	20.167	2.00	32.417	2.00	44.67	13.00
8.000	2.00	20.250	2.00	32.500	2.00	44.75	13.00
8.083	2.00	20.333	2.00	32.583	2.00	44.83	13.00
8.167	2.00	20.417	2.00	32.667	2.00	44.92	13.00
8.250	2.00	20.500	2.00	32.750	2.00	45.00	13.00
8.333	2.00	20.583	2.00	32.833	2.00	45.08	13.00
8.417	2.00	20.667	2.00	32.917	2.00	45.17	13.00
8.500	2.00	20.750	2.00	33.000	2.00	45.25	13.00
8.583	2.00	20.833	2.00	33.083	2.00	45.33	13.00
8.667	2.00	20.917	2.00	33.167	2.00	45.42	13.00
8.750	2.00	21.000	2.00	33.250	2.00	45.50	13.00
8.833	2.00	21.083	2.00	33.333	2.00	45.58	13.00
8.917	2.00	21.167	2.00	33.417	2.00	45.67	13.00
9.000	2.00	21.250	2.00	33.500	2.00	45.75	13.00
9.083	2.00	21.333	2.00	33.583	2.00	45.83	13.00
9.167	2.00	21.417	2.00	33.667	2.00	45.92	13.00
9.250	2.00	21.500	2.00	33.750	2.00	46.00	13.00
9.333	2.00	21.583	2.00	33.833	2.00	46.08	52.94
9.417	2.00	21.667	2.00	33.917	2.00	46.17	53.00
9.500	2.00	21.750	2.00	34.000	2.00	46.25	53.00
9.583	2.00	21.833	2.00	34.083	2.00	46.33	53.00
9.667	2.00	21.917	2.00	34.167	2.00	46.42	53.00
9.750	2.00	22.000	2.00	34.250	2.00	46.50	53.00
9.833	2.00	22.083	2.00	34.333	2.00	46.58	53.00
9.917	2.00	22.167	2.00	34.417	2.00	46.67	53.00
10.000	2.00	22.250	2.00	34.500	2.00	46.75	53.00
10.083	2.00	22.333	2.00	34.583	2.00	46.83	53.00

10.167	2.00	22.417	2.00	34.667	2.00	46.92	53.00
10.250	2.00	22.500	2.00	34.750	2.00	47.00	53.00
10.333	2.00	22.583	2.00	34.833	2.00	47.08	38.02
10.417	2.00	22.667	2.00	34.917	2.00	47.17	38.00
10.500	2.00	22.750	2.00	35.000	2.00	47.25	38.00
10.583	2.00	22.833	2.00	35.083	2.00	47.33	38.00
10.667	2.00	22.917	2.00	35.167	2.00	47.42	38.00
10.750	2.00	23.000	2.00	35.250	2.00	47.50	38.00
10.833	2.00	23.083	2.00	35.333	2.00	47.58	38.00
10.917	2.00	23.167	2.00	35.417	2.00	47.67	38.00
11.000	2.00	23.250	2.00	35.500	2.00	47.75	38.00
11.083	2.00	23.333	2.00	35.583	2.00	47.83	38.00
11.167	2.00	23.417	2.00	35.667	2.00	47.92	38.00
11.250	2.00	23.500	2.00	35.750	2.00	48.00	38.00
11.333	2.00	23.583	2.00	35.833	2.00	48.08	13.04
11.417	2.00	23.667	2.00	35.917	2.00	48.17	13.00
11.500	2.00	23.750	2.00	36.000	2.00	48.25	13.00
11.583	2.00	23.833	2.00	36.083	2.00	48.33	13.00
11.667	2.00	23.917	2.00	36.167	2.00	48.42	13.00
11.750	2.00	24.000	2.00	36.250	2.00	48.50	13.00
11.833	2.00	24.083	2.00	36.333	2.00	48.58	13.00
11.917	2.00	24.167	2.00	36.417	2.00	48.67	13.00
12.000	2.00	24.250	2.00	36.500	2.00	48.75	13.00
12.083	2.00	24.333	2.00	36.583	2.00	48.83	13.00
12.167	2.00	24.417	2.00	36.667	2.00	48.92	13.00
12.250	2.00	24.500	2.00	36.750	2.00	49.00	13.00

Max.Eff.Inten. (mm/hr)= 53.00 62.69
over (min) 5.00 10.00
Storage Coeff. (min)= 1.25 (ii) 7.72 (ii)
Unit Hyd. Tpeak (min)= 5.00 10.00
Unit Hyd. peak (cms)= 0.33 0.13

TOTALS

PEAK FLOW (cms)= 0.02 0.02 0.043 (iii)
TIME TO PEAK (hrs)= 46.33 47.00 47.00
RUNOFF VOLUME (mm)= 282.50 225.46 253.96
TOTAL RAINFALL (mm)= 284.00 284.00 284.00
RUNOFF COEFFICIENT = 0.99 0.79 0.89

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 75.0 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( 2001) | 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		0.0826	0.0013
0.0100	0.0000		0.0904	0.0015
0.0190	0.0002		0.0975	0.0017
0.0380	0.0004		0.1042	0.0017
0.0528	0.0006		0.1335	0.0017
0.0643	0.0009		0.1574	0.0017
0.0740	0.0011		0.5345	0.0018

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
INFLOW : ID= 2 (0204)	0.300	0.043	47.00	253.96
OUTFLOW: ID= 1 (2001)	0.300	0.043	47.00	254.02

PEAK FLOW REDUCTION [Qout/Qin] (%)= 99.95
TIME SHIFT OF PEAK FLOW (min)= 0.00
MAXIMUM STORAGE USED (ha.m.)= 0.0005

ADD HYD (5000)				
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.
-----	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0010):	5.97	0.154	47.00	251.67
+ ID2= 2 (2001):	0.30	0.043	47.00	254.02
=====				
ID = 3 (5000):	6.27	0.197	47.00	251.78

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB				
STANDHYD (0203)	Area	(ha)=	0.29	
ID= 1 DT= 5.0 min	Total Imp (%)=	7.00	Dir. Conn. (%)=	7.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.02	0.27
Dep. Storage (mm)=	1.50	5.00
Average Slope (%)=	2.00	2.00
Length (m)=	43.97	15.00
Mannings n =	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----							
TIME	RAIN		TIME	RAIN		TIME	RAIN
hrs	mm/hr		hrs	mm/hr		hrs	mm/hr
0.083	0.00		12.333	2.00		24.583	2.00
0.167	0.00		12.417	2.00		24.667	2.00
0.250	0.00		12.500	2.00		24.750	2.00
0.333	0.00		12.583	2.00		24.833	2.00
0.417	0.00		12.667	2.00		24.917	2.00

0.500	0.00	12.750	2.00	25.000	2.00	37.25	6.00
0.583	0.00	12.833	2.00	25.083	2.00	37.33	6.00
0.667	0.00	12.917	2.00	25.167	2.00	37.42	6.00
0.750	0.00	13.000	2.00	25.250	2.00	37.50	6.00
0.833	0.00	13.083	2.00	25.333	2.00	37.58	6.00
0.917	0.00	13.167	2.00	25.417	2.00	37.67	6.00
1.000	0.00	13.250	2.00	25.500	2.00	37.75	6.00
1.083	2.00	13.333	2.00	25.583	2.00	37.83	6.00
1.167	2.00	13.417	2.00	25.667	2.00	37.92	6.00
1.250	2.00	13.500	2.00	25.750	2.00	38.00	6.00
1.333	2.00	13.583	2.00	25.833	2.00	38.08	4.00
1.417	2.00	13.667	2.00	25.917	2.00	38.17	4.00
1.500	2.00	13.750	2.00	26.000	2.00	38.25	4.00
1.583	2.00	13.833	2.00	26.083	2.00	38.33	4.00
1.667	2.00	13.917	2.00	26.167	2.00	38.42	4.00
1.750	2.00	14.000	2.00	26.250	2.00	38.50	4.00
1.833	2.00	14.083	2.00	26.333	2.00	38.58	4.00
1.917	2.00	14.167	2.00	26.417	2.00	38.67	4.00
2.000	2.00	14.250	2.00	26.500	2.00	38.75	4.00
2.083	2.00	14.333	2.00	26.583	2.00	38.83	4.00
2.167	2.00	14.417	2.00	26.667	2.00	38.92	4.00
2.250	2.00	14.500	2.00	26.750	2.00	39.00	4.00
2.333	2.00	14.583	2.00	26.833	2.00	39.08	6.00
2.417	2.00	14.667	2.00	26.917	2.00	39.17	6.00
2.500	2.00	14.750	2.00	27.000	2.00	39.25	6.00
2.583	2.00	14.833	2.00	27.083	2.00	39.33	6.00
2.667	2.00	14.917	2.00	27.167	2.00	39.42	6.00
2.750	2.00	15.000	2.00	27.250	2.00	39.50	6.00
2.833	2.00	15.083	2.00	27.333	2.00	39.58	6.00
2.917	2.00	15.167	2.00	27.417	2.00	39.67	6.00
3.000	2.00	15.250	2.00	27.500	2.00	39.75	6.00
3.083	2.00	15.333	2.00	27.583	2.00	39.83	6.00
3.167	2.00	15.417	2.00	27.667	2.00	39.92	6.00
3.250	2.00	15.500	2.00	27.750	2.00	40.00	6.00
3.333	2.00	15.583	2.00	27.833	2.00	40.08	13.00
3.417	2.00	15.667	2.00	27.917	2.00	40.17	13.00
3.500	2.00	15.750	2.00	28.000	2.00	40.25	13.00
3.583	2.00	15.833	2.00	28.083	2.00	40.33	13.00
3.667	2.00	15.917	2.00	28.167	2.00	40.42	13.00
3.750	2.00	16.000	2.00	28.250	2.00	40.50	13.00
3.833	2.00	16.083	2.00	28.333	2.00	40.58	13.00
3.917	2.00	16.167	2.00	28.417	2.00	40.67	13.00
4.000	2.00	16.250	2.00	28.500	2.00	40.75	13.00
4.083	2.00	16.333	2.00	28.583	2.00	40.83	13.00
4.167	2.00	16.417	2.00	28.667	2.00	40.92	13.00
4.250	2.00	16.500	2.00	28.750	2.00	41.00	13.00
4.333	2.00	16.583	2.00	28.833	2.00	41.08	17.00
4.417	2.00	16.667	2.00	28.917	2.00	41.17	17.00
4.500	2.00	16.750	2.00	29.000	2.00	41.25	17.00
4.583	2.00	16.833	2.00	29.083	2.00	41.33	17.00
4.667	2.00	16.917	2.00	29.167	2.00	41.42	17.00
4.750	2.00	17.000	2.00	29.250	2.00	41.50	17.00
4.833	2.00	17.083	2.00	29.333	2.00	41.58	17.00

4.917	2.00	17.167	2.00	29.417	2.00	41.67	17.00
5.000	2.00	17.250	2.00	29.500	2.00	41.75	17.00
5.083	2.00	17.333	2.00	29.583	2.00	41.83	17.00
5.167	2.00	17.417	2.00	29.667	2.00	41.92	17.00
5.250	2.00	17.500	2.00	29.750	2.00	42.00	17.00
5.333	2.00	17.583	2.00	29.833	2.00	42.08	13.00
5.417	2.00	17.667	2.00	29.917	2.00	42.17	13.00
5.500	2.00	17.750	2.00	30.000	2.00	42.25	13.00
5.583	2.00	17.833	2.00	30.083	2.00	42.33	13.00
5.667	2.00	17.917	2.00	30.167	2.00	42.42	13.00
5.750	2.00	18.000	2.00	30.250	2.00	42.50	13.00
5.833	2.00	18.083	2.00	30.333	2.00	42.58	13.00
5.917	2.00	18.167	2.00	30.417	2.00	42.67	13.00
6.000	2.00	18.250	2.00	30.500	2.00	42.75	13.00
6.083	2.00	18.333	2.00	30.583	2.00	42.83	13.00
6.167	2.00	18.417	2.00	30.667	2.00	42.92	13.00
6.250	2.00	18.500	2.00	30.750	2.00	43.00	13.00
6.333	2.00	18.583	2.00	30.833	2.00	43.08	22.99
6.417	2.00	18.667	2.00	30.917	2.00	43.17	23.00
6.500	2.00	18.750	2.00	31.000	2.00	43.25	23.00
6.583	2.00	18.833	2.00	31.083	2.00	43.33	23.00
6.667	2.00	18.917	2.00	31.167	2.00	43.42	23.00
6.750	2.00	19.000	2.00	31.250	2.00	43.50	23.00
6.833	2.00	19.083	2.00	31.333	2.00	43.58	23.00
6.917	2.00	19.167	2.00	31.417	2.00	43.67	23.00
7.000	2.00	19.250	2.00	31.500	2.00	43.75	23.00
7.083	2.00	19.333	2.00	31.583	2.00	43.83	23.00
7.167	2.00	19.417	2.00	31.667	2.00	43.92	23.00
7.250	2.00	19.500	2.00	31.750	2.00	44.00	23.00
7.333	2.00	19.583	2.00	31.833	2.00	44.08	13.01
7.417	2.00	19.667	2.00	31.917	2.00	44.17	13.00
7.500	2.00	19.750	2.00	32.000	2.00	44.25	13.00
7.583	2.00	19.833	2.00	32.083	2.00	44.33	13.00
7.667	2.00	19.917	2.00	32.167	2.00	44.42	13.00
7.750	2.00	20.000	2.00	32.250	2.00	44.50	13.00
7.833	2.00	20.083	2.00	32.333	2.00	44.58	13.00
7.917	2.00	20.167	2.00	32.417	2.00	44.67	13.00
8.000	2.00	20.250	2.00	32.500	2.00	44.75	13.00
8.083	2.00	20.333	2.00	32.583	2.00	44.83	13.00
8.167	2.00	20.417	2.00	32.667	2.00	44.92	13.00
8.250	2.00	20.500	2.00	32.750	2.00	45.00	13.00
8.333	2.00	20.583	2.00	32.833	2.00	45.08	13.00
8.417	2.00	20.667	2.00	32.917	2.00	45.17	13.00
8.500	2.00	20.750	2.00	33.000	2.00	45.25	13.00
8.583	2.00	20.833	2.00	33.083	2.00	45.33	13.00
8.667	2.00	20.917	2.00	33.167	2.00	45.42	13.00
8.750	2.00	21.000	2.00	33.250	2.00	45.50	13.00
8.833	2.00	21.083	2.00	33.333	2.00	45.58	13.00
8.917	2.00	21.167	2.00	33.417	2.00	45.67	13.00
9.000	2.00	21.250	2.00	33.500	2.00	45.75	13.00
9.083	2.00	21.333	2.00	33.583	2.00	45.83	13.00
9.167	2.00	21.417	2.00	33.667	2.00	45.92	13.00
9.250	2.00	21.500	2.00	33.750	2.00	46.00	13.00

9.333	2.00	21.583	2.00	33.833	2.00	46.08	52.94
9.417	2.00	21.667	2.00	33.917	2.00	46.17	53.00
9.500	2.00	21.750	2.00	34.000	2.00	46.25	53.00
9.583	2.00	21.833	2.00	34.083	2.00	46.33	53.00
9.667	2.00	21.917	2.00	34.167	2.00	46.42	53.00
9.750	2.00	22.000	2.00	34.250	2.00	46.50	53.00
9.833	2.00	22.083	2.00	34.333	2.00	46.58	53.00
9.917	2.00	22.167	2.00	34.417	2.00	46.67	53.00
10.000	2.00	22.250	2.00	34.500	2.00	46.75	53.00
10.083	2.00	22.333	2.00	34.583	2.00	46.83	53.00
10.167	2.00	22.417	2.00	34.667	2.00	46.92	53.00
10.250	2.00	22.500	2.00	34.750	2.00	47.00	53.00
10.333	2.00	22.583	2.00	34.833	2.00	47.08	38.02
10.417	2.00	22.667	2.00	34.917	2.00	47.17	38.00
10.500	2.00	22.750	2.00	35.000	2.00	47.25	38.00
10.583	2.00	22.833	2.00	35.083	2.00	47.33	38.00
10.667	2.00	22.917	2.00	35.167	2.00	47.42	38.00
10.750	2.00	23.000	2.00	35.250	2.00	47.50	38.00
10.833	2.00	23.083	2.00	35.333	2.00	47.58	38.00
10.917	2.00	23.167	2.00	35.417	2.00	47.67	38.00
11.000	2.00	23.250	2.00	35.500	2.00	47.75	38.00
11.083	2.00	23.333	2.00	35.583	2.00	47.83	38.00
11.167	2.00	23.417	2.00	35.667	2.00	47.92	38.00
11.250	2.00	23.500	2.00	35.750	2.00	48.00	38.00
11.333	2.00	23.583	2.00	35.833	2.00	48.08	13.04
11.417	2.00	23.667	2.00	35.917	2.00	48.17	13.00
11.500	2.00	23.750	2.00	36.000	2.00	48.25	13.00
11.583	2.00	23.833	2.00	36.083	2.00	48.33	13.00
11.667	2.00	23.917	2.00	36.167	2.00	48.42	13.00
11.750	2.00	24.000	2.00	36.250	2.00	48.50	13.00
11.833	2.00	24.083	2.00	36.333	2.00	48.58	13.00
11.917	2.00	24.167	2.00	36.417	2.00	48.67	13.00
12.000	2.00	24.250	2.00	36.500	2.00	48.75	13.00
12.083	2.00	24.333	2.00	36.583	2.00	48.83	13.00
12.167	2.00	24.417	2.00	36.667	2.00	48.92	13.00
12.250	2.00	24.500	2.00	36.750	2.00	49.00	13.00

Max.Eff.Inten. (mm/hr)=	53.00	48.69
over (min)	5.00	10.00
Storage Coeff. (min)=	1.63 (ii)	6.86 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.32	0.14

TOTALS

PEAK FLOW (cms)=	0.00	0.04	0.039 (iii)
TIME TO PEAK (hrs)=	46.42	47.00	47.00
RUNOFF VOLUME (mm)=	282.50	211.39	216.35
TOTAL RAINFALL (mm)=	284.00	284.00	284.00
RUNOFF COEFFICIENT =	0.99	0.74	0.76

***** 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* = 74.0 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 (0203):	0.29	0.039	47.00	216.35	
+ ID2= 2 (4000):	7.58	1.694	47.00	251.11	
=====					
ID = 3 (1000):	7.87	1.734	47.00	249.83	

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):	7.87	1.734	47.00	249.83	
+ ID2= 2 (5000):	6.27	0.197	47.00	251.78	
=====					
ID = 1 (1000):	14.14	1.931	47.00	250.70	

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

APPENDIX F
WATER BALANCE AND FIRST 5MM ON-SITE DETENTION
CALCULATIONS

Monthly Water Balance (Thornthwaite and Mather Method)

Date: September 2024

PRE-DEVELOPMENT CONDITIONS - OVERALL SITE

Contributing Catchments:	101	To Woodlot	Soil Type: Hillsburgh Fine Sandy Loam	Impervious Area =	0	ha	0%	Runoff Factor =	0.500
Contributing Area =	6.44	ha	Vegetation: Shallow-rooted crops	Pervious Area =	6.44	ha	100%	Evapotranspiration	
Percent Impervious =	0%		Root Zone Depth = 0.50m	Total Area =	6.44	ha	100%	Factor for Impervious	
			Soil Moisture Retention Capacity = 75mm					Surfaces =	0.34

Month	Daily Average Temperature	Monthly Heat Index (I)	Unadjusted Daily Potential Evapotranspiration	Correction Factors	Adjusted Potential Evapotranspiration (PE)	Average Precipitation (P)	P-PE	Accum. Pot. Water Loss	Storage (ST)	ΔS	Pervious ET	Actual Evapotranspiration (AE)	Pervious ET - Actual ET	Moisture Deficit (D)	Moisture Surplus (S)	Water Runoff (RO)	Snow Melt Runoff	Total Recharge and Runoff	Total Recharge and Runoff	Recharge	Runoff	Recharge Volume	Runoff Volume
	(°C)		(mm)		(mm)	(mm)	(mm)	(mm)	(mm)	(mm)		(mm)		(mm)	(mm)	(mm)	(mm)	(mm)	(m³)	(mm)	(mm)	(m³)	(m³)
Jan	-7.5	0.0	0.0	24.3	0.0	64.3	64.3		203.5	0.0	0.0	0.0	0.0	0.0	0.0	9.5	0.0	9.5	612	4.8	4.8	306	306
Feb	-6.5	0.0	0.0	24.6	0.0	54.5	54.5		258.0	0.0	0.0	0.0	0.0	0.0	0.0	4.8	0.0	4.8	306	2.4	2.4	153	153
Mar	-2.1	0.0	0.0	30.6	0.0	60.9	60.9		318.9	0.0	0.0	0.0	0.0	0.0	0.0	2.4	0.0	2.4	153	1.2	1.2	77	77
Apr	5.3	1.1	0.9	33.6	30.2	70.1	39.9		75.0	0.0	30.2	30.2	0.0	0.0	39.9	21.1	24.4	45.5	2,931	22.8	22.8	1,466	1,466
May	11.7	3.6	1.9	37.8	71.8	86.6	14.8		75.0	0.0	71.8	71.8	0.0	0.0	14.8	18.0	109.8	127.7	8,225	63.9	63.9	4,112	4,112
Jun	16.9	6.3	2.9	38.4	111.4	81.3	-30.1	-30.1	49.9	-25.1	106.4	106.4	0.0	5.0	0.0	9.0	54.9	63.9	4,112	31.9	31.9	2,056	2,056
Jul	19.4	7.8	3.3	38.7	127.7	80.8	-46.9	-77.0	22.0	-27.9	108.7	108.7	0.0	19.0	0.0	4.5	27.4	31.9	2,056	16.0	16.0	1,028	1,028
Aug	18.4	7.2	3.1	36.0	111.6	88.2	-23.4	-100.4	19.0	-3.0	91.2	91.2	0.0	20.4	0.0	2.2	13.7	16.0	1,028	8.0	8.0	514	514
Sep	14.3	4.9	2.4	31.2	74.9	87.0	12.1		31.1	12.1	74.9	74.9	0.0	0.0	0.0	1.1	6.9	8.0	514	4.0	4.0	257	257
Oct	7.8	2.0	1.3	28.5	37.1	76.6	39.6		70.7	39.6	37.1	37.1	0.0	0.0	0.0	0.6	3.9	4.5	287	2.2	2.2	144	144
Nov	2.0	0.3	0.3	24.3	7.3	87.1	79.8		75.0	4.3	7.3	7.3	0.0	0.0	75.5	38.0	2.0	40.0	2,577	20.0	20.0	1,289	1,289
Dec	-4.1	0.0	0.0	23.1	0.0	64.2	64.2		139.2	0.0	0.0	0.0	0.0	0.0	0.0	19.0	1.0	20.0	1,289	10.0	10.0	644	644
Total		33.1				901.6	329.7					527.6	0.0	44.4	130.1	130.1	243.9	374.1	24,091	187.0	187.0	12,046	12,046

Contributing Catchments:	102	To West Farm Field	Soil Type: Hillsburgh Fine Sandy Loam	Impervious Area =	0	ha	0%	Runoff Factor =	0.500
Contributing Area =	5.81	ha	Vegetation: Shallow-rooted crops	Pervious Area =	5.81	ha	100%	Evapotranspiration	
Percent Impervious =	0%		Root Zone Depth = 0.50m	Total Area =	5.81	ha	100%	Factor for Impervious	
			Soil Moisture Retention Capacity = 75mm					Surfaces =	0.34

Month	Daily Average Temperature	Monthly Heat Index (I)	Unadjusted Daily Potential Evapotranspiration	Correction Factors	Adjusted Potential Evapotranspiration (PE)	Average Precipitation (P)	P-PE	Accum. Pot. Water Loss	Storage (ST)	ΔS	Pervious ET	Actual Evapotranspiration (AE)	Pervious ET - Actual ET	Moisture Deficit (D)	Moisture Surplus (S)	Water Runoff (RO)	Snow Melt Runoff	Total Recharge and Runoff	Total Recharge and Runoff	Recharge	Runoff	Recharge Volume	Runoff Volume
	(°C)		(mm)		(mm)	(mm)	(mm)	(mm)	(mm)	(mm)		(mm)		(mm)	(mm)	(mm)	(mm)	(mm)	(m³)	(mm)	(mm)	(m³)	(m³)
Jan	-7.5	0.0	0.0	24.3	0.0	64.3	64.3		203.5	0.0	0.0	0.0	0.0	0.0	0.0	9.5	0.0	9.5	552	4.8	4.8	276	276
Feb	-6.5	0.0	0.0	24.6	0.0	54.5	54.5		258.0	0.0	0.0	0.0	0.0	0.0	0.0	4.8	0.0	4.8	276	2.4	2.4	138	138
Mar	-2.1	0.0	0.0	30.6	0.0	60.9	60.9		318.9	0.0	0.0	0.0	0.0	0.0	0.0	2.4	0.0	2.4	138	1.2	1.2	69	69
Apr	5.3	1.1	0.9	33.6	30.2	70.1	39.9		75.0	0.0	30.2	30.2	0.0	0.0	39.9	21.1	24.4	45.5	2,645	22.8	22.8	1,322	1,322
May	11.7	3.6	1.9	37.8	71.8	86.6	14.8		75.0	0.0	71.8	71.8	0.0	0.0	14.8	18.0	109.8	127.7	7,420	63.9	63.9	3,710	3,710
Jun	16.9	6.3	2.9	38.4	111.4	81.3	-30.1	-30.1	49.9	-25.1	106.4	106.4	0.0	5.0	0.0	9.0	54.9	63.9	3,710	31.9	31.9	1,855	1,855
Jul	19.4	7.8	3.3	38.7	127.7	80.8	-46.9	-77.0	22.0	-27.9	108.7	108.7	0.0	19.0	0.0	4.5	27.4	31.9	1,855	16.0	16.0	927	927
Aug	18.4	7.2	3.1	36.0	111.6	88.2	-23.4	-100.4	19.0	-3.0	91.2	91.2	0.0	20.4	0.0	2.2	13.7	16.0	927	8.0	8.0	464	464
Sep	14.3	4.9	2.4	31.2	74.9	87.0	12.1		31.1	12.1	74.9	74.9	0.0	0.0	0.0	1.1	6.9	8.0	464	4.0	4.0	232	232
Oct	7.8	2.0	1.3	28.5	37.1	76.6	39.6		70.7	39.6	37.1	37.1	0.0	0.0	0.0	0.6	3.9	4.5	259	2.2	2.2	130	130
Nov	2.0	0.3	0.3	24.3	7.3	87.1	79.8		75.0	4.3	7.3	7.3	0.0	0.0	75.5	38.0	2.0	40.0	2,325	20.0	20.0	1,163	1,163
Dec	-4.1	0.0	0.0	23.1	0.0	64.2	64.2		139.2	0.0	0.0	0.0	0.0	0.0	0.0	19.0	1.0	20.0	1,163	10.0	10.0	581	581
Total		33.1				901.6	329.7					527.6	0.0	44.4	130.1	130.1	243.9	374.1	21,734	187.0	187.0	10,867	10,867

Contributing Catchments:	103	To County Road 22	Soil Type: Hillsburgh Fine Sandy Loam	Impervious Area =	0	ha	0%	Runoff Factor =	0.500
Contributing Area =	1.89	ha	Vegetation: Shallow-rooted crops	Pervious Area =	1.89	ha	100%	Evapotranspiration	
Percent Impervious =	0%		Root Zone Depth = 0.50m	Total Area =	1.89	ha	100%	Factor for Impervious	
			Soil Moisture Retention Capacity = 75mm					Surfaces =	0.34

Month	Daily Average Temperature	Monthly Heat Index (I)	Unadjusted Daily Potential Evapotranspiration	Correction Factors	Adjusted Potential Evapotranspiration (PE)	Average Precipitation (P)	P-PE	Accum. Pot. Water Loss	Storage (ST)	ΔS	Pervious ET	Actual Evapotranspiration (AE)	Pervious ET - Actual ET	Moisture Deficit (D)	Moisture Surplus (S)	Water Runoff (RO)	Snow Melt Runoff	Total Recharge and Runoff	Total Recharge and Runoff	Recharge	Runoff	Recharge Volume	Runoff Volume
	(°C)		(mm)		(mm)	(mm)	(mm)	(mm)	(mm)	(mm)		(mm)		(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(m ³)	(m ³)
Jan	-7.5	0.0	0.0	24.3	0.0	64.3	64.3		203.5	0.0	0.0	0.0	0.0	0.0	0.0	9.5	0.0	9.5	180	4.8	4.8	90	90
Feb	-6.5	0.0	0.0	24.6	0.0	54.5	54.5		258.0	0.0	0.0	0.0	0.0	0.0	0.0	4.8	0.0	4.8	90	2.4	2.4	45	45
Mar	-2.1	0.0	0.0	30.6	0.0	60.9	60.9		318.9	0.0	0.0	0.0	0.0	0.0	0.0	2.4	0.0	2.4	45	1.2	1.2	22	22
Apr	5.3	1.1	0.9	33.6	30.2	70.1	39.9		75.0	0.0	30.2	30.2	0.0	0.0	39.9	21.1	24.4	45.5	860	22.8	22.8	430	430
May	11.7	3.6	1.9	37.8	71.8	86.6	14.8		75.0	0.0	71.8	71.8	0.0	0.0	14.8	18.0	109.8	127.7	2,414	63.9	63.9	1,207	1,207
Jun	16.9	6.3	2.9	38.4	111.4	81.3	-30.1	-30.1	49.9	-25.1	106.4	106.4	0.0	5.0	0.0	9.0	54.9	63.9	1,207	31.9	31.9	603	603
Jul	19.4	7.8	3.3	38.7	127.7	80.8	-46.9	-77.0	22.0	-27.9	108.7	108.7	0.0	19.0	0.0	4.5	27.4	31.9	603	16.0	16.0	302	302
Aug	18.4	7.2	3.1	36.0	111.6	88.2	-23.4	-100.4	19.0	-3.0	91.2	91.2	0.0	20.4	0.0	2.2	13.7	16.0	302	8.0	8.0	151	151
Sep	14.3	4.9	2.4	31.2	74.9	87.0	12.1		31.1	12.1	74.9	74.9	0.0	0.0	0.0	1.1	6.9	8.0	151	4.0	4.0	75	75
Oct	7.8	2.0	1.3	28.5	37.1	76.6	39.6		70.7	39.6	37.1	37.1	0.0	0.0	0.0	0.6	3.9	4.5	84	2.2	2.2	42	42
Nov	2.0	0.3	0.3	24.3	7.3	87.1	79.8		75.0	4.3	7.3	7.3	0.0	0.0	75.5	38.0	2.0	40.0	756	20.0	20.0	378	378
Dec	-4.1	0.0	0.0	23.1	0.0	64.2	64.2		139.2	0.0	0.0	0.0	0.0	0.0	0.0	19.0	1.0	20.0	378	10.0	10.0	189	189
Total		33.1				901.6	329.7					527.6	0.0	44.4	130.1	130.1	243.9	374.1	7,070	187.0	187.0	3,535	3,535

Notes: Precipitation and Temperature data from Environment Canada Climate Normals 1981-2010 for the Orangeville Weather Station

Monthly water balance strategy as outlined in the document*Instructions and Tables for Computing Potential Evapotranspiration and the Water Balance (Thorntwaite and Mather, 1957)*

For impervious surfaces, evapotranspiration is assumed to be 20% of the yearly precipitation (180.3mm/yr), remainder 721.3mm/yr is runoff.

Evaporation Factor for Impervious Surfaces = Average Annual Evapotranspiration for Impervious Surfaces (180.3mm/year) / Average Annual Evapotranspiration for Pervious Surfaces (527.6mm/year) = 0.34

Pervious soilaverage annual runoff from MOE Stormwater Management Planning and Design Manual Table 3.1 - Hydrologic Cycle Component Values. Table provides 187mm/yr runoff for a for fine sandy loam soil, shallow rooted crops.

Runoff Factor = [(Impervious Percentage of Site x Average Annual Runoff for Impervious Surfaces (721.3mm/year)) + (Pervious Percentage of Site x Average Annual Runoff for Pervious Surfaces (187 mm/year))]/ Total Annual Recharge & Runoff

Hillsburgh Trails Subdivision
Town of Erin
Monthly Water Balance (Thorntwhaite and Mather Method)
Date: September 2024

POST-DEVELOPMENT CONDITIONS - OVERALL SITE - WITHOUT MITIGATIONS

Contributing Catchments:	200, 201, 204	To County Road 22	Soil Type: Hillsburgh Fine Sandy Loam	Percent of Total Area				Runoff Factor =	0.87
				Impervious Area =	7.43	ha	59%		
				Pervious Area =	5.16	ha	41%		
				Total Area =	12.59	ha	100%		
Contributing Area =			Vegetation: Shallow-rooted crops						
Percent Impervious =			Root Zone Depth = 0.50m						
			Soil Moisture Retention Capacity = 75mm						
						Factor for Impervious Surfaces =			0.34

Month	Daily Average Temperature	Monthly Heat Index	Unadjusted Daily Potential Evapotranspiration	Correction Factors	Adjusted Potential Evapotranspiration	Average Precipitation	P-PE	Accum. Pot. Water Loss	Storage	ΔS	Pervious ET	Actual Evapotranspiration	Pervious ET - Actual ET	Moisture Deficit	Moisture Surplus	Water Runoff	Snow Melt Runoff	Total Recharge & Runoff	Total Recharge and Runoff	Recharge	Recharge Volume	Runoff	Runoff Volume
	(°C)		(mm)		(mm)	(mm)	(mm)	(mm)	(mm)	(mm)		(mm)		(mm)	(mm)	(mm)	(mm)	(mm)	(m ³)	(mm)	(m ³)	(mm)	(m ³)
Jan	-7.5	0.0	0.0	24.3	0.0	64.3	64.3		203.5	0.0	0.0	0.0	0.0	0.0	0.0	12.8	0.0	12.8	1,609	1.7	213	11.1	1,396
Feb	-6.5	0.0	0.0	24.6	0.0	54.5	54.5		258.0	0.0	0.0	0.0	0.0	0.0	0.0	6.4	0.0	6.4	804	0.8	107	5.5	698
Mar	-2.1	0.0	0.0	30.6	0.0	60.9	60.9		318.9	0.0	0.0	0.0	0.0	0.0	0.0	3.2	0.0	3.2	402	0.4	53	2.8	349
Apr	5.3	1.1	0.9	33.6	30.2	70.1	39.9		75.0	0.0	30.2	18.5	11.7	11.7	51.6	27.4	24.4	51.8	6,518	6.9	863	44.9	5,655
May	11.7	3.6	1.9	37.8	71.8	86.6	14.8		75.0	0.0	71.8	43.9	27.9	27.9	42.7	35.0	109.8	144.8	18,228	19.2	2,415	125.6	15,814
Jun	16.9	6.3	2.9	38.4	111.4	81.3	-30.1	-30.1	49.9	-25.1	106.4	65.1	41.3	46.3	41.3	38.2	54.9	93.1	11,715	12.3	1,552	80.7	10,163
Jul	19.4	7.8	3.3	38.7	127.7	80.8	-46.9	-77.0	22.0	-27.9	108.7	66.5	42.2	61.2	42.2	40.2	27.4	67.6	8,515	9.0	1,128	58.7	7,387
Aug	18.4	7.2	3.1	36.0	111.6	88.2	-23.4	-100.4	19.0	-3.0	91.2	55.8	35.4	55.8	35.4	37.8	13.7	51.5	6,487	6.8	859	44.7	5,628
Sep	14.3	4.9	2.4	31.2	74.9	87.0	12.1		31.1	12.1	74.9	45.8	29.1	29.1	29.1	33.4	6.9	40.3	5,074	5.3	672	35.0	4,402
Oct	7.8	2.0	1.3	28.5	37.1	76.6	39.6		70.7	39.6	37.1	22.7	14.4	14.4	14.4	23.9	3.9	27.8	3,502	3.7	464	24.1	3,038
Nov	2.0	0.3	0.3	24.3	7.3	87.1	79.8		75.0	4.3	7.3	4.5	2.8	2.8	78.3	51.1	2.0	53.1	6,687	7.0	886	46.1	5,801
Dec	-4.1	0.0	0.0	23.1	0.0	64.2	64.2		139.2	0.0	0.0	0.0	0.0	0.0	0.0	25.6	1.0	26.6	3,344	3.5	443	23.0	2,901
Total		33.1				901.6	329.7					322.7	204.9	249.3	335.0	335.0	243.9	578.9	72,887	76.7	9,655	502.2	63,232

Contributing Catchments:	202	To Woodlot	Soil Type: Hillsburgh Fine Sandy Loam	Impervious Area =	0.69	ha	55%	Runoff Factor =	0.85
Contributing Area =	1.26	ha	Vegetation: Shallow-rooted crops	Pervious Area =	0.57	ha	45%	Evapotranspiration	
Percent Impervious =	55%		Root Zone Depth = 0.50m	Total Area =	1.26	ha	100%	Factor for Impervious	
			Soil Moisture Retention Capacity = 75mm					Surfaces =	0.34

Month	Daily Average Temperature	Monthly Heat Index	Unadjusted Daily Potential Evapotranspiration	Correction Factors	Adjusted Potential Evapotranspiration	Average Precipitation	P-PE	Accum. Pot. Water Loss	Storage	ΔS	Pervious ET	Actual Evapotranspiration	Pervious ET - Actual ET	Moisture Deficit	Moisture Surplus	Water Runoff	Snow Melt Runoff	Total Recharge & Runoff	Total Recharge and Runoff	Recharge	Recharge Volume	Runoff	Runoff Volume
	(°C)		(mm)		(mm)	(mm)	(mm)	(mm)	(mm)	(mm)		(mm)		(mm)	(mm)	(mm)	(mm)	(mm)	(m ³)	(mm)	(m ³)	(mm)	(m ³)
Jan	-7.5	0.0	0.0	24.3	0.0	64.3	64.3		203.5	0.0	0.0	0.0	0.0	0.0	0.0	12.6	0.0	12.6	158	1.9	23	10.7	135
Feb	-6.5	0.0	0.0	24.6	0.0	54.5	54.5		258.0	0.0	0.0	0.0	0.0	0.0	0.0	6.3	0.0	6.3	79	0.9	12	5.3	67
Mar	-2.1	0.0	0.0	30.6	0.0	60.9	60.9		318.9	0.0	0.0	0.0	0.0	0.0	0.0	3.1	0.0	3.1	40	0.5	6	2.7	34
Apr	5.3	1.1	0.9	33.6	30.2	70.1	39.9		75.0	0.0	30.2	19.3	10.9	10.9	50.8	26.6	24.4	51.0	643	7.5	95	43.5	547
May	11.7	3.6	1.9	37.8	71.8	86.6	14.8		75.0	0.0	71.8	45.8	26.0	26.0	40.8	33.7	109.8	143.4	1,807	21.2	267	122.2	1,540
Jun	16.9	6.3	2.9	38.4	111.4	81.3	-30.1	-30.1	49.9	-25.1	106.4	67.9	38.5	43.5	38.5	36.1	54.9	91.0	1,146	13.5	170	77.5	977
Jul	19.4	7.8	3.3	38.7	127.7	80.8	-46.9	-77.0	22.0	-27.9	108.7	69.3	39.4	58.4	39.4	37.7	27.4	65.2	821	9.6	121	55.5	700
Aug	18.4	7.2	3.1	36.0	111.6	88.2	-23.4	-100.4	19.0	-3.0	91.2	58.2	33.0	53.4	33.0	35.4	13.7	49.1	619	7.3	91	41.8	527
Sep	14.3	4.9	2.4	31.2	74.9	87.0	12.1		31.1	12.1	74.9	47.8	27.1	27.1	27.1	31.2	6.9	38.1	480	5.6	71	32.5	409
Oct	7.8	2.0	1.3	28.5	37.1	76.6	39.6		70.7	39.6	37.1	23.6	13.4	13.4	13.4	22.3	3.9	26.2	330	3.9	49	22.3	282
Nov	2.0	0.3	0.3	24.3	7.3	87.1	79.8		75.0	4.3	7.3	4.7	2.6	2.6	78.1	50.2	2.0	52.2	658	7.7	97	44.5	561
Dec	-4.1	0.0	0.0	23.1	0.0	64.2	64.2		139.2	0.0	0.0	0.0	0.0	0.0	0.0	25.1	1.0	26.1	329	3.9	49	22.2	280
Total		33.1				901.6	329.7					336.6	191.0	235.4	321.1	320.4	243.9	564.3	7,111	83.5	1,052	480.9	6,059

Contributing Catchments:	203	To West Farm Field	Soil Type: Hillsburgh Fine Sandy Loam	Impervious Area =	0.02	ha	7%	Runoff Factor =	0.56
Contributing Area =	0.29	ha	Vegetation: Shallow-rooted crops	Pervious Area =	0.27	ha	93%	Evapotranspiration	
Percent Impervious =	7%		Root Zone Depth = 0.50m	Total Area =	0.29	ha	100%	Factor for Impervious	
			Soil Moisture Retention Capacity = 75mm					Surfaces =	0.34

Month	Daily Average Temperature	Monthly Heat Index	Unadjusted Daily Potential Evapotranspiration	Correction Factors	Adjusted Potential Evapotranspiration	Average Precipitation	P-PE	Accum. Pot. Water Loss	Storage	ΔS	Pervious ET	Actual Evapotranspiration	Pervious ET - Actual ET	Moisture Deficit	Moisture Surplus	Water Runoff	Snow Melt Runoff	Total Recharge & Runoff	Total Recharge and Runoff	Recharge	Recharge Volume	Runoff	Runoff Volume
	(°C)		(mm)		(mm)	(mm)	(mm)	(mm)	(mm)	(mm)		(mm)		(mm)	(mm)	(mm)	(mm)	(mm)	(mm ³)	(mm)	(m ³)	(mm)	(m ³)
Jan	-7.5	0.0	0.0	24.3	0.0	64.3	64.3		203.5	0.0	0.0	0.0	0.0	0.0	0.0	9.9	0.0	9.9	29	4.3	13	5.6	16
Feb	-6.5	0.0	0.0	24.6	0.0	54.5	54.5		258.0	0.0	0.0	0.0	0.0	0.0	0.0	4.9	0.0	4.9	14	2.2	6	2.8	8
Mar	-2.1	0.0	0.0	30.6	0.0	60.9	60.9		318.9	0.0	0.0	0.0	0.0	0.0	0.0	2.5	0.0	2.5	7	1.1	3	1.4	4
Apr	5.3	1.1	0.9	33.6	30.2	70.1	39.9		75.0	0.0	30.2	28.8	1.4	1.4	41.3	21.8	24.4	46.2	134	20.2	59	26.0	76
May	11.7	3.6	1.9	37.8	71.8	86.6	14.8		75.0	0.0	71.8	68.5	3.3	3.3	18.1	20.0	109.8	129.7	376	56.6	164	73.1	212
Jun	16.9	6.3	2.9	38.4	111.4	81.3	-30.1	-30.1	49.9	-25.1	106.4	101.5	4.9	9.9	4.9	12.4	54.9	67.3	195	29.4	85	37.9	110
Jul	19.4	7.8	3.3	38.7	127.7	80.8	-46.9	-77.0	22.0	-27.9	108.7	103.7	5.0	24.0	5.0	8.7	27.4	36.2	105	15.8	46	20.4	59
Aug	18.4	7.2	3.1	36.0	111.6	88.2	-23.4	-100.4	19.0	-3.0	91.2	87.0	4.2	24.6	4.2	6.5	13.7	20.2	59	8.8	26	11.4	33
Sep	14.3	4.9	2.4	31.2	74.9	87.0	12.1		31.1	12.1	74.9	71.4	3.5	3.5	3.5	5.0	6.9	11.8	34	5.2	15	6.7	19
Oct	7.8	2.0	1.3	28.5	37.1	76.6	39.6		70.7	39.6	37.1	35.3	1.7	1.7	1.7	3.3	3.9	7.2	21	3.2	9	4.1	12
Nov	2.0	0.3	0.3	24.3	7.3	87.1	79.8		75.0	4.3	7.3	7.0	0.3	0.3	75.8	39.6	2.0	41.6	121	18.2	53	23.4	68
Dec	-4.1	0.0	0.0	23.1	0.0	64.2	64.2		139.2	0.0	0.0	0.0	0.0	0.0	0.0	19.8	1.0	20.8	60	9.1	26	11.7	34
Total		33.1				901.6	329.7					503.3	24.3	68.7	154.4	154.4	243.9	398.3	1,155	173.9	504	224.4	651

Notes: Precipitation and Temperature data from Environment Canada Climate Normals 1981-2010 for the Orangeville Weather Station

Monthly water balance strategy as outlined in the document*Instructions and Tables for Computing Potential Evapotranspiration and the Water Balance (Thorntwaite and Mather, 1957)*

For impervious surfaces, evapotranspiration is assumed to be 20% of the yearly precipitation (180.3mm/yr), remainder 721.3mm/yr is runoff.

Evaporation Factor for Impervious Surfaces = Average Annual Evapotranspiration for Impervious Surfaces (180.3mm/year) / Average Annual Evapotranspiration for Pervious Surfaces (527.6mm/year) = 0.34

Pervious soilaverage annual runoff from MOE Stormwater Management Planning and Design Manual Table 3.1 - Hydrologic Cycle Component Values. Table provides 187mm/yr runoff for a for fine sandy loam soil, shallow rooted crops.

Runoff Factor = [(Impervious Percentage of Site x Average Annual Runoff for Impervious Surfaces (721.3mm/year)) + (Pervious Percentage of Site x Average Annual Runoff for Pervious Surfaces (187 mm/year))]/ Total Annual Recharge & Runoff

Hillsburgh Trails Subdivision
Town of Erin
Monthly Water Balance (Thorntwaite and Mather Method)
Date: September 2024

POST-DEVELOPMENT CONDITIONS - OVERALL SITE - WITH MITIGATIONS

Contributing Catchments: 200, 201, 202 To County Road 22		Soil Type: Hillsburgh Fine Sandy Loam		Percent of Total Area				Runoff Factor =		0.87	
Contributing Area = 12.59 ha		Vegetation: Shallow-rooted crops		Impervious Area = 7.43 ha 59%				Evapotranspiration			
Percent Impervious = 59%		Root Zone Depth = 0.50m		Pervious Area = 5.16 ha 41%				Factor for Impervious			
		Soil Moisture Retention Capacity = 75mm		Total Area = 12.59 ha 100%				Surfaces =		0.34	

Month	Daily Average Temperature	Monthly Heat Index	Unadjusted Daily Potential Evapotranspiration	Correction Factors	Adjusted Potential Evapotranspiration	Average Precipitation	P-PE	Accum. Pot. Water Loss	Storage	ΔS	Pervious ET	Actual Evapotranspiration	Pervious ET - Actual ET	Moisture Deficit	Moisture Surplus	Water Runoff	Snow Melt Runoff	Total Recharge & Runoff	Total Recharge and Runoff	Recharge	Recharge Volume	Runoff	Runoff Volume	Enhanced Recharge	Enhanced Recharge Volume	Remaining Runoff Volume	Remaining Runoff Volume
	(°C)		(mm)		(mm)	(mm)	(mm)	(mm)	(mm)	(mm)		(mm)		(mm)	(mm)	(mm)	(mm)	(mm)	(m³)	(mm)	(m³)	(mm)	(m³)	(mm)	(m³)	(mm)	(m³)
Jan	-7.5	0.0	0.0	24.3	0.0	64.3	64.3		203.5	0.0	0.0	0.0	0.0	0.0	0.0	12.8	0.0	12.8	1,609	1.7	213	11.1	1,396	2.2	273	8.9	1,122
Feb	-6.5	0.0	0.0	24.6	0.0	54.5	54.5		258.0	0.0	0.0	0.0	0.0	0.0	0.0	6.4	0.0	6.4	804	0.8	107	5.5	698	1.1	137	4.5	561
Mar	-2.1	0.0	0.0	30.6	0.0	60.9	60.9		318.9	0.0	0.0	0.0	0.0	0.0	0.0	3.2	0.0	3.2	402	0.4	53	2.8	349	0.5	68	2.2	281
Apr	5.3	1.1	0.9	33.6	30.2	70.1	39.9		75.0	0.0	30.2	18.5	11.7	11.7	51.6	27.4	24.4	51.8	6,521	6.9	864	44.9	5,656	8.0	1,012	36.9	4,645
May	11.7	3.6	1.9	37.8	71.8	86.6	14.8		75.0	0.0	71.8	43.9	27.9	27.9	42.7	35.0	109.8	144.8	18,229	19.2	2,416	125.6	15,814	22.6	2,841	103.0	12,972
Jun	16.9	6.3	2.9	38.4	111.4	81.3	-30.1	-30.1	49.9	-25.1	106.4	65.1	41.3	46.3	41.3	38.2	54.9	93.1	11,716	12.3	1,553	80.7	10,163	16.3	2,058	64.4	8,105
Jul	19.4	7.8	3.3	38.7	127.7	80.8	-46.9	-77.0	22.0	-27.9	108.7	66.5	42.2	61.2	42.2	40.2	27.4	67.6	8,516	9.0	1,129	58.7	7,387	13.3	1,680	45.3	5,707
Aug	18.4	7.2	3.1	36.0	111.6	88.2	-23.4	-100.4	19.0	-3.0	91.2	55.8	35.4	55.8	35.4	37.8	13.7	51.5	6,487	6.8	860	44.7	5,628	11.0	1,386	33.7	4,241
Sep	14.3	4.9	2.4	31.2	74.9	87.0	12.1		31.1	12.1	74.9	45.8	29.1	29.1	29.1	33.4	6.9	40.3	5,074	5.3	672	35.0	4,402	9.2	1,153	25.8	3,249
Oct	7.8	2.0	1.3	28.5	37.1	76.6	39.6		70.7	39.6	37.1	22.7	14.4	14.4	14.4	23.9	3.9	27.8	3,502	3.7	464	24.1	3,038	6.4	801	17.8	2,237
Nov	2.0	0.3	0.3	24.3	7.3	87.1	79.8		75.0	4.3	7.3	4.5	2.8	2.8	78.3	51.1	2.0	53.1	6,687	7.0	886	46.1	5,801	9.0	1,130	37.1	4,671
Dec	-4.1	0.0	0.0	23.1	0.0	64.2	64.2		139.2	0.0	0.0	0.0	0.0	0.0	0.0	25.6	1.0	26.6	3,344	3.5	443	23.0	2,900	4.5	567	18.5	2,334
Total		33.1				901.6	329.7					322.7	204.9	249.3	335.0	335.0	243.9	579.0	72,892	76.7	9,660	502.2	63,232	104.1	13,108	398.1	50,124

Contributing Catchments: 202 To Woodlot		Soil Type: Hillsburgh Fine Sandy Loam		Percent of Total Area				Runoff Factor =		0.85	
Contributing Area = 1.26 ha		Vegetation: Shallow-rooted crops		Impervious Area = 0.69 ha 55%				Evapotranspiration			
Percent Impervious = 55%		Root Zone Depth = 0.50m		Pervious Area = 0.57 ha 45%				Factor for Impervious			
		Soil Moisture Retention Capacity = 75mm		Total Area = 1.26 ha 100%				Surfaces =		0.34	

Month	Daily Average Temperature	Monthly Heat Index	Unadjusted Daily Potential Evapotranspiration	Correction Factors	Adjusted Potential Evapotranspiration	Average Precipitation	P-PE	Accum. Pot. Water Loss	Storage	ΔS	Pervious ET	Actual Evapotranspiration	Pervious ET - Actual ET	Moisture Deficit	Moisture Surplus	Water Runoff	Snow Melt Runoff	Total Recharge & Runoff	Total Recharge and Runoff	Recharge	Recharge Volume	Runoff	Runoff Volume	Enhanced Recharge	Enhanced Recharge Volume	Remaining Runoff Volume	Remaining Runoff Volume
	(°C)		(mm)		(mm)	(mm)	(mm)	(mm)	(mm)	(mm)		(mm)		(mm)	(mm)	(mm)	(mm)	(mm)	(m³)	(mm)	(m³)	(mm)	(m³)	(mm)	(m³)	(mm)	(m³)
Jan	-7.5	0.0	0.0	24.3	0.0	64.3	64.3		203.5	0.0	0.0	0.0	0.0	0.0	0.0	12.6	0.0	12.6	158	1.9	24	10.7	135	0.4	47	10.3	87
Feb	-6.5	0.0	0.0	24.6	0.0	54.5	54.5		258.0	0.0	0.0	0.0	0.0	0.0	0.0	6.3	0.0	6.3	79	0.9	12	5.3	67	0.2	24	5.2	44
Mar	-2.1	0.0	0.0	30.6	0.0	60.9	60.9		318.9	0.0	0.0	0.0	0.0	0.0	0.0	3.1	0.0	3.1	40	0.5	6	2.7	34	0.1	12	2.6	22
Apr	5.3	1.1	0.9	33.6	30.2	70.1	39.9		75.0	0.0	30.2	19.3	10.9	10.9	50.8	27.0	24.4	51.3	647	7.6	96	43.7	551	1.4	175	42.3	375
May	11.7	3.6	1.9	37.8	71.8	86.6	14.8		75.0	0.0	71.8	45.8	26.0	26.0	40.8	33.9	109.8	143.6	1,810	21.4	270	122.2	1,540	3.9	492	118.3	1,048
Jun	16.9	6.3	2.9	38.4	111.4	81.3	-30.1	-30.1	49.9	-25.1	106.4	67.9	38.5	43.5	38.5	36.2	54.9	91.1	1,148	13.6	171	77.5	977	2.8	357	74.7	620
Jul	19.4	7.8	3.3	38.7	127.7	80.8	-46.9	-77.0	22.0	-27.9	108.7	69.3	39.4	58.4	39.4	37.8	27.4	65.2	822	9.7	122	55.5	699	2.3	291	53.2	408
Aug	18.4	7.2	3.1	36.0	111.6	88.2	-23.4	-100.4	19.0	-3.0	91.2	58.2	33.0	53.4	33.0	35.4	13.7	49.1	619	7.3	92	41.8	527	1.9	240	39.9	286
Sep	14.3	4.9	2.4	31.2	74.9	87.0	12.1		31.1	12.1	74.9	47.8	27.1	27.1	27.1	31.3	6.9	38.1	480	5.7	72	32.4	409	1.6	200	30.8	209
Oct	7.8	2.0	1.3	28.5	37.1	76.6	39.6		70.7	39.6	37.1	23.6	13.4	13.4	13.4	22.3	3.9	26.2	331	3.9	49	22.3	281	1.1	139	21.2	142
Nov	2.0	0.3	0.3	24.3	7.3	87.1	79.8		75.0	4.3	7.3	4.7	2.6	2.6	78.1	50.2	2.0	52.2	658	7.8	98	44.4	560	1.6	196	42.9	364
Dec	-4.1	0.0	0.0	23.1	0.0	64.2	64.2		139.2	0.0	0.0	0.0	0.0	0.0	0.0	25.1	1.0	26.1	329	3.9	49	22.2	280	0.8	98	21.4	182
Total		33.1				901.6	329.7					336.6	191.0	235.4	321.1	321.1	243.9	565.0	7,119	84.2	1,060	480.9	6,059	18.0	2,271	462.8	3,788

Contributing Catchments:	203	To West Farm Field	Soil Type: Hillsburgh Fine Sandy Loam	Impervious Area =	0.02	ha	7%	Runoff Factor =	0.56
Contributing Area =	0.29	ha	Vegetation: Shallow-rooted crops	Pervious Area =	0.27	ha	93%	Evapotranspiration	
Percent Impervious =	7%		Root Zone Depth = 0.50m	Total Area =	0.29	ha	100%	Factor for Impervious	
			Soil Moisture Retention Capacity = 75mm					Surfaces =	0.34

Month	Daily Average Temperature	Monthly Heat Index	Unadjusted Daily Potential Evapotranspiration	Correction Factors	Adjusted Potential Evapotranspiration	Average Precipitation	P-PE	Accum. Pot. Water Loss	Storage	ΔS	Pervious ET	Actual Evapotranspiration	Pervious ET - Actual ET	Moisture Deficit	Moisture Surplus	Water Runoff	Snow Melt Runoff	Total Recharge & Runoff	Total Recharge and Runoff	Recharge	Recharge Volume	Runoff	Runoff Volume	Enhanced Recharge	Enhanced Recharge Volume	Remaining Runoff Volume	Remaining Runoff Volume
	(°C)		(mm)		(mm)	(mm)	(mm)	(mm)	(mm)	(mm)		(mm)		(mm)	(mm)	(mm)	(mm)	(mm)	(m³)	(mm)	(m³)	(mm)	(m³)	(mm)	(m³)	(mm)	(m³)
Jan	-7.5	0.0	0.0	24.3	0.0	64.3	64.3		203.5	0.0	0.0	0.0	0.0	0.0	0.0	9.9	0.0	9.9	29	4.3	13	5.6	16	0.0	0	5.6	16
Feb	-6.5	0.0	0.0	24.6	0.0	54.5	54.5		258.0	0.0	0.0	0.0	0.0	0.0	0.0	4.9	0.0	4.9	14	2.2	6	2.8	8	0.0	0	2.8	8
Mar	-2.1	0.0	0.0	30.6	0.0	60.9	60.9		318.9	0.0	0.0	0.0	0.0	0.0	0.0	2.5	0.0	2.5	7	1.1	3	1.4	4	0.0	0	1.4	4
Apr	5.3	1.1	0.9	33.6	30.2	70.1	39.9		75.0	0.0	30.2	28.8	1.4	1.4	41.3	21.8	24.4	46.2	134	20.2	59	26.0	76	0.0	0	26.0	76
May	11.7	3.6	1.9	37.8	71.8	86.6	14.8		75.0	0.0	71.8	68.5	3.3	3.3	18.1	20.0	109.8	129.7	376	56.6	164	73.1	212	0.0	0	73.1	212
Jun	16.9	6.3	2.9	38.4	111.4	81.3	-30.1	-30.1	49.9	-25.1	106.4	101.5	4.9	9.9	4.9	12.4	54.9	67.3	195	29.4	85	37.9	110	0.0	0	37.9	110
Jul	19.4	7.8	3.3	38.7	127.7	80.8	-46.9	-77.0	22.0	-27.9	108.7	103.7	5.0	24.0	5.0	8.7	27.4	36.2	105	15.8	46	20.4	59	0.0	0	20.4	59
Aug	18.4	7.2	3.1	36.0	111.6	88.2	-23.4	-100.4	19.0	-3.0	91.2	87.0	4.2	24.6	4.2	6.5	13.7	20.2	59	8.8	26	11.4	33	0.0	0	11.4	33
Sep	14.3	4.9	2.4	31.2	74.9	87.0	12.1		31.1	12.1	74.9	71.4	3.5	3.5	3.5	5.0	6.9	11.8	34	5.2	15	6.7	19	0.0	0	6.7	19
Oct	7.8	2.0	1.3	28.5	37.1	76.6	39.6		70.7	39.6	37.1	35.3	1.7	1.7	1.7	3.3	3.9	7.2	21	3.2	9	4.1	12	0.0	0	4.1	12
Nov	2.0	0.3	0.3	24.3	7.3	87.1	79.8		75.0	4.3	7.3	7.0	0.3	0.3	75.8	39.6	2.0	41.6	121	18.2	53	23.4	68	0.0	0	23.4	68
Dec	-4.1	0.0	0.0	23.1	0.0	64.2	64.2		139.2	0.0	0.0	0.0	0.0	0.0	0.0	19.8	1.0	20.8	60	9.1	26	11.7	34	0.0	0	11.7	34
Total		33.1				901.6	329.7					503.3	24.3	68.7	154.4	154.4	243.9	398.3	1,155	173.9	504	224.4	651	0.0	0	224.4	651

Notes: Precipitation and Temperature data from Environment Canada Climate Normals 1981-2010 for the Orangeville Weather Station

Monthly water balance strategy as outlined in the document *Instructions and Tables for Computing Potential Evapotranspiration and the Water Balance (Thornthwaite and Mather, 1957)*

For impervious surfaces, evapotranspiration is assumed to be 20% of the yearly precipitation (180.3mm/yr), remainder 721.3mm/yr is runoff.

Evaporation Factor for Impervious Surfaces = Average Annual Evapotranspiration for Impervious Surfaces (180.3mm/year) / Average Annual Evapotranspiration for Pervious Surfaces (527.6mm/year) = 0.34

Pervious soilaverage annual runoff from MOE Stormwater Management Planning and Design Manual Table 3.1 - Hydrologic Cycle Component Values. Table provides 187mm/yr runoff for a for fine sandy loam soil, shallow rooted crops.

Runoff Factor = [(Impervious Percentage of Site x Average Annual Runoff for Impervious Surfaces (721.3mm/year)) + (Pervious Percentage of Site x Average Annual Runoff for Pervious Surfaces (187 mm/year))]/ Total Annual Recharge & Runoff

Monthly Water Budget from Site to Wetland and Woodlot

Month	Site-wide Recharge				Runoff to Woodlot				Runoff to County Rd 22 / Wetland			
	Existing ¹ (m³)	Post-development ² (m³)	Total Difference (m³)	Total Difference (%)	Existing ¹ (m³) (Catchment 101)	Post-development (m³) (Catchment 202)	Total Difference (m³)	Total Difference (%)	Existing ¹ (m³) (Catchment 103)	Post-development (m³) (Catchments 200, 201, 204)	Total Difference (m³)	Total Difference (%)
January	672	570	-102	-15.2%	306	87	-219	-71%	90	1,122	1,032	1149%
February	336	285	-51	-15.2%	153	44	-109	-71%	45	561	516	1149%
March	168	143	-25	-15.2%	77	22	-55	-71%	22	281	258	1149%
April	3,218	2,206	-1,012	-31.4%	1,466	375	-1,090	-74%	430	4,645	4,214	980%
May	9,029	6,183	-2,846	-31.5%	4,112	1,048	-3,064	-75%	1,207	12,972	11,766	975%
June	4,515	4,223	-291	-6.5%	2,056	620	-1,436	-70%	603	8,105	7,502	1243%
July	2,257	3,268	1,011	44.8%	1,028	408	-620	-60%	302	5,707	5,405	1792%
August	1,129	2,604	1,475	130.7%	514	286	-228	-44%	151	4,241	4,091	2712%
September	564	2,112	1,548	274.3%	257	209	-48	-19%	75	3,249	3,173	4207%
October	315	1,463	1,147	363.7%	144	142	-1	-1%	42	2,237	2,195	5206%
November	2,829	2,363	-467	-16.5%	1,289	364	-924	-72%	378	4,671	4,292	1135%
December	1,415	1,184	-231	-16.3%	644	182	-463	-72%	189	2,334	2,144	1134%
Annual Total	26,448	26,603	156	0.6%	12,046	3,788	-8,258	-68.55%	3,535	50,124	46,589	1317.90%

The monthly recharge volumes under existing conditions are generated by Catchments 101, 102, and 103 in the Functional Servicing Report (GM BluePlan Engineering, revised September 2024). The monthly runoff volumes under existing conditions are generated by Catchments 101 (to woodlot) and 103 (to County Rd 22 and downstream wetland), as runoff in Catchment 102 is directed to the West Farm Field.

The monthly recharge volumes under post-development conditions are generated by Catchments 200, 201, 202, 203 and 204 in the Functional Servicing Report (GM BluePlan Engineering, revised September 2024). The monthly runoff volumes under post-development conditions are generated by Catchments 200, 201, 202, and 204, as runoff in Catchments 203 is directed to the West Farm Field.

Hillsburgh Trails Subdivision
Town of Erin
Monthly Water Balance (Thorntwhaite and Mather Method)
Date: September 2024

ROOFTOP (100% IMPERVIOUS)

Contributing Catchments:	Rooftops	Soil Type: Hillsburgh Fine Sandy Loam	Impervious Area =	0.32	ha	100%	Runoff Factor =	1.00
Contributing Area =	0.32 ha	Vegetation: Shallow-rooted crops	Pervious Area =	0.00	ha	0%	Evapotranspiration	
Percent Impervious =	100%	Root Zone Depth = 0.50m	Total Area =	0.32	ha	100%	Factor for Impervious	
		Soil Moisture Retention Capacity = 75mm					Surfaces =	0.34

Month	Daily Average Temperature	Monthly Heat Index	Unadjusted Daily Potential Evapotranspiration	Correction Factors	Adjusted Potential Evapotranspiration	Average Precipitation	P-PE	Accum. Pot. Water Loss	Storage	ΔS	Pervious ET	Actual Evapotranspiration	Pervious ET - Actual ET	Moisture Deficit	Moisture Surplus	Water Runoff	Snow Melt Runoff	Total Recharge & Runoff	Actual Runoff
	(°C)		(mm)		(mm)	(mm)	(mm)	(mm)	(mm)	(mm)		(mm)		(mm)	(mm)	(mm)	(mm)	(mm)	(mm)
Jan	-7.5	0.0	0.0	24.3	0.0	64.3	64.3		203.5	0.0	0.0	0.0	0.0	0.0	0.0	15.1	0.0	15.1	15.0
Feb	-6.5	0.0	0.0	24.6	0.0	54.5	54.5		258.0	0.0	0.0	0.0	0.0	0.0	0.0	7.5	0.0	7.5	7.5
Mar	-2.1	0.0	0.0	30.6	0.0	60.9	60.9		318.9	0.0	0.0	0.0	0.0	0.0	0.0	3.8	0.0	3.8	3.8
Apr	5.3	1.1	0.9	33.6	30.2	70.1	39.9		75.0	0.0	30.2	10.3	20.0	20.0	59.8	31.4	24.4	55.7	55.7
May	11.7	3.6	1.9	37.8	71.8	86.6	14.8		75.0	0.0	71.8	24.4	47.4	47.4	62.2	46.8	109.8	156.5	156.3
Jun	16.9	6.3	2.9	38.4	111.4	81.3	-30.1	-30.1	49.9	-25.1	106.4	36.2	70.2	75.2	70.2	58.5	54.9	113.4	113.2
Jul	19.4	7.8	3.3	38.7	127.7	80.8	-46.9	-77.0	22.0	-27.9	108.7	37.0	71.7	90.8	71.7	65.1	27.4	92.6	92.5
Aug	18.4	7.2	3.1	36.0	111.6	88.2	-23.4	-100.4	19.0	-3.0	91.2	31.0	60.2	80.6	60.2	62.7	13.7	76.4	76.3
Sep	14.3	4.9	2.4	31.2	74.9	87.0	12.1		31.1	12.1	74.9	25.5	49.4	49.4	49.4	56.0	7.5	63.5	63.5
Oct	7.8	2.0	1.3	28.5	37.1	76.6	39.6		70.7	39.6	37.1	12.6	24.5	24.5	24.5	40.2	3.9	44.1	44.1
Nov	2.0	0.3	0.3	24.3	7.3	87.1	79.8		75.0	4.3	7.3	2.5	4.8	4.8	80.3	60.3	2.0	62.3	62.2
Dec	-4.1	0.0	0.0	23.1	0.0	64.2	64.2		139.2	0.0	0.0	0.0	0.0	0.0	0.0	30.1	1.1	31.2	31.2
Total		33.1				901.6	329.7					179.4	348.2	392.6	478.3	477.5	244.7	722.1	721.3

Actual runoff adjusted to reflect 721.3 mm/year average impervious runoff (rooftop)

Notes: Precipitation and Temperature data from Environment Canada Climate Normals 1981-2010 for the Orangeville Weather Station
Monthly water balance strategy as outlined in the document*Instructions and Tables for Computing Potential Evapotranspiration and the Water Balance (Thorntwhaite and Mather, 1957)*
For impervious surfaces, evapotranspiration is assumed to be 20% of the yearly precipitation (180.3mm/yr), remainder 721.3mm/yr is runoff
Evaporation Factor for Impervious Surfaces = Average Annual Evapotranspiration for Impervious Surfaces (180.3mm/year) / Average Annual Evapotranspiration for Pervious Surfaces (527.6mm/year) = 0.34
Pervious soilaverage annual runoff from MOE Stormwater Management Planning and Design Manual Table 3.1 - Hydrologic Cycle Component Values. Table provides 187mm/yr runoff for a for fine sandy loam soil, shallow rooted crops.
Runoff Factor = [(Impervious Percentage of Site x Average Annual Runoff for Impervious Surfaces (721.3mm/year)) + (Pervious Percentage of Site x Average Annual Runoff for Pervious Surfaces (187 mm/year))]/ Total Annual Recharge & Runoff

**Hillsburgh Subdivision
Town of Erin
File No: 121132
Infiltration Gallery Sizing Calculation**

Runoff Depth = 25 mm							Infiltration Gallery					
Lot Frontage (m)	Number of Units	Building Width (m)	Building Length (m)	Rooftop Area (m ²)	Required Storage Volume Per Lot (m ³)	Total Storage Volume Required (m ³)	Length (m)	Width (m)	Depth (m)	Stone Volume (m ³)	Storage Volume (m ³)	Total Storage Volume Provided (m ³)
12.19	88	10.39	15.00	155.85	3.90	342.87	11.19	1.5	0.75	12.59	4.20	369.27
10.97	35	9.17	15.00	137.55	3.44	120.36	9.97	1.5	0.75	11.22	3.74	130.86
13.71	9	11.91	15.00	178.65	4.47	40.20	12.71	1.5	0.75	14.30	4.77	42.90
Irregular/End Lots	10	9.41	15.00	141.11	3.53	35.28	11.00	1.5	0.75	12.38	4.13	41.25
Townhome Block 143	15	6.00	15.00	45.00	1.13	16.88	5.00	1.5	0.75	5.63	1.88	28.13
Townhome Block 144	8	6.00	15.00	45.00	1.13	9.00	5.00	1.5	0.75	5.63	1.88	15.00
Multiple Residential Block 145				2500.00		62.50	16.50	16.5	0.75	204.19	68.06	68.06
Total	165			3203.16		627.07						695.46

Notes:

1.0 Assumes the following lot setbacks:

- a) 6m min front yard for single detached and townhome lots
- b) 7m min rear yard for single detached and townhome lots
- c) Singles detached side yard - 1.2m one side, 0.6m other side. Exterior side yard (corner) shall be 4m
- d) Townhomes – 1.2m end unit side yard. Exterior Side Yard 3m. Distance between buildings 3m.

2.0 Assumes stone void ratio of 1/3

3.0 Infiltration Galleries sized to infiltrate 25mm design storm event from building rooftops.

4.0 For townhome units, it is assumed that only half of the rooftop area can be infiltrated.

5.0 Assumes Multiple Residential Block rooftop area to be infiltrated is 25% of block area (0.25ha)

Rear Yard Infiltration Gallery - 12.19m Wide Lots

Structure Length = 11.19 m Gallery Footprint = 16.79 m²
 Structure Width = 1.50 m
 Structure Depth = 0.75 m

Volume of Stone = 12.59 m³
 Stone Porosity = 0.33
Storage Volume of Stone = 4.20 m³

Draindown time calculated using the BMP Sizing equation from the Low Impact Development Stormwater Management Planning and Design Guide

$d_{rmax} = i * t_s / V_r$
 d_{rmax} = depth of stone = 750.00 mm
 i = infiltration rate for native soils = 10.00 mm/hr
 V_r = void space ratio for aggregate used = 0.33
 t_s = time to drain, solve for t_s

$t_s = d_{rmax} * V_r / i =$ 24.75 hours or 1.03 day draindown period

Building Rooftops

Number of Lots = 88
 Rooftop Area (per lot)= 155.85 m² 0.0156 ha
 Total Rooftop Area 1.371 ha Rooftop Area (ha) x Number of Lots
 Recharge Time 24.75 hours / 1.03 days
 Recharge Volume Potential = 4.20 m³ (per lot)
 Total Recharge Volume Potential = 369.27 m³ (Recharge Volume Potential x Number of Lots)

Month	Total Runoff (mm)	No. of days	Max Potential Recharge (m ³)	Total Available Recharge (m ³)	Total Enhanced Recharge (m ³)	Available Recharge per Lot (m ³)	Enhanced Recharge per Lot (m ³)
Jan	15.0	31	11,100	206	175	2.3	2.0
Feb	7.5	28	10,026	103	88	1.2	1.0
Mar	3.8	31	11,100	52	44	0.6	0.5
Apr	55.7	30	10,742	764	649	8.7	7.4
May	156.3	31	11,100	2,144	1,823	24.4	20.7
Jun	113.2	30	10,742	1,553	1,320	17.6	15.0
Jul	92.5	31	11,100	1,268	1,078	14.4	12.2
Aug	76.3	31	11,100	1,046	889	11.9	10.1
Sep	63.5	30	10,742	870	740	9.9	8.4
Oct	44.1	31	11,100	605	514	6.9	5.8
Nov	62.2	30	10,742	853	725	9.7	8.2
Dec	31.2	31	11,100	428	364	4.9	4.1
Total	721.3	365	130,699	9,892	8,409	112.4	95.6

Note: Infiltration Galleries are sized for the 25mm design storm event. It is assumed that 85% of storm events are 25mm or less. Enhanced recharge is taken as 85% of the available recharge to represent the 25mm storm infiltration.

Rear Yard Infiltration Gallery - 10.97m Wide Lots

Structure Length =	9.97	m	Gallery Footprint =	14.96	m ²
Structure Width =	1.50	m			
Structure Depth =	0.75	m			
			Volume of Stone =	11.22	m ³
			Stone Porosity =	0.33	
			Storage Volume of Stone =	3.74	m³

Draindown time calculated using the BMP Sizing equation from the Low Impact Development Stormwater Management Planning and Design Guide

$d_{rmax} = i * t_s / V_r$
 d_{rmax} = depth of stone = 750.00 mm
 i = infiltration rate for native soils = 10.00 mm/hr
 V_r = void space ratio for aggregate used = 0.33
 t_s = time to drain, solve for t_s

 $t_s = d_{rmax} * V_r / i =$ 24.75 hours or 1.03 day draindown period

Building Rooftops

Number of Lots =	35		
Rooftop Area (per lot)=	137.55	m ²	0.0138 ha
Total Rooftop Area	0.481	ha	Rooftop Area (ha) x Number of Lots
Recharge Time	24.75	hours	/ 1.03 days
Recharge Volume Potential =	3.74	m ³	(per lot)
Total Recharge Volume Potential =	130.86	m ³	(Recharge Volume Potential x Number of Lots)

Month	Total Runoff (mm)	No. of days	Max Potential Recharge (m ³)	Total Available Recharge (m ³)	Total Enhanced Recharge (m ³)	Available Recharge per Lot (m ³)	Enhanced Recharge per Lot (m ³)
Jan	15.0	31	3,934	72	62	2.1	1.8
Feb	7.5	28	3,553	36	31	1.0	0.9
Mar	3.8	31	3,934	18	15	0.5	0.4
Apr	55.7	30	3,807	268	228	7.7	6.5
May	156.3	31	3,934	753	640	21.5	18.3
Jun	113.2	30	3,807	545	463	15.6	13.2
Jul	92.5	31	3,934	445	378	12.7	10.8
Aug	76.3	31	3,934	367	312	10.5	8.9
Sep	63.5	30	3,807	306	260	8.7	7.4
Oct	44.1	31	3,934	212	180	6.1	5.2
Nov	62.2	30	3,807	299	255	8.6	7.3
Dec	31.2	31	3,934	150	128	4.3	3.6
Total	721.3	365	46,315	3,473	2,952	99	84

Note: Infiltration Galleries are sized for the 25mm design storm event. It is assumed that 85% of storm events are 25mm or less. Enhanced recharge is taken as 85% of the available recharge to represent the 25mm storm infiltration.

Rear Yard Infiltration Gallery - 13.71m Wide Lots

Structure Length = 12.71 m Gallery Footprint = 19.07 m²
 Structure Width = 1.50 m
 Structure Depth = 0.75 m

Volume of Stone = 14.30 m³
 Stone Porosity = 0.33
Storage Volume of Stone = 4.77 m³

Draindown time calculated using the BMP Sizing equation from the Low Impact Development Stormwater Management Planning and Design Guide

$d_{rmax} = i * t_s / V_r$
 d_{rmax} = depth of stone = 750.00 mm
 i = infiltration rate for native soils = 10.00 mm/hr
 V_r = void space ratio for aggregate used = 0.33
 t_s = time to drain, solve for t_s

$t_s = d_{rmax} * V_r / i =$ 24.75 hours or 1.03 day draindown period

Building Rooftops

Number of Lots = 9
 Rooftop Area (per lot)= 178.65 m² 0.0179 ha
 Total Rooftop Area 0.161 ha Rooftop Area (ha) x Number of Lots
 Recharge Time 24.75 hours / 1.03 days
 Recharge Volume Potential = 4.77 m³ (per lot)
 Total Recharge Volume Potential = 42.90 m³ (Recharge Volume Potential x Number of Lots)

Month	Total Runoff (mm)	No. of days	Max Potential Recharge (m ³)	Available Recharge (m ³)	Enhanced Recharge (m ³)
Jan	15.0	31	1,289	24	21
Feb	7.5	28	1,165	12	10
Mar	3.8	31	1,289	6	5
Apr	55.7	30	1,248	90	76
May	156.3	31	1,289	251	214
Jun	113.2	30	1,248	182	155
Jul	92.5	31	1,289	149	126
Aug	76.3	31	1,289	123	104
Sep	63.5	30	1,248	102	87
Oct	44.1	31	1,289	71	60
Nov	62.2	30	1,248	100	85
Dec	31.2	31	1,289	50	43
Total	721.3	365	15,183	1,160	986

Note: Infiltration Galleries are sized for the 25mm design storm event. It is assumed that 85% of storm events are 25mm or less. Enhanced recharge is taken as 85% of the available recharge to represent the 25mm storm infiltration.

Rear Yard Infiltration Gallery - Irregular Lots

Structure Length = 11.00 m Gallery Footprint = 16.50 m²
 Structure Width = 1.50 m
 Structure Depth = 0.75 m

Volume of Stone = 12.38 m³
 Stone Porosity = 0.33
Storage Volume of Stone = 4.13 m³

Draindown time calculated using the BMP Sizing equation from the Low Impact Development Stormwater Management Planning and Design Guide

$d_{rmax} = i * t_s / V_r$
 d_{rmax} = depth of stone = 750.00 mm
 i = infiltration rate for native soils = 10.00 mm/hr
 V_r = void space ratio for aggregate used = 0.33
 t_s = time to drain, solve for t_s

$t_s = d_{rmax} * V_r / i =$ 24.75 hours or 1.03 day draindown period

Building Rooftops

Number of Lots = 10
 Rooftop Area (per lot)= 141.11 m² 0.0141 ha
 Total Rooftop Area 0.141 ha Rooftop Area (ha) x Number of Lots
 Recharge Time 24.75 hours / 1.03 days
 Recharge Volume Potential = 4.13 m³ (per lot)
 Total Recharge Volume Potential = 41.25 m³ (Recharge Volume Potential x Number of Lots)

Month	Total Runoff (mm)	No. of days	Max Potential Recharge (m ³)	Available Recharge (m ³)	Enhanced Recharge (m ³)
Jan	15.0	31	1,240	21	18
Feb	7.5	28	1,120	11	9
Mar	3.8	31	1,240	5	5
Apr	55.7	30	1,200	79	67
May	156.3	31	1,240	221	188
Jun	113.2	30	1,200	160	136
Jul	92.5	31	1,240	130	111
Aug	76.3	31	1,240	108	91
Sep	63.5	30	1,200	90	76
Oct	44.1	31	1,240	62	53
Nov	62.2	30	1,200	88	75
Dec	31.2	31	1,240	44	37
Total	721.3	365	14,600	1,018	865

Note: Infiltration Galleries are sized for the 25mm design storm event. It is assumed that 85% of storm events are 25mm or less. Enhanced recharge is taken as 85% of the available recharge to represent the 25mm storm infiltration.

Rear Yard Infiltration Gallery - Townhome Blocks 143 and 144

Structure Length = 5.00 m Gallery Footprint = 7.50 m²
 Structure Width = 1.50 m
 Structure Depth = 0.75 m

Volume of Stone = 5.63 m³
 Stone Porosity = 0.33
Storage Volume of Stone = 1.88 m³

Draindown time calculated using the BMP Sizing equation from the Low Impact Development Stormwater Management Planning and Design Guide

$d_{rmax} = i * t_s / V_r$
 d_{rmax} = depth of stone = 750.00 mm
 i = infiltration rate for native soils = 10.00 mm/hr
 V_r = void space ratio for aggregate used = 0.33
 t_s = time to drain, solve for t_s

$t_s = d_{rmax} * V_r / i =$ 24.75 hours or 1.03 day draindown period

Building Rooftops

Number of Lots = 23
 Rooftop Area (per lot) = 45.00 m² 0.0045 ha
 Total Rooftop Area 0.104 ha Rooftop Area (ha) x Number of Lots
 Recharge Time 24.75 hours / 1.03 days
 Recharge Volume Potential = 1.88 m³ (per lot)
 Total Recharge Volume Potential = 43.13 m³ (Recharge Volume Potential x Number of Lots)

Month	Total Runoff (mm)	No. of days	Max Potential Recharge (m ³)	Available Recharge (m ³)	Enhanced Recharge (m ³)
Jan	15.0	31	1,296	16	13
Feb	7.5	28	1,171	8	7
Mar	3.8	31	1,296	4	3
Apr	55.7	30	1,255	58	49
May	156.3	31	1,296	162	138
Jun	113.2	30	1,255	117	100
Jul	92.5	31	1,296	96	81
Aug	76.3	31	1,296	79	67
Sep	63.5	30	1,255	66	56
Oct	44.1	31	1,296	46	39
Nov	62.2	30	1,255	64	55
Dec	31.2	31	1,296	32	27
Total	721.3	365	15,264	747	635

Notes:

1.0 Rooftop area for townhome units is taken as half of the building roof area (assumes only rear half of roof is infiltrated)

2.0 Note: Infiltration Galleries are sized for the 25mm design storm event. It is assumed that 85% of storm events are 25mm or less. Enhanced recharge is taken as 85% of the available recharge to represent the 25mm storm infiltration.

Infiltration Gallery - Multiple-Residential Block 145

Structure Length = 16.50 m Gallery Footprint = 272.25 m²
 Structure Width = 16.50 m
 Structure Depth = 0.75 m

Volume of Stone = 204.19 m³
 Stone Porosity = 0.33
Storage Volume of Stone = 68.06 m³

Draindown time calculated using the BMP Sizing equation from the Low Impact Development Stormwater Management Planning and Design Guide

$d_{rmax} = i * t_s / V_r$
 d_{rmax} = depth of stone = 750.00 mm
 i = infiltration rate for native soils = 10.00 mm/hr
 V_r = void space ratio for aggregate used = 0.33
 t_s = time to drain, solve for t_s

$t_s = d_{rmax} * V_r / i =$ 24.75 hours or 1.03 day draindown period

Building Rooftops

Total Rooftop Area 0.250 ha Rooftop Area (ha) x Number of Lots
 Recharge Time 24.75 hours / 1.03 days
 Recharge Volume Potential = 68.06 m³ (per lot)

Month	Total Runoff (mm)	No. of days	Max Potential Recharge (m ³)	Available Recharge (m ³)	Enhanced Recharge (m ³)
Jan	15.0	31	2,046	38	32
Feb	7.5	28	1,848	19	16
Mar	3.8	31	2,046	9	8
Apr	55.7	30	1,980	139	118
May	156.3	31	2,046	391	332
Jun	113.2	30	1,980	283	241
Jul	92.5	31	2,046	231	196
Aug	76.3	31	2,046	191	162
Sep	63.5	30	1,980	159	135
Oct	44.1	31	2,046	110	94
Nov	62.2	30	1,980	155	132
Dec	31.2	31	2,046	78	66
Total	721.3	365	24,090	1,803	1,533

Notes:

- 1.0 Assumes Multiple Residential Block rooftop area to be infiltrated is 25% of block area (0.25ha)
- 2.0 Infiltration Galleries are sized for the 25mm design storm event. It is assumed that 85% of storm events are 25mm or less. Enhanced recharge is taken as 85% of the available recharge to represent the 25mm storm infiltration.